

RELX and the FOSSIL FUEL ENERGY ORDER

*The Growing Global Health and Human Rights Implications of
Business Practices at the World's Largest Science Publisher*

PUBLICATIONS

- ▶ RELX maintains that it's greatest environmental impact is "through its journals and what [is] published."
- ▶ Once marketed as serving fossil fuel expansion, RELX has rebranded its journals as having missions that reflect and advance the UN SDGs and promote a pathway to a net zero future.
- ▶ With realistic pathways to these goals requiring no new fossil fuel projects past those planned in 2021, RELX publications continue to inform global fossil fuel expansion, with some framing this activity as low-carbon and consistent with "green" development.

"We have reviewed our journals to ensure their missions reflect and advance the UN SDGs and promote a pathway to a net zero future...[and] ensure they support an energy transition."

—RELX's initial response to this human rights grievance mechanism (2024)

SCIENTIST REBELLION
2026



2025 paper examples

Alexandria Engineering Journal

[Optimization of fatigue life of the seismic vibrator baseplate considering the coupling effect of welding residual stress](#)

"This study provides theoretical guidance for the structural design and optimization of the SVB, aligning with practical engineering needs and showing substantial application value. Seismic exploration technology is a primary method for oil and gas exploration. As a non-explosive seismic source, the seismic vibroseis provides advantages like high efficiency, controllability, broad applicability, and environmental friendliness, making it essential equipment for land-based oil exploration."

Applied Energy

[Co-production of gas hydrates, shallow gas, and deep gas in the Qiongdongnan Basin: A pathway to commercial production](#)

"The commercial recovery of gas hydrate (GH) remains challenging due to low production rates and high operational costs...Our findings offer a promising pathway toward commercializing GH exploitation through TGCP... Natural gas is considered a promising transitional energy source in the pursuit of carbon peak and neutrality due to its advantages, such as cleanliness, availability, convenience, storage, and supply security [1]... Our findings provide a valuable foundation for future exploitation of GH and conventional deep gas reservoirs, delivering actionable insights to advance resource recovery in hydrate-rich environments."

Chemical Engineering Journal

[Modeling and evaluation on gas adsorption ratio: Insight into the coexistence mechanism of adsorbed and free gas in shales](#)

"Accurate determination of gas-in-place amount associates with resource potential assessment of shale gas and production prediction of shale gas well... This study is of great help to understand the microscopic occurrence mechanism of methane in shale nanopores, and contributes to effective shale gas exploitation."

China Geology

[Lithofacies palaeogeography, depositional model and shale gas potential evaluation in the O3-S1 Wufeng-Longmaxi Formation in the Sichuan Basin, China](#)

"Considering the basic sedimentary geology and shale gas characteristics, areas such as Suijiang-Leibo-Daguan, Luzhou-Zigong, Weirong-Yongchuan, and Nanchuan-Dingshan are identified as key prospects for future shale gas exploration in the Wufeng-Longmaxi Formations."

[Tight sandstone diageneses, evolution, and controls on high-graded reservoirs in slope zones of foreland basins: A case study of the fourth Member of Xujiahe Formation, Tianfu gas field, Sichuan Basin](#)

"The research findings have been successfully applied to explore the Xujiahe Formation in the slope zone of the Sichuan foreland basin. They can be referential for other similar tight sandstone gas accumulations."

[Genetic relationship between shell fossils and shale oil: A case study of Jurassic shale reservoir in the northeast Sichuan Basin](#)

"This study provides new insights into the exploration and development of unconventional oil and gas resources in this rock type."

[Accumulation process and potential of Jurassic tight sandstone oil and gas in Eastern Yangxia sag of Kuqa Depression](#)

"This study is of practical importance for expanding the exploration field and selecting favorable areas in the eastern Yangxia sag."

Computers & Geosciences

[A novel class-imbalance learning framework for fluid recognition: Application to Qingshimao-Gaoshawo tight-sand gas reservoirs in the Ordos Basin, China](#)

"Booming artificial intelligence technologies and accumulating logging data provide a solid foundation for the application of machine learning methods as new tools for fluid identification...In this paper, a class-imbalance learning framework (CILF) is proposed for fluid recognition of tight-sand gas reservoirs...We would like to thank the China National Petroleum Corporation for providing the data."

[Improving generalization through self-supervised learning using generative pre-training transformer for natural gas segmentation](#)

"Seismic reflection is an essential geophysical method for subsurface mapping in the oil and gas industry, used to deduce the position and extension of potential gas accumulations through the processing and interpretation of data. ...This work presents a method to find possible gas accumulations in seismic surveys using seismic traces for analysis...The authors wish to express their deep gratitude for all the support provided by the company Eneva S.A. through the project "Automated Learning Intelligence for Exploration", in partnership with the Tecgraf Institute at PUC-RIO."

Energy and A.I.

[A Deep-learning based Model with Intra- and Inter-Well Constraints for Intelligent Identification of Stratigraphic Layers](#)

"The study shows that our proposed deep learning

model exhibits better generalization for stratigraphic interpretation, improving the efficiency of stratigraphic analysis and providing a valuable reference for drilling strategies in oil and gas development."

Energy Geoscience

"[Energy Geoscience](#) is a quarterly, international, open access journal with a multidisciplinary focus, particularly on energy transition and achieving net-zero emission targets. The Journal explores conventional, non-conventional, and renewable energy resources including: Oil and gas exploration and development"

[Key technologies for increasing production based on the best practices of major shale oil and gas basins](#)

"The key technologies and optimization design parameters proposed in this paper can be applied to guide new well placement, drilling and completion designs, and hydraulic fracture operations to increase productivity." [Authors are currently employed by SINOPEC USA.]

[Spatiotemporal distribution patterns and exploration implications of multi-type coal-measure gases in the Daniudi gas field, Ordos Basin, China](#)

"While focusing on single types of gas reservoirs such as CBM and tight-sand gas, it is essential to consider the concurrent exploration of various coal-measure gas combinations to discover more additional gas resources and guide exploration deployment...this study investigated the spatiotemporal distribution patterns of multi-type coal-measure gases in the Carboniferous-Permian strata, aiming to provide insights and reference for the exploration deployment of these gas types."

[Gas geochemistry evaluation of onshore Colombian basins: New insights for natural gas and liquified petroleum gas prospectivity](#)

"The combination of high OGIP volumes and significant LPG content in the Llanos foothills, where the Cusiana, Cupiagua, Pauto, and Floreña fields are located, further suggests that this sector is highly prospective. Implementing near-field exploration strategies could contribute to the addition of both NG and LPG reserves."

[Facies and NMR-based petrophysical analyses of the Apollonia unconventional gas reservoir: A case study from the BED 9 field, Abu Gharadig Basin, North Western Desert, Egypt](#)

"The Apollonia Formation has unique characteristics as an unconventional hydrocarbon resource...The work presented herein focuses on the Apollonia unconventional reservoir, a commercially gas-bearing reservoir that has gained considerable attention from hydrocarbon exploration and development companies."

[Implications of the geochemical characteristics of](#)

[post-fracturing flowback fluids for shale gas exploration and exploitation](#)

"This study will provide theoretical and data support for efficient shale gas exploration and exploitation."

[A model for predicting marine shale gas sweet spots based on relative sea-level changes and its application](#)

"Gas-bearing shales have become a major source of future natural gas production worldwide. It has become increasingly urgent to develop a reliable prediction model and corresponding workflow for identifying shale gas sweet spots...This study presents a new prediction model and workflow to achieve effective identification of shale gas sweet spots through integrated analysis of relative sea-level changes and facies sequences. In addition, the model and workflow have been applied to the Wufeng-Longmaxi shale to guide the shale gas exploration and development...All the authors are currently employed by Petro China."

[Segmented evolution and exploration targets of the Cambrian platform margin in the Manxi area, Tarim Basin](#)

"The Shayilike Formation transgressive deposits and the high-energy mound-shoal complexes along the platform margin of the Wusonggeer Formation constitute the optimal reservoir - cap rock assemblage, establishing this segment as the most promising target for hydrocarbon exploration in the platform margin... This work was funded by SINOPEC Science and Technology Research Program (project Nos: [P24226](#), [P24077](#)) and Northwest Oil Field Company, SINOPEC."

Energy Strategy Reviews

"[This journal](#) welcomes contributions that support and advance the UN's sustainable development goals"

[Forecasting of natural gas based on a novel discrete grey seasonal prediction model with a time power term](#)

"Currently, more than 130 nations and areas have declared their intention to achieve carbon neutrality, also known as net zero emissions...Because natural gas is the cleanest fossil fuel source, its expansion is consistent with that of the idea of green development...This study has made significant contributions in multiple aspects within the field of natural gas forecasting...For international cooperation: the US government should actively participate in international natural gas cooperation projects. This can involve signing bilateral and multilateral cooperation agreements with countries rich in natural gas resources." Study funded in part by the National Natural Science Foundation of China, a key funder for PetroChina's research.

Engineering

[Hydrate Blockage in Subsea Oil/Gas Pipelines: Characterization, Detection, and Engineering Solutions](#)

"As oil and gas exploration moves deeper into the ocean, the issue of hydrate blockages has become more severe. It is essential to take adequate measures promptly to mitigate the hazards of hydrate blockages after they form...The use of a hydrate model combined with fiber optics could prove to be an effective method for detecting blockages in newly laid pipelines in the future."

Engineering Analysis with Boundary Elements [Predicting downhole rock friction angles in complex geological settings: Machine learning approaches and application to the Xihu sag](#)

"These findings not only advance predictive methodologies in complex geological settings but also provide a robust reference for future studies, underscoring the framework's scientific rigor and high-value contributions. Rock mechanics parameters are intrinsic properties of formation rocks. They form the foundational data for drilling and fracturing operations and are critical for oil and gas exploration and development. Analyzing rock mechanics parameters of reservoirs enables a more accurate assessment of stress characteristics, providing a theoretical basis for subsequent exploration and development in the study area."

Engineering Applications of Artificial Intelligence [An intelligent three-dimensional fault detection method based on multitask learning and multi-scale feature fusion](#)

"This research introduces new techniques for fault detection, with significant practical value. It demonstrates the effectiveness, scalability, and robustness of artificial intelligence in fault detection within the oil and gas exploration field...fault detection holds a prominent position in oil and gas exploration."

Engineering Fracture Mechanics

"EFM is committed to publishing research content that supports and advances the energy transition and the reduction of CO₂ emissions. In light of this and in response to market changes, we have decided to decline research papers in the topic of fossil fuels."

[Fracture toughness prediction using well logs and extreme gradient boosting based on particle swarm optimization in shale gas reservoir](#)

"Determining the fracture toughness of unconventional reservoirs is vital to enhance hydraulic fracture effectiveness and optimize well-completion strategies... the utilized ML model can serve as a substitute method for identifying the optimal location for fracking in shale gas reservoirs, thereby improving shale gas production... as economies expand, their energy needs increase significantly. With conventional reservoirs depleting quickly, unconventional reservoirs have emerged as an alternative energy source... This paper applies ML to predict KIC, aiding in identifying optimal hydraulic frac-

turing locations to enhance shale gas production."

[Investigation on difference and correlation of scratch fracture toughness affected by shale scale effect](#)

"This provides crucial insights into mechanical properties across different scales and offers new theoretical support for shale oil and gas exploration."

[Investigating hydraulic fracture penetration in soft-hard interlayer coal measures with perforated completion](#)

"Fossil fuels, such as oil and natural gas, occupy a pivotal role in the global energy landscape, with their exploration and development constituting an indispensable aspect of energy resources and fuel science. In recent years, the exploitation of unconventional, environmentally-friendly natural gas resources, such as coalbed methane, tight sandstone gas and shale gas, serve as not only a crucial safeguard for national energy security, but also a vital tool in advancing towards the achievement of the "dual carbon" goal, encompassing carbon neutrality and zero-carbon emissions...In this paper, we delve into the multilayer commingled fracturing of coal measures, an integral aspect of natural gas development. This technology represents a crucial advancement for the efficient extraction and exploration of energy resources."

Evolving Earth

[Organic matter characteristics in black shales of the Southwestern Paleogene N'kapa Formation, Douala Sub-basin Cameroon: Evidence from stable isotopes and Rock-Eval pyrolysis](#)

"The data and their interpretation presented in this study will improve the understanding how paleoclimatic variation controls paleoredox and paleoproductivity conditions, the mechanisms of organic matter enrichment and the hydrocarbon generation potentials of black shales in sedimentary basins of Cameroon and other parts of the World."

Expert Systems with Applications

[PATSA-BIL: Pipeline for automated texture and structure analysis of borehole image logs](#)

"Identifying potential hydrocarbon reservoirs is critical for oil and gas exploration and production (Lasdon et al., 1986). Borehole image logs, also known as image logs, are particularly relevant for geoscientists and petroleum engineers, as they bring high-resolution images with a detailed view of the rock formations traversed by the well borehole...This study employed computer vision techniques to explore various approaches for the automated texture and structure analysis of borehole image logs. We developed a robust pipeline for loading and preprocessing resistivity image log data, which is beneficial for subsequent analysis using ML methods..."

The authors also thank Petrobras S.A. (2022/00364-1 and 2022/00112-2) for the financial and infrastructure support."

Fluid Dynamics and Materials Processing [Estimated Ultimate Recovery and Productivity of Deep Shale Gas Horizontal Wells](#)

"Pressure control in deep shale gas horizontal wells can reduce the stress sensitivity of hydraulic fractures and improve the estimated ultimate recovery (EUR). In this study, a hydraulic fracture stress sensitivity model is proposed to characterize the effect of pressure drop rate on fracture permeability....The results of this study are of great significance for guiding the development of future pressure-controlled deep shale gas production systems."

Fuel

[Layered massive fracturing of carrier beds commercially unveils the deep tight sandstone gas reserves in Sichuan Basin](#)

"Comparative productivity analyses manifested the breakthrough of this technical route over preceding ones in Xuejiahe gas reservoirs, providing a superior reference for discovering and developing deep tight gas resources around the world."

Gas Science and Engineering

[A model of evaluating dynamical process of the inter-layer interference of tight gas and coalbed methane and its application](#)

"Evaluating the dynamical process of interlayer interference in reservoirs with various properties is significant for analyzing the rationality of the coproduction of tight gas and coalbed methane. ...Research results indicated that the model could be applied to analyzing the actual performance of exploration."

Geoenergy Science and Engineering

[Hydrothermal influence on ultra-deep petroleum and gas in the Tarim Basin: Evidence from calcite veins](#)

"This study provides valuable insights into the impact of hydrothermal activity on the hydrocarbon accumulation process and offers further evidence for deep hydrocarbon exploration in the region."

[Geochemical characteristics and geological formation process of CO₂-enriched oil-type coalbed gas in the Haishiwan area of the Minhe Basin, NW China](#)

"The research results not only contribute to the theory of coalbed gas accumulations in coal-oil-gas symbiotic mining areas but also provide a geological basis for the efficient development of coalbed gas in the research area."

Geomorphology

[Origin and evolution of slope-confined canyons and](#)

[their relationship with gas hydrate accumulation in the northwestern Qiongdongnan Basin, South China Sea](#)

"Submarine canyons are important channels for sediment transportation in sloped areas and are key locations for the accumulation of gas hydrates and shallow gases. Understanding the evolution of submarine canyons and gas migration is crucial for natural gas exploration in the petroleum industry. In this study, we integrated bathymetric, seismic, logarithmic, and lithological data derived from slope-confined canyons in the Qiongdongnan Basin (QDNB) to examine their geomorphologies and filling patterns."

Geosystems and Geoenvironment

[Combined analysis of magnetic investigations and geological mapping of the Babouri-Figuil Basin \(Northern Cameroon\): Implications for hydrocarbon prospects](#)

"The Babouri-Figuil Basin (BFB) is a frontier basin for petroleum exploration in northern Cameroon, where various studies indicated the presence of prospective source rocks but with limited information concerning its subsurface configuration. This work integrates the combination of magnetic survey and field geological data to assess the distribution of geological formations, and evaluate the basement configuration and thicknesses of sedimentary series in the BFB...The presence of igneous intrusions in the vicinity of organic-rich formations may imply the existence of an atypical petroleum system. It is recommended that petroleum exploration campaigns be intensified in the basin."

Heliyon

[Sequence stratigraphic analysis for hydrocarbon prospectivity of the Kamta structure in the foredeep region of the Bengal Basin](#)

"These findings provide a robust understanding of the stratigraphic architecture and depositional history of the reservoirs in Kamta and Rupganj gas fields, offering critical insights for future exploration and development in the Bengal Basin."

International Journal of Coal Geology

[Isotopic and hydrochemical evidence for the origins of unconventional gases in the Middle and Lower Jurassic coal measures in the Fukang area of Junggar Basin, NW China](#)

"The findings of this study contribute to the geological understanding of coalbed, shale, and tight sandstone gases, providing valuable insights for future exploration efforts in the Fukang area."

[Dynamic evolution and differential enrichment of deep coalbed methane: A case study in Qinshui Basin](#)

"This study elucidates the mechanisms responsible for differential gas content enrichment in deep coal reservoirs, providing valuable insights for guiding the exploration and development of deep coalbed methane

resources.”

[Restoring the original hydrocarbon-generating potential of deep source rocks: A critical review and a novel method using the Songliao Basin, China, as a case study](#)

“This research not only enhances the importance of the geological understanding of deep-seated source rocks but also provides guidance for improved evaluation of these resources, ultimately allowing for improved exploration of deep-seated petroleum and natural gas resources.”

International Journal of Hydrogen Energy

[Study on hydraulic fracturing in natural gas hydrate reservoir based on thermo-hydraulic-mechanical-chemistry coupled damage model and experiment](#)

“Natural gas hydrate is a kind of clean energy with high energy density, existing in permafrost or marine sediments under low temperature and high pressure. ...This research can provide important theoretical support for the application of hydraulic fracturing in natural gas hydrate reservoirs, which is meaningful for accelerating the industrialization process of hydrate development.”

Journal of African Earth Sciences

[Automated lithofacies classification: A comprehensive machine learning approach in Shushan Basin reservoirs, Western Desert, Egypt](#)

“Technology has taken center stage, enabling the industry to maximize data value. The convergence of machine learning has fundamentally transformed how the petroleum sector conducts exploration, enhancing efficiency, reducing costs, and ultimately saving precious time. Rapid and accurate geological modeling practices is introduced by identification of facies from conventional logging tools...The authors are bound to give their due acknowledgement to Khalda Petroleum Company and Egyptian General Petroleum Corporation for providing data and material needed for this study.”

[Cretaceous source rocks evaluation inferred from geochemical analysis and basin modeling in Northern-Central Atlas of Tunisia: A guide for exploration](#)

“These grabens are key exploration targets for finding preserved traps, both within the grabens and at graben edges...Our results will help guiding the hydrocarbon exploration in Ech-Cheid- Bouarada area and similar structures in the Northern Tunisian Atlas fold belt.”

[3D static modeling for identifying the main flow units and heterogeneities in the Abu Madi Reservoir, Baltim Gas Field, Nile Delta, Egypt](#)

“These findings contribute to refining exploration strategies and improving production planning for the Abu Madi reservoir and analogous gas-prone settings in the Nile Delta.”

[Diagenesis of the Callovian-Kimmeridgian Antalo Limestone Formation, Blue Nile Basin, Ethiopia: Implications for characterizing hydrocarbon reservoir quality](#)

“This study provides insight into the Antalo Limestone reservoir quality in the Blue Nile Basin. Moreover, it offers important baseline data to guide future exploration and advanced investigations aimed at re-evaluating the formation as a significant reservoir. It also enhances the current understanding of reservoir heterogeneity in Ethiopian Jurassic carbonates and contributes valuable insights for regional hydrocarbon exploration.”

[Modeling overthrust structures for hydrocarbon exploration by 3D magnetotellurics](#)

“Given the limited number of previous studies focusing on 3D MT in overthrust terrains, this research provides new insights into its practical applications and highlights its potential as a critical tool for hydrocarbon exploration in challenging geological settings.”

[Source rocks thermal maturity reconstruction on high and deep structures in the Sahel region \(central-eastern Tunisia\)](#)

“Modelling results reveal that significant amounts of hydrocarbons are still retained within the sourcing rocks of the Sahel area. These constitute unconventional resources to be explored in the future.”

Journal of Alloys and Compounds

[Ti-6Al-4V and Ti-6Al-4V-0.1Ru alloys in oil and gas exploration: A review of performance and hydrogen embrittlement](#)

“The primary objective of this review is to comprehensively assess the electrochemical and mechanical behavior of Ti-6Al-4V and Ti-6Al-4V-0.1Ru alloys, including the ELI versions, under harsh conditions, particularly those involving hydrogen exposures. Given the growing use of titanium alloys in deep water oil and gas exploration, a comprehensive understanding of their performance is essential for ensuring secure exploration...the oil and gas industries have increasingly relied on titanium alloys to meet the demanding conditions found in deep and ultra-deepwater environments, characterized by extreme pressures, high temperatures, and corrosive media.”

Journal of Analytical and Applied Pyrolysis

[Control mechanisms of kerogen chemical structure on thermogenic gas generation](#)

“This study highlights the relationship between kerogen's microstructural features and its hydrocarbon generation potential, offering insights into the hydrocarbon potential of source rocks and the development of natural gas fields in the Turpan-Hami Basin.”

Journal of Applied Geophysics

[Integrated machine learning workflow for 3D pore type modeling in the pre-salt carbonates of the Tupi Field, Santos Basin](#)

"This approach aims to produce reliable 3D models of pore distributions, which can be correlated with reservoir quality and hydrocarbon potential, offering valuable insights for exploration and production strategies... This research was carried out in association with the R&D project registered as ANP nº 21575–6, "Integrated multi-scale analysis of pre-salt carbonate rocks for the characterization and prediction of reservoir properties" (Unicamp/Shell Brasil/ANP), sponsored by Shell Brasil..."

[Data-driven lithofacies classification of marine shale based on deep learning approaches](#)

"The results indicate that the Transformer model outperform the others. In summary, DL methods hold significantly potential to improve marine shale identification, thereby advancing the efficiency of "sweet spot" targeting and evaluation and unconventional reservoirs."

[Hybrid modeling of deep neural networks and unsupervised machine learning algorithms for missing well log prediction based on geological lithofacies similarities](#)

"Well logging plays a vital role in formation characterization and resource evaluation in oil and gas exploration...The proposed model represents a promising step forward in improving the accuracy of missing log predictions and optimizing resource extraction strategies in complex reservoirs, facilitating more efficient and cost-effective exploration and development."

[Integrated petrophysical characterization of Late Cretaceous fluvial-deltaic channel systems in Penobscot Field, Nova Scotia: Implications for reservoir facies prediction](#)

"Integration of P-imp, Nphi, Vsh, and Phie provides a robust geological model that enhances the understanding of facies dispersal pattern and reservoir potential, and identifies sweet spots for future hydrocarbon exploration within the Late Cretaceous channel system of the Penobscot Field, Nova Scotia."

Journal of Asian Earth Sciences

[Origin and accumulation model of ultra-deep marine natural gas in the Shuntuoguole low Uplift of the Tarim Basin, NW China](#)

"In this study, we systematically analyzed the genesis and alterations of deep marine natural gas in the region through oil and gas geochemical characteristics and the features of strike-slip faults. We also preliminarily investigated the natural gas accumulation model to provide a theoretical foundation for resource estimation and optimization of future exploration targets."

[Origin, maturity and geochemistry of natural gas in the Yancheng Sag, Subei Basin, China: Insights from pyrolysis experiments and basin modeling](#)

"These results provide insights into the source of natural gas in the Zhujiadun gas field and a basis for natural gas exploration in the future."

[Deep-water hydrocarbon accumulation controlled by a structural ridge: The Baodao step-fault zone in the Qiongdongnan Basin, South China Sea](#)

"The B21 step-fault zone is located on the northern slope of the Baodao Sag in the Qiongdongnan Basin of the northern South China Sea. It occurs in a deep-water area that has substantial natural gas exploration potential. ...Our results could help identify deep-water reservoirs."

[Formation mechanism and geological significance of shale reservoirs in Cretaceous continental faulted basins of the Yanshan Tectonic belt, Northeastern China: A case study of the Luanping Basin](#)

"This study aims to provide theoretical and practical guidance for the future exploration of similar basins, both domestically and internationally."

[Novel insights into the conventional and unconventional hydrocarbon potential of the Sembar Formation, Southern Indus Basin, Pakistan: A multi-analytical and basin modeling approach](#)

"This study confirms the shale oil and shale gas potential of the Sembar Formation, demonstrating that integrating basin modeling and a multi-analytical approach provides a novel framework for assessing hydrocarbon potential and identifying sweet spots in the Sembar shale and analogous formations."

[Tectonostratigraphic evolution of the Obi Basin, North Maluku, Indonesia, with implications for petroleum exploration potential](#)

"We integrated satellite gravity and 2D seismic data with surface geological information from Obi and Bacan Islands to interpret the basin's evolution and its hydrocarbon potential...We thank the Directorate General of Oil and Gas, Ministry of Energy, and Mineral Resources of the Republic of Indonesia for granting permission for this publication."

Journal of Asian Earth Sciences: X

[Quantitative evaluation and effectiveness criteria for the crystalline bedrock-type reservoir in the central uplift zone of the northern Songliao basin, NE China](#)

"The crystalline bedrock-type gas reservoirs in the central uplift zone of the northern Songliao Basin represent a significant target for deep natural gas exploration. ...These criteria provide useful guides for identifying effective reservoirs within the crystalline bedrocks."

Journal of Natural Gas Geoscience

[Geological characteristics of biogenic gas formation and direction of favorable zones in the Quaternary mudstone of the Qaidam Basin, China](#)

"[This paper] clarifies the exploration potential of mudstone biogas reservoirs, which has significant implications for Quaternary biogas exploration. All experiments were conducted at the PetroChina Research Institute of Petroleum Exploration and Development."

[Geochemical characteristics and genesis of the Paleozoic natural gas in the southern Ordos Basin, China](#)

"By systematically comparing the geochemical characteristics of natural gas from the southern and northern parts of the basin, this paper provides a reference for natural gas exploration in the southern basin."

[Petrophysical characterization and reservoir potential of the Lower Goru sandstone: A case study from the Sinjoro Gas Field, Pakistan](#)

"This study offers a valuable case study for regional hydrocarbon evaluation, providing practical insights for exploration in the Lower Indus Basin, Pakistan...A comparison of LGF with other sections of the Indian Plate portrays a better understanding of the potential reservoir investigation of the sandstone reservoir and will be helpful for further petroleum exploration."

[Method and application for ultra-deep carbonate reservoir quality evaluation: A case study of the Well X area in the Fuman Oilfield, Tarim Basin, China](#)

"The proposed evaluation methods are effective in evaluating reservoir quality and provide a valuable geological reference and support for the efficient exploration and profitable development of fault-controlled fracture-cavity ultra-deep carbonate reservoirs...The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Ke Xu, Hui Zhang, Penglin Zheng, Mingjin Cai, Ziwei Qian, Jianli Qiang and Lei Liu are currently employed by PetroChina."

Journal of Palaeogeography

[Sedimentary facies architecture and terminal fan systems of the lower Palaeogene Shahejie Formation in Bonan sag, Bohai Bay Basin, China: Implications for hydrocarbon exploration](#)

"This study provides key findings on the sedimentary mechanisms in the Es4x member, offering important information regarding deep reservoirs in tectonically active areas, particularly the challenges of predicting oil reservoirs in thin versus thick red beds."

Journal of Rock Mechanics and Geotechnical Engineering

[Characterizing strength and location of continental oil shale with drilling process monitoring in Southern](#)

Ordos Basin, China

"The digital results provide a better understanding of the oil shale in Tongchuan and the potential for future oil shale exploration in other regions."

[Evaluating shale reservoir fracability using triaxial hydraulic fracturing tests](#)

"This study provides a scientific foundation for optimizing formation deployment and fracturing stage design in Gulong shale oil horizontal wells within the Daqing Songliao Basin, and offers technical support for the efficient development of unconventional reservoirs... The outcomes of this research are expected to provide a theoretical foundation for optimizing hydraulic fracturing design and identifying engineering "sweet spots" in the Gulong shale oil play of the Songliao Basin, Daqing."

Journal of South American Earth Sciences

[Hydrocarbon generation in the onshore and offshore of the Austral and Malvinas basins based on 3D petroleum system modelling](#)

"The objectives of the study are to: (1) evaluate and compare the geochemical properties of the LC-SR in the Austral and Malvinas basins, (2) obtain a semi-quantitative evaluation of the unit using 3D regional BPSM to test the timing of hydrocarbon generation–expulsion from the Fuegian and Malvinas fold-and-thrust belts to basin borders, and (3) discuss the risk and remaining exploration potential of the LC-SR/Springhill petroleum system."

Journal of Structural Geology

"This journal welcomes contributions that support and advance the UN's sustainable development goals"

[The red river fault zone and its deep structural characteristics revealed by high-resolution seismic data in the Yinggehai basin, South China sea](#)

"By considering the development of the Eocene and Oligocene source rocks, we examine the structural inversion of RRFZ and its implications for oil-gas exploration in the YGHB."

[Differential salt-related structural deformation in the Eastern segment of the Qiulitage fold and thrust belt, Kuqa Foreland Basin: Evidences from seismic interpretation and numerical simulation analysis](#)

"This study integrates seismic interpretation and numerical simulation to investigate the genetic mechanisms of segmented deformation in the QFTB, providing valuable insights and solid evidence for structural interpretation and hydrocarbon exploration in analogous salt-detachment systems."

Journal of Water Process Engineering

[Microbial community structure and functional characteristics in shale gas flowback water from marine shale](#)

[formation in Sichuan Basin, China: Insights into C-N-P-S cycle and correlations](#)

"This study provided a theoretical foundation for understanding microorganisms in flowback water from deep marine shale formation and promote environmentally sustainable shale gas development."
Kuwait Journal of Science

[A reappraisal of Mesozoic-Cenozoic sequence stratigraphy in Offshore Indus Basin, Pakistan](#)

"The Offshore Indus Basin is a passive continental margin and a frontier zone for hydrocarbon exploration based on structural and stratigraphic features observed on seismic data. In this study, the seismic and biostratigraphic framework is established using seismic data, geophysical well logs, along with biostratigraphic information to define the depositional sequences in the study region.. The new findings in this study will significantly influence the assessment of hydrocarbon source rock burial and maturity, unconformity identification, hydrocarbon reservoir fingerprinting, and seals/trap evaluation in the study area."

[Marine and Petroleum Geology](#)

[Paleoenvironment and source rock potential within the Jurassic-Cretaceous succession of the Nile Delta Basin, Egypt: Insights from palynology and organic geochemistry](#)

"The study provides valuable insights into the Upper Jurassic and Lower Cretaceous geology of the Nile Delta Basin, facilitating the prediction of depositional environments and source rocks...This has the potential to unlock a remarkable new exploration play concept in the Nile Delta, paving the way for a new direction in future petroleum exploration and development."

[Shale fracture prediction using integrated seismic methods](#)

"This study shows that the integrated method proposed in this paper can predict fractures in the Z215 well block reliably; this may be a reference for shale fracture prediction in other regions...The authors would like to thank the PetroChina Jilin Oilfield Branch for data sharing"

[A comprehensive review of the characteristics, formation, evolution, resource potential, and ultradeep exploration fields of oil-cracking gas in the Ediacaran–Cambrian formations of the Sichuan super gas basin](#)

"This study offers a reference, which is expected to promote the exploration of Ediacaran–Cambrian natural gas in domestic basins (such as Sichuan, Ordos, and Tarim), and holds substantial scientific and practical importance for pioneering the exploration of natural gas in ancient strata from the Middle–Upper Proterozoic to the Lower Paleozoic eras worldwide."

[Tight gas accumulation in middle to deep successions of fault depression slopes: Northern slope of the Lishu Depression, Songliao Basin](#)

"This research provides valuable insights for future exploration in deep rift basins and a framework to predict favourable hydrocarbon traps and increase the success of future drilling campaigns."

[Shallow gas accumulation mechanism in the Qiongdongnan Basin, South China Sea](#)

"The results of this study will provide guidance for the development of shallow resources in the South China Sea...The ultimate goal is to provide guidance and recommendations for the next steps in the exploration, evaluation, and development of natural gas reservoirs in shallow layer in the Qiongdongnan Basin, while also offering valuable insights for the exploration of oil and gas resources in other basins."

[Dynamic model for charging tight gas reservoirs: A case study from the Xujiahe Formation in the Sichuan Basin, China](#)

"This research not only aids in understanding the accumulation process of tight gas but also provides a theoretical foundation for the accurate prediction of tight gas sweet spots."

[Development model of fracture-filling gas hydrates at the top of gas chimneys, the Songnan Low Uplift in Qiongdongnan Basin of the northern South China Sea](#)

"It is expected that this work will illuminate exploration and production strategies in gas hydrate plays, ultimately enabling operators to target the most favorable zones."

[Integrated analysis of the gas hydrate petroleum system in the western South Korea Plateau \(WSKP\), East Sea \(Sea of Japan\)](#)

"The findings contribute to understanding GH systems in back-arc basins and provide a foundation for future exploration...These results establish the WSKP as a promising target for gas hydrate exploration and provide a framework for future research in similar back-arc basin settings."

[Evaluation of petroleum system elements and processes in the Risha gas field, eastern Jordan: A comprehensive study](#)

"The methodology assesses petroleum potential, generation, migration, and accumulation while minimizing risks for future exploration and development in the Risha gas field."

[Sequence stratigraphic and reservoir modeling of KOC Field onshore Niger Delta Basin: implication for mature oilfield revitalization](#)

"In this study, detailed interpretation of the structure,

stratigraphy, and facies geometry of the middle to late Miocene sequences in the KOC Field onshore Niger Delta Basin was carried out using well logs, 3D seismic, and biostratigraphic data in order to understand the subsurface geological complexities and uncover potential prospective zones for optimized drilling and increased hydrocarbon production in the study area."

Measurement

[Empowering lithology identification with FreLog: Leveraging frequency domain insights in well logging signal processing](#)

"Lithology identification using well logging data is a critical technology in energy exploration...we propose FreLog, a frequency-domain-based lithology identification method that provides an intuitive perspective for understanding lithological responses in well logging data, thereby enhancing identification accuracy and generalizability...Experiments conducted on datasets from three independent wells in the Changqing and Shengli Oilfields validate the effectiveness of FreLog, demonstrating superior accuracy and robustness compared to eight advanced models. By shifting from time-domain to frequency-domain analysis, FreLog offers a novel perspective for lithology identification."

MethodsX

[Filling-well: An effective technique to handle incomplete well-log data for lithology classification using machine learning algorithms](#)

"Lithology classification is crucial for efficient and sustainable resource exploration in the oil and gas industry...This research comprehensively evaluates various techniques to improve the accuracy of lithology classification, ultimately contributing to more efficient exploration and exploitation of oil and gas resources."

Natural Gas Industry B

[The hydrocarbon generation potential of the mudstone source rock in the Jurassic Shuixigou Group, the Turpan-Hami Basin, and indicative significance for oil and gas exploration](#)

"The research result provides a scientific basis for the comparison of oil and gas sources and the evaluation of oil and gas resources in the Turpan-Hami Basin."

[Gas occurrence characteristics in marine-continental transitional shale from Shan23 sub-member shale in the Ordos Basin: Implications for shale gas production](#)

"These data may support future model validations and enhance confidence in exploring and developing marine-continental transitional shale gas."

[Reconstruction of the geothermal field of the Xihu Depression in the East China Sea Basin and its controlling effect on hydrocarbon generation and distribution](#)

"A study of the burial history–thermal history–hydro-

carbon generation history based on the reconstruction of geothermal fields demonstrates the matching relationship between hydrocarbon generation, distribution, and accumulation in the Xihu Depression—an understanding that is vital for oil and gas exploration in the Xihu Depression."

Ocean Engineering

[Prediction of the dynamic response on the spread catenary mooring system for FPSO by long short-term memory method](#)

"The key contribution of this work is the LSTM model's unprecedented ability to simultaneously capture both low-frequency and wave-frequency tension components while maintaining computational efficiency. The study identifies wave load as the predominant factor affecting prediction performance, establishing a critical direction for future research to enhance forecasting capabilities in complex sea states. The offshore platform is one of the key facilities for the exploration of oil and gas resources, especially deep and ultra-deep waters."

[An integrated multi-objective optimization method for downhole cooling during deepwater high temperature and high pressure drilling](#)

As oil and gas exploration and development progress into deeper waters and formations, drilling often encounters high-temperature and high-pressure (HTHP) environments...The research results provide theoretical support for wellbore temperature control in deepwater HTHP wells...This paper is financially supported by the National Natural Science Foundation of China (No. 51904034), the Open Foundation of Cooperative Innovation Center of Unconventional Oil and Gas, Yangtze University (Ministry of Education & Hubei Province) (No. UOG2024-13), and the Open Research Fund of State Key Laboratory of Deep Oil and Gas (No. SK-LDOG2024-KFYB-11).

[Distributed genetic algorithm for floating production unit's mooring system optimization](#)

"This work proposes the adoption of High-Performance Computing in offshore system design, allowing distributed optimization processes and accelerating the evaluation of solutions. Our procedure was successfully validated in a real-world case study involving the repositioning of an operational Floating Production Unit through a distributed implementation of the NSGA-II optimization algorithm, resulting in the reconfiguration of its mooring system...Mooring systems are essential for maintaining the position of floating structures, especially in offshore oil and gas exploration, where precise placement is crucial for safety and operational efficiency...This work was funded by Petrobras."

Ore and Energy Resource Geology

[The origin and migration mechanism of natural gas in](#)

[the Yacheng Gas Field, Qiongdongnan Basin, South China Sea: Constraints from noble gas isotopes](#)

"By exploring the vertical migration patterns of natural gas and its interactions with subsurface water systems, this research provides new theoretical insights into natural gas accumulation and preservation mechanisms. Additionally, it serves as a valuable reference for hydrocarbon exploration and development in similar geologically complex basins."

[Age, depositional environment, and hydrocarbon potential of the Bonalea strata in the northern Douala basin, SW Cameroon: An integrated organic and mineralogical approach](#)

"This study uses the lithofacies analysis, palynology and palynofacies, as well as bulk organic geochemical by Rock-Eval analysis, and mineralogical analysis to date and assess the hydrocarbon potential, maturity, and depositional environment characteristics of the strata from the Bonalea area in the northern part of the Douala sub-basin...the Bonalea deposits, which are affected by the movement of oils from external sources and have the potential to be a full reservoir, could be a promising option for future petroleum exploration in the Douala sub-basin."

Organic Geochemistry

"This journal welcomes contributions that support and advance the UN's sustainable development goals."

[Diamondoids, biomarkers, and chemofacies: Uniting insights on hydrocarbon maturation and migration in the Cline Shale, Midland Basin](#)

"Source rock is the most crucial risk factor for oil and gas exploration...In this study, our approach investigates the molecular signature of produced oil samples and hydrocarbons extracted from core samples of variable chemofacies across the Cline Shale and applies multivariate statistics to develop a better understanding of its resource potential."

[Unravelling the origin of gas in tight sandstones of the Hangjinqi gas field, Ordos Basin, China: New insights from natural gas geochemistry data](#)

"These findings provide critical references for deciphering the origins and gas sources of natural gas in the marginal zones of the Ordos Basin, offering significant implications for hydrocarbon exploration, development, and resource evaluation in these areas."

[Geochemical constraints on the hydrocarbon generation and expulsion in source rocks with different primary organic matter compositions: A case study on the Lucaogou Formation in the Jimusaer Sag, Junggar Basin, Northwest China](#)

"These findings are helpful to the understanding of the constraints imposed by different primary organic mat-

ters on hydrocarbon generation and expulsion of the source rocks, and the insights have significant implications for exploration and development of the shale oil resources."

[Quantifying the impact of thermal maturity on carbon isotope variations of marine oils from the Shunbei ultra-deep petroleum system, Tarim Basin](#)

"This study provides a theoretical framework for ultra-deep oil and gas exploration and oil source analysis in the Tarim Basin."

Petroleum

[Architecture and differential hydrocarbon enrichment of basins under joint constraints of basement nature and regional stresses: A case study of the passive continental margin basins along the East Coast of Canada](#)

"This study highlights substantial hydrocarbon exploration potentials in the turbidite sandstones within the slope and basin-floor areas of the transtensional and transform types of PCMBs, as well as in the deltaic sandstones within the rift and depression layers of the gentle-rampy type of PCMBs."

Petroleum Exploration and Development

[Formation mechanisms and exploration breakthroughs of new type of shale gas in Cambrian Qiongzhusi Formation, Sichuan Basin, SW China](#)

"The deployment of multiple exploration wells has achieved significant breakthroughs in shale gas exploration."

[Main factors controlling unconventional gas enrichment and high production in the first member of Permian Maokou Formation, southeastern Sichuan Basin, SW China](#)

"The study results are of referential significance for further understanding the natural gas enrichment in the Mao 1 Member and guiding the efficient exploration and development of new types of unconventional natural gas."

[Enrichment mechanisms and accumulation model of ultra-deep water and ultra-shallow gas: A case study of Lingshui 36-1 gas field in Qiongdongnan Basin, South China Sea](#)

"The new understanding obtained from the research has reference and enlightening significance for the next step of deepwater and ultra-shallow layers, as well as oil and gas exploration in related fields or regions."

[New progress and future exploration targets in petroleum geological research of ultra-deep clastic rocks in Kuqa Depression, Tarim Basin, NW China](#)

"The achievements have important reference significance for enriching the theory of ultra-deep clastic rock oil and gas exploration and guiding the future oil and

gas exploration deployment.”

[Exploration breakthrough and hydrocarbon accumulation conditions of Mesozoic volcanic rocks in Bodong Low Uplift, Bohai Bay Basin, China](#)

“The Mesozoic volcanic buried hills in the study area reflect good trap geometry, providing favorable conditions for large-scale reservoir formation, and also excellent migration and accumulation conditions. Areas with long-term exposure of intermediate-acidic volcanic rocks, particularly in active structural regions, are the key targets for future exploration.”

[Geological characteristics, resource potential, and development direction of shale gas in China](#)

“It is recommended to carry out the shale gas exploration at three levels: Accelerate the exploration of Silurian, Cambrian, and Permian marine shales in the Upper-Middle Yangtze region; make key exploration breakthroughs in ultra-deep marine shales of the Upper-Middle Yangtze region, the new Ordovician marine shale strata in the North China region, the transitional shales of the Carboniferous and Permian, as well as the Mesozoic lacustrine shale gas in basins such as Sichuan, Ordos and Songliao; explore and prepare for new shale gas exploration areas such as South China and Northwest China, providing technology and resource reserves for the sustainable development of shale gas in China.”

[Multi-detachment-controlled thrust structures and deep hydrocarbon exploration targets in southern margin of Junggar Basin, NW China](#)

“A hierarchical exploration strategy is proposed for deep lower assemblages in this region, that is, focusing on five priority zones, expanding to three potential areas, and challenging two high-risk targets.”

[Source and exploration potential of the ultra-deep Cambrian petroleum in Well XT-1, Tarim Basin, NW China](#)

“The source and exploration potential of the ultra-deep petroleum in the Cambrian on the west of F5 are still unclear. ..This finding suggests that the area to the west of F5 will be a new target of exploration in the Cambrian ultra-deep structural-lithologic reservoirs in the Tarim Basin, in addition to the Cambrian ultra-deep platform-margin facies-controlled reservoirs in the eastern part of the basin.”

[Application of borehole images in the characterization of volcanic paleoenvironments with implications for the exploration of hydrocarbons in Brazilian basins](#)

“The image log interpretation combined with regional geological knowledge has enabled paleoenvironmental insights into the rift magmatism system related to the breakup of Gondwana with associated implications for hydrocarbon exploration.”

[Intelligent optimization method of fracturing parameters for shale oil reservoirs in Jimsar Sag, Junggar Basin, NW China](#)

“For shale oil reservoirs in the Jimsar Sag of Junggar Basin, the fracturing treatments are challenged by poor prediction accuracy and difficulty in parameter optimization. This paper presents a fracturing parameter intelligent optimization technique for shale oil reservoirs and verifies it by field application.”

Petroleum Research

[Shale gas accumulation mechanism of deep-buried marine shale of Upper Ordovician Wufeng Formation to Lower Silurian Longmaxi Formation in the southeast Sichuan Basin](#)

“This study provides a reference for exploration and development of deep shale gas in Sichuan Basin and other areas.”

Petroleum Science

[Multidisciplinary insights into the origin of natural gas from hydrocarbon generation and charging history of Permian dolomite reservoir in Sichuan Basin](#)

“This study’s findings have implications beyond the Sichuan Basin, offering insights for deep hydrocarbon reservoir exploration worldwide...The Petroleum Exploration and Production Research Institute of SINOPEC is thanked for providing background geological data.”

[The characteristics and controlling factors of high-quality reservoirs of ultra-deep tight sandstone: A case study of the Dabei Gas Field, Tarim Basin, China](#)

“Clarifying the characteristics, controlling factors, evolution and distribution of the high-quality reservoirs is important for the deployment of “sweet spots”...This distribution model provides guidance for exploration in ultra-deep tight sandstone gas reservoir.”

[The geochemical, pore development and water-bearing characteristics of deep and ultra-deep marine shales and their effects on gas content: New implications from the shales of the first Lower Cambrian high-yield gas well \(Z201\) in China](#)

“The results can enhance the understanding of ultra-deep shale gas accumulation and offer new insights for the exploration and development of the Lower Cambrian shale gas, which may have significant theoretical and practical implications... The Lower Cambrian shales in the Ziyang area, have a high TOC content and effective porosity, is benefits for the preservation of shale gas, and they are the most promising targets for the exploration of the Lower Cambrian shale gas.”

[Can clay-rich reservoirs in predominantly-freshwater lacustrine shale systems serve as primary exploration targets in low-medium maturity? A case study of the Triassic Yanchang Formation of the Ordos Basin](#)

"The findings from this study provide a foundation for the exploration and development of shale plays within the Triassic Yanchang Formation of the Ordos Basin and contribute to a deeper understanding of the exploration potential of clay-rich reservoirs in other petroliferous basins."

[Machine learning-based grayscale analyses for lithofacies identification of the Shahejie formation, Bohai Bay Basin, China](#)

"This method can not only effectively characterize the material composition of shale, but also numerically characterize the development degree of shale laminae, and solve the problem that difficult to identify millimeter-scale laminae based on logging curves, which can provide technical support for shale lithofacies identification, sweet spot evaluation and prediction of complex continental lacustrine basins..."

Physics and Chemistry of the Earth, Parts A/B/C

"This journal welcomes contributions that support and advance the UN's sustainable development goals, in particular SDG 6 (Clear water and sanitation), SDG 11 (Sustainable cities and communities) and SDG 13, (Climate Action)]"

[Integrated reservoir characterization and simulation approach to enhance production of tight sandstone gas reservoir, Sulige gas field, Ordos Basin, China](#)

"In this study, an integrated approach combining reservoir characterization, history matching, and simulation was utilized to optimize gas recovery from the tight sandstone Su-6 block of the Sulige gas field. This research provides a systematic methodology for identifying unswept regions, evaluating different development strategies, and selecting the most effective and economical options for reservoir management."

[Seismic attributes and spectral waveform-constrained porosity-controlled dynamical simulations of low-er-Cretaceous shale gas-bearing Lowstands prograding wedges and deep-water submarine fans, NE-Indus rift delta](#)

"Research workflow has tectono-stratigraphic implications for exploring global [deep water shale gas] basins."

[Petroleum source rock characterization and hydrocarbon generating potential of sediments from Surghar range, Kohat plateau, Upper Indus Basin](#)

"This study uniquely identifies the kerogen types and thermal maturity of under study formations, providing critical insights for understanding their economic viability. By highlighting the differences in organic matter quality across formations, it fills a gap in the existing literature and supports informed decision-making for future exploration efforts."

Polar Science

"This journal welcomes contributions that support and advance the UN's sustainable development goals, in particular SDG 13, (Climate Action) SDG 14 (Life below water) and SDG 15 (Life on land)"

[Gravity strike angles from EIGEN6C4 to seek conditions favourable for hydrocarbon occurrences in the Arctic zone](#)

"Our results can also be used for speculations about many further untapped places in the Arctic zone with prospective hydrocarbon resources."

Precambrian Research

[Evolution of Neoproterozoic basins within the Yangtze Craton and its significance for oil and gas exploration in South China: An overview](#)

"By comparing the petroleum exploration practices in China and abroad, this paper concludes that the Nanhua rift basins on the southeastern and northern Yangtze margins, the Sinian divergent marginal subsidence basins on the southeastern and northern Yangtze margins and the intracratonic rift basins in the interior Yangtze Craton were most conducive to source rock formation and are target regions for future oil and gas exploration."

Remote Sensing Applications: Society and Environment

This [journal](#) "focuses on remote sensing studies that address specific topics with an emphasis on environmental and societal issues - regional / local studies with global significance. Subjects are encouraged to have an interdisciplinary approach and include, but are not limited by: Global and climate change studies addressing the impact of increasing concentrations of greenhouse gases, CO2 emission, carbon balance and carbon mitigation, energy system on social and environmental systems)"

[Multisensor satellite and ground gravity data for delineating near surface signatures for hydrocarbon exploration - A study in the Jaisalmer basin, Rajasthan](#)

"In this study, we analyzed multisensor Earth Observation (EO) data along with ground geophysical and field data to identify potential areas for hydrocarbon exploration in Jaisalmer Basin... we identified three potential areas for detailed exploration."

Renewable and Sustainable Energy Reviews

"The aim of the [journal](#) is to share problems, solutions, novel ideas and technologies to support sustainable development, the transition to a low carbon future and achieve the emissions targets as established by the United Nations Framework Convention on Climate Change [Paris Agreement]... This journal welcomes contributions that support and advance the UN's sustain-

able development goals, in particular SDG 7 (Affordable and clean energy) and SDG 13 (Climate Action)"

[A review of deep and ultra-deep shale gas fracturing in China: Status and directions](#)

"This study first summarizes the preliminary exploration and practical understanding of deep and ultra-deep shale gas fracturing in China and systematically reviews the current status of five key theoretical research areas for deep-ultra-deep shale gas fracturing ...six research directions for deep and ultra-deep shale gas fracturing technology in China are proposed. This research contributes to the efficient development of shale gas."

Results in Earth Sciences

[3D modeling of source and reservoir rock characteristics in key oil and gas fields, Gippsland Basin, Southern Australia](#)

"The findings will provide valuable insights for hydrocarbon exploration and production strategies in the Gippsland Basin."

[Application of micropaleontological and chemostratigraphic analyses: Insight into depositional environment and hydrocarbon prospectivity in the Niger Delta Basin, Nigeria](#)

"The Niger Delta Basin, one of the world's most prolific hydrocarbon provinces, presents significant challenges in stratigraphic correlation and reservoir characterization due to its structural and depositional complexities. This study presents an integrated analysis of the Miocene sediments that penetrated the NS-2 well in Leuma Field, Coastal Swamp Depobelt. ...The results demonstrate a favourable petroleum system characterised by organic-rich source rocks, high-quality reservoirs, and effective traps, enhancing the hydrocarbon prospectivity of the Agbada Formation in the NS-2 well in the study area of the basin."

Results in Engineering

[Shale volume estimation using machine learning methods from the southwestern fields of Iran](#)

"The study's innovation [is] in combining advanced computational techniques with traditional petrophysical analyses to improve shale volume estimation, thereby aiding better reservoir characterization and decision-making in hydrocarbon exploration and production....This study lays the groundwork for understanding Shale volume estimation using ML methods."

RSC Advances

[Geochemical characteristics and oil-source rock correlation in the Paleogene source rocks of the Qinnan Sag, Bohai Bay basin](#)

"This study provides more accurate data of oil source

formation and is significant for oil exploration in the Qinnan Sag, Bohai Bay Basin...offering valuable support for petroleum exploration and resource assessment in the region."

Sedimentary Geology

[Impact of secondary geomorphic processes on sedimentary characteristics of alluvial fans: Implications for reservoir exploration and development](#)

"Fan deposits are considered valuable reservoir exploration targets in the hydrocarbon field worldwide...The results of this study provide new insights into constructing alluvial fan models in deep-time terrestrial basins and contribute to predicting favorable reservoir distribution and adjusting development strategies for alluvial fan reservoirs worldwide."

Soil Dynamics and Earthquake Engineering

[Wave propagation characteristics and parameter sensitivity analysis of Longmaxi shale in deep oil and gas reservoirs under multiple dissipation mechanisms](#)

"Oil and gas resources are not only a vital energy base and source of chemical raw materials supporting the normal functioning of human society but also a strategic asset essential for ensuring national energy security and promoting sustainable economic development... The research outcomes are expected to provide a more accurate theoretical basis and practical guidance for the exploration of mineral and hydrocarbon resources under complex geological conditions."

Solid Earth Sciences

"This journal welcomes contributions that support and advance the UN's sustainable development goals, in particular SDG 13 (Climate Action)"

[Investigating hydrocarbon potential utilizing isopach maps in the paleo-environment of the external Fars region, Zagros fold-thrust belt](#)

"These findings have significant implications, providing a foundation for refining exploration and production strategies to optimize hydrocarbon extraction in this energy-rich region. ... offering strategic recommendations for future exploration efforts...This research project is a collaborative effort between the Islamic Azad University, with its Sciences and Research Branch and South Tehran Branch, and the National Iranian Oil Company's Exploration Directorate (NIOC-EXP)."

Unconventional Resources

[Optimal selection of favorable production areas for low-permeability sandstone gas reservoirs in the Benxi Formation of the Upper Carboniferous in Ordos Basin](#)

"This research has clarified the direction for natural gas exploration and development in the Benxi Formation of the central and eastern Ordos Basin, and has optimized and evaluated target areas for production,

offering significant guidance and reference for the next stage of natural gas scale development...93 km² of favorable production areas, with a resource volume of 4.27×10^{10} m³, have been identified to ensure sufficient preparation for future large-scale production."

[Discussion on influencing factors of hydrocarbon generation in deep source rocks: A case study of Bozhong Sag, Bohai Bay basin](#)

"When integrated with geochemical analysis, this methodology aids in comprehending the conditions and mechanisms underlying hydrocarbon generation in deep layers characterized by high temperatures and overpressure. Furthermore, it facilitates the prediction and discovery of new oil and gas reservoirs, ultimately guiding deep hydrocarbon exploration."

[Coupling thermal and maturity histories of the Gulong shale oil reservoir in the Songliao Basin: Insights from vitrinite reflectance and apatite fission track](#)

"This study provides a research technique and guidance for forecasting and exploring shale oil reservoirs, particularly in regions where present-day temperature distribution does not strongly correlate with the maturity characteristics."

2024 paper examples

Applied Computing and Geosciences

[Improved reservoir characterization of thin beds by advanced deep learning approach](#) (9/24): "Targeting reservoirs below seismic resolution presents a major challenge in reservoir characterization...This deep-learning methodology is ideally suited to regions where the acquired seismic has limited resolution and lacks advanced reservoir characterization...**This study will be helpful for future exploration of hydrocarbons** in thin sand beds."

Applied Energy

["This journal welcomes contributions that support and advance the UN's sustainable development goals"](#)

[A shale gas production prediction model based on masked convolutional neural network](#) (1/24): «Shale gas production prediction is of great significance for shale gas exploration and development... This paper presents a novel masked convolutional neural network (M-CNN) based on masked autoencoder **for shale gas production prediction.**"

[A novel method for predicting shallow hydrocarbon accumulation based on source-fault-sand \(S-F-S_d\) evaluation and ensemble neural network \(ENN\)](#) (4/24):

"This contribution provides a reliable method for SHA prediction and corresponding predrilling volume evaluation, which can help avoid costly drilling mistakes and **advance intelligent exploration techniques.**"

[Spatial correlation-based machine learning framework for evaluating shale gas production potential: A case study in southern Sichuan Basin, China](#) (3/24): "A machine-learning prediction model based on spatial correlation (SC-MLPM) is proposed for **evaluating shale gas potential production** based on well data..."

[Techno-economic integration evaluation in shale gas development based on ensemble learning](#) (3/24): "This work can quickly and effectively predict the economic benefits of under complex geological and engineering factors, which facilitates expeditiously developing decision making."

[Real-time imaging of oil shale pyrolysis dynamics at nanoscale via environmental scanning electron microscopy](#) (6/24): "Pyrolysis is a promising technology to increase pore and fracture connectivity in oil shale and thereby **accomplish commercial recovery of unconventional hydrocarbons.** Herein, real-time oil shale pyrolysis dynamics are imaged at nanoscale via environmental scanning electron microscopy."

[A novel domain adaptation method with physical constraints for shale gas production forecasting](#) (10/24): "Effective forecasting of shale gas production is essential for **optimizing exploration strategies** and guiding subsequent fracturing...Experimental results demonstrate the effectiveness and superiority of the proposed method for forecasting shale gas production under data insufficiency."

[Numerical investigation of production characteristics and interlayer interference during co-production of natural gas hydrate and shallow gas reservoir](#) (1/24): "It is hoped that this study can provide important guidance for **future co-production of NGH-SG reservoirs** and bring new perspectives to the commercial exploitation of offshore NGH resources in the future."

Applied Geochemistry

["This journal welcomes contributions that support and advance the UN's sustainable development goals"](#)

[Differential fault-fluid alterations and reservoir properties in ultra-deep carbonates in the Tarim Basin, NW China](#) (6/24): "The results should be **significant for evaluation and predict of ultradeep carbonate reservoirs** in basins with influences of both strike-slip faults

and fluids.» *Many thanks to the Northwestern Oil & Gas Branch Company, SINOPEC, for providing fundamental drilling data*

[Dissolution Kinetics and Heterogeneous Evolution of Dolomite with Different Pore Structures](#) (9/24):

“Dolomite reservoirs are **crucial for global oil and gas exploration**. In recent years, significant breakthroughs in oil and gas exploration have been achieved in deep (>4500m) and ultra-deep (>6000m) burial high-quality marine dolomite reservoirs, underscoring their immense development potential...The study has clarified the dissolution mechanisms and pore heterogeneity evolution patterns of different dolomites, and **suggested exploration directions for identifying high-quality dolomite reservoirs** in the region.”

[Applied Surface Science](#)

[The effect of mixed wettability on flow characteristics in porous media of ultra-deep gas reservoirs: Molecular dynamics simulations and numerical simulations](#) (5/24):

“Oil and gas exploration is advancing to deep strata, becoming **a key target and popular area for oil and gas exploration**...The research methodology and results proposed in this work complement the limitations of experimental methods and have **crucial significance** for clarifying the flow and production mechanisms of water and gas in ultra-deep gas reservoirs.»

[Applied Thermal Engineering](#)

[Numerical simulation of insulated drilling technique with refrigerant fluid in the Arctic region](#) (9/24):

“In recent years, there has been a gradual rise in the exploitation of the abundant oil and gas resources in the Arctic...The model and calculations provided in this paper offer some insights for the implementation of this **innovative insulated drilling technique in the Arctic region**...The thawing of Arctic ice due to the effects of global warming has made it possible to explore and extract petroleum and natural gas resources in the Arctic region. **The Arctic region possesses significant potential in oil and gas resources**. According to the United States Geological Survey (USGS) Arctic Circle geological survey spanning from 2000 to 2008, approximately 30% of the world's undiscovered oil and gas reserves are situated in the Arctic”

[Arabian Journal of Chemistry](#)

[Advancement in heavy oil upgrading and sustainable exploration emerging technologies](#) (3/24):

«The emerging technologies that can **enhance the cost-efficiency and marketability of heavy oil** are discussed comprehensively.» *Financial supporters for this paper include the “Government of Kingdom of Saudi Arabia.”*

[Geochemical characteristics of the shale gas reservoirs in Guizhou Province, South China](#) (3/24): “The spots with siliceous rock floor on the western edge of the Xuefeng uplift is **a favorable area for future exploration** of shale gas in the Niutitang organic-rich shale.”

[Artificial Intelligence in Geosciences](#)

[Reservoir evaluation using petrophysics informed machine learning: A case study](#) (12/24): «These findings indicate that it is crucial to integrate data-driven machine learning with petrophysical mechanism **for the application of artificial intelligence in oil and gas exploration**.”

[Research on the prediction method for fluvial-phase sandbody connectivity based on big data analysis--a case study of Bohai a oilfield](#) (12/24):

“The connectivity of sandbodies is a key constraint to the exploration effectiveness of Bohai A Oilfield...The study results show that this method has high accuracy and timeliness in predicting connectivity for continuous composite sandbodies. Applied to the Bohai A Oilfield, it successfully identified multiple sandbody connectivity relationships and **provided strong support for the subsequent exploration potential assessment** and well placement optimization. This method also provides a new idea and method for studying sandbody connectivity under similar complex geological conditions.”

[Canadian Geotechnical Journal](#)

[Improved prediction of thin reservoirs in complex structural regions using post-stack seismic waveform inversion: a case study in the Junggar Basin](#) (10/24): “The Mahu sag slope area, which holds significance as an oil and gas resource, **still have some underexplored regions** because of structural mismatches, presenting a potential challenge to be properly addressed. **To resolve, this study conducts a comprehensive investigation** concerning structural characteristics, fault combinations, favorable reservoir distribution, reservoir control factors, and oil-water distribution characteristics within the Triassic Baikouquan Formation, evaluating the impact of depositional environments and sedimentary dynamics on reservoir quality... These outcomes provide a strong foundation for future evaluations and multi-layer system deployment in the region by serving as a novel valuable framework for subsequent development activities not only in the Mahu sag but also in similar regions.”

[Canadian Journal of Earth Sciences](#)

[Sedimentary characteristics, lithofacies, and paleogeog-](#)

[raphy of the Middle–Lower Cambrian in the Tarim Basin, NW China](#) (1/24): «The Cambrian pre-salt dolomite sequence in the Tarim Basin is a target zone of great strategic significance for hydrocarbon exploration in the basin...Based on these results and previous studies, the lithofacies and paleogeography maps of the Middle–Lower Cambrian in the Tarim Basin are modified, and the **implications for hydrocarbon exploration** in this area are discussed.

Chemical Engineering Journal

[Laser-induced electro-response of oil shale: Principles and applications](#) (7/24):

“These results show that LIER has great significance for the precise evaluation and effective development of oil shale reservoirs, which will **drive the advances in the exploration for oil shale.**”

[A model characterising the fractal supercritical adsorption behaviour of methane in shale: Incorporating principles, methods, and applications](#) (11/24): “The research results provide theoretical support for the **evaluation of deep shale gas reserves**, including the optimisation of exploitation strategies.”

Chemical Engineering Science

[Log-exponential transformation function for interpreting NMR relaxation measurements of hydrocarbon in organic porous media for enhancing absolute adsorption estimation](#) (3/24): «Assessing unconventional petroleum resources, particularly shale gas reserve estimation, is challenging due to the adsorption phenomenon. This study presents a new method combining experimental and mathematical procedures to determine the absolute adsorption amount in shale samples...This innovative approach enables the **accurate characterization of shale reservoirs.**”

China Geology

[Deep-large faults controlling on the distribution of the venting gas hydrate system in the middle of the Qiongdongnan Basin, South China Sea](#) (1/24): “The impact of deep structures on gas-bearing fluids migration and gas hydrates distribution in tectonically inactive regions is still unclear...This study suggest that it is important to consider the influence of hydrocarbon migration process for the gas hydrate formation in future gas hydrate exploration...Based on high-precision 3D seismic and LWD data, the authors have investigated the relationship between the venting gas hydrate distribution and regional deep-large faults at the margin of the Songnan Low Uplift in the middle QDNB.”

Colloids and Surfaces A: Physicochemical and Engi-

neering Aspects

[Indicative significance of the interfacial interactions between pore surface and soluble organic matter on the shale oil mobility](#) (9/24): “Mobility of the oil occluded in shales are **vital to the exploration and exploitation of shale oil resources**...The achievements of this study provide direct evidences about the controlling factors of the shale oil mobility and will also benefit the evaluation and development of shale oil resources.”

Computers & Geosciences

[Enhanced wave modeling & optimal plane-wave destruction \(OPWD\) method for diffraction separation and imaging](#) (5/24): “By integrating diffraction-based imaging into hydrocarbon exploration workflows, the industry can enhance the accuracy of reservoir characterization, optimize drilling strategies, and ultimately **increase the success rate of exploration efforts**. The primary aim of this research is to enhance the comprehensive wave modeling technique in order to mitigate dispersion in the data.”

[MAMCL: Multi-attributes Masking Contrastive Learning for explainable seismic facies analysis](#) (9/24): “Seismic facies analysis is **crucial in hydrocarbon exploration and development**. Traditional machine learning approaches typically require manual selection of attributes and lack interpretability analysis. We propose an interpretable framework, multi-attribute masking contrastive learning (MAMCL), designed to adaptively select, explore and aggregate seismic attributes for seismic facies analysis.” ***We would like to thank Sinopec for providing the seismic data and well logging data for the Chengdao work area.***

[FlexLogNet: A flexible deep learning-based well-log completion method of adaptively using what you have to predict what you are missing](#) (9/24): «Well logs are essential tools for understanding the characteristics of subsurface formations and **exploring petroleum resources**. However, well logs are often missing randomly due to cost constraints, instrument failures, or other factors...we propose a hybrid deep learning method with two heads of heterogeneous graph neural network (HGNN) and fully connected network (FCN) to achieve mutual prediction among multiple types of well logs...**Our method demonstrates excellent predictive accuracy** on a dataset from an offshore North Sea field near Norway.»

[Seismic impedance inversion based on semi-supervised learning](#) (1/24): «In **coalfield seismic exploration**, seismic impedance inversion can infer subsurface

physical properties through seismic data, allowing the identification of subsurface strata. Deep learning has shown great potential in the field of seismic impedance inversion...The results showed that the proposed semi-supervised inversion method performed better and demonstrated improved inversion results relative to the conventional single-supervised method."

[Research on elastic parameter inversion method based on seismic facies-controlled deep learning network](#) (11/24): "Seismic inversion is an effective approach to obtain the elastic parameters of underground media, to reveal the distribution, physical properties, and hydrocarbon-bearing characteristics of subsurface reservoirs. With the continuous advancement of oilfield exploration and development, the demand for accuracy in reservoir prediction is increasing. Therefore, high-precision reservoir inversion technology plays an increasingly important role in thin interlayer recognition...a novel seismic facies-controlled deep learning method for predicting elastic parameters has been established by integrating deterministic inversion and seismic facies classification techniques into a deep learning network, thereby **enhancing the prediction accuracy of shale oil reservoirs.**"

[Geology-constrained dynamic graph convolutional networks for seismic facies classification](#) (2/24): «Knowing a land's facies type before drilling is **an essential step in oil exploration.** In seismic surveying, subsurface images are analyzed to segment and classify the facies in that volume. With the recent developments in deep learning, multiple works have utilized deep neural networks to classify facies from subsurface images...In this work, we propose a novel approach for facies classification...to improve the facies classification process in seismic data."

[Composite loss function for 3-D poststack seismic data compression](#) (7/24): «In the context of **gas and oil exploration**, seismic data play an important role in **identifying potential prospecting locations**, by providing valuable information on subsurface structures. The size of these data, however, has increased as methods and sensors evolved...we propose a new loss function for seismic data."

[An encoder-decoder deep neural network for binary segmentation of seismic facies](#) (1/24): «To explore hydrocarbons, it is necessary to interpret seismic data to identify facies and geological features...In this work, we presented an encoder-decoder deep neural network for seismic interpretation.»

[A new efficient approach of DFN modelling constrained with fracture occurrence and spatial location](#) (9/24): "Particularly in the realm of oil and gas exploration, the development of fractures or faults in subsurface plays an important role, offering effective storage space for resources and serving as the primary seepage channels, migration pathways and production pathways. Therefore, understanding the laws of fracture distribution and establishing proper three-dimensional models are essential in mimicking the performance of fractured oil and gas reservoirs. The Discrete Fracture Network (DFN) (Shi et al., 2021) method, as one of the major fracture modelling methods, is a valuable tool for analyzing fracture distribution patterns in 3D space...To improve both efficiency and accuracy, this paper introduces two new ways for DFN modeling, the matrix-based random sampling method (referred to as the random sampling method for simplification hereon) and the utilization of the quaternion method."

[Improving Lithofacies Prediction in Lacustrine Shale by Combining Deep Learning and Well Log Curve Morphology in Sanzhao Sag, Songliao Basin, China](#) (9/24): "The accurate identification of shale lithofacies is **crucial for characterizing the hydrocarbon potential of lacustrine shale oil reservoirs.**...In this study, the lower Qingshankou member in the Sanzhao Sag was selected as the research target...The Sanzhao Sag is located in the northeastern part of the central depression of the Songliao Basin (Fig. 1), serving as another important hydrocarbon-producing sag and favorable area for shale oil exploration...A novel method for predicting lacustrine shale lithofacies has been proposed, utilizing the integration of well logging data value features and morphological features (WLCM) based on the DRSN."

Computers & Operations Research

[An approximated dynamic programming model for the supply vessel fleet sizing problem](#) (3/24): "Consequently, our proposed method exhibits promising potential for practical implementation, allowing companies like Petrobras to accurately assess and determine the ideal fleet composition [for oil and gas exploration and production activities.]"

Continental Shelf Research

[Sedimentation characteristics of surficial sediments in Baiyun Canyon area, Northern South China Sea](#) (10/24): "The Baiyun Canyon area on the Northern Slope of the South China Sea is **a potential hotspot for oil and gas resource development**, but the sediment characteristics and sedimentary environment in this region present challenges for offshore engineering. This study

comprehensively analyzed the physical, and mechanical properties of sediments in the area using geophysical exploration, engineering geological investigation, fixed-point sampling and hydrological observation.... This study holds **significant theoretical and practical implications for oil and gas exploration** and offshore engineering construction."

Earth Energy Science

"Our mission is to contribute to environmentally friendly goals and promote a net-zero carbon future."

A novel method for calculating the dynamic reserves of tight gas wells considering stress sensitivity is under consideration (8/24): The precision of dynamic reserve calculations in gas reservoirs is crucial for the rational and efficient development of oil and gas fields and the formulation of **gas well production plans**...we carry out stress-sensitive experiments on reservoir rocks and combine them with the effective stress model of reservoir rocks...to **guide the dynamic evaluation of such hydrotight gas reservoirs** and the rational production allocation program for subsequent exploitation." *Chen changhao reports financial support was provided by PetroChina Southwest Oil and Gas-field Company. This work was partially supported by CNPC Southwest Oil and Gas Field Branch's 2023 Scientific Research Program Project*

Earth-Science Reviews

"This journal welcomes review-type papers within its scope that support and advance the UN's sustainable development goals"

Cratonic strike-slip fault systems in the central Sichuan Basin, China (7/24): «**Our methods and results can help guide petroleum exploration** along strike-slip fault system in other ancient cratonic basins in similar tectonic settings worldwide.»

Shale oil migration across multiple scales: A review of characterization methods and different patterns (7/24): «This review also improves the geological understanding of different types of shale oil migration, which has **important guiding significance for sustainable shale oil exploration.**"

Quantification and classification of a giant fluvial-distributive system - the Triassic Mungaroo Formation, NWS, Australia (2/24): "The interpretation of the Mungaroo Formation as a large, low-gradient distributive river system, has **significant reservoir modelling and hydrocarbon production implications.**" *The authors would like to thank Chevron*

Technical Center and Chevron Australia Pty. Ltd.

Cryogenian–Cambrian tectono-sedimentary evolution, paleoclimate and environment effects, and formation of petroleum resources in the Tarim Block (1/24): «This review provides an improved understanding of the Cryogenian–Cambrian tectono-sedimentary evolution in the Tarim Block and its effects on the formation of ancient petroleum source rocks. It sheds **insights into hydrocarbon accumulation theories and exploration strategies** in ultra-deep ancient strata.

Well log prediction of total organic carbon: A comprehensive review (9/24): "Source rocks are fundamental elements for petroleum systems, and Total Organic Carbon (TOC) is one of the most important geochemical parameters in source rock property evaluation... Absence of source rock analysis is one of the main risks in **hydrocarbon exploration**...The ultimate goal of this study is to predict TOC content with high accuracy using conventional and advanced well logs, and hope beginners and interested readers can use for future work." *This work is financially supported by the National Natural Science Foundation of China, Science Foundation of China University of Petroleum, Beijing, strategic cooperation project of PetroChina and China University of Petroleum.*

The Egyptian Journal of Remote Sensing and Space Sciences

Integrated multispectral remote sensing approach for high-resolution spectral characterization and automated mapping of carbonate lithofacies (6/24): "We proposed a novel approach by integrating multispectral remote sensing, advanced image processing techniques, and supervised classification to perform high-resolution carbonate lithofacies mapping...The proposed approach should be applicable to other carbonate outcrops globally and could help in **improving carbonate lithofacies mapping** where the outcrops are not accessible...The Middle to Late Callovian Tuwaiq Mountain Limestone (TMF) contains the massive Hadriya hydrocarbon reservoir. Therefore, TMF is discussed here due to its importance in the petroleum industry."

Energy

"This journal welcomes contributions that support and advance the UN's sustainable development goals"

In-situ pressure-preserved coring for deep oil and gas exploration: Design scheme for a coring tool and re-search on the in-situ pressure-preserving mechanism (1/24): "In this paper, the design scheme of a new

IPP-Coring tool was introduced for deep onshore oil and gas exploration...The presented coring tool has a higher designed pressure-preserving capacity (70 MPa) and better mechanical reliability than previous tools and thus has **broad application prospects in onshore deep oil and gas exploration.**"

[The flooding mechanism and oil recovery of nanoemulsion on the fractured/non-fractured tight sandstone based on online LF-NMR experiments](#) (3/24): «The conclusion of this study is helpful to provide theoretical support for the benefit **development of ultra-low permeability sandstone reservoirs.**"

[Research on the recovery efficiency of crude oil in tight reservoirs with different pore sizes](#) (10/24): «Compared with other conventional and unconventional reservoirs, tight oil reservoir is rich and has good exploration and development prospects... studying the imbibition and dynamic stimulation mechanisms of tight sandstone cores is beneficial **for the development of tight sandstone reservoirs.**...In this paper, firstly, the effects of pressure and imbibition medium on the recovery rate and total recovery rate of different pore sizes under static imbibition conditions of rock cores are studied."

[Uncertainty quantification of reservoir performance using machine learning algorithms and structured expert judgment](#) (2/24): "The uncertainty quantification plays a vital role in reliable reservoir simulations and provides **practical decision support for the subsequent development plans.** This study analyzed the Teal South reservoir in the Gulf of Mexico to assess uncertainty."

[Pore structure and gas adsorption characteristics in stress-loaded shale on molecular simulation](#) (1/24): «Since stress from overlying strata is one of the primary factors influencing pore structure and gas content in shale reservoirs, understanding its role is crucial for developing shale...This study provides an important reference for understanding the pore structure of the organic matrix and the adsorption characteristics of CH₄ in reservoirs...Shale gas is currently at the forefront of oil and gas exploration.»

[Pore structure evolution of organic-rich shale induced by structural deformation based on shale deformation experiments](#) (10/24): «The findings can facilitate the potential **evaluation and utilization of shale gas resources** in deep and structurally complex areas.»

[A novel method for quantifying hydrocarbon micromigration in heterogeneous shale and the controlling mechanism](#) (2/24): This method has a **worldwide**

application for shale oil evaluation, and the findings will help to uncover shale oil differential enrichment mechanisms....There is a consensus that shale contains abundant oil resources [1]. To compensate for the weak growth of green energy, the efficient use of shale oil resources will guarantee the alleviation of global energy shortages."

[Comprehensive evaluation of the organic-rich saline lacustrine shale in the Lucaogou Formation, Jimusar sag, Junggar Basin, NW China](#) (5/24): «The siltstone and type III₃ carbonate felsic shale ...[are] attractive **for shale oil exploration.**"

[Stimulation effect of network fracturing combined with sealing boundaries on the depressurization development of hydrate reservoir in China's offshore test site](#) (9/24): "The hydrate reservoirs in the South China Sea are the main **exploration and development target blocks,** with a natural gas reserve of 74.4 billion tons of oil equivalent...In this study, firstly, we compared the distribution of reservoir pressure fields, hydrate decomposition, CH₄ production, and water production before and after reservoir fracturing with different boundary sealing conditions...**the commercial exploitation potentials of different cases were evaluated.**"

[Simulation of wellbore pipe flow in oil production engineering: Offshore concentric double-tube CO₂-assisted superheated steam wellbore during SAGD process of heavy oil reservoirs](#) (5/24): «Heavy oil reservoirs are widely distributed around the world and play an **important role in offshore oil and gas development.**... industrial productivity can only be obtained by effectively reducing the viscosity. In addition, by improving the steam injection pipe string, the production degree of the heavy oil reservoir can be effectively improved. In this paper, with the development of offshore heavy oil reservoirs as the background, the heat transfer characteristics of concentric double pipes are studied."

[Research on controllable shock wave technology for in-situ development of tar-rich coal](#) (2/24): "The world is rich in tar-rich coal resources, which have **broad exploration and development prospects.** At present, the academic community has relatively weak research on the impact of shock waves on the permeability of target coal bodies. This article focuses on the development technology of controllable shock waves in tar-rich coal reservoirs."

[Identifying nonuniform distributions of rock properties and hydraulic fracture trajectories through deep learning in unconventional reservoirs](#) (3/24): «The design of

hydraulic fracturing encounters significant obstacles arising from the non-uniform distribution of rock properties within the formation...These uncertainties can impede the overall efficiency and **economic viability of unconventional oil and gas exploration**...The findings of this study offer significant advancements in computational efficiency for fracture morphology prediction. Moreover, they provide a novel avenue for exploring and addressing complex reservoir distribution prediction challenges."

[Study on the influence of steam state on seepage, production, migration and deposition of offshore heavy oilfields](#) (3/24): "In recent years, the proportion of offshore oil exploitation in the field of petroleum exploration has increased significantly...Currently, there are a large number of proven offshore heavy oil fields ... thermal recovery technique may become the primary option **to unlock highly viscous offshore heavy oil reservoirs**...This paper experimentally studied the effects of steam status on seepage characteristics, production characteristics, heavy component migration and deposition in offshore oil fields."

Energy and AI

["This journal welcomes contributions that support and advance the UN's sustainable development goals, in particular SDG 7 \(Affordable and clean energy\)"](#)

[Machine Learning and Data Fusion Approach for Elastic Rock Properties Estimation and Fracturability Evaluation](#) (5/24): «The integration of multi-stage hydraulic fracturing and horizontal drilling has unlocked the potential of **unconventional reservoirs** by creating intricate networks of highly conductive fractures in the rock matrix. Accurate knowledge of the rock's mechanical properties is essential for **designing efficient fracturing operations**...This study aims to apply data mining principles to establish a deeper understanding of the relationship between rock characteristics, elastic properties, microstructure, and rock fracability."

Energy Conversion and Management

[This journal welcomes contributions that support and advance the UN's sustainable development goals, in particular SDG 7 \(Affordable and clean energy\).](#)

[A review on high-value development and utilization of unconventional methane-containing gaseous fuel resources](#) (11/24): "The development and utilization of unconventional methane-containing gaseous fuel resources are extremely important. This article mainly summarizes the current reserves, high-value develop-

ment and utilization technologies of unconventional methane-containing gaseous fuel resources, such as shale gas, coalbed methane, and coke oven gas, etc... helpful for providing references **for the current and future development of the unconventional methane-containing gaseous fuel resources industries.**"

Energy Engineering

[Shale Fracturability Graphic Template Based on Mixed Analytic Hierarchy Process and Mutation Theory](#) (6/24): "Hydraulic fracturing...depends on identifying optimal fracturing layers, also known as 'sweet spots'. However, there is currently no uniform standard for locating these sweet spots. This paper presents a new model for evaluating fracturability that aims to address the current gap in the field...shale oil and gas have emerged as key areas in **global energy exploration.**"

[Predicting Turbidite Channel in Deep-Water Canyon Based on Grey Relational Analysis-Support Vector Machine Model: A Case Study of the Lingshui Depression in Qiongdongnan Basin, South China Sea](#) (8/24): "This endeavor not only marks a significant advancement in the realm of seismic attribute application but also **contributes substantially to the strategic exploration and development of oil and gas resources in challenging deep-water environments.**"

[Characteristics of Rock Mechanics Response and Energy Evolution Regime of Deep Reservoirs in the Bozhong Sag, Bohai Bay Basin](#) (8/24): "With the increase of energy demand and improvement of development technology, the exploitation depth of resources is increasing. However, deep reservoirs face significant challenges...A comprehensive discussion on the intensity of rock damage in deep reservoir of Bozhong Sag is provided, which aims to provide theoretical **guidance for oil/gas production** in this area." ***This research is funded by the Scientific and Technological Service Project of CNOOC Tianjin Branch***

[Factors Influencing Fracture Propagation in Collaborative Fracturing of Multiple Horizontal Wells](#) (1/24): "Horizontal well-stimulation is the key to **unconventional resource exploration and development**. The development mode of the well plant helps increase the stimulated reservoir volume. Nevertheless, fracture interference between wells reduces the fracturing effect... The study provides guidance for optimizing the fracturing technology of multiple horizontal wells."

[A Data-Oriented Method to Optimize Hydraulic Fracturing Parameters of Tight Sandstone Reservoirs](#)(5/24): "This technical approach can provide **a valuable guide**

for subsequent hydraulic fracturing design in tight gas reservoirs.» *The authors acknowledge the CNOOC Research Institute Co. for their support in this project.*

Energy Geoscience

[“A a quarterly, international, open access journal with a multidisciplinary focus, particularly on energy transition and achieving net-zero emission targets. The Journal explores conventional, non-conventional, and renewable energy resources including: Oil and gas exploration and development” Editor-in-Chief: Zhiqiang Feng, SINOPEC Petroleum Exploration & Production Research Institute, China](#)

[Geochemical characteristics and exploration significance of ultra-deep Sinian oil and gas from Well Tashen 5, Tarim Basin, NW China](#) (1/24): “The deep pre-salt Cambrian strata in the northern Tarim Basin still have prospects for volatile oil and condensate exploration. Furthermore, the oil & gas discovery in the Well TS5 provided important insights for the exploration for oil & gas in the ultra-deep, high-temperature and high-pressure Neoproterozoic reservoirs.”

[Microscopic characteristics of tight sandstone reservoirs and their effects on the imbibition efficiency of fracturing fluids: A case study of the Linxing area, Ordos Basin](#) (7/24): “In light of these findings, for the exploration and exploitation of tight sandstone reservoirs in the Linxing area of the Ordos Basin, it is advisable to prioritize areas with favorable physical properties and avoid those with high clay mineral content.» *The authors declare the following financial interests/ personal relationships which may be considered as potential competing interests: Hu Wang and Haipeng Sun are currently employed by PetroChina, and Hanpeng Zhang is currently employed by CNOOC.*

[Shale oil production predication based on an empirical model-constrained CNN-LSTM](#) (4/24): «Compared to traditional approaches, the D-C-L model demonstrates superior precision, efficiency, and cost-effectiveness in predicting shale oil production.” *The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Qiang Zhou, Zhengdong Lei, Zhewei Chen, Yishan Liu and Yuqi Liu are currently employed by PetroChina. The research project is funded by the National Natural Science Foundation of China (No. 51974356).*

[Architecture and exploration target areas of the Senegal Basin, West Africa](#) (10/24): “The Upper Jurassic - Aptian platforms exhibit thick carbonate rocks and

organic reefs on their edges, suggesting substantial potential for hydrocarbon exploration in the Senegal Basin.» *Authors are currently employed by SINOPEC. The research is funded by the projects of the SINOPEC Science & Technology Department and the Basic Prospective Research Projects of SINOPEC, China.*

[Influence of shale reservoir properties on shale oil mobility and its mechanism](#) (5/24): “This study explores the Biyang Depression as an example to determine the influence of shale reservoir properties on shale oil mobility, based on geological and geochemical data, to provide a clearer understanding and theoretical guidance for shale oil exploration and development.” *Xinwen Zhang is currently employed by Exploration & Development Research Institute of Henan Oilfield Company and Suping Zhao is currently employed by PetroChina.*

[Outcrops as windows to petroleum systems: Insights from the southern Bida Basin, Nigeria](#) (7/24): «The areas where the Patti Formation overlies the Lokoja Formation in the Agbaja Plateau area, extending to Agbaja, Ahoko, and Abaji, are considered the most promising for oil and gas exploration and exploitation. The presence of faults, fractures, slump structures, and abandoned channels suggests the existence of potential hydrocarbon traps in the deeper subsurface of the basin.”

[The Upper Jurassic sediments, Marib-Shabwa Basin, Yemen: Lithofacies aspects and sequence stratigraphic analysis](#) (1/24): “It is advised that all future drilling as well as upcoming exploration and development plans in the basin be focused on the highstand deposits.»

[Callovian-Oxfordian sedimentary microfacies in the middle of Block B on the right bank of the Amu Darya Basin, Turkmenistan](#) (4/24): “The purpose of this study is to provide a theoretical basis for the efficient exploration and development of the reservoirs of platform - ramp shoal facies in the middle of Block B.»

[Horizontal well spacing optimization and gas injection simulation for the ultra-low-permeability Yongjin reservoir](#) (1/24): “The method for calculating optimal horizontal well spacing is proposed for low-permeability reservoirs...The low-permeability Yongjin reservoir makes gas injection the preferred EOR method. Simulation of different gas injection shows that using carbon dioxide is the most economical and efficient. But if the reservoir produces enough methane, methane would be a better choice than carbon

dioxide.»

[A multi-mineral model for predicting petrophysical properties of complex metamorphic reservoirs: Case study of the Bozhong Depression, Bohai Sea](#) (7/24): "The multi-mineral model presented in this study provides reasonable methods for interpreting log data in complex metamorphic hydrocarbon reservoirs and could assist in efficient development in the future." *Guoqiang Zhang, Zhongjian Tan and Jun Cao are currently employed by Tianjin Branch of CNOOC Ltd.; Guibin Zhang, Dong Li and Zhang Zhang are currently employed by Well Tech of China Oilfield Services Co. Ltd., CNOOC; Xin Lei is currently employed by Research Center of China National Offshore Oil Corporation (CNOOC). The research project is funded by Science and Technology Major Project of China National Offshore Oil Corporation (CNOOC-KJ 135 ZDXM36 TJ 08TJ).*

[An intelligent lithology recognition system for continental shale by using digital coring images and convolutional neural networks](#) (8/24): "This study delves into the intelligent identification of macroscopic drilling core images of continental shale, and the findings can offer technical support for the interpretation and evaluation of continental shale reservoirs." *This work was supported in part by the PetroChina Science and Technology Innovation Foundation (2021 DQ02-0501)*

[Quantitative identification and prediction of mixed lithology, Bohai Sea, China](#) (7/24): "Under the guidance of reservoir research, the oil-in-place discovered in the oilfield were estimated to be more than 5 million tonnes. This technology provides reference for the exploration and development of oilfields of mixed sedimentary system."

[The Middle and Lower Cambrian salt tectonics in the central Tarim Basin, China: A case study based on strike-slip fault characterization](#) (4/24): «It is crucial to prioritize the salt layers of the Lower Cambrian formations during the exploration and development of oil and gas resources in the Shunbei region. This article presents a precise technique for identifying these salt layers, which can serve as a technical reference for professionals engaged in oil and gas exploration." *Authors are currently employed by SINOPEC.*

[Shale primary porosimetry based on 2D nuclear magnetic resonance of \$T_1\$ - \$T_2\$](#) (7/24): "There has been a mismatch between the exploration potential and the technical production of shale oil in China given the current understanding and exploration accuracy. One of the important reasons for the problem lies in the

determination of parameters in reserve estimation, among which porosity is a key one...This method can be applied to calculate the effective porosity of cored samples taken under pressure without core cleaning, which will be of referential value to shale oil/gas reserve estimation."

[Analyzing the impact of geological features on reservoir heterogeneity using heterogeneity logs: A case study of Permian reservoirs in the Persian Gulf](#) (6/24): "The aim of the present study is to investigate the application of heterogeneity log to determine the geological features affecting heterogeneity in Upper Dalan Member (Late Permian) in the central Persian Gulf...a comprehensive understanding of heterogeneity in carbonate reservoirs and its recognition in petrophysical measurements and geological studies, can significantly contribute to the exploration and development of these important reservoirs."

[Log interpretation of carbonate rocks based on petrophysical facies constraints](#) (7/24): "The research results demonstrate that deep learning algorithms can uncover the correlation in carbonate reservoir well logging data. Integrating geological and production data and selecting appropriate machine learning algorithms can significantly improve the accuracy of well log interpretation for carbonate reservoirs." *The authors declare the following financial interests/ personal relationships which may be considered as potential competing interests: Hongwei Xiao is currently employed by Exploration and Development Research Institute of Daqing Oilfield Co., Ltd., and Guofeng Cheng is currently employed by PetroChina.*

[Influences of lithofacies on fluid mobility in mixed sedimentary rocks: Insights from NMR analysis of the middle Permian Lucaogou Formation, Junggar Basin](#) (10/24): "Fine-grained sedimentary rocks have garnered significant attention as promising sites for hydrocarbon exploration efforts...This study will significantly advance the comprehension of the distribution and formation conditions of high-quality reservoirs within a complex sedimentary environment."

[Highlighting relationships between sand thicknesses, reservoir-seal pairs and paleobathymetry from a sequence stratigraphic perspective: An example from Tortonian Serravallian deposits, onshore Niger Delta Basin](#) (1/24): "This methodology employed in the study was carried out in selected fields with similar gross depositional environments, while learning from observed relationships was applied in predicting sand-prone areas, characterizing reservoir-seal parameters,

and estimating net sand thickness. These are **key inputs for prospect evaluation** and quick-look volume estimation for frontier assets." *This work, which formed part of the senior author's doctorate thesis, was sponsored by the Shell Petroleum Development Company of Nigeria Limited (SPDC).*

[Flow behavior of a coupled model between horizontal well and fractal reservoir](#) (8/24): "The application of fractals in the petroleum industry has been extensively studied, spanning from geological and geophysical exploration to reservoir development...In this paper, we developed a finite flow model for horizontal wells in fractal reservoirs and investigated the influence of fractal parameters on the flow rate and flow profile of horizontal wells. This method can be applied to rapidly assess horizontal wells in highly heterogeneous reservoirs, predict single-well production, and guide well deployment." **Authors are currently employed by SINOPEC**

[Fundamental error in tree-based machine learning model selection for reservoir characterisation](#) (4/24): "This study aims to highlight the common mistake of relying solely on statistical metrics to select a suitable model and demonstrate the importance of incorporating visualisation into the model selection process...it is an area of active research and development within the industry and is likely to play an increasingly important role in the future of oil and production."

[Regression analysis and its application to oil and gas exploration: A case study of hydrocarbon loss recovery and porosity prediction, China](#) (7/24): "In oil and gas exploration, elucidating the complex interdependencies among geological variables is paramount...The insights garnered from these advanced modeling strategies are set **to transform geological and engineering practices in hydrocarbon prediction**, evaluation, and recovery."

[3D reservoir characterization of the Mangahewa Formation, Mangahewa Field, Taranaki Basin, New Zealand](#) (4/24): "The 3D reservoir modeling of the Mangahewa Formation **encourages future hydrocarbon development** in the region. This study can be replicated for other tight-sand gas reservoir elsewhere."

[Progress and prospects of EOR technology in deep, massive sandstone reservoirs with a strong bottom-water drive](#) (1/24): "Gas flooding tests in the Tahe oilfield are of great significance to identifying which EOR technology is the most effective and has the potential of large-scale application for **improving development**

of deep reservoirs with a strong bottom-water drive.»

[Paleoenvironment of marine-continental transitional shales in the lower Permian Shanxi formation, south-eastern Ordos Basin, China](#) (7/24): «...aiming to provide foundational information for **enhanced research on shale gas exploration** in the Ordos Basin."

[Organic geochemical, petrographic and palynological characterization of claystones of the Palaeogene Toraja Formation, and oil seeps in the Enrekang Sub-basin, south Sulawesi, Indonesia: Implications for hydrocarbon source rock potential](#) (7/24): "The results of this study are expected to be **beneficial for the hydrocarbon exploration** in the south arm of Sulawesi»

[Production forecasting methods for different types of gas reservoirs](#) (7/24): "This study evaluates the suitability of various lifecycle models and explores **production forecasting methodologies** for five gas reservoir types developed by SINOPEC» **Authors are currently employed by SINOPEC.**

[Fluid property identification of the Lower Cretaceous reservoirs with complex oil-water contacts in Doseo Basin, Chad](#) (1/24): "The application in the Doseo Basin achieved great success, improving interpretation ability of fluid property in the reservoir with complex oil-water contact, and also provided technical reference **for the efficient exploration and development of similar reservoirs.**"

[Fracture identification of carbonate reservoirs by deep forest model: An example from the D oilfield in Zagros Basin](#) (7/24): "Accurate identification of fractures is **crucial for the exploration and development of tight reservoirs**...the DF algorithms can achieve effective learning without the backpropagation algorithm used in neural networks, and obtain good predictive performance"

[Improved reservoir characterization by means of supervised machine learning and model-based seismic impedance inversion in the Penobscot field, Scotian Basin](#) (4/24): "The present research advocates the integrated analysis of multi-attributes estimated using different methods to **minimize the risk involved in hydrocarbon exploration.**"

[Reservoir quality of the Late Cretaceous Volador Formation of the Latrobe group, Gippsland Basin, Australia: Implications from integrated analytical techniques](#) (1/24): "The results obtained from this study have shown that the Volador Formation in the

Gippsland Basin is worth **for hydrocarbon exploration.**"

[The Lower Cambrian Xiaoerbulake Formation in the Tarim Basin as a potential carbonate source rock](#) (4/24): "The source rocks of the Xiaoerbulake Formation may play a greater role in hydrocarbon generation, thus their **significance of oil and gas exploration deserves attention.**"

[3D static modeling and sequence stratigraphy using well logs and seismic data: An example of Abu Roash G member in Bahga oilfield](#) (7/24): "[The hydrocarbon initially in-place](#) (HCIIP), which is the number of hydrocarbons in the reservoir during the exploration phase, is the last step in static reservoir modeling. The aim of this study is to evaluate the quantity of oil and its spatial distribution within the Abu Roash G reservoir in preparation for future field development."

[Gas source of the Middle Jurassic Shaximiao Formation in the Zhongjiang large gas field of Western Sichuan Depression: Constraints from geochemical characteristics of light hydrocarbons](#) (4/24): "This study will assist in revealing the accumulation process and enrichment mechanism of natural gas from terrigenous strata in the Western Sichuan Depression, thus **providing a scientific basis for expanding exploration targets** in the terrigenous strata in the depression."

[Facies-controlled prediction of dolomite reservoirs in the Middle Permian Qixia Formation in Shuangyushi, northwestern Sichuan Basin](#) (4/24): "The plane and spatial distributions of high-graded reservoirs in the Qixia Formation were accurately delineated, **hopefully providing theoretical support to extensive and beneficial exploration and development of the Qixia Formation gas reservoirs** in the Sichuan Basin."

[Ordovician reservoirs in Fuxian area: Gas accumulation patterns and their implications for the exploration of lower Paleozoic carbonates in the southern Ordos Basin](#) (1/24): "This study will serve as **a geological basis for future [gas] exploration** deployment in the Fuxian area."

[Application of fluid modulus inversion to complex lithology reservoirs in deep-water areas](#) (1/24): "Our findings confirm the value of the fluid modulus in fluid identification and demonstrate that the tri-parameter direct inversion method can **significantly enhance hydrocarbon exploration in deep-water areas.**"

[Dynamic evaluation on sealing capacity of caprocks of the Meso-Neoproterozoic reservoirs in Ordos Basin.](#)

[China](#) (1/24): "The Meso-Neoproterozoic reservoirs in the Ordos Basin are well preserved and probably of better **potential for exploration** in terms of the caprock-source rock combination."

[Origin of condensate oil and natural gas in Bozhong 19-6 gas field, Bohai Bay Basin](#) (1/24): "The discovery of the Bozhong 19-6 gas field has opened a new frontier for deep gas exploration in the Bohai Bay Basin, with a **great potential for further gas exploration.** However, poor understanding of oil and gas origin has been limiting the exploration progress in this area...The findings of this study are scientifically, theoretically and practically significant for the in-depth understanding of the formation and distribution patterns of oil and gas in the Bozhong Sag."

[The formation and evolutionary characteristics of organic matter and pyrites in the continental shales of the 3rd submember of Chang 7 Member, Yanchang formation, Ordos Basin, China](#) (4/24): "This study systematically analyzes the organic matter and pyrites in the continental shales in the Triassic Chang 73 submember, Ordos Basin to ascertain their types, as well as formation and evolutionary characteristics, so as to **provide a basis for further understanding of continental shale oil in the basin...**an important strategic successor **for future exploration and development** in the Ordos Basin."

[Reservoir quality evaluation of the Narimba Formation in Bass Basin, Australia: Implications from petrophysical analysis, sedimentological features, capillary pressure and wetting fluid saturation](#) (1/24): "The main objective of this study is to understand, examine and **evaluate the reservoir quality** of the Narimba Formation using integrated analytical methods including petrophysical parameters (porosity and permeability), sedimentological and petrography description and many derivative parameters which are common for reservoir evaluation. "

[Fluid identification and tight oil layer classification for the southwestern Mahu Sag, Junggar Basin using NMR logging-based spectrum decomposition](#) (4/24): "This well exhibits a stable production of about 40 t/d, indicating that **this area has great potential for tight oil exploration.**"

[Reservoir characteristics and controlling factor of tight sandstone in Shuixigou Group in Taibei depression, Turpan-Hami basin](#) (4/24): "The research findings will provide **valuable guidance for the exploration and development of lithological oil and gas reser-**

voirs within the Taibei Sag.”

[Sedimentary systems of the Oligocene Huagang Formation in the central anticline zone of the Xihu Depression, East China Sea Shelf Basin](#) (1/24): “The study will provide a basis for well placement and serve as **guidance for the selection of favorable hydrocarbon exploration areas** in the Xihu Depression.»

[A log-based method for fine-scale evaluation of lithofacies and its applications to the Gulong shale in the Songliao Basin, Northeast China](#) (7/24): «The methodology and insights in this study will provide a **valuable guide for sweet spot identification** and horizontal well-based exploitation of the Gulong shale.»

[Hydrocarbon generation potential of Campano-Maastrichtian to Paleogene shales in the Benin Flank of the Anambra Basin, SW Nigeria](#) (7/24): «**An assessment of the hydrocarbon generation potential** of this frontier area from subsurface samples.»

[Sand body architecture of braided river deltas in the Upper Triassic Xujiahe Formation, Sichuan Basin](#) (11/24): “This study serves as a **guide for future exploration and evaluation** of the T3x5 member in the Dongfeng area while also augmenting the methodologies for describing tight sandstone reservoirs.”

Energy Reviews

[“Facilitating the beneficial collaborations among researchers that are key to building a sustainable future for all. This journal welcomes contributions that support and advance the UN’s sustainable development goals.”](#)

[A critical mini-review of key issues on sweet spot identification for shale gas reservoirs](#) (7/24): «With the escalating energy demand, attention has shifted toward exploring and exploiting deep-buried, low-quality middle-shallow, and middle-deep shale gas reservoirs in China. This shift necessitates advancements in geological evaluation and engineering design. Here, **the key issues related to sweet spot identification in shale gas reservoirs are introduced**, and three correlated parameters (gas-in-place, microstructure, and permeability) are concisely overviewed.”

[Sustainable development of unconventional resources: Analysis of the transient linear flow oriented straight-line analysis technique](#) (3/24): «Unconventional reservoirs have emerged in a dominant role **to furnish substantial oil and gas supplies worldwide**...in an ever

more carbon-conscious world, it is of paramount importance to prioritize producing global unconventional resources in a cost-effective and environmentally sustainable fashion...[this paper] helps promote the production of global unconventional resources in a cost-effective and environmentally sustainable fashion.”

[A critical mini-review of key issues on sweet spot identification for shale gas reservoirs](#) (12/24): “Here, the key issues related to sweet spot identification in shale gas reservoirs are introduced, and three correlated parameters (gas-in-place, microstructure, and permeability) are concisely overviewed...since the drilling cost of deep shale formation is large, cost analysis and production estimation are also important factors for shale gas development. By synthesizing the factors mentioned above, the **accurate identification of sweet spots in shale gas reservoirs** becomes feasible. This, in turn, may pave the way for **significant advancements in the effective and economic development of deep shale gas** and low-quality middle-shallow and middle-deep shale gas in the upcoming years.”

Energy Strategy Reviews

[“This journal welcomes contributions that support and advance the UN’s sustainable development goals”](#)

[Scenario analysis to evaluate the economic benefits of tight oil resource development in China](#) (1/24): «Foreign oil dependency may restrict rapid social and economic development in China. To solve its energy security problem, **China needs to accelerate the exploration and development of domestic alternative oil and gas resources**, such as tight oil.”

Engineering

[Unveiling the Oldest Industrial Shale Gas Reservoir: Insights for the Enrichment Pattern and Exploration Direction of Lower Cambrian Shale Gas in the Sichuan Basin](#) (4/24): «...two additional reservoirs were identified with **significant potential**...This model provides a **predictive tool for identifying prospective shale gas reservoirs** in similar geological settings globally...minimizes risks and costs associated with **exploration and production activities** in the Sichuan Basin.»

[Engineering Applications of Artificial Intelligence Estimating hydrocarbon recovery factor at reservoir scale via machine learning: Database-dependent accuracy and reliability](#) (2/24): “This study aims to estimate recovery factor (RF), a key property for exploration...**to determine whether [a reservoir] has high potential to produce substantial amount of**

hydrocarbon and subsequently yield enough profit.”

[Novel method for total organic carbon content prediction based on non-equigap multivariable grey model](#) (7/24): «Predicting total organic carbon content plays a crucial role in **shale gas reservoir evaluation**. To address multi-variable, imperfect logging data and non-equigap characteristics, this study developed a multi-variable grey derivative model for predicting the total organic carbon content trend.”

Engineering Failure Analysis

[Hydrogen-induced cracking of longitudinally submerged arc welded HSLA API 5L X65 carbon steel pipeline](#) (9/24): «Rising global energy and petroleum demand necessitate **increased oil and gas exploration** [and] necessitates a thorough understanding of the hydrogen-induced cracking (HIC) susceptibility...This paper presents findings from investigations of HIC failures in longitudinally submerged arc welded (LSAW) pipes.» *Acknowledgements include Saudi Arabia and Saudi Aramco.*

Engineering Fracture Mechanics

[Multiple hydraulic fracture propagation simulation in deep shale gas reservoir considering thermal effects](#) (6/24): “Increasing the **exploration and development of deep unconventional oil and gas** resources has become a key focus of the petroleum industry...in this study, a shale multiple hydraulic fracture propagation model considering thermal effects was established...providing theoretical basis for the efficient development of deep shale gas.»

Expert Systems With Applications

[Classification with noisy labels through tree-based models and semi-supervised learning: A case study of lithology identification](#) (4/24): «In this paper, hybrid noise label filtering and correction framework for lithology identification (HNFCL) is proposed... Lithology identification is the fundamental task in **hydrocarbon exploration** and reservoir research»

[Missing well logs reconstruction based on cascaded bidirectional long short-term memory network](#) (9/24): «Oil and natural gas, as crucial fossil fuels, are extensively utilized in various sectors worldwide. The efficient exploration and development of these resources play a significant role in improving the efficiency and benefits of energy (,). Well logs are essential for effective interpretation and evaluation in reservoir, which is of **great significance for exploration and development of oil and gas reservoirs**...Experimental results show the effectiveness of the proposed

cascaded system.”

Fluid Dynamics and Materials Processing

[Evaluation of Well Spacing for Primary Development of Fractured Horizontal Wells in Tight Sandstone Gas Reservoirs](#) (6/24): «The SEC reserve is **critical in exploration, development, production, and operation processes**; the evaluation results are required to have reasonable certainty to ensure minimum risks for investors...**This method will provide significant guidance and reference** for key parameters of the SEC reserve estimation of similar gas reservoirs.»

A Transient-Pressure-Based Numerical Approach for Interlayer Identification in Sand Reservoirs (1/24):

«Almost all sandstone reservoirs contain interlayers. The identification and characterization of these interlayers is critical for minimizing the uncertainty associated with oilfield development and improving oil and gas recovery...This study is of considerable importance for improving the quantitative identification of interlayers and reducing uncertainty in the oilfield development process.»

[A Novel Fracturing Fluid with High-Temperature Resistance for Ultra-Deep Reservoirs](#) (6/24): «Ultra-deep reservoir resources are crucial for our oil and gas exploration and development. An oilfield block aims to achieve a production capacity of 30 million tons. The target layer depth is becoming increasingly deep, with the physical properties of the reservoir deteriorating... The findings of this study provide valuable technical references for future fracturing construction in onshore ultra-deep well oilfields.”

Fuel

[“The scope is broad and includes many topics of increasing interest such as environmental aspects and pollution.”](#)

[Oil content and mobility in a shale reservoir in Songliao Basin, Northeast China: Insights from combined solvent extraction and NMR methods](#) (2/24): “Our results improve understanding of hydrocarbon content, saturation, and mobility in organic-rich shale; as shale oil has become a globally important source of fossil-fuel energy, **such understanding is important in shale oil exploration and development.**”

[Molecular and stable carbon isotopic compositions of crude oils from Shengbei Sag, Tuha Basin: Implications for hydrocarbon Sources, migration and mixing](#) (9/24): «This study provides an improved understanding of hydrocarbon sources, migration and mixing in the

Cretaceous and Jurassic reservoirs of Shengbei Sag, Tuha Basin and should be helpful in making reasonable **strategy for petroleum exploration** in this region.»

[Experimental simulation of fracture propagation and extension in hydraulic fracturing: A state-of-the-art review](#) (5/24): «With the continuous advancement of oil and gas field development technologies, there has been an increasing focus on the exploration of unconventional oil and gas resources...The findings of this research offer valuable guidance for experimental design and serve as **a reference for future fracturing operations.**»

[Micro formation mechanism of oil–water inversion in reservoirs based on water film theory—An example from the Dawangzhuang Oilfield in Bohai Bay Basin](#) (3/24): «This method has a strong generalisation potential and can **guide rolling exploration** and the efficient development of similar oilfields.»

[The relationship between oiliness and mobility and their controlling factors for lacustrine shale oil: A case study of Qing1 Member in Changling Sag, Songliao Basin](#) (11/24): “The results of the present study are very important for deepening the understanding of the mobile mechanism and **guiding the selection of sweet spots for shale oil.**”

[Numerical simulation of gas production from Class III hydrate reservoirs using low-frequency electric heating-assisted depressurization with horizontal wells](#) (2/24): «The proposed method and the findings of this work provide a useful reference for the efficient development of gas hydrate reservoirs.»

[GCMC-MD prediction of adsorption and diffusion behavior of shale gas in nanopores](#) (12/24): «In recent years, the problem of global warming has become increasingly severe...Meanwhile, the global shortage of oil and gas resources is getting worse...**The main object is to provide the theoretical basis and guidance for increasing the production of shale gas reservoirs.**»

[Unraveling the mechanism of selective dissolution in anthracite coal for enhanced permeability through sodium hypochlorite oxidation treatment](#) (10/24): «Sodium Hypochlorite (NaClO) oxidation treatment has emerged as a **promising method for stimulating coalbed methane reservoirs.** However, the variability in reactivity among different coal macerals and mineral compositions, particularly vitrinite and inertinite, and its impact on coal permeability remain incompletely

understood. This study aims to reveal the mechanism of selective dissolution in anthracite coal by comparing the change in coal composition and the associated dissolution structures.”

[Multiscale characterization of carbonate-rich shale: From micro structure to macro mechanical properties, a case study in Hongxing Block, China](#) (4/24): «These comprehensive insights are of **great significance for both the exploration and development of carbonate-rich shale reservoirs.**»

[Characterization and behavior of Raniganj shale under heated environment](#) (6/24): “Understanding the physico-mechanical characteristics of shale under different environmental conditions is **vital for the practical exploration and production of shale gas.** One of the essential components that can substantially affect the physico-mechanical properties of shales is temperature...In this study, the characterization of Raniganj shale was carried out under a heating environment based on physical, mechanical, and chemical parameters.”

[Intelligent identification and segmentation of fractures in images of ultrasonic image logging based on transfer learning](#) (8/24): “We believe that this algorithm can mitigate the subjective influence of manual identification, significantly improve segmentation accuracy, provide reliable guidance for oil and gas production forecasting, and **support the intelligent development of oil and gas exploration and development.**”

[Enrichment and movability of lacustrine tight shale oil for the first member of the Upper Cretaceous Qing-shankou Formation in the Sanzhao Sag, Songliao Basin, NE China: Insights from saturated hydrocarbon molecules](#) (7/24): «**The above discoveries indicate the great exploration potential of tight shale oil in the Songliao Basin.** Tight shale oil was regarded by the Petrochina Daqing Oilfield as the most important exploration field in the next few years, and was expected to be an important substitute resource for the present producing conventional crude oil in the future”

[Construction of multidimensional structure model of the Mesoproterozoic Xiamaling shale kerogen, northern North China](#) (7/24): “In the southeastern Xuanlong sag of Northern China, the organic-rich black shale of the Mesoproterozoic Xiamaling Formation holds significant potential as a source rock...a 3D model for the Xiamaling kerogen was developed with a relatively high degree of accuracy.”

[Oil saturation quantitative evaluation in lacustrine shale: Novel insights from NMR \$T_1\$ - \$T_2\$ and displacement experiments](#) (9/24): "This method allows the shale oil saturation to be accurately calculated and provides basis for **the determination of favorable sections and evaluation of resource of shale oil reservoir.**"

[A rapid optimization methodology of produced gas reinjection EOR in carbonate reservoirs](#) (1/24): «The optimal levels of controlling factors were determined to **maximize oil recovery.** This optimization procedure is very practical for reservoir engineers to guide a rapid evaluation of gas injection processes [in EOR]."

[The occurrences and mobility of shale oil in the pore space of terrestrial shale](#) (10/24): "The characterization and quantification of movable shale oil are of **utmost importance for identifying prospective shale oil exploration areas and evaluating targets.** Moreover, movable shale oil plays a pivotal role in determining the level of shale oil enrichment and the distribution of shale oil reservoirs and is the key to achieving high production and enrichment of terrestrial shale oil...The study comprehensively analyzed the impact of mineral content, organic matter abundance, and pore structure of the shale reservoir on shale oil mobility." *We also thank the PetroChina Research Institute of Petroleum Exploration and Development and PetroChina Changqing Oilfield for providing core samples and necessary data.*

[Characterization of shale oil and water micro-occurrence based on a novel method for fluid identification by NMR \$T_2\$ spectrum](#) (10/24): «Accurately identifying the fluid type and occurrence characteristics is **essential for exploring and developing shale oil.**...This study aims to capitalize on the strengths of 1D and 2D NMR techniques and their relationship, providing a more accurate solution for fluid identification in 1D T_2 spectra."

Gas Science and Engineering

["The journal aims to advance the environmentally sustainable exploration, processing, and utilization of gas resources to support energy transition and net-zero carbon goals."](#) *Editor-in-Chief: Zhejun Pan, PhD, Northeast Petroleum University, Daqing, China*

[Evolution of organic pores in Permian low maturity shales from the Dalong Formation in the Sichuan Basin: Insights from a thermal simulation experiment](#) (1/24): "This knowledge contributes to our understanding of shale reservoir characteristics and can **inform exploration**

and production strategies for shale gas and oil resources."

[Hydraulic Fracturing Potential of Tight Gas Reservoirs: A Case Study from a Gas Field in the Bredasdorp Basin, South Africa](#) (6/24): «This study has shown that the F-O gas field is a **promising candidate for hydraulic fracturing.**"

[Identifying favourable reservoir areas of coalbed methane based on multifractal and gated circulation unit](#) (1/24): «The method is feasible and provides a new way for **identifying favourable reservoir areas** of CBM under complex geological conditions.»

[Comprehensive Characterizations of Core Sediments Recovered from Shenhu W17 Well in South China Sea and Its Impact on Methane Hydrate Kinetics](#) (10/24): "Natural Gas Hydrates (NGH) is considered a vast unconventional energy source that holds significant promise in addressing future energy demands...The study provides valuable insights on the role Shenhu core sediments in CH₄ hydrate formation, which is **essential for understanding the spatial heterogeneity of NGH in reservoir and for designing suitable production strategy.**

[Estimation of shale adsorption gas content based on machine learning algorithms](#) (7/24): «The **exploration and development of shale gas** plays a vital role in addressing energy crisis, reducing carbon emissions, and achieving carbon neutrality...This study evaluates the geological parameters that affect methane adsorption capacity and their influence on prediction accuracy. It also clarifies the accuracy and applicable conditions of ML models with different combinations of geological parameters. The paper concludes by providing an example of a rapid and accurate prediction using the Wufeng-Longmaxi gas shale in the southern Sichuan Basin.»

[An improved convolutional neural network for predicting porous media permeability from rock thin sections](#) (7/24): "Accurately predicting the permeability of rock thin sections can lead to more precise assessments of reservoirs and **reduced uncertainty in the oil and gas exploration and development.** In this study, we proposed a neural network named Phy-ConvNeXt to rapidly predict the permeability of porous media based on artificially synthesized porous media image datasets in the absence of a large amount of rock thin section data."

[Effects of SEM image resolution on organic pore struc-](#)

[ture estimation of shale reservoirs](#) (1/24): «This should significantly help petroleum geologists and engineers to better utilize SEM images on **shale reservoir evaluation**.”

[Characterizing spatial distribution of ice and methane hydrates in sediments using cross-hole electrical resistivity tomography](#) (8/24): “The reduction of conventional oil and gas reserves, coupled with increasing energy needs, has resulted in the recognition of unconventional energy sources, particularly natural gas hydrates, as one of the most promising alternative energy reservoirs. Consequently, research emphasis has shifted towards exploring and exploiting natural gas hydrates...These endeavors will provide **an essential guarantee for the exploitation and assessment of hydrate resources**.”

[Development of a dual-functional inhibitor for natural gas hydrates and construction of drilling fluid system](#) (2/24): «The research outcomes presented in this paper hold significant practical value in addressing the wellbore stability issues encountered during the drilling process of **gas hydrate reservoirs in deep-sea areas**.”

[Control of fracture toughness of kerogen on artificially-matured shale samples: An energy-based nanoindentation analysis](#) (4/24): «Understanding controls on mechanical properties of organic-rich shale is essential in **exploration and successful production from hydrocarbon reservoirs**...The fracture toughness of organic matter obtained in this study is crucial for parameter estimation of fracture propagation and homogenization models.”

[Geoenergy Science and Engineering \(Formerly known as Journal of Petroleum Science and Engineering\)](#) “The journal aims to publish articles with a particular focus on energy transition and achieving **net-zero emission targets**.”

[Application of machine learning in wellbore stability prediction: A review](#) (1/24): “Ensuring wellbore stability is **vital for safe drilling and production in the process of oil exploration and development**... therefore, this paper systematically investigates and summarizes the research progress in intelligent prediction of wellbore stability.”

[Nanopores-to-microfractures flow mechanism and remaining distribution of shale oil during dynamic water spontaneous imbibition studied by NMR](#) (8/24): “Providing a theoretical **support for the exploration and development of lacustrine shale oil**.”

[Influencing factors on weathered clay layer formation in unconformity structures: A case study of the Junggar Basin](#) (9/24): “This study provides a **significant guide for predicting the distribution of stratigraphic oil and gas reservoirs in petroleum exploration**.”

[Brittleness index prediction using modified random forest based on particle swarm optimization of Upper Ordovician Wufeng to Lower Silurian Longmaxi shale gas reservoir in the Weiyuan Shale Gas Field, Sichuan Basin, China](#) (2/24): “The developed model can be adopted as an alternative technique **to determine the sweet spot for hydraulic fracturing in shale gas reservoirs to enhance gas production**.”

[SR-RDFAN-LOG: Arbitrary-scale logging image super-resolution reconstruction based on residual dense feature aggregation](#) (9/24): «The experimental results... provides **support for subsequent fracture-cave evaluation and oil and gas exploration**.”

[Effects of matrix on oil sands texture and bitumen distribution in the Cretaceous McMurray Formation, Alberta, Canada](#) (6/24): «With the depletion of world energy resources, unconventional energy sources such as heavy oil and oil sand are attracting widespread attention... considering matrix can further consummate the formation mechanism of water, oil, and poor oil interval in oil sand reservoir, **provide more comprehensive information for predicting the distribution and quality of bitumen, and optimize well-site deployment and bitumen recovery**.”

This research was supported by CNPC's Research Institute of Petroleum Exploration and Development Project. We sincerely appreciate the collaboration and support of the National Key Laboratory of Petroleum Resources and Engineering, College of Geosciences, China University of Petroleum (Beijing)

[Rapid well-test analysis based on Gaussian pressure-transients](#) (10/24): «The study **recommends hydraulic fracturing for future field development**, and includes simulation results valuable for reservoir management and decision-making.”

[Tectono-Sedimentary Evolution of Prolific Permo-Triassic Petroleum Reservoirs Offshore Iran: Insights from Seismic Stratigraphy](#) (8/24): “The significance of this finding is that by applying the developed seismic stratigraphy techniques integrated with existing well data on a regional basis offers the opportunity **to identify undrilled exploration targets** with an improved chance of containing high-quality Dalan /

Kangan reservoir sections.”

[Difference of hydrocarbon generation between argillaceous dolomite and mudstone and its influence on oil source: A case study of the Es4 in the Leijia area, Liaohe depression](#) (6/24): «This study aims to provide a **theoretical foundation and research methodology for the exploration of tight oil** in the study area and other work regions with similar geological conditions.»

[Chemofacies characterization of lacustrine shale based on machine learning classification: A case study from the Dongying Depression, Bohai Bay Basin, China](#) (7/24): «The rapid lithofacies transitions and compositional heterogeneities inherent in lacustrine shale posed significant challenges to accurately characterizing it, thus impeding the **optimization of shale oil exploration and extraction**. This study employed a multifaceted methodology to address these obstacles, integrating principal component analysis (PCA), K-means clustering, and geochemical trend analysis to precisely identify and characterize nine distinct chemofacies.”

[Experimental and numerical simulation study on enhanced oil recovery by N₂-Assisted water huff-n-puff in a tight oil reservoir](#) (10/24): «N₂-assisted water huff-n-puff (NAWHP) was proposed to improve oil recovery under reservoir conditions...As the amount of conventional oil continues to decrease, tight oil will become an important successor resource for oil exploration and development in the future due to its large reserves.”

[Multifactor quantitative evaluation of tight sandstone reservoirs based on Geodetector model and spatial statistics: First member of the Paleogene Shahejie Formation, southern Raoyang Sag, Bohai Bay Basin](#) (9/24): «With the development and continuous improvement of conventional **oil and gas exploration**, the strategic and industrial value of tight sandstone reservoirs is increasingly evident, attracting increasing attention...**A multifactor reservoir quantitative evaluation method has been developed** based on the spatial heterogeneity of reservoir influencing factors.

[Multifractal characteristics on pore structure of Longmaxi shale using nuclear magnetic resonance \(NMR\)](#) (7/24): “The comprehensive fractal characterization of reservoir rocks demonstrates the applicability of multifractal dimensions in characterizing the heterogeneity of shale reservoir pore structures, which holds potential **promise for coal methane exploration**.”

[Improved pore structure prediction based on a stacking](#)

[machine learning model for low-permeability reservoir in Tazhong area, Tarim Basin](#) (10/24): «The proficiency of the stacking model in predicting pore structure types serves as a transformative force, offering **significant advancements in hydrocarbon distribution predictions** and paving the way for more streamlined and effective future EOR activities.»

[Applying transfer learning to address data scarcity: A case study on LWD gamma ray depth-lag remediation from Volve to another gasfield](#) (11/24): «This study investigates the applicability of deep learning with transfer learning, to tackle this prominent challenges... In petroleum exploration and development, deep learning models often face challenges due to dataset limitations, affecting their generalizability...transfer learning offers a powerful approach to addressing the dual challenges of geological complexity and data scarcity in petroleum engineering. This research investigates the application of transfer learning to enhance real-time data augmentation for LWD operations.»

[A New Approach for Fracture Parameters Optimization of Multi-Fractured Horizontal Wells: Virtual Boundary Method](#) (7/24): «Horizontal well fracturing technology stands as the cornerstone **for achieving large-scale commercial production in shale reservoirs**. Yet, the complexity of fracture variables within horizontal wells, comprising both discrete and continuous factors, presents a formidable challenge for optimization...This research lays a solid theoretical foundation for the design of horizontal fracturing well construction plans in shale reservoirs.”

[Analysis of bit-balling failure and hydraulic structure optimization design of annular-grooved PDC bits](#) (10/24): «**The results herein will assist in accelerating the exploration and development of deep difficult-to-drill formations** and reduce drilling costs.»

[Geological and dynamic similarity for reservoir state prediction by well connectivity](#) (3/24): «Reservoir modeling and simulation are the main pipeline of computational analysis...there is growing demand in exploration and production industry to develop efficient alternatives for this pipeline...We propose that such a method is a reliable and efficient approach for fast estimation of well connectivity properties.»

[Seismic simulation and attribute analysis of Jurassic fluvial reservoirs in the P6 region, Xinjiang](#) (2/24): «Fluvial reservoirs are crucial **for oil and gas exploration**...We conclude that further exploration should focus

on the fluvial channel delta in the southeast of the study area."

[A Novel Method for Predicting Geomechanical Parameters of Gassy Sediments: Insights from Theoretical Models and Laboratory Testing](#) (9/24): "These advancements provide a simplified and effective approach for the rapid and precise determination of geomechanical parameters in gassy sediments, offering **crucial theoretical and technical guidance for offshore petroleum exploration** and field operations."

[Dynamic Prediction of Fracture Propagation in Horizontal Well Hydraulic Fracturing: A Data-Driven Approach for Geo-Energy Exploitation](#) (7/24): «Accurate and efficient prediction of hydraulic fracturing fracture propagation is of utmost importance **for unconventional reservoir development**...The research findings demonstrate that this method significantly enhances prediction efficiency and provides new insights for predicting fracture morphology and optimizing fracturing design."

[Carbonate Rock Physics Model Using Different Approaches to Estimate Rock Frame Stiffness](#) (10/24): "Deepwater carbonate reservoirs in the Brazilian pre-salt have emerged as **significant hydrocarbon plays in the region** and globally. Seismic monitoring of these reservoirs is crucial to provide **information for well placement assessments, to reduce uncertainty in reservoir models, and to enhance model-based decision making**...A proxy model is employed, and its coefficients are subsequently calibrated with well-log information...Overall, the proxy for the rock frame stiffness modeling is a computationally **less expensive model** compared to the inclusion models which involve modeling of various pore-types."

[Effect of pump start-stop operation in drilling of offshore Extreme-HPHT directional wells upon bottom-hole transient fluctuating pressure](#) (4/24): «Since high temperature and high pressure oil and gas reservoirs have steadily become an important area for offshore oil-gas exploration and development, the work of oil-gas exploration and development is constantly veering toward high-risk and very challenging extreme-HPHT environments, and the **extreme-HPHT fields will become a global focus of future oil-gas resource exploration**...To accurately predict the wellbore pressure and variation pattern of offshore extreme-HPHT wells throughout the drilling pump start-steady circulation-pump stop process, a transient-flow mathematical model of drilling fluid temperature-pressure physical properties-unsteady friction during pump start-stop

process of directional wells has been established."

[Novel Insights to Unconventional Carbonate Mudstones with Quantitative Nanoporosity Characterization and Modeling of Tuwaiq Mountain Formation](#) (10/24): "The findings can enhance our understanding of the nano-scale pore structure and provide **insights to evaluate and build development strategies of carbonate mudstones** in the Arabian Intrashelf Basin and elsewhere... Global energy demand is rising steadily with an increasing population and technological advancements. As such, hydrocarbons become a critical source to support this ever-growing energy demand. This demand trajectory will accelerate the depletion of hydrocarbon resources, necessitating the exploration and development of more complex and challenging resources, including unconventional plays."

[Accurate identification of low-resistivity gas layer in tight sandstone gas reservoirs based on optimizable neural networks](#) (7/24): «This model can accurately identify low resistivity gas reservoirs in the research area, and has important guiding significance for identifying the reservoir properties of tight sandstone gas reservoirs in the Sichuan Basin. It can provide **reference value for the exploration and development of similar gas reservoirs in other regions**."

[Bridging the gap: Integrating static and dynamic data for improved permeability modeling and super K zone detection in vuggy reservoirs](#) (7/24): "The challenging task of predicting permeability in hydrocarbon reservoirs has long confounded geoscientists engaged in subsurface exploration and reservoir management...In this study, we have delved into a pressing issue observed in certain carbonate reservoirs, namely the inadequacy of core plug permeability values in representing substantial production rates."

[Automatic fracture identification from logging images using the TSCODE-SIMAM-YOLOv5 algorithm](#) (9/24): "Fracture logging evaluation is a critical aspect of production and holds substantial importance in oil and gas exploration. Detecting fractures is essential for understanding reservoir characteristics and predicting hydrocarbon production capacities, which aids in **devising effective exploration and development strategies**... This study introduces a novel method for identifying logging image fractures."

[Study on the multifractal characterization and seepage of the shale matrix: A case study of the Longmaxi Formation in southwestern Sichuan Basin, China](#) (7/24): «With the increasing global efforts in oil and gas

exploration, the focus is gradually shifting from conventional to unconventional reservoirs...This [study] aims to provide **theoretical guidance for the exploration and development of shale gas** in southern Sichuan." *The Shale Gas Research Institute of PetroChina Southwest Oil & Gas Field Company is thanked for providing shale samples and geological background references.*

[Stacking ensemble learning based inversion for three-dimensional distribution region of hydraulic fractures in shale](#) (5/24): "Machine learning methods have been applied to the **oil and gas exploration and development** industry...an inversion method based on stacking ensemble learning was proposed, which can obtain the three dimensional distribution region of hydraulic fractures in every single stage with actual geological and engineering data, thus providing **key parameters for the fracturing evaluation** and productivity analysis."

[Tridimensional porosity modeling through fuzzy logic and geostatistics](#) (9/24): «The three-dimensional porosity simulation plays a **pivotal role in the exploration and prospecting of oil fields**. In this study, we introduce a hybrid methodology for subsismic resolution porosity estimation, combining algorithms based on fuzzy logic and geostatistics...The obtained results showed satisfactory levels of accuracy in the evaluated wells."

[Prediction of total gas content in low-resistance shale reservoirs via models fusion — Taking the Changning shale gas field in the Sichuan Basin as an example](#) (4/24): "Total gas content (GAST) is an important parameter for the evaluation of gas content and sweet spots in shale reservoirs. Accurate prediction of GAST is **crucial for shale gas exploration and development**, which directly determines an optimal production plan... In this paper, we propose a fusion model to predict the GAST of low-resistivity shale reservoirs in the Changning area."

[Parameter optimization based on deepwater drilling system simulation: A pre-salt exploration well in Brazil](#) (10/24): "The **exploration and development of extensive oil fields in deepwater and ultra-deepwater offshore areas** have brought about escalating risks during the drilling process...However, these risks are accompanied by opportunities; beneath the thick salt layers in deep water lie abundant oil reservoirs...Pre-drilling modeling and virtual drilling simulation analysis are important means to address the challenges of deepwater salt drilling engineering...We investigate

energy-vibration relationships to optimize key parameters providing practical recommendations for actual drilling operations.»

[Optimization design of plugging agent dosage and application of deep shale gas inner-diversion fracturing](#) (8/24): «The Sichuan Basin of China is rich in shale gas resources and has great potential for development. Especially its deep shale gas will become the **focus of future exploration and development**...accurately calculating the critical plugging pressure during the inner-diversion process and optimizing the temporary plugging agent dosage is significant...This study establishes critical diversion pressure and optimal on-site temporary plugging agent dosage calculation models for deep shale gas fracturing."

[An improved stochastic inversion method for 3D elastic impedance under the prior constraints of random medium parameters](#) (2/24): «Three-dimensional (3D) elastic impedance inversion is widely used in **oil and gas exploration** with its excellent identification of reservoirs and noise immunity. However, modifying the prior information directly in inversion will undoubtedly destroy the spatial autocorrelation structure of the elastic impedance. Maintaining the elastic impedance spatial autocorrelation structure in seismic inversion is of great significance for guiding the reservoir identification and prediction...**this method can effectively perform high-resolution geophysical prediction** of underground thin-layer reservoirs.»

[Low-carbon development strategy to achieve heat conversion in heavy oil reservoirs: In-situ combustion](#) (9/24): «These results demonstrate that the oil soluble catalyst can enhance the ISC performance of heterogeneous heavy oil reservoirs and offer **theoretical guidance for subsequent field development**."

[Well logs reconstruction of petroleum energy exploration based on bidirectional Long Short-term memory networks with a PSO optimization algorithm](#) (8/24): «In the exploration of oil and gas reserves, geophysical logging is crucial for evaluating a state of underground energy...This paper establishes a prediction model based on BiLSTM neural network to handle the well log reconstruction problem.»

[In-situ conversion of low-to medium-mature organic-rich shales by nuclear irradiation](#) (7/24): "Irradiation can provide a **new idea for shale oil and gas exploitation in the future**."

[Theoretical analysis and field application of cooling bottom hole by mud density reduction during drilling in deep shale gas well](#) (9/24): «All findings show that lower mud density can not only effectively reduce the bottom hole temperature, but also improve the drilling efficiency, which has positive significance **for the development of deep shale gas.**»

[Prediction of shale oil "sweet spot" parameters centered on seismic prestack waveform inversion](#) (8/24): «Shale oil in the upper Cretaceous Qingshankou Formation has becoming an important complement and substitute **for increasing reserves and productions** in the Songliao basin...the multilevel parallelization of elastic-waveform inversion methodology based on genetic-algorithm (GA) under a 1D assumption which is called the PWI is a practical choice for us to carry out **seismic quantitative prediction of shale** reservoir in Songliao Basin.»

[Shear wave anisotropy response characteristics of laminated shale and its correction methods](#) (7/24): «Effective evaluation of shale reservoirs is essential **for shale oil and gas exploration and development...** [our] method has been successfully applied in shale gas wells in the southern Sichuan Basin, demonstrating promising results.»

[Quantifying uncertainty in ultra-deepwater carbonate facies modeling](#) (9/24): «Through this approach, we provide a methodological advancement that allows for a nuanced interpretation of subsurface data, **facilitating more informed decision-making in exploration and production activities.**»

[Improving density logging resolution by VMD-CEEM-DAN-ICWT method and its application in thin layer identification](#) (8/24): «It makes density logging curves more capable of identifying reservoirs, which provides high-quality data **for further exploration and exploitation of oil and gas.**»

[Charging dynamic, resistance and accumulation process of tight sandstone oil of the paleogene Es3 member in linnan sag, jiyang depression](#) (7/24): «We hoped that the dynamic process of oil accumulation and the oil enrichment ability of tight reservoirs revealed in this paper could provide theoretical **guidance for the exploration and development of tight oil** in other similar area." *We thank Petroleum Exploration and Production Research Institute of SINOPEC for providing samples and geological data.*

[Innovative lithology identification enhancement via the](#)

[recurrent transformer model with well logging data](#) (9/24): «The Recurrent Transformer model showcases the potential of integrating advanced machine learning in geosciences, **opening new horizons in oil and gas resource exploration and utilization.**»

[Experimental study on the mechanical behavior of different lithologic shales in Qingshankou group under in-situ geological conditions](#) (2/24): «This study provides valuable insights into the in-situ mechanical characteristics of different lithologies of Gulong shale in the Qingshankou group and serves as a scientific basis for the **efficient development of shale oil.**»

[Geoscience-engineering integration-based formation damage control drill-in fluid \(GEI-FDC-DIF\): An essential technology for successful extraction of deep mid-high permeability sandstone reservoirs](#) (6/24): «This study introduces an innovative geoscience-engineering integration-based formation damage control drill-in fluid (GEI-FDC-DIF) technology...Such damage, if uncontrolled, can hinder hydrocarbon reservoir discovery»

[Selective dissolution of tight sandstone in an acidic environment to enhance gas flow capacity](#) (6/24): «Tight sandstone hydrocarbon resources are widely distributed and have **good exploration potential.** However, the pore structure in sandstone is the key factor affecting the hydrocarbon production due to the complex multiscale gas transport process...The study conducts experiments to evaluate the selective acid dissolution of minerals in tight sandstone and their impact on enhancing seepage capacity.»

[Enhancement on PDC Bit Based on Archimedean Spiral Control Method](#) (7/24): «The research results contributed to a quantitative understanding of the coupling effects between spiral span angle_{span} and cutting sections on the rock-breaking efficiency and stability of PDC bits. Polycrystalline diamond compact (PDC) bits are widely used in **shale gas exploration.**»

[Advanced developments in nanotechnology and nanomaterials for the oil and gas industry: A review](#) (7/24): «The study examines the effective use of nanotechnology in several operations, including **oil and gas exploration** and development, drilling, and well completion.»

[A fresh look at the Lucia classification using mud- and grain-dominated reservoirs of the Persian Gulf](#) (1/24): «Carbonate reservoir heterogeneity, a multifaceted phenomenon in the domain of subsurface exploration,

plays a pivotal role in the **assessment of hydrocarbon resources**. The upper Dalan and Dariyan formations are **significant gas and oil reservoirs** in the Persian Gulf...In this research, Lucia's standard petrophysical method was used to manage and compare the heterogeneity of the upper Dalan and Dariyan formations.»

[Fracture propagation and evaluation of dual wells, multi-fracturing, and split-time in Fuyu oil shale \(8/24\)](#): «This study attempts to identify a practical technology for commercial well group exploitation and provide a technical support reference for hydraulic fracturing scale and effect evaluation.»

[Improving the accuracy of short-term multiphase production forecasts in unconventional tight oil reservoirs using contextual Bi-directional long short-term memory \(4/24\)](#): «To improve the accuracy of short-term multiphase production forecasts with one-step-ahead predictions, a Contextual Bi-directional Long Short-Term Memory (C-Bi-LSTM) was developed...accurate production forecasts in unconventional reservoirs play a **pivotal role in assisting operators during the exploration and development phase** to reduce associated costs.»

[Research on quantitative analysis method of shale oil reservoir sensitivity based on mineral analysis \(8/24\)](#): «The research content of this paper has important scientific and engineering significance for **the design of shale reservoir fracturing schemes**."»

[Inter-well reservoir parameter prediction based on LSTM-Attention network and sedimentary microfacies \(4/24\)](#): «The experimental results show that the research method is effective and can achieve the purpose of describing the spatial distribution of reservoir parameters and guiding **geological exploration** and development work.»

[A novel deep learning method based on 2-D CNNs and GRUs for permeability prediction of tight sandstone \(7/24\)](#): «This model can provide insight into the petrophysical characteristics of reaction reservoirs based on conventional well logs data and can accurately estimate reservoir permeability under limited core data, which has great application potential in improving the exploration accuracy of unconventional oil and gas resources."»

[Unsupervised machine learning-based multi-attributes fusion dim spot subtle sandstone reservoirs identification utilizing isolation forest \(3/24\)](#): «Exploration

practices reveal that dim spot subtle sandstone reservoirs are widely exist in major petroliferous basins and have **great exploration potential**...This paper proposes a dim spot subtle sandstone reservoir identification scheme based on unsupervised ML multi-attribute fusion anomaly detection from prestack data."»

[A novel evaluation method of dolomite reservoir using electrical image logs: The Cambrian dolomites in Tarim Basin, China \(2/24\)](#): «The Cambrian dolomites in Tarim basin are important **hydrocarbon exploration targets**... This novel technology adopts the idea of classification and identification before quantitative evaluation and establishes a new bridge from qualitative analysis to **quantitative evaluation**...a reference for the comprehensive evaluation of ultra-deep dolomite reservoirs in the Tarim basin and worldwide."»

[Microbial coalbed gas and its geological formation process in the Jimsar region of the southern Junggar Basin, NW China \(2/24\)](#): "This study enriches the **geological theory** of CBG accumulation in the Jimsar region and provides **guidance for the subsequent exploration and development of the CBG** [Coalbed gas]."»

[Optimizing estimated ultimate recovery in horizontal wells through data-driven analytics \(8/24\)](#): «The study provides a practical framework for EUR estimation, readily applicable by operators in **unconventional exploration**, representing a transformative milestone in the industry."»

[Experimental investigation of kerogen structure and heterogeneity during pyrolysis \(11/24\)](#): «The results presented here can be mutually corroborated with other whole-rock thermal simulation experiments, aiding in a deeper understanding of OM pore evolution processes, **effective evaluation of average shale gas resource potential and quality**, and analysis of other basin hydrocarbon generation studies."»

[Effect of lithofacies assemblages on multi-scale fractures in the transitional shale and its implications for shale gas exploration \(2/24\)](#): "Here we show the non-structural factors controlling the development of natural fractures and their **implications for shale gas exploration** in the Longtan Formation transitional shale, southeastern Sichuan Basin."»

[Integrated controls of tectonics, diagenesis and sedimentation on sandstone densification in the Cretaceous paleo-uplift settings, north Tarim Basin \(2/24\)](#): "This study can serve as a **valuable reference for exploration and development of clastic reservoirs** in the

Tabai Uplift and analogous reservoirs with a paleo-uplift context.”

[Understanding pore space and oil content of liquid-rich shale in the southern Bohai Sea, China](#) (2/24): “This study provides data and **suggestions for the exploration of shale oil resources in the southern Bohai Sea.**”

[Overpressure origin and evolution during burial in the shale gas plays of the Wufeng-Longmaxi formations of southern Sichuan basin](#) (5/24): «Valuable insights to **guide the further exploration and development** of marine shale gas within the intricate tectonic setting of the Sichuan Basin.»

[Constraining faults and stratigraphic zones in shale and tight oil basins via 3D geocellular models](#) (9/24) «The horizontal well trend analysis techniques and workflows in **this study will aid researchers attempting to build large, regional geocellular models for unconventional plays** in improving the accuracy and precision of their 3D geocellular models through the improved constraint of faults and stratigraphic zones.”

[Experimental study on acid etching mechanism of acid fracturing in carbonate reservoirs](#) (10/24): «Acid fracturing is one of the most effective techniques for **reservoir development**...The findings provide a theoretical basis for the precise design of acid fracturing in carbonate reservoirs.”

[The bottomhole stress field analysis and the rate of penetration enhancement mechanism of a new type of central-grooved single-cone/multi-blade hybrid bit for deep well drilling](#) (2/24): «Efficiently **developing deep oil & gas** has become a significant demand for oil & gas replacement strategy...the conventional rock-breaking theories and methods for deep hard formations are no longer applicable...In this paper, a high efficiency rock-breaking idea of forming an isolated rock column in the center of the deep bottomhole, that is, a convex-stepped bottomhole and a new type of central-grooved single-cone/multi-blade hybrid bit (CSMHB) are proposed.»

[Prediction of deep low permeability sandstone seismic reservoir based on CBAM-CNN](#) (11/24): «The prediction of sand body is a key focus in evaluating reservoir distribution, playing a **crucial role in oil and gas exploration and development**. To clarify the development characteristics of the sand body in the Huangyan structural belt of the Xihu Sag and effectively identify the hidden channel, a new approach is proposed.”

[Sedimentary texture differences between lithofacies types and their control on the physical property in fan-delta conglomerate reservoirs: A case study from the Triassic Baikouquan Formation in Mahu Sag, Junggar Basin, Northwestern China](#) (2/24): «These results indicate that Gc and Sm1 deposited in subaqueous distributary channels and lobes should be the first target in **hydrocarbon exploration** of fan-delta conglomerate reservoir.»

[Hydrocarbon migration and accumulation in member 3 of the Palaeogene Shahejie formation in the Nangong sag, Southern Bohai Bay basin, Eastern China: Insights from the fluid potential change rate and finite difference method](#) (4/24): «The new methods and results in this study will provide important insights for establishing HMA models and for accurately **identifying hydrocarbon enrichment regions and hydrocarbon sources** in oil-rich basins.»

[Fractured reservoirs: An extensive geomechanical integrity approach](#) (2/24): «An important number of newly discovered oil and gas fields has been classified as a heavily fractured and their development constitutes a real challenge for the petroleum industry...Current study represents a reliable framework for the development of **new strategy of exploitation** for the Hasdrubal field.»

[Application of Multifunctional Wellbore Cleaning Fluid in the Removal of Residual Drilling Fluids in Ultra-Deep Wells: Research Progress and Prospects](#) (9/24): “Developing ultra-deep wells presents a significant challenge in current petroleum exploration and production. Ensuring the cleanliness of the wellbore is a crucial aspect of safeguarding the development process. Removing contaminants from residual drilling fluids is vital to ensure unobstructed production pathways in ultra-deep wells, thereby achieving secure operational environments...This study provides a detailed overview of the hazards caused by residual drilling fluid and methods for their removal, offering comprehensive insights and theoretical guidance for the future development of subterranean flushing technologies.

[Innovative integrated workflow for data-driven production forecasting and well completion optimization: A Montney Formation case study](#) (7/24): «This research makes a significant contribution to the field of **unconventional gas exploration** by introducing an automated workflow that simplifies data processing, model development, and decision-making processes.”

[Mineral effects on methane hydrate formation and distribution in sand sediments](#) (10/24): "The findings of this study significantly expand the understanding of the formation and distribution of methane hydrate in marine sediments and the prediction of physical properties of hydrate-bearing sediments, and provide **insights into natural gas hydrate exploration and production**...The volume of carbon stored in natural gas hydrates is more than twice of all fossil fuels, and emphasizing natural gas hydrates as a promising energy resource."

[Collaborative-driven reservoir formation pressure prediction using GAN-ML models and well logging data](#) (11/24): «This research aims to delve into the collaborative approach of GAN-ML models driven by well logging data for subsurface pressure prediction. **The goal is to provide more reliable underground geological information for oil and gas exploration** and drilling engineering»

[CT imaging to study meso-structure evolution of fractured oil shale during in-situ pyrolysis by high-temperature water vapor injection](#) (10/24): «Oil shale boasts abundant reserves globally, with the equivalent of over 400 billion metric tons of potentially convertible oil shale oil. This surpasses three times the known reserves of conventional petroleum. Therefore, oil shale represents a highly significant unconventional hydrocarbon resource in the contemporary era marked by extreme resource scarcity. Its immense strategic value lies in its potential as a **substantial supplement to future oil and gas energy needs**...The study quantitatively outlined the meso-structure evolution patterns during the high-temperature water vapor pyrolysis process of fractured oil shale, and provided guidance for engineering practice."

[Analysis of near-well hydraulic fracture propagation behavior in inhomogeneous deep-sea hydrate-bearing sediments](#) (11/24): **Deep-sea gas hydrate**, as a new type of **clean energy**, is known for its enormous reserves. However, the unique conditions of seafloor reservoirs may be a **significant challenge to commercial development**, and there is an urgent need to improve the exploitation efficiency through reservoir modification technology...The present results can provide theoretical basis for improving the basic theory of hydraulic fracturing in hydrate reservoirs."

[Investigation on rock-breaking characteristics of hard sandstone by non-planar PDC cutters under high confining pressure](#) (12/24) "With the rapid development of the oil and gas exploration and exploitation, the

drilling depth has gradually shifted into deep and ultra-deep formations, leading to low rate of penetration (ROP), worn PDC bit, and short drilling footage per bit...this paper proposes to carry out laboratory experiments on the hard sandstone broken by non-planar cutters (e.g., triple-ridged cutter, axe-shaped cutter, and triple-ridged concave cutter) under confining pressure and atmospheric pressure conditions."

[Hybrid-Driven MRF Seismic Inversion for Gas Sand Identification: A Case Study in the Yinggehai Basin](#) (10/24): "Identifying gas formations using elastic parameters as indicators relies on stable seismic inversion results...In this research paper, we propose a novel approach to seismic inversion that integrates MRF neighborhood drive and incorporates both seismic data and a parametric model...This approach significantly improves reservoir heterogeneity characterization and **enhances accuracy in identifying sandstone and gas**."

[Lithological and physical characteristics and their controlling factors of the Archean metamorphic rocks: A case study of the Damintun Sag, in Liaohe depression of Bohai Bay Basin, China](#) (10/24): "An Archean metamorphic rock with deep burial adjacent to the Rongshengpu depression in the south of the sag still has **great potential for the oil and gas exploration**. Based on cores, logs, seismic data, and laboratory measurements, the lithology types, spatial distribution, physical characteristics, lithology controlling factors and physical properties of the Archean metamorphic buried hill reservoirs are systematically analyzed...Clastic migmatitic granite and migmatitic gneiss, leptyte, and some dynamic metamorphic rocks could be regarded as **high-quality reservoirs**."

[The Rock-breaking Performance of the Special-shaped PDC cutter under Combined penetration and Cutting](#) (9/24): "PDC drill bits are widely utilized in oil and gas exploration and extraction due to their fast drilling speed, durability, and stability. However, as shallow oil and gas resources are continuously developed, exploration and extraction are increasingly focused on deeper wells. Deep well drilling environments, characterized by high temperature and high pressure, ultra-hard/abrasive formations, and uneven in-situ stress, significantly accelerate the wear of PDC drill bits, thereby shortening their lifespan (Liu et al., 2024)...It is very important to clarify the rock-breaking mechanism of SPDC cutters to enhance their lifespan and reduce drilling costs...The results are expected to provide new perspectives for the selection of PDC drill bits and the

optimization of PDC cutter arrangements.”

[DDViT: Advancing lithology identification on FMI image logsthrough a dual modal transformer model with less information drop](#) (3/24): “Lithology is an essential topic in oil and gas reservoir studies. Lithological observation lays the foundation for assessing oil and gas prospects and **guides future exploration and development**...In this work, we proposed a Dual-modal Drop-less-information Vision Transformer(DDViT), an FMI image lithology identification model based on transformer architecture...demonstrating the **great potential of deep learning** in geological images.”

[Lithology identification based on ramified structure model using generative adversarial network for imbalanced data](#) (9/124): «Lithology identification plays a crucial role in the process of **geological exploration and oil and gas development**...Compared with other machine learning methods, the ramified lithology identification model demonstrates superior performance.”

Geomorphology

[Subsurface structures and nature of seafloor mounds in the northern South China Sea margin: Implications for Mesozoic hydrocarbon exploration](#) (1/24): “To reveal the nature of these mounds and the Mesozoic hydrocarbon potential in the Chaoshan Depression, multi-channel seismic (MCS) and ocean bottom seismometer (OBS) data along line CS-L1 across three seafloor mounds are processed and analyzed...it is crucial to identify the nature and sources of seafloor edifices in sedimentary basins **for effective hydrocarbon exploration**.”

Geoscience Frontiers

[“This journal welcomes contributions that support and advance the UN’s sustainable development goals.”](#)

[A novel method for quantitatively identifying driving forces and evaluating their contributions to oil and gas accumulation](#) (7/24): «Quantitatively identifying the driving forces and evaluating their relative contributions, which are our research objectives and **critical issues in the research and exploration of oil and gas accumulations**.”

[Evaluation of gas content in organic-rich shale: A review of the history, current status, and future directions](#) (8/24): «Shale gas is being hailed as the green energy of the future due to high heating value, low carbon emissions, and large reserves...In this paper, we provide a review of the long-established and recently developed gas content evaluation methods...The unreliable evaluation of gas content can significantly

impact the effectiveness of shale gas exploration and development. Therefore, the gas content is one of the most important reservoir parameter of organic-rich shale and has received significant attention...Evaluating the gas content of organic-rich shale is an **important work for shale gas exploration and development**.”

Gondwana Research

[“This journal welcomes contributions that support and advance the UN’s sustainable development goals.”](#)

[A world-class source rock in southern China formed during the periods from Katian to Rhuddanian: Biostratigraphic distribution, depositional model and shale gas potential](#) (2/24): “This study characterises the organic-rich shale distribution in the Sichuan Basin and helps in assessing organic-rich shale and **identifying sweet spots of shale gas potential**.”

[Characterizing coal gas reservoirs: A multiparametric evaluation based on geological and geophysical methods](#) (9/24): “The prediction of gas content in coal reservoirs has been a focal theme of research in the field of **CBM exploration and development**...Based on seismic and well logging data integrated with geological and structural parameters, our study establishes the methods of tectonic identification of coal reservoirs, lithology inversion, structural curvature calculation, and ash content evaluation based on a quantitative basis.” ***PetroChina Coalbed Methane Company Limited is greatly appreciated for providing samples testing results and original exploration data of CBM wells.***

Heliyon

[Appraisal of reservoir quality for hydrocarbon-bearing deep-water Miocene sandstones incised valley, south-east Asian offshore Indus: An application of seismic attributes and instantaneous spectral porosity quantitative reservoir simulations](#) (5/24): «This process has **the potential to facilitate the exploration and exploitation of untapped oil and gas reservoirs** in this setting, as well as in other geological basins worldwide.”

[Organic geochemistry of the middle Paleozoic Ora Formation in Iraq: Implications for source rock assessment and hydrocarbon potentiality](#) (4/24): “The study aims to explore the petroleum source rocks and **assess the source rock potential** of the Ora Formation, particularly in one of the economically significant regions of the Middle East.»

[Unveiling the revolutionary role of nanoparticles in the oil and gas field: Unleashing new avenues for enhanced efficiency and productivity](#) (7/24): «The article explores

various applications of nanoparticles in the industry, including enhanced oil recovery, drilling fluids, wellbore strengthening, and reservoir characterization.»

[Coalbed Methane Reservoir Properties Assessment and 3D Static Modeling for Sweet-Spot Prediction in Dahebian Block, Liupanshui Coal field, Guizhou Province, Southwestern China](#) (7/24): «This integrated research aims to provide a foundation and support for the **future systematic development planning of coalbed methane** in Guizhou Province.

[Unlocking the hydrocarbon potential: Formation evaluation and petrophysical properties of the upper Triassic Kurra Chine Formation in Sarta Oil Field, Kurdistan Region, Northern Iraq](#) (2/24): «This study furnishes comprehensive descriptions and analyses of the formation evaluation and petrophysical properties of the Kurra Chine Formation in Northern Iraq, **shedding light on the characteristics and potential of this oil-bearing formation.**»

[Bayesian-based probabilistic decline curve analysis study in unconventional reservoirs](#) (4/24): «The capacity of oil and gas producers to produce from low-permeability shale formations has been greatly expanded due to the rapid development of horizontal drilling and hydraulic fracturing technology. Thus, **estimating the reserves and predicting the production trends of these unconventional reservoirs** is of paramount importance...In this study, individual-well DCA will be conducted on 50 oil wells and 54 gas wells from publicly available data.»

[Optimization of tight gas reservoir fracturing parameters via gradient boosting regression modeling](#) (3/24): «In China, the exploitation of most unconventional oil and gas reservoirs is dependent on hydraulic fracturing, which is a key method employed when developing tight gas formations...this represents a novel fracture design method that is applicable to onsite engineers in tight gas production fields in the Ordos region.»

[A new approach to predict carbonate lithology from well logs: A case study of the Kometan formation in northern Iraq](#) (2/24): «This information is crucial for understanding the subsurface characteristics of the geological formation, as it provides insights into the permeability and fluid storage capacity of the rock, which are **vital considerations in various applications such as hydrocarbon exploration** and reservoir engineering»

[Seismic attributes and spectral decomposition-based](#)

[inverted porosity-constrained simulations for appraisal of shallow-marine lower-Cretaceous sequences of Miano gas field, Southern Pakistan](#)

(2/24): «Seismic attributes can play an important role in the exploration of hydrocarbon-bearing stratigraphic systems...This study deals with the application of the continuous wavelet transform (CWT) of a spectral decomposition (SD) tool on a 3D post-stack seismic volume of the Miano gas Field...These implications suggest that **the identified regional stratigraphic traps have development potential for this gas field.**»

[Seismic sedimentology response characteristics of nearshore terminal fan in the suning area of Raoyang Sag, Bohai Bay Basin, NE China](#) (3/24): «A nearshore terminal fan is a special water system formed in arid environments. The characterisation of its thin-channel sand bodies has long been a challenge restricting **oil and gas exploration**...This study enriches our understanding of nearshore fans and provides ideas for predicting favourable sand bodies in this type of sedimentary facies.»

[Hybrid Advances](#)

[Digital transformation and trends for tapping connectivity in the Oil and Gas sector](#) (7/24): «By embracing emerging technologies and fostering a culture of innovation, industry stakeholders can unlock new levels of efficiency, optimize production processes, and **maximize O&G recovery rates for years to come.**»

[International Journal of Applied Earth Observation and Geoinformation](#)

[Monitoring surface deformation dynamics in the mining subsidence area using LT-1 InSAR interferometry: A case study of Datong, China](#) (7/24): «These findings offer valuable scientific data that can aid local government in more effectively overseeing **coal exploration activities.**»

[International Journal of Coal Geology](#)

[“This journal welcomes contributions that support and advance the UN’s sustainable development goals”](#)

[Shale oil potential and mobility in low- to medium-maturity lacustrine shales: A case study of the Yanchang Formation shale in southeast Ordos Basin, China](#) (2/24): «The Chang 73 shale has a high TOC content and GP, **showing considerable hydrocarbon potential.**»

[Hyperspectral imaging of coal core: A focus on the visible-near-shortwave infrared \(VN-SWIR\) region](#) (3/24): «Several factors were established for consideration when using HSI in **coal exploration.**»

[Geochemical and biological evidence for the presence of secondary microbial gas in anthracite: A case study in the songta block, northern Qinshui Basin, China](#) (7/24):

«These discoveries presented in this case study have **significant theoretical implications for guiding the exploration of high-rank CBG** and advancing the geological theory of CBG accumulation.»

[Tracing the geochemical imprints of Maastrichtian black shales in southern Tethys, Egypt: Assessing hydrocarbon source potential and environmental signatures](#) (2/24): "The primary objective is to **assess the hydrocarbon generation potential**, maturity, source input, biodegradation levels, and depositional environment characteristics within the Lower Maastrichtian interval near the Safaga area."

[Organic petrology and geochemistry of the Devonian-Mississippian bakken formation, Williston Basin, North Dakota](#) (2/24): «The Devonian–Mississippian (D–M) black shales of the Bakken Formation are of interest as a hydrocarbon source due to their high total organic carbon (TOC; 2.2–17.4%) content...As the Bakken shales are **important hydrocarbon sources**, understanding their maturation level is critical."

[Weathering-induced organic matter enrichment in marine-continental transitional shale: A case study on the early permian taiyuan formation in the ordos basin, china](#) (7/24): «The exploration of shale oil and gas in petroliferous basins, such as those in North America and China, represent one of the most important energy revolutions nowadays...This study investigated elemental geochemistry, organic geochemistry, and petrology of the Taiyuan Formation transitional shale intervals in the northeastern Ordos Basin...The results potentially have **implications for gas exploration in similar settings worldwide.**"

[Factors controlling the heterogeneity of shale pore structure and shale gas production of the Wufeng–Longmaxi shales in the Dingshan plunging anticline of the Sichuan Basin, China](#) (2/24): «Shale reservoirs located at relatively long tectonic distances from regional thrust faults (approximately 15 km) within the Dingshan plunging anticline exhibit high pore volume, porosity, and shale gas content, rendering them **favorable for shale gas exploration.**"

[Hydrocarbon potential and depositional environment of the Middle Miocene Balikpapan Formation, lower Kutai Basin, Indonesia: Sedimentology, calcareous nannofossil, organic geochemistry, and organic petro-](#)

[graphy integrated approach](#) (10/24): «This study integrates sedimentology, organic geochemistry, organic petrography and calcareous nannofossil analysis to characterize the depositional environment, to determine the source of the organic matter, and **to assess the hydrocarbon potential** of the Balikpapan Formation.»

[Petrographic and geochemical signatures of the Upper Permian Gondwana coals: Newcastle Coal Measures, Northern Sydney Basin, Australia](#) (10/24): "Twenty-seven coal, coaly mudstone and mudstone samples were collected and analyzed by using organic petrography (maceral composition and vitrinite reflectance) techniques, Rock–Eval pyrolysis, bitumen extraction and gas chromatography - mass spectrometry (GC–MS). The obtained results indicate that the samples exhibit promising gas-prone source rock potential and contain a predominantly terrestrial in origin organic matter, with limited contribution by marine organisms...This research **adds knowledge on the source rock potential in the northern Sydney Basin**...Despite the global efforts towards an energy transition and an increase in the renewable sources share, coal remains a significant source of energy in several countries."

[Understanding the burial history and the hydrocarbon potential of the late Paleozoic Claromecó foreland Basin \(Southwestern Gondwana, Argentina\) by combining organic geochemistry, organic petrology, and thermal modeling](#) (7/24): «A detailed characterization of the coal deposits of the Tunas Formation was attained, which can help **to decrease uncertainties in the exploration of potential energy resources** in Argentina."

[Depositional conditions, wildfires, maturity, and hydrocarbon potential evaluation of Central Carpathian Paleogene Basin based on integrative approach from Orava Basin](#) (4/24): "There is no consistent data of sedimentary conditions in the CCPB based on up-to-date petrographic and geochemical methods. In addition, there is also no successive analysis of the evolution of organic matter (OM) with the progression of Oligocene deposition in the CCPB, as well as a discussion about depositional environments and hydrocarbon potential of the particular formations from the CCPB. In this study, we aim to approach the above issue comprehensively, using a set of independent petrographic, organic, and inorganic geochemical methods...**The best source rock potential was documented** for Zuberec Fm., and it may be considered as fair to good source rock interval."

[Evaluating the impact of artificial maturation on the petrophysical and geochemical properties of unconventional shale formations by integrating dielectric and NMR measurements](#) (4/24): "This paper addresses challenges in characterizing unconventional shale reservoirs...Despite the huge hydrocarbon reserve in shale formation, several challenges are associated with developing and producing from these reservoirs...The integration of NMR and dielectric methods is employed for effectively characterizing shale formations across different maturation stages."

[Effects of geochemical compositional heterogeneities on hydrocarbon expulsion and thermal maturation: An analog study of Maastrichtian source rocks from Jordan](#) (9/24): «The outcomes of this investigation hold **implications for both conventional and unconventional hydrocarbon exploration.**"

[Pore systems and their correlation with oil enrichment in various lithofacies of saline lacustrine shale strata](#) (2/24): «Great energy demand intensifies unconventional oil and gas extraction...The research findings **guide the selection of sweet spots** in saline lacustrine shale strata and aid in formulating development strategies, which significantly advances the geological understanding of lacustrine shale oil deposits."

[Quality and composition of Lower Cretaceous carbonate source rocks and seepage oils in the Belize Basin, southern Belize, Central America](#) (4/24): "Little is known of the petroleum and source rock geology of the eastern margin of the Maya Block of Mexico, and Belize... This study examines three of these newly exposed carbonate sections to address source rock quality, maturity, and age of the brown and black carbonate facies of these thrust faulted allochthonous sections. **The study documents for the first time the presence of oil-prone Lower Cretaceous carbonate source rocks in the Belize Basin.**" *We would like to thank Michael Hertle (TotalEnergies) for conducting the Kinex modelling and Integrated Geochemical Interpretation Ltd. for the use of the pIGI-3 software.*

[Origin and nature of pores in the Toolebuc Formation, a potential unconventional target in Australia](#) (5/24): «The Toolebuc Formation of Australia, a potential unconventional hydrocarbon resource, has limited studies on its pore structure and sorption characteristics. In this study, shale samples [were collected]...The results contribute to future exploration of the Toolebuc Formation and to expanding the understanding of the pores and gas

potential of low mature shales."

[The occurrence of coalbed methane in the depocentre of the Upper Silesian Coal Basin in the light of the research from the Orzesze-1 deep exploratory well](#) (9/24): «Due to significant gas content in the deep zone (depth > 1500 m), the drilling area can be considered as **a prospect for further exploration and development of coalbed methane (CBM)**...In addition, reservoir parameters and coal quality were determined and compared with the results of the gas content tests."

[Genesis and accumulation mechanism of external gas in deep coal seams of the Baijiahai Uplift, Junggar Basin, China](#) (5/24): It is necessary to exploit new natural gas resources to maintain the oil–gas production...This study provides an inaugural comprehensive explanation of the identification methods and formation conditions of external gases in the coal seams, thereby innovating in the field of CBM. The exploration of external gases in the coal seams is valuable for expanding the field of CBM extraction, particularly in regions characterized by intricate structural conditions."

[Paleoenvironmental factors controlling organic-rich formations deposition in the Babouri-Figuil Basin \(Northern Cameroon\)](#) (9/24): "The Babouri-Figuil Basin is an intracratonic basin (half-graben) in northern Cameroon that is genetically connected to the Benue Trough from Nigeria, and is an area of interest in terms of petroleum prospectivity...The current study reveals that black shale and massive claystone lithologies constitute the main organic-rich formations in the basin"

[Substantial gas enrichment in shales influenced by volcanism during the Ordovician–Silurian transition](#) (10/24): "Our work...provides **new insights into identifying the most favorable shale gas resources**... Commercial shale gas exploration and production are highly dependent on the accurate estimation of shale gas storage potential in complex nanopore structures."

[Coal structure identification based on geophysical logging data: Insights from Wavelet Transform \(WT\) and Particle Swarm Optimization Support Vector Machine \(PSO-SVM\) algorithms](#) (2/24): «Coal structure is closely related to microscopic and macroscopic properties of coal, and its accurate identification is of great **significance to coalbed methane (CBM) reservoir evaluation**, hydraulic fracturing performance and production efficiency prediction...This work provides new insights for coal structure identification."

[Organic petrology and geochemistry of the late Neogene Shizigou Formation in the Qaidam Basin, China: Characteristics of a prospective microbial gas source rock](#) (12/24): "Such insights are **crucial for identifying potential areas** conducive to microbial gas discovery and subsequent exploration efforts."

[International Journal of Heat and Mass Transfer Hydrothermal coupling model between wellbore and permafrost for drilling in arctic cold regions](#) (12/24): "The abundant oil and natural gas resources in the Arctic cold regions have driven people to conduct drilling operations in these harsh environments. During drilling operations in Arctic permafrost regions, the linear heat source effect generated by the flow of drilling fluid in the wellbore continuously melts the surrounding permafrost, which can lead to wellhead settlement and instability of the wellbore wall, among other accidents. In order to **provide guidance for drilling engineering in cold regions**, there is an urgent need to study the coupled heat transfer between the wellbore and the permafrost in Arctic drilling."

"Global warming has caused significant thawing of the Arctic ice sheet, and the vast expanse of bare land and navigable seaways in the Arctic Ocean have enabled people to **conduct large-scale exploration and drilling of Arctic resources**. The Arctic has extremely abundant oil and natural gas resources...The model and calculation results proposed in this article can provide a certain **reference value for drilling operations** in Arctic permafrost regions."

[International Journal of Hydrogen Energy](#)
"This journal welcomes contributions that support and advance the UN's sustainable development goals"

[A machine learning-based method for analyzing factors influencing production capacity and production forecasting in fractured tight oil reservoirs](#) (6/24): «The XGBoost method yielded the best performance across all three evaluation metrics, indicating that its prediction results are more reliable. In conclusion, machine learning methods can provide **significant technical support for the exploration and development of tight oil reservoirs**."

[Study on the mechanism of CO₂ composite system assisted steam stimulation of oil recovery efficiency in heavy oil reservoirs](#) (7/24): "The world is rich in thick oil resources, and the **prospect of exploration and development is broad**...Note that the advantage of this method is that it **can significantly improve the recovery**

rate; The disadvantage is that the economic cost is high and there is a high requirement for corrosion prevention of equipment."

[Prediction of wellbore gas hydrate generation based on temperature-pressure coupling model in deepwater testing](#) (11/24): "With the advancement of oil and gas exploration and development technology, the development of the world's oil and gas resources is gradually advancing from land and shallow waters to deep waters. During the development of gas wells in deepwater regions, the temperature of the wellbore decreases from the bottom of the well to the wellhead, and therefore, common well conditions of high pressure, low temperature, and the presence of free water are encountered, which can lead to gas hydrate plugging of the pipeline and affect the transportation of natural gas...The study's results can provide a theoretical basis for flow assurance for hydrocarbon production in the wellbore of deepwater gas wells."

[Pore structure of deep coal of different ranks and its effect on coalbed methane adsorption](#) (3/24): «Deep CBM will become an important field in the next step of CBM exploration and development in China. China contains abundant deep CBM resources...In this paper, coal samples of different coal ranks from deep layers were collected as research objects, and through combined low-pressure CO₂ adsorption (L-PA), low-temperature N₂ adsorption (L-TA) and high-pressure mercury intrusion porosimetry (MIP) experiments, the full-aperture distribution of pores in the coal samples of different coal ranks was quantitatively characterized, and the influence of metamorphism on the coal pore structure was examined...It is vital to discover the distribution and change trends of pores in coal of various ranks to **provide information on deep CBM exploration and development**."

[International Journal of Mining Science and Technology](#)

[Excess pore pressure behavior and evolution in deep coalbed methane reservoirs](#) (7/24): «Identifying and predicting pore pressure, the fluid pressure in pore spaces of porous formation, is of **significant importance in the exploration and exploitation of hydrocarbon**...the research results provide valuable insights into the dynamic pore pressure behavior in unconventional resources, including deep coal seams, shale gas and oil reservoirs"

[International Journal of Pressure Vessels and Piping](#)
[Three-dimensional mechanical characteristics analysis of double-shoulder tool joint under complex](#)

[loads](#) (6/24): «**Deep and ultra-deep oil and gas resources** has gradually become a new direction for the development and utilization of oil and gas resources...as the drilling depth increases, the downhole geological environment becomes more and more complicated, the service conditions of the drill string become more severe...The research results provide a reference for the optimized design and safe application of drilling tool joints.»

[International Journal of Rock Mechanics and Mining Sciences](#)

[Influence of tectonic stress field on oil and gas migration in the Tahe Oilfield carbonate reservoir: Identification of areas favorable for reservoir formation](#) (8/24): «Collectively, these findings **facilitate the identification of areas favorable for oil and gas migration** and provide a crucial mechanical analysis that can **inform the exploration and development** of the Tahe Oilfield.»

[3D in-situ stress prediction for shale reservoirs based on the CapsNet-BiLSTM hybrid model](#) (11/24): "Precisely predicting in-situ stress is crucial for advancing shale oil and gas development, as it **facilitates safe and efficient exploration and development endeavors**, optimizes production capacity, reduces costs, and fosters sustainable development...We develop a data-driven approach for 3D in-situ stress prediction based on a deep hybrid neural network, CapsNet-BiLSTM."

[Mechanical properties of shale during pyrolysis: Atomic force microscopy and nano-indentation study](#) (11/24): "This study will facilitate the analysis of shale matrix deformation mechanisms at the microscale, providing a fundamental **theoretical and scientific basis for shale fracturing design, exploration, and development.**"

[iScience](#)

[Automated graptolite identification at high taxonomic resolution using residual networks](#) (1/24): "This AI-based method, capable of recognizing minute morphological details better than taxonomists, can be integrated into web and mobile apps, extending graptolite identification beyond research institutes and **enhancing shale gas exploration efficiency.**"

[Journal of African Earth Sciences](#)

["This journal welcomes contributions that support and advance the UN's sustainable development goals"](#)

[Implementations core properties and Sedimentary facies on the reservoir quality of the Lower Cenomanian Upper Bahariya Member in East Abu El-Gharadig basin,](#)

[Western Desert, Egypt](#) (1/24): "This research enhances reservoir characterization, which is **vital for successful hydrocarbon exploration, development, and production efforts** in the area."

[Preliminary assessment of the Cambro-Ordovician reservoir potential from the Shushan basin, north Western Desert, Egypt](#) (5/24): «The preliminary assessment presented in this work shed **critical insights into the reservoir potential** of the Shifah Formation."

[The Early Aptian Oceanic Anoxic event \(OAE-1a\) of the uppermost M'Cherga formation of northern Tunisia: Geochemical characterization and inferred petroleum potential](#) (5/24): «This study confirms the potential for the Aptian organic-rich sequence within the northern Tunisian basin to have **potential for hydrocarbon generation.**"

[Geophysical Evaluation and Petrophysical Assessment of the Abu Roash "F" Member: A Probable Unconventional Oil Reservoir in Heba Field, Eastern Abu Gharadig Basin, Egypt](#) (7/24): "Using advanced geophysical and petrophysical methods, this study aims to assess the AR/F Member's viability as an unconventional oil-bearing reservoir."

[Sequence stratigraphy of the foraminiferal zones F9700 and F9800 in the Niger Delta: A comprehensive litho-sequence approach](#) (3/24): "Using fault interpretation and correlation approaches has enhanced our understanding of reservoir geometry and continuity in the field, **making it easier to discover potential reservoirs.**"

[Quantitative analysis of the Permian sediments of Karoo Basin of South Africa using combined petrophysical and X-ray analytical techniques](#) (8/24): «The primary purpose of this study, among others, is to use petrophysical and geochemical methods to investigate a potential dolerite reservoir and two other identified tight sandstone reservoirs»

[Evaluation of the Lower Cretaceous Alam El Bueib sandstone reservoirs in Shushan Basin, Egypt – Implications for tight hydrocarbon reservoir potential](#) (8/24): "The formation evaluation presented in this work shed **critical insights into the tight hydrocarbon reservoir potential** of the early Cretaceous AEB.»

[Provenance, organic geochemistry and sequence stratigraphy of foredeep sediments \(Gurpi and Pabdeh formations\) in the Zagros pro-foreland sedimentary](#)

[system, North Dezful embayment, SW Iran](#) (10/24): "This study aims to **evaluate the hydrocarbon production potential** of organic calcareous shales in the Gurpi and Pabdeh formations."

[Linking petrophysical heterogeneity and reservoir rock-typing of the post-rift shallow marine siliciclastics to their depositional setting: The Upper Cretaceous Bahariya reservoirs, north Western Desert, Egypt](#) (11/24): "Deciphering the contribution of these variables and assessment of their impact on the reservoir facies architecture and hence distribution of different reservoir rock types (RRTs) are crucial for establishing predictive models to support hydrocarbon exploration and development campaigns...this study integrates seismic stratigraphic, sedimentological and petrophysical approaches to establish a predictive framework for reservoir heterogeneity and link it with the spatio-temporal evolution of different Bahariya RRTs in Yasser Field region." ***The authors express their gratitude to the Egyptian General Petroleum Corporation (EGPC) for releasing the raw data necessary for carrying out this research.***

[Prediction of reservoir properties and fluids using rock physics techniques in the Rio Del Rey Basin, Cameroon](#). (7/24): «The application of rock physics modeling has been a breakthrough in oil and gas industry and has greatly managed exploration and interpretation risk. In the Rio del Rey Basin, the rock physics method was used to ascertain the reservoir's characteristics and relate them to the elastic characteristics...the exploration, development, and production divisions of oil and gas firms will comprehend the geologic trend of these reservoirs.»

[Sedimentology and stratigraphy of lower Cretaceous fluvial to shallow marine deposits on the central Atlantic passive margin: The Aaiun-Tarfaya Basin, Morocco](#) (10/24): «The improved facies and depositional models together with improved understanding of the evolution of the delta have **significant implication for exploring the deep-water equivalents offshore.**"

[Geochemical and mineralogical characterizations of Silurian "Hot" shales: Implications for shale gas/oil reservoir potential in Jeffara basin-southeastern Tunisia, North Africa](#) (4/24): «The hot shales in the study area have a considerable MBI, which could be easily enhanced by hydraulic fracturing to liberate oil/gas from the potentially saturated unconventional shale reservoir.»

[Petrographical, petrophysical, and geomechanical](#)

[characterization of the Pliocene sandstone reservoirs of the Scarab Gas Field, deepwater Nile Delta, Egypt – Inferences on reservoir development](#) (6/24): "This study presents a comprehensive reservoir characterization of the channel sandstones of the Pliocene El Wastani Formation from the deepwater Scarab field, in Egypt...to infer the implications for reservoir development...Inferences are drawn on reservoir quality, and **reservoir development strategies are discussed accordingly.**" ***Egyptian General Petroleum Company (EGPC) is acknowledged for the data and permission to publish.***

[Structural Assessment and Petrophysical Evaluation of the pre-Cenomanian Nubian Sandstone in the October Oil Field, Central Gulf of Suez, Egypt](#) (7/24): "The study aims at locating and delineating zones having **excellent reservoir potential.**"

[Assessment of the Upper Cretaceous Abu Roash carbonate source rocks from the Beni Suef field, Western Desert, Egypt](#) (7/24): «Following the wireline logs and core data, the self-sourcing **unconventional reservoir potential** of the AR-F carbonates has been emphasized. Beni Suef Basin (BSB) in Egypt is a key region in the Western Desert for hydrocarbon production. Due to its promising prospects, the BSB has been prioritized in Egypt's exploration plans»

[Integration of geochemical data, well logs and seismic sections for source rock characterization of the Albian Kazhdumi Formation in the central Persian Gulf basin, South Iran](#) (2/24): "Source rock characterization is the fundamental part of petroleum system studies to **decrease the risk of hydrocarbon exploration**...The results showed that the applied methods based on rock physics templates (AI versus Sw) and multi-attribute analysis are helpful in exploration and characterization of source rocks."

[Sequence stratigraphic and petrophysical controls on the oil-reservoirs architecture: A case study from the Cretaceous meqasequence, Gulf of Suez region, Egypt](#) (11/24): «The study offers valuable insights into how petrophysical properties and sequence stratigraphy influence Cretaceous reservoir architecture. Examining the depositional environments and petrophysical evaluation enhances our understanding of reservoir quality and distribution. Furthermore, it guides future exploration activities in the mixed siliciclastic and carbonate multi-level intervals of the Gulf of Suez and nearby basins, aiding in identifying potential hydrocarbon zones and optimizing drilling strategies." ***We wish to express our most sincere apprecia-***

tion and gratitude to the Egyptian General Petroleum Corporation as well as the Ganoub El-Wadi Petroleum Company & the Gulf of Suez Petroleum Company for providing the geophysical data existing in this research.

[Seismic sequence stratigraphy of Late Albian-Early Turonian successions in SW Iran: Implication for reservoir characterizations and potential for improved reservoir quality prediction](#) (6/24): "This study delves into the Seismic Sequence Stratigraphy (SSS) of these successions to unravel reservoir characterization and characterized **potential hydrocarbon plays**."

[Integrated multi-proxy source-to-sink analysis of Late Barremian \(Lower Cretaceous\) clastic systems in the Essaouira-Agadir Basin](#) (5/24): «The results constrain the source and size of the system, and composition of deposited clastics, and investigate the mechanism for delivery of coarse clastics into the offshore domain, a **key target for hydrocarbon exploration**."

[Geophysical appraisal and hydrocarbon potential of the Pre-Cenomanian and Miocene reservoirs in the onshore and offshore Gulf of Suez Basin](#) (6/24): «The purpose of this study is to **geophysically assess the petroleum potential** of the Pre-Cenomanian (Nubia sandstones) as well as the Miocene oil reservoirs in the Rabeh field and Edfu-Saqqara field, located in the Gulf of Suez Basin.»

[Morphostructure, paleostress and kinematics of the southern kilombero rift basin, southern Tanzania](#) (3/24): "The southern Kilombero basin is potential for hydrocarbon accumulation."

[Shale gas play of the Silurian hot shale, Ghadames Basin, North Africa: Insights from integrated geochemistry and basin modeling](#) (2/24): «The lower Silurian hot shale in the Ghadames Basin was investigated to provide a regional assessment of the **future prospects of shale gas play** as an important unconventional resource system.»

[Integrated 3D geological analysis of hydrocarbon maturation and migration in rift basins: Insights from the Niger Chad Basin](#) (2/24): "This research advances informed decision-making in **hydrocarbon exploration and production**."

[Integrated seismic, petrophysical, and geochemical studies for evaluating the petroleum system of the Upper Bahariya-Abu Roash G sequence in the Karama Field, Abu Gharadig Basin, North Western Desert, Egypt](#) (11/24): «The main aim of this study is to

delineate the **hydrocarbon potential** and evaluate the petroleum system elements of the Cenomanian Abu Roash G (AR/G) and the Upper Bahariya Members in the Karama Field...The petrophysical/reservoir properties of the AR/G Member indicate its potential as a promising reservoir in Karama Field." *The authors thank the Egyptian General Petroleum Corporation (EGPC) and Qarun Petroleum Company*

[Petroleum System Assessment of the Beni Suef Basin, Western Desert, Egypt](#) (7/24): «**The study aims to identify potential drilling locations** by integrating geochemical methods, 1D and 2D basin modelling, well log analysis, seismic interpretation, and hydrocarbon migration pathways.»

[Nature and occurrence, geochemical characteristics, and families of the crude oils in Sirt Basin, Libya: Implication for super rift basin petroleum system](#) (8/24): "These areas hold the potential for successful exploration and exploitation in near future if a major focus is placed on the deep plays of the Cretaceous section in the basin...In this study, we compiled a comprehensive dataset based on the quality and physical properties of oilfields within the Sirt Basin." *We extend our sincere gratitude to the staff members of two research institutes, the Libyan Petroleum Research Institute (LPRI) under the Libyan National Oil Corporation (LNOC) and the Research Institute for Petroleum Exploration and Development (RIPED) of PetroChina company.*

[Integrating 3D subsurface imaging, seismic attributes, and wireline logging analyses: Implications for a high resolution detection of deep-rooted gas escape features, eastern offshore Nile Delta, Egypt](#) (5/24): "While the Nile Delta is considered the nation's largest gas province, it is also counted as the most significant petroleum province in Africa. The natural gas industry in Egypt is now going through a period of tremendous expansion...This study presents an improved workflow for imaging 3D subsurface structural patterns, geobodies extractions such as chimneys and major faults, and petrophysical evaluation to explore controls on gas accumulation and seepage in the subsurface of eastern offshore Nile Delta." *The authors acknowledge the Egyptian General Petroleum Corporation (EGPC) for granting the official agreement for data release and publication. Thanks to PETROBEL Petroleum Company, Egypt for providing the raw data necessary for conducting the current research.*

[Sedimentary age and paleoenvironment restoration of Paleogene and Cretaceous oil and gas reservoirs in the](#)

[Termit Basin, Niger](#) (5/24): «These findings provide valuable data **support for future hydrocarbon discoveries** in the region.»

[Depositional environments and thermal maturity of the hydrocarbon source rocks in the Devonian–Early carboniferous Ora Formation from palynological organic petrographic investigations in northern and western Iraq](#) (11/24): «The study investigates the palynofacies, organic matter character, and **hydrocarbon generation potential** of this rock unit, based on surface and sub-surface samples from the Ora Formation type-section in extreme northern Iraq and the Akkas-3 well in western Iraq, respectively.”

[Journal of Analytical and Applied Pyrolysis](#)

[The implication of kinetics characteristics of modern organisms for the hydrocarbon generation evolution of organic matter components in the lacustrine source rocks: A case study of the Dongying Formation from the Bozhong Sag, Bohai Bay Basin](#) (1/24): «Bozhong Sag near the source kitchen of the Dongying Formation offers **promising prospects for oil and gas exploration**.”

[Formation mechanism of Gulong shale oil: Insights from semiclosed hydrous pyrolysis](#) (8/24): “As a typical lacustrine shale oil, Gulong shale oil has enormous resource potential. The current lack of understanding regarding the formation process of this oil has affected its development...the shale oil formation process is clarified, which **provides an experimental foundation for the exploration and development** of the Gulong shale oil in the later stage.”

[Molecular structure and evolution mechanism of shale kerogen: Insights from thermal simulation and spectroscopic analysis](#) (7/24): «This study thus provides new insights into the thermal evolution of shale kerogen, which in turn improve understanding of shale reservoirs for hydrocarbon exploitation...This will **facilitate more accurate predictions of shale gas content** at different stages of the evolutionary process.”

[Differential hydrocarbon generation characteristics of organic matter with green algae and cyanobacteria origins in the Permian Lucaogou Formation of the Santanghu Basin](#) (10/24): “The P2L2 shale, with its high OM content and substantial hydrocarbon generation, holds **great potential for shale oil exploration**, but both reservoir quality and crude oil property evolution under different OM backgrounds should be considered when selecting favorable areas...The main objectives are to establish hydrocarbon generation models for OM primarily derived from cyanobacteria and green algae,

determine the evolution patterns of hydrocarbon products from different organic sources, and provide insights **for selecting “sweet spots” in shale oil exploration**.”

[Experimental investigation of hydrocarbon generation, retention, and expulsion of saline lacustrine shale: Insights from improved semi-open pyrolysis experiments of Lucaogou Shale, eastern Junggar Basin, China](#) (8/24): «Predicting the quality and quantity of generated, retained, and expelled hydrocarbons under various maturity stages for a given shale before drilling persists as **a vital issue in exploration**...the results could be a valuable analog for other saline lacustrine petroleum systems worldwide.”

[Journal of Applied Geophysics](#)

[A hybrid model based on unsupervised learning for seismic response feature extraction and gas-bearing reservoir prediction using longitudinal and transverse waves seismic data in low-degree exploration areas: A case study](#) (6/24): “In low exploration areas (areas with few or no wells), this method is important as **a guide to hydrocarbon exploration**.”

[MultiURNet for 3D seismic fault attributes fusion detection combined with PCA](#) (2/24): «The results confirm the feasibility and efficiency of the proposed method, which has significant potential for future exploration in shallow and medium-shallow oil and gas fields...it can identify the low-order faults more accurately and completely, providing a new **direction for the future discovering oil and gas**.”

[An efficient method of predicting S-wave velocity using sparse Gaussian process regression for a tight sandstone reservoir](#) (8/24): «S-wave velocity is a crucial parameter **for hydrocarbon exploration**...we provide a detailed explanation of utilizing the SGPR method for S-wave velocity prediction...[this method] yields satisfactory predictions for tight sandstones with low porosity and permeability.”

[Response characteristics and novel understandings of dual induction logging of horizontal wells in fractured reservoirs](#) (6/24): “This study can provide response characteristics and novel understandings for the evaluations of horizontal wells in fractured reservoirs...horizontal well technique is important **for oil&gas exploration and exploitation**.”

[Predicting the thermal maturity of source rock from well logs and seismic data in basins with low-degree exploration](#) (2/24): «Organic matter maturity is an

important index that determines the **hydrocarbon generation potential** of source rock along with other products types...we provide guidance for reconstructing burial history, understanding the course of hydrocarbon accumulation and exploration, and further clarify the manner in which basin evolution type controls the distribution and thermal evolution of source rock to **reduce the risk associated with early exploration** in other superimposed basins." *This study was supported considerably by Research Institute of Exploration and Development, Huabei Oilfield Branch of PetroChina.*

[Rock-physics modeling of deep clastic reservoirs considering the relationship between microscopic pore structure and permeability](#) (1/24): «Clastic reservoirs are still regarded as having **significantly observable exploration potential and yield** in the current energy landscape. Simultaneously, as oil and gas reservoirs gradually advance into deeper layers, the exploration and development of deep-seated clastic reservoirs are notably influenced by the micro-scale rock physics characteristics of these reservoirs. Consequently, it is necessary to construct a seismic petrophysical model applicable to deep clastic reservoirs...This paper presents the construction of a seismic rock physics model for deep clastic reservoirs.»

[Two-dimensional synchrosqueezing transform and its application to tight channel sandstone reservoir characterization](#) (2/24): «To facilitate oil and gas exploration and the development of such reservoirs, it is necessary to characterize the lateral characteristics of tight-channel sandstone reservoirs with high precision... Within the scope of this study, we propose a novel TFA approach called TDSST and apply it to the characterization of tight channel sandstone reservoirs.»

[Estimating pore pressure in tight sandstone gas reservoirs: A comprehensive approach integrating rock physics models and deep neural networks](#) (11/24): «These findings validate the effectiveness of the proposed methodology, which can provide **valuable insights for identifying potential tight sandstone reservoirs.**»

[Machine learning approach for core permeability prediction from well logs in Sandstone Reservoir, Mediterranean Sea, Egypt](#) (1/24): "Precise reservoir description is crucial for the proper evaluation of reservoirs...In this study, we describe a machine learning-based permeability prediction method." *The authors wish to acknowledge the Egyptian General Petroleum Corporation (EGPC) and Shell-Egypt for*

providing data for this research.

[Physics-driven deep-learning for marine CSEM data inversion](#) (7/24): «Marine controlled-source electromagnetic (MCSEM) inversion plays a **crucial role in hydrocarbon exploration** and pre-drill reservoir evaluation...our physics-driven network has enhanced the data adaptability and overcome the limitation of conventional DNN in handling new data.»

[Salt dome identification using incremental semi-supervised learning and unsupervised learning-based label generation](#) (10/24): "Salt domes represent distinctive geological anomalies in seismic data, **crucial for pinpointing hydrocarbon reservoirs and strategizing drilling paths.**...To facilitate accurate interpretation, we propose an innovative workflow that integrates an unsupervised label generation component with an incremental semi-supervised learning framework utilizing the U-Net architecture...This automated approach significantly streamlines the interpretation process, reducing the time and resources traditionally necessary for reservoir analysis...Many regions of the Earth known for their abundant oil and natural gas reserves also possess significant salt domes in the deep formation (Asjad and Mohamed, 2015). The pronounced low porosity, permeability, and chemical inertness of salt domes result in the trapping of hydrocarbon reservoirs like natural gas and crude oil beneath overlying rock-salt formations. Consequently, companies engaged in oil and gas exploration place emphasis on accurately determining the locations of these salt domes **to discover hydrocarbon reservoirs.**"

[Facies associations dispersion via rule-based simulation with genetic algorithm and kriging: A methodology conditioned by seismic facies](#) (9/24): "Rule-based simulation of facies is a **valuable tool in oil and gas field exploration.** The manuscript presents a hybrid methodology for simulating facies associations, using paleobathymetry as the main data and seismic facies as the secondary...This approach addresses the inherent uncertainties and biases in traditional facies modeling, providing a more reliable and automated method for calibrating facies intervals."

[A Gamma-ray spectroscopy approach to evaluate clay mineral composition and depositional environment: A case study from the lower Goru Formation, Southern Indus Basin, Pakistan](#) (7/24): «A problematic aspect of evaluating hydrocarbon-bearing sandstone is to accurately model the impact of clay and shale components on reservoir properties...The study contributes unique perspectives to reservoir evaluation

methods, ultimately enhancing strategies for petroleum resource extraction and optimization.»

[Variations in the present-day stress field and its implications for hydrocarbon development in the Hassi Terfa field, Hassi Messaoud, Algeria](#) (3/24): «This study aims to provide a new interpretation of the sources and variability of the present-day stress regime and their effect on the development of hydrocarbon resources... This new generation stress map will be beneficial for determining the optimal borehole direction, initiation, and propagation of the hydraulic fracture, and for identifying potentially active faults and fractures in areas with considerable hydrocarbon production. The workflow presented in **this study can be applied to other areas of major hydrocarbon development around the world.**»

[Spectral recomposition feature for optimizing seismic velocity model prediction with a neural network](#) (7/24): «This research contributes significantly to **optimizing hydrocarbon exploration** by predicting seismic features more accurately.»

[Simultaneous prediction of petrophysical properties and formation layered thickness from acoustic logging data using a modular cascading residual neural network \(MCARNN\) with physical constraints](#) (5/24): «Predicting petrophysical properties from logging data using deep neural networks (DNNs) improves the efficiency of subsurface exploration. Traditional methods, however, heavily rely on data pre-processing...In this study, we introduce a novel deep learning framework...circumventing potential inaccuracies introduced by preprocessing steps.»

[A model integration approach for stratigraphic boundary delineation based on local data augmentation](#) (9/24): «Identification of stratigraphic boundaries is a fundamental task in the seismic **interpretation of oil and gas reservoir locations**...it was demonstrated that the proposed method can effectively improve the delineation accuracy of stratigraphic boundaries compared to the benchmark U-Net model.»

[A novel hybrid CNN-SVM method for lithology identification in shale reservoirs based on logging measurements](#) (4/24): «Precise lithology identification has become a critical issue in the **exploration and development of shale reservoirs**...we propose a hybrid CNN-SVM model for lithology identification.»

[Integration of well logs and seismic attributes for prediction of thermal maturity and TOC content in the](#)

[Kazhdumi Formation \(central Persian Gulf basin\)](#) (3/24): «This study proposes an indirect method for estimating source rock properties, specifically thermal maturity and Total Organic Carbon (TOC), using well logs and seismic data within the central Persian Gulf hydrocarbon fields.»

[Poro-Acoustic Impedance \(PAI\) as a new and robust seismic inversion attribute for porosity prediction and reservoir characterization](#) (4/24): «Given that porosity is incorporated into the PAI formula, the PAI porosity section and inversion results can be used as an indicator for **evaluating the hydrocarbon capacity of the reservoir**. The findings of this research suggest that PAI is an effective attribute for porosity estimation, bridging the gap between seismic data and porosity estimation, thereby enhancing our understanding and exploration of the reservoir.»

[A data driven approach to assess the petrophysical parametric sensitivity for lithology identification based on ensemble learning](#) (3/24): «Precise identification of lithology is **significant for oil and gas exploration**...The main objective of our study was to determine the best subset of logging features based on available well-log data using SFFS technique for formation lithology identification.»

[Efficient self-attention based joint optimization for lithology and petrophysical parameter estimation in the Athabasca Oil Sands](#) (10/24): «Our findings demonstrate that ARViT outperforms ANN, LSTM, and ViT in estimating lithological and petrophysical parameters. While lithology prediction has been a well-explored field, ARViT's unique blend of features, including its self-attention mechanism, autoregression, and multitask approach along with efficient fine tuning using LoRA, sets it apart as a **valuable tool for the complex task of lithology prediction and petrophysical parameter estimation**...The accurate characterization of lithology and its petrophysical parameter estimation are cornerstones in hydrocarbon exploration, playing a crucial role in understanding subsurface formations, resource estimation, and reservoir management within the oil and gas industry.»

[S-wave log construction through semi-supervised regression clustering using machine learning: A case study of North Sea fields](#) (10/24): «This study underscores the potential of machine learning techniques for accurate prediction of S-wave velocity and other rock properties, thereby enhancing our comprehension of subsurface geology and hydrocarbon reservoirs.»

[Permeability prediction using logging data from tight reservoirs based on deep neural networks](#) (8/24): «The tight reservoirs in the Chang 7 Member of the Ordos Basin host significant oil and gas resources and have recently emerged as the main focus of unconventional oil and gas exploration and development. In this work, we performed DNN-based permeability prediction for the tight reservoirs in the Ordos Basin area.»

[Application of Deep Learning for Reservoir Porosity Prediction and self Organizing Map for Lithofacies Prediction](#) (8/24): «The suggested model's efficacy will be verified by utilizing real data from the exploration region, showcasing its capacity to improve estimating models and aid decision-making in the petroleum business.»

[A comprehensive review of deep learning techniques for salt dome segmentation in seismic images](#) (11/24): "Salt dome detection in seismic images is a critical aspect of hydrocarbon exploration and production. Salt domes are subsurface structures formed from the accumulation of salt deposits and can trap oil and gas reservoirs...This comprehensive analysis provides a valuable roadmap for researchers and practitioners interested in understanding how deep learning can be utilized for salt body classification in seismic exploration."

[An anisotropic rock physics modeling for the coalbed methane reservoirs and its applications in anisotropy parameter prediction](#) (6/24): "Coalbed methane (CBM), commonly known as unconventional gas, is a hot spot for **gas exploration** at present...The results are helpful in establishing the relationship between reservoir physics parameters and seismic response and can be used to retrieve the anisotropic parameters from seismic data which can provide a basis for CBM **reservoir prediction** and hydraulic fracturing." *This study is supported by the National Natural Science Fund Projects, and the State Key Laboratory for Fine Exploration and Intelligent Development of Coal Resources.*

[Journal of Asian Earth Sciences](#)
["This journal welcomes contributions that support and advance the UN's sustainable development goals, in particular SDG 13 \(Climate Action\)»](#)

[Basin-range coupling relationship and prediction of favorable targets for ultra-deep subsalt exploration in the Tarim Basin, Northwest China](#) (2/24): "The findings of this study carry significant implications for unveiling the basin-range coupling relationship, understand-

ing the geodynamic setting of the basin's evolution, and **advancing oil and gas exploration activities** in the ultra-deep regions of the Tarim Basin."

[Geological modelling of petroleum reservoir through multi-scale analysis of faults in complex media](#) (7/24): «Modelling faults plays a crucial step in the chain of studies through the first phase of the **hydrocarbon exploration** and its following studies in reservoir engineering, simulation and field development. This study introduces an innovative and automatic integrated approach that combines seismic multi-attributes and well data for faults modelling."

[An improved algorithm with particle swarm optimization-extreme gradient boosting to predict the contents of pyrolytic hydrocarbons in source rocks](#) (10/24): "With advancements in unconventional hydrocarbon exploration, the effective evaluation of hydrocarbon-generation potential of source rocks has become a research hotspot, highlighting promising exploration targets...This study provides a solid foundation for integrating ML methods to **evaluate pyrolytic hydrocarbon generation potential and facilitate oil-gas exploration.**"

[Early Cretaceous climatic influences on organic matter enrichment in lacustrine shales: Insights from the Liupanshan Basin of northwestern China](#) (4/24): «This study has significance for the correlation of Cretaceous marine and terrestrial strata and provides **scientific guidance for unconventional shale resource exploitation** in the Liupanshan Basin.»

[Depositional and diagenetic controls on the reservoir quality of Early Miocene syn-rift deep-marine sandstones, NW Saudi Arabia](#) (1/24): «Important implications for **prediction of reservoir quality in deep-marine systems.**" *Authors would like to thank Saudi Aramco, Dhahran, for providing the generous funding of this study.*

[Controls of strike-slip faults on condensate gas accumulation and enrichment in the Ordovician carbonate reservoirs of the central Tarim Basin, NW China](#) (3/24): «These proposed hydrocarbon accumulation models contribute to a better understanding of these fault systems and **further petroleum exploration.**"

[A novel approach for evaluating the transport capacity of sandstone carriers and determining effective hydrocarbon migration channels: Application to the Pinghu Slope Belt of the Xihu Depression, East China Sea Basin](#) (1/24): "The quantitative method in this study can

be used to **predict preferential hydrocarbon migration pathways and reduce exploration risks.**"

[Depositional and diagenetic controls on hydrocarbon generation of mudstones through clay–organic matter interactions: A comparative study of the Dongpu Depression, Bohai Bay Basin, China](#) (3/24): «These findings provide a theoretical reference for shale oil accumulation in saline lacustrine systems and can potentially serve as **a guide for future oil–gas exploration and development.**"

[Main controlling factors evolution on high-quality source rocks development in the Shanan Sag, Bohai Bay Basin, NE China: Implication from structure, depositional environment, and organic matter](#) (3/24): «Lacustrine source rocks have a **significant oil potential**...This study can provide a reference for **a better understanding of the evaluation and exploration** of lacustrine high-quality source rocks deposited in other continental basins with similar conditions.»

[Mineral diagenesis in lacustrine organic-rich shales: Evolution pathways and implications for reservoir characteristics](#) (3/24): «Unconventional gas and oil resources have emerged as crucial drivers for future growth in the oil and gas industry...This work serves as a sedimentological basis for the future **prediction of favorable sections for unconventional hydrocarbon production** from the Qingshankou Formation, as well as similar shale oil targets globally.»

[Influence of coupled dissolution-precipitation processes on the pore structure, characteristics, and evolution of tight sandstone: A case study in the upper Paleozoic reservoir of Bohai Bay Basin, eastern China](#) (3/24): «This study provides a reliable reference for genesis analysis and evaluation of tight sandstones...the study of the characteristics and formation of the micro-nano pore structure plays an important role in **reducing the exploration risk of tight sandstone reservoirs**" *The authors also sincerely thank the Research Institute of Petroleum Exploration and Development of Sinopec Zhongyuan Oilfield for providing the cores samples for this study.*

[Occurrence and mobility of shale oil in the Jiyang Depression, eastern China](#) (1/24): "Our work provides an index regime to evaluate the mobility and high production probability of shale oil, which will **benefit the exploration and development of shale oil resources.**"

[Geomorphologic and infilling characteristics of the shelf-incising submarine canyon in the eastern Makran](#)

[accretionary prism, offshore Pakistan](#) (4/24): «These can not only deeply understand the evolution of the canyon system in Makran accretionary prism, but also provide basic **data for future gas hydrate exploration**"

[Using digital cores and nuclear magnetic resonance to study pore-fracture structure and fluid mobility in tight volcanic rock reservoirs](#) (1/24): «Pore-fracture structure characterization and fluid mobility analysis are key to the **effective development of tight reservoirs**. However, it is difficult to accurately characterize the pore-fracture structure of tight volcanic rocks using a single method, and the mechanisms of fluid mobility are not fully understood...This combination of methods provides an effective way of investigating the overall pore-fracture structure characteristics."

[Reservoir characterization of the Berriasian–Early Valanginian Lower Fahliyan Formation in Dorood Oilfield, Persian Gulf](#) (10/24): "Integrating all available data including well logs, core data analysis and thin sections led to the identification of rock types and electrofacies which form the basis for **predicting reservoir heterogeneity and fluid flow characteristics** as well as, facilitates the reservoir modelling and simulation." *This paper and the research behind it would not have been possible without the exceptional support of the Iranian Offshore Oil Company (IOOC) and Pars Petro Zagros Engineering and Services Company (PPZ) for which the authors are grateful.*

[Seismic attributes and instantaneous spectral analysis-based temperature-porosity simulations: An example of imaging shale gas-bearing basin floor fans of early-cCretaceous delta sequences, Southeast Asian Basin](#) (5/24): «The used workflow has strong stratigraphic **implications for field development strategies.**"

[Evaluation of movable fluid and controlling factors in lacustrine gravity-flow tight sandstone reservoirs: Implications for predicting reservoir quality](#) (10/24): "These findings offer novel insights for evaluating and predicting high-quality lacustrine gravity-flow tight sandstone reservoirs, **enabling more effective exploration and development strategies.**"

[Quantitative prediction and spatial analysis of structural fractures in deep shale gas reservoirs within complex structural zones: A case study of the Longmaxi Formation in the Luzhou area, southern Sichuan Basin, China](#) (3/24): «This research aims to provide a **crucial foundation for shale gas exploration**, including identifying optimal drilling locations, well deployment,

hydraulic fracturing enhancement, and production capacity estimation."

[Controls on organic matter enrichment of the early-middle Miocene lacustrine oil shale, central Tibet \(SW China\): New insights from clay minerals and geochemistry](#) (3/24): «This study can not only deepen the understanding of OM enrichment mechanism in lacustrine rift basin but also provide **important information for predicting the distribution of the oil shale** in the Lunpola Basin."

[Generation and expulsion of Lower Jurassic hydrocarbon in different source rocks in the Taibei Sag, Turpan-Hami Basin, northwest China](#) (1/24): "These findings are valuable for objectively assessing the tight oil potential of J1s source rocks and establishing a **theoretical foundation for exploration...for evaluating the hydrocarbon resource quantity and predicting promising exploration area.**"

[Paleodepositional environment and hydrocarbon generation potential of the Paleogene lignite in the Barmer Basin, Rajasthan, India](#) (1/24): «The Barmer ortholignite has a **good hydrocarbon generation potential** from type-III (Giral) and types II-III kerogens (Kapurdi) pointing to gaseous hydrocarbon prospects; however, the source rock is immature."

[Development of arcuate faults and controls on hydrocarbon accumulation in the Tiantai slope, Xihu Depression, East China Sea basin](#) (10/24): "The area with the arcuate faults present **favorable conditions for hydrocarbon accumulation** in the Tiantai slope of the Xihu Depression...an in-depth investigation into the development characteristics of arcuate faults in the Tiantai slope and their impact on hydrocarbon accumulation is **crutial for advancing oil and gas exploration** in this area." *This work was jointly funded by the National Natural Science Foundation of China (Grant No. 42072149) and the Scientific Research Project of CNOOC (China) Limited (CNOOC-KJ135ZDXM39SH01).*

[Sources of natural gas in the Middle-Permian carbonate succession in the central-northern Sichuan Basin, Southwest China](#) (6/24): "Natural gas-source correlation is a challenging aspect of natural gas exploration in deep strata. The Middle-Permian carbonate succession in the Sichuan Basin, southwest China, particularly in the Maokou Formation, is a **hotspot for natural gas exploration**...This study is the first to combine multiple geochemical methods and consider different geological settings to **identify the gas source of a deep carbonate**

gas reservoir. Our study provides a reliable method for determining the natural gas-source correlation of gas reservoirs that contain highly mature and complex gas sources." ***We thank the Exploration and Development Research Institute of the PetroChina Southwest Oil and Gas Field Company for providing important data and the permission to publish the results.***

[In-situ calcite U-Pb ages and absolute timing of oil charge events: A case study of ultra-deep carbonate reservoirs in the Shunbei oilfield, Tarim basin, Northwest China](#) (1/24) «...potential **implications for deeper exploration** and similar deep petroleum systems worldwide.»

[Classification of shale lithofacies with minimal data: Application to the early Permian shales in the Ordos Basin, China](#) (1/24): "The main advantage of our approach is that it only uses conventional logging data and a small number of XRD measurements of core samples, combined with XGBoost algorithm, to predict shale lithofacies, which can reduce the cost and **improve the efficiency of reservoir evaluation.**"

[Geochemical characterization of Upper Cretaceous organic-rich deposits: Insights from the Azraq Basin in Jordan](#) (10/24): "Cretaceous sedimentary successions in Jordan are among the most **promising unconventional global petroleum resources**...This study makes a significant contribution to our understanding of Cretaceous sedimentary basins in the Middle East...This knowledge is **critical for hydrocarbon exploration**"

[Control of complex lithofacies on the shale oil potential in saline lacustrine basins of the Jimsar Sag, NW China: Coupling mechanisms and conceptual models](#) (5/24): «The study's outcomes can offer enhanced **guidance for accurately assessing shale oil resources**, particularly in the identification of crucial "sweet spots."

[Variable depositional environments and organic matter enrichment of Early Cambrian shales in the Middle Yangtze region, South China](#) (1/24): "Organic-rich shales of the Lower Cambrian Shuijingtuo Formation (SJT) in the Middle Yangtze region (South China) represent an important target for shale gas exploration and development in China...This work will enhance the understanding of formation of the Lower Cambrian organic-rich shale deposits, and play a **guiding role in shale gas exploration** in South China.»

[Pore structure characterization and reservoir quality prediction in deep and ultra-deep tight sandstones by](#)

[integrating image and NMR logs](#) (6/24): «The comprehensive analysis integrating core data with geophysical well logs provide **important insights for reservoir quality prediction** of deep and ultra-deep tight sandstones.»

[Prediction of fractures by using the stress field in medium to deep shale gas reservoirs: A case study of Late Ordovician–early Silurian shale gas reservoirs in the Nanchuan region, South China](#) (4/24): «...predict the fractures in shale gas reservoirs by using the stress field, in order **to provide a scientific basis for the practical exploration and development of shale gas** in the Nanchuan region.»

[Fluid inclusion evidence for overpressure-induced self-sealing and accumulation of deep shale gas](#) (5/24): «Shale oil and gas exploration and development are extending to greater depths, and it is important to understand the accumulation mechanisms of shale oil and gas. Here we conducted a case study in the Upper Ordovician Wufeng Formation–Lower Silurian Longmaxi Formation in the Ningxi area, Sichuan Basin, southwest China, by using petrological and fluid inclusion investigation to determine the processes involved during the overpressure-induced self-sealing accumulation of deep shale gas...The results provide new insights into shale gas enrichment and preservation, and are of **theoretical and practical significance for exploration.**»

[Chaotic behavior of geophysical logs for stratigraphic hiatuses: A case study from Upper Assam Shelf, India](#) (7/24): «This research contributes to advancing stratigraphic correlation methodologies, particularly in complex geological formations, and offers a novel perspective on subsurface characterization, offering opportunities for optimizing well placement, reservoir management, and hydrocarbon exploration efforts.»

[Origin and geological significance of the first discovered seafloor oil seepage in the Beikang Basin, southern South China Sea](#) (3/24): «Our study offers **valuable insights into the exploration of hydrocarbons** in the SSCS, as well as the interactions between the deep and shallow fluids in the background of focused fluid seepage.»

[Geochemical characteristics and classification of Oligocene source rocks with different facies in Bozhong Sag, Bohai Bay Basin, East China](#) (12/24): «Extensive exploration experience has shown that lacustrine sequences have the potential to develop commercial petroleum reservoirs...this study provides an

integrated **assessment of the hydrocarbon generation potential**, environmental and ecological variations, and OM origins of Oligocene source rocks in southwestern Bozhong Sag.” This work was funded by “Key Scientific Issues and Innovative Technology Research on Oil and Gas Resource Exploration in China Sea Risk Exploration Area” from CNOOC Research Institute in Beijing, China.”

[Contrasting diagenetic evolution and hydrocarbon charge of tight gas sandstones in the lower Permian Shanxi Formation, southeastern Ordos Basin, China](#) (9/24): “Reservoir quality of, and gas production rates from, tight sandstones in the Lower Permian Shanxi Formation vary greatly across the Yan’an Gas Field, southeastern Ordos Basin, China. Effective reservoirs are significant for the economic success of tight gas exploration and production...This study indicates that petrofacies is useful for reservoir characterization and modeling in the Yan’an Gas Field and other tight gas fields worldwide.”

[Mesozoic tectonic evolution and dynamic mechanisms of the northern Bozhong depression of the Bohai Bay Basin, eastern China](#) (9/24): «The northern Bozhong depression of the Bohai Bay Basin in eastern China is an **important area for oil and gas exploration** in buried hills, which has complex structural styles and evolutionary processes. Based on 3D seismic and drilling data, the features of the Mesozoic structural deformation of the northern Bozhong depression are analyzed, and the tectonic evolution and dynamic mechanisms are also discussed.»

[Quantitative seismicity of shale gas reservoirs of the Lower and Middle Indus Basin \(Pakistan\) revealed from instantaneous spectral decomposition-based inverted Vp/Vs ratio simulation](#) (6/24): “The energy demands within unconventional resources are exciting issues in stratigraphic-hydrocarbon exploration around the globe. The sub-surface heterogeneous backgrounds and bandlimited seismic information are momentous, and therefore, predicting the true Vp/Vs ratio (Vp/Vs) for incised-valley shale gas play at tuning frequency is a challenge for stratigraphic exploration...The exploration of unconventional is becoming a hot topic in future oil and gas exploration. There is a vital suite of unconventional reservoirs, which can be explored using various geophysical techniques.”

“This workflow has strong implications for horizontal well drillings within the extensional regimes of unconventional stratigraphic plays and serves as an analogue for global clastic depositional systems.”

[The hydrocarbon source potential of Permo-Triassic rocks of the Indochina Block adjacent to the Paleo-Tethys suture in Thailand](#) (1/24): "This study investigated the source potential of outcropping Permo-Triassic shales from the western margin of the Khorat Plateau and the Khao Khwang Fold and Thrust Belt (KKFTB)...Simply in terms of TOC content >1, the Hua Hin Lat and Khao Khad formations have the most **promising source potential**."

[Tectono-thermal evolution of the northern Tarim Basin, Central Asia: New insights from apatite low-temperature thermochronometers](#) (1/24): "Overall, this study provides valuable insights into the tectono-thermal histories of the eastern KFTB. It enhances our understanding of the tectonic evolution of Central Asia and holds **great significance for further hydrocarbon exploration and development** in the northern Tarim Basin."

[Rifting of the upper Yangtze carbonate platform: Insight from middle Permian carbonate olistostromes in the NE Sichuan basin, SW China](#) (2/24): "The initiation time and geodynamics driving the rifting are poorly understood, which restricts petroleum evaluation and exploration in the KL and DW regions...we herein carefully examine the petrographic feature of basalt in this paper and present a new data set composed of geochemical, isotopic, and zircon U-Pb analyses to provide new insight into the geodynamics and initiation time of rifting of the upper Yangtze carbonate platform." *Financial support for this project was provided by the Fundamental Research Funds for the Central Universities and the Exploration Company of SINOPEC.*

[Oil-source correlations and petroleum accumulation in oil sands in the Carboniferous Yanghugou Formation in the Shajingzi area, Ordos Basin, China](#) (2/24): "This is the first documented discovery of Ordovician marine oil in the Ordos Basin...This study helps to elucidate the depositional conditions and petroleum potential of the Paleozoic sediments in the Shajingzi area."

[Journal of Asian Earth Sciences: X Source rock potential, thermal maturity, and depositional environment of the Ordovician Ra'an Shale Member, central Saudi Arabia](#) (6/24): "This study provides an improved understanding of the depositional setting, organic geochemical, and thermal evolution of the Ra'an Member as a **potential unconventional hydrocarbon reservoir**."

[An enhancement in the petrophysical evaluation in a](#)

[vuggy carbonate gas reservoir by integrating the core data and empirical methods, Zagros basin, south of Iran](#) (6/24): «Applying the proposed approach will improve the accuracy of petrophysical properties and **lead to the proper calculation of the hydrocarbon volume** in the carbonate reservoir rocks containing isolated vugs, particularly in gas-bearing reservoirs where conventional logs are affected by gas contents.»

[Assessment of the source rock potential in the Sirka and Giddi collieries of South Karanapura coalfield, Jharkhand, India: Insights from megaflora, palynology, and geochemistry](#) (12/24): "Permian deposits in the Indian Peninsula have long been a significant source of coal and have **great potential for hydrocarbon exploration**. Here we present results of megafloral, palynological, and geochemical analysis of the Late Artinskian-Kungurian sediments in the South Karanapura coalfield **to assess hydrocarbon generation potential**... The increasing demand for hydrocarbon fossil fuels and the expansion of the petroleum industry, driven by their substantial resource potentials, have led researchers to focus on unconventional petroleum sources, such as shale gas, as well as deep petroleum systems."

[Journal of Engineering Research 1D basin modeling and hydrocarbon generation potential of the Late Cretaceous organic-rich intervals within the North-Western Taranaki Basin, offshore New Zealand](#) (6/24): «This study focuses on **exploring the hydrocarbon generation potential** of Late Cretaceous of the Wainui Member of the North Cape and Rakopi Formation within the North-Western Taranaki Basin»

[Petrophysical evaluation based on three-stream convolutional neural networks in the Berkine Basin, Algeria](#) (6/24): «Petrophysical evaluation is a key stage before formation test in exploration field, it allows the **identification of the best plays** in term of effective porosity, shale volume and hydrocarbon saturation... Petrophysical evaluation proved to be a challenging task in the exploration efforts in the Berkine basin, hence, we propose a deep learning-based method for petrophysical evaluation."

"This paper introduces an innovative approach to petrophysical evaluation [...] in the Berkine Basin, Algeria...our technique gives state-of-the-art prediction and even surpasses conventional method by giving better results in thin beds situation and low resistivity pays." [Exxon Mobil is looking for its "next Permian," which an executive said could be in Algeria]

[Design of intelligent drill bit embedded structure based](#)

[on multi-objective topology optimization method](#) (6/24): «As **deep resource exploration and development** technologies advance, efficiently overcoming challenges in drilling difficult formations has become paramount...This study focuses on the optimal design of embedded structures in intelligent drill bits.»

[Journal of Geochemical Exploration](#)

[Fractal modeling of oil and gas geochemical data in the Taiwan Strait Basin](#) (2/24): "This study **provides a theoretical foundation for future oil and gas exploration** and evaluation in the Taiwan Strait."

[Journal of King Saud University - Science](#)

[Integrated analysis of wireline logs analysis, seismic interpretation, and machine learning for reservoir characterisation: Insights from the late Eocene McKee Formation, onshore Taranaki Basin, New Zealand](#) (7/24): «An integrated study...was conducted, crucial for **accurately evaluating and characterizing hydrocarbon reservoirs, enhancing the likelihood of successful exploration and development projects.**»

[Journal of Magnetic Resonance](#)

[Bayesian NMR petrophysical characterization](#) (5/24): "Identification of reservoir rock types is necessary for the exploration and recovery of oil and gas. It involves determining the petrophysical properties of rocks such as porosity and permeability which play a significant role in developing reservoir models, estimating the volumes of oil and gas reserves, and planning production methods...This work introduces a Bayesian estimation method for analyzing NMR data...The experimental results illustrate that the Bayesian estimator outperforms other estimators."

[Journal of Magnetism and Magnetic Materials](#)

[Development of a viscosity prediction model and investigation into drag reduction in weakly magnetized waxy crude oil](#) (6/24): «Shallow water, deepwater, and ultra-deepwater regions abound with **abundant offshore oil and gas resources**. However, the increased viscosity and wax deposition consistently pose significant challenges...magnetization technology is particularly suitable for crude oil production and transportation pipelines in deep-water ocean environments...The present study investigates the impact of weak magnetic treatment."

[Journal of Molecular Liquids](#)

[Molecular dynamics simulation and key performance study of VES self-diverting acid system for deep carbonate reservoirs](#) (5/24): «A self-diverting VES acid system suitable for deep carbonate rock reservoirs at

140 °C was developed, providing **technical support for the efficient development of deep carbonate reservoirs.**»

[Self-growing biomimetic functional hydrogel particles for conformance control in tight reservoir fracture network](#) (10/24): «The results from this study provide a theoretical basis and **technical support for enhancing oil recovery** in low/ultra-low permeability reservoirs.»

[Microscopic mechanism of enhancing shale oil recovery through CO₂ flooding- insights from molecular dynamics simulations](#) (7/24): «Shale oil reserves are abundant worldwide and are a primary focus for future oil and gas development...This study provides a reference for the development and application of molecular simulation technology in **unconventional oil and gas development.**»

[Preparation of zwitterionic polymer and its application for dual-functional inhibition in deepwater drilling](#) (10/24): "As the increasing demand for energy sources with economic development, **it is crucial to find new sources of fossil fuel**. Deep-water sediments are usually very rich in oil and gas resources, and have **broad prospects for exploration and development**...However, in deep-water drilling operations, the complex and harsh geological conditions pose more technical challenges to drilling fluids...In this paper, to address the challenges of wellbore plugging due to hydrate formation and well instability because of clay hydration in deepwater drilling, a zwitterionic polymer AADV (a copolymer of AM/AMPS/DMDAAV/VAC) was synthesized, which can simultaneously inhibit hydrate formation and clay hydration as a dual-functional inhibitor.

[Journal of Natural Gas Geoscience](#)

"An academic bimonthly journal focused on natural gas exploration and exploitation." Editor-in-Chief: Jinxing Dai, PetroChina Research Institute of Petroleum Exploration & Development, Beijing, China

[The dominant three-element model of oil and gas accumulation in basement buried hills: A discussion on new exploration frontiers in the deepwater area of the northern South China Sea](#) (4/24): «This study identifies... **crucial exploration targets** in the deepwater areas of the northern South China Sea.» **This research was funded in part by the CNOOC Major Project. Author Gongcheng Zhang is an Editorial Board Member for Journal of Natural Gas Geoscience.**

[Natural gas accumulation conditions and exploration](#)

[directions of Carboniferous clastic rocks in the north-eastern margin of Junggar Basin, China](#) (9/24): «This study reveals that the Carboniferous clastic rock source and reservoir configuration in the northeastern Junggar Basin is highly favorable, and the natural gas reservoirs in source and near-source clastic rocks represent important exploration directions...Reliable gas-source stove areas such as Dishuiquan Sag, Wucaiwan Sag, and Shiqiantan Sag are identified as **key exploration targets.**” *This research was funded by the PetroChina “14th Five-Year Plan” Forward-looking Basic Major Science and Technology Project; the PetroChina Research Institute of Petroleum Exploration and Development’s Research Projects...[All the authors] are currently employed by PetroChina.*

[Structural inheritance through 3D reservoir modeling and ant-tracking attribute implications for structural configuration of Upper Cretaceous Pab Sandstone, Kirthar Fold Belt, Pakistan](#) (4/24): «In this study, 3D structural model and attribute assisted seismic interpretation have made a novel and clearer representation of structural complexities **to improve the success rate and future development plans for hydrocarbon exploration.**”

[Differential controlling on the deep tight sandstone reservoirs: Insight from the second member of lower Triassic Xujiahe Formation in Xinchang area, western Sichuan basin, China](#) (10/24): “With advancements in deep exploration, the deep tight sandstone gas reservoir has become a significant exploration field. However, it remains challenging to develop on a large scale due to the unclear distribution of relatively high-quality reservoirs. In this paper, the petrology, reservoir properties, diagenesis, and structural fracturing of deep tight sandstone reservoirs are systematically studied, focusing on the second member of the Upper Triassic Xujiahe Formation (T3x2) in the Xinchang area, and the types of relatively high-quality reservoirs and their differential controlling are further clarified...**The results will provide a geological basis for seeking “sweet spots” in deep sandstone reservoirs** and for guiding the reserve’s effective recovery.” *This research was funded by the Research Project of SINOPEC Science and Technology Department; the Precursor Project of SINOPEC Oil Field Department. The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Pengwei Li, Zongquan Hu, Zhongqun Liu, Shilin Xu, Zhenfeng Liu, Ai Wang, Junlong Liu, Wujun Jin and Yanqing Huang are currently employed by SINOPEC.*

[Integrated petrophysical, sedimentological and well-log study of the Mangaheha Formation, Taranaki Basin, New Zealand](#) (6/24): «In conclusion, from this comprehensive study, it can be deduced that the Mangaheha Formation possesses fair to **good reservoir quality and hydrocarbon potentiality.**”

[Hydrocarbon-generating potential of the Middle Permian Lucaogou source rock in the eastern Junggar Basin, China](#) (7/24): «The results further consolidated the oil and gas resources in the eastern Junggar Basin and provided **valuable references for exploring future oil and gas fields.**”

[Depositional pattern and source-to-sink process of submarine fans in Lingshui and Sanya formations, Baodao Sag, Qiongdongnan Basin, China](#) (4/24): «The findings hold significant implications for predicting the distribution of favorable oil and gas zones in the deepwater area of the Qiongdongnan Basin, thereby **improving the success rate of deepwater oil and gas exploration** in the northern South China Sea.”

[Solid bitumen Rhenium-Osmium \(Re–Os\) isotope geochronology and existing problems: Sampled of Sinian–Cambrian gas reservoir in Sichuan Basin, China](#) (8/24): «Understanding the key timings related to petroleum evolution is **crucial for optimizing exploration targets** and assessing oil/gas resources, attract petroleum geologists’ attention worldwide...this work aims to reconstruct the evolution process of the deep Sinian–Cambrian hydrocarbon reservoirs in the Gaoshiti–Moxi area.»

[Pore structure and fractal characteristics of coal-bearing Cretaceous Nenjiang shales from Songliao Basin, Northeast China](#) (4/24): «This work will provide a scientific theoretical basis for the **comprehensive evaluation of coal-bearing shale reservoirs** and research on shale gas reservoir formation theory.» Study funded in part by the Open Fund Project of Sinopec Key Laboratory of Shale Oil/Gas Exploration and Production Technology.

[Seismic geological characteristics and gas reservoir distribution of Changxing Formation biological bio-reef reservoir in the Longhuichang–Tieshan area, northeastern Sichuan Basin, China](#) (4/24): The enrichment mode and failure mode of favorable gas reservoirs in the study area have been analyzed and established, providing crucial technical support to **facilitate further exploration** of Changxing Formation bio-reef gas reservoirs in the northeastern Sichuan Basin.»

[Diagenetic features recorded in sedimentary rocks within a gas chimney: A case study from the Makassar Strait, offshore Indonesia](#) (8/24): «This study has implications for **methane exploration**.”

[Geochemical evaluation of Sarvak oil reservoir using biomarkers, carbon isotope and trace element: A case study from Southwest Iran](#) (6/24) «...an excellent novel tool for better understanding the basic concepts in petroleum basins and for **solving a wide range of problems during petroleum exploration**.”

[Characteristics of geothermal field and tectono-thermal evolution in Baiyun Sag, Pearl River Mouth Basin, China](#) (4/24): «...significant implications for regional tectonic evolution and future **deepwater oil and gas explorations**.”

[Differences in gas sources of the Changxing–Feixian-guan formations around the Kaijiang–Liangping Trough and favorable exploration directions for coal-formed gas generated by the Upper Permian Longtan Formation, Sichuan Basin, China](#) (9/24): «The Suining–Luzhou and Langzhong–Guang’an–Fuling areas are identified as **favorable zones for the exploration of coal rock gas and marine–continental transitional shale gas**, respectively. Additionally, the reef and shoal development areas of the Changxing Formation in the Suining–Hechuan and Guang’an–Nanchong regions are also **favorable exploration areas for coal-formed gas**...The Permian Changxing Formation and the Triassic Feixianguan Formation in the Sichuan Basin are among the most critical areas for natural gas exploration in the region.”

[Sources and exploration potential of Ordovician subsalt natural gas in Ordos Basin, China](#) (12/24): “Provides a theoretical basis for confirming the exploration potential of Ordovician subsalt natural gas and optimizing exploration targets in the central-eastern Ordos Basin.”

[Journal of Paleogeography](#)

[Characteristics and origin of low-organic-matter carbonate source rocks in the Middle–Upper Ordovician, Tarim Basin, northwestern China](#) (4/24): “This research method is theoretically **significant for oil and gas exploration** in the same type of highly-mature carbonate paleobasins.»

[The reservoir characteristics and their controlling factors of the sublacustrine fan in the Paleogene Dongying Formation, Bohai Sea, China](#) (1/24): «The results of this study are **significant for the exploration and development of the sublacustrine fan sandstone**

reservoirs in the Bohai Sea and analogous sandstone reservoirs elsewhere.»

[Evolution of Cenozoic sedimentary architecture in Central and Southern South China Sea basins](#) (1/24): «The differences in sedimentary filling structures and main controlling factors between basins were explored from the perspective of basin tectonic evolution, intending to deepen sedimentological research in the area and provide a **geological basis for petroleum exploration**.”

[Palaeogeographical development of two merging delta systems \(Eocene Shahejie Formation\) in the Bohai Bay Basin, E China and implications for hydrocarbon exploration](#) (10/23): “Detailed core analysis shows that the best hydrocarbon reservoirs consist of sand bodies formed in distributary channels on the delta plains, and of sandy turbidites formed in the deep-lacustrine environment in front of the merged deltas...This study was carried out to better understand the processes involved in the convergence of prograding deltas, and **to facilitate more effective sedimentary investigations into potential hydrocarbon reservoirs** and their quality in front of deltas.”

[Sedimentary dynamics and depositional model for mud accumulation in deep lake basins: A case study in the Upper Triassic Chang-7 Member, Ordos Basin, northern China](#) (8/24): «Shales in deep lake basins have become the main focus of continental shale oil and gas exploration...The aim of this paper is to improve the theoretical understanding of the sedimentation mechanism of mudrocks in deep-water depressional lake basins, and also to provide **theoretical guidance for unconventional oil and gas exploration and development** in deep-water depressional lake basins.»

[Sedimentary facies analysis of a thin-bed-dominated turbidite succession in the Miocene Temburong Formation, Kampung Bebuloh, Labuan Island, Malaysia](#) (7/24): “As mature oil fields and the easier reservoir targets are fully exploited, hydrocarbon exploration and production tends to shift toward more challenging reservoirs...The identification of geological criteria to differentiate lobe- and channel-associated thin beds will be **very useful in deepwater hydrocarbon exploration and field development**...A detailed facies and ichnological analysis was conducted on a 97 m-thick sedimentary succession of the Early Miocene Temburong Formation at Kampung Bebuloh, Labuan Island.” **Financial support was provided by a scholarship from ConocoPhillips Asia Pacific Sdn Bhd.**

[Sedimentary environment shift and organic matter enrichment mechanism in response to volcanic ash influence: A case study of the Permian Lucaogou Formation, Santanghu Basin, NW China](#) (7/24): «This study comprehensively analyzed the organic geochemistry, mineral composition, organic matter (OM) types, volcanic cycle, and palaeoenvironment of shale in the study area...The study area is predominantly situated in the Tiaohu and Malang Sags of the central depression belt, covering an area of approximately 3200 km², and **this region is a key focus for oil and gas exploration and development** within the basin” *The authors acknowledge the financial support provided by Tuha Oilfield Company of PetroChina. Gratitude is extended to the guidance and assistance from relevant experts at the Exploration and Development Research Institute of Tuha Oilfield Company of PetroChina, whose contributions significantly improved the quality of this study.*

[Journal of Rock Mechanics and Geotechnical Engineering](#)

[Visualization and characterization of experimental hydraulic fractures interacting with karst fracture-cavity distributions](#) (5/24): «Karst fracture-cavity carbonate reservoirs, in which natural cavities are connected by natural fractures to form cavity clusters in many circumstances, have become significant fields of **oil and gas exploration and exploitation**...These findings provide new insights into the fracturing design of carbonate reservoirs.”

[An improved permeability estimation model using integrated approach of hybrid machine learning technique and shapley additive explanation](#) (9/24): “Accurate reservoir permeability determination is crucial in hydrocarbon exploration and production. Conventional methods relying on empirical correlations and assumptions often result in high costs, time consumption, inaccuracies, and uncertainties. This study introduces a novel hybrid machine learning approach to predict the permeability of the Wangkwar formation in the Gunya oilfield, Northwestern Uganda...the GMDH-DE model offers a novel, efficient, and accurate approach for fast permeability prediction, **enhancing hydrocarbon exploration and production.**”

[Experimental study and prediction method of solid destabilization and production in deep carbonate reservoir during mining](#) (7/24): «As the demand for oil and gas increases, exploration and production efforts of these resources have been extended to ever-greater depths. There has been a growing focus on **developing deep and ultra-deep carbonate reservoirs**...a new

method combining a geomechanical model and a microscopic sand production model is proposed to predict wellbore instability and analyze its influencing factors.”

[Journal of South American Earth Sciences](#)

[“This journal welcomes contributions that support and advance the UN’s sustainable development goals”](#)

[Characterization of onshore hydrocarbon reservoirs in the Amazonas Basin using well logging data](#) (3/24): «In this work, the analysis of geophysical logging data from exploratory wells drilled in the Amazonas Basin is conducted to **characterize the hydrocarbon reservoirs** in the basin.»

[Jurassic depocenters development, between colorado basin, chelforó sub-basin and neuquén basin](#) (12/24): “Using marine and continental gravity data (Free air and Isostatic anomalies respectively), constrained by well and seismic data, an integrated interpretation workflow for the study area was carried out...The interpretation of seismic lines, and gravimetric data in areas without deep wells allow **the identification of new exploration targets increasing the exploration potential of these basins.**” *The authors thank YPF for their support in producing this contribution, and the authorization to publish. (YPF S.A. is a vertically integrated, majority state-owned Argentine energy company, engaged in oil and gas exploration and production)*

[Study of geomechanical properties of the Pimienta formation with undrained multi-stage triaxial tests, Central-Western Tampico Misantla Basin, Mexico](#) (8/24): «The objective of studying the geomechanical properties of the Pimienta Formation in the AOI is to provide critical insight from the perspective of rock mechanics for the modeling, planning, and **execution of potential unconventional hydrocarbon production.**”

[Dynamic re-sedimentation of lacustrine carbonates in the Búzios Field, pre-salt section of Santos Basin, Brazil](#) (6/24): “The focus of this study is to understand the processes that generated these reworked deposits within the rift and mainly within the sag section, in order to **contribute to the reduction of exploration risks** and to optimize hydrocarbon production from the Pre-Salt reservoirs.”

[3D stochastic simulation of a deep-water turbidite system: An example from the Los Molles Formation, southern region of the Neuquén Basin, Argentina](#) (12/24): “Stochastic simulation is a technique that has broad use in the development of probabilistic

geological models. This type of simulation is widely used to model hydrocarbon reservoirs and production in oil fields...In this study, **we shorten the exploration to production scale gap** by applying common geostatistical methods in reservoir scale analysis into an exploration scale study...The area presents excellent exposures of deep-water turbidites, where sedimentary body geometries are visible."

[The impact of the Abimael Ridge on the salt tectonics in the southern Santos Basin, Brazil: The Esmeralda exploration block case.](#) (8/24): «The southern Santos Basin displays **areas with exploration potential** for plays with both the post-salt and pre-salt reservoir rocks (Avila, 2022)...This study revealed crucial information about the two main leads in the Esmeralda block, named Esmeralda and Tupã (Figure 1), as proposed by ANP (Ávila, 2022)."

[Petrophysical and petrographic data correlation and the discrimination of magmatic environments and processes in Santos Basin, offshore SE Brazil](#) (8/24): «It is expected that the application of the proposed methodology will **reduce risks and costs during petroleum exploration** in rift-to-drift sedimentary basins elsewhere.»

[Organic geochemistry and palynofacies of the Devonian: A correlation between Paraná and Parnaíba basins, Brazil](#) (6/24): «A study on the characterization of the depositional paleoenvironment and the **potentiality for hydrocarbon generation** was carried out in Praguian-Emsian shale samples from Ponta Grossa Formation using data from organic geochemistry and palynofacies.»

Journal of Structural Geology

[This journal welcomes contributions that support and advance the UN's sustainable development goals](#)

[Using seismic methods to detect connectivity of fracture networks controlled by strike-slip faults in ultra-deep carbonate reservoirs: A case study in northern tarim basin, China](#) (3/24): «Ordovician tight carbonate rocks in the Tarim Basin are typically ultra-deep, with targets deeper than 7000 m. The fracture networks associated with strike-slip faults are the primary reservoir space...The Tarim Basin is the largest and least explored inland basin in Northwest China, with a total area of about 560,000 km²...**This study analyzed the distribution of fractures** related to strike-slip faults according to the 3D seismic coherence attributes." *The author highly appreciates the information and support the SINOPEC Petroleum Explora-*

tion and Development Research Institute of Northwest Oilfield Branch Company provided.

[Developing evolutionary models for deformation band formation in high-porosity suprasalt sandstones: An example from Paradox Basin, Utah](#) (8/24): «Predicting the magnitude and spatial extent of this often extensive reservoir "damage" remains as a major challenge **for hydrocarbon exploration**. This challenge is exacerbated by our inability to resolve these deformation zones using traditional geophysical techniques...this study provides a framework for understanding the genesis of deformation bands in most basins"

[The influence of major faults and fractures on the development of non-matrix porosity system in a pre-salt carbonate reservoir, Santos Basin – Brazil](#) (12/24): "High permeability zones and fractures are not easily recognized in seismic data due to limited resolution and they are often associated with higher concentrations of hydrocarbons or even significant fluid losses during drilling, thus creating a challenge **for hydrocarbon exploration**...In this study, we built a conceptual model of these fracture zones and non-matrix porosity formation that helped narrowing the understanding of these complex systems."

[Faulted karst reservoir spaces in Middle-Lower Triassic carbonates, Qingjiang Region, Yangtze block, China](#)[Autor links open overlay panel](#)

(12/24): "The complexity and heterogeneity of ultra-deep faulted karst reservoirs pose significant challenges for hydrocarbon exploration. In this study, we integrated remote sensing image analysis, field measurements, and core sample testing to evaluate the characteristics and controlling factors of carbonate reservoir spaces...offering critical insights for improving the precision of carbonate reservoir exploration and optimizing production efficiency...provides **valuable insights for optimizing exploration and development strategies** in ultra-deep carbonate reservoirs." *This work was supported by the Sinopec Research Project*

Marine and Petroleum Geology

["The journal aims to advance the environmentally sustainable exploration and utilization of natural resources of petroleum and gas hydrate...This journal welcomes contributions that support and advance the UN's sustainable development goals"](#)

[Comprehensive analysis of stress magnitude and orientations and natural fractures in complex structural regimes oil reservoir: Implications for tectonic and oil field development in the Zagros suture zone](#) (2/24):

"This study will provide **valuable insights into the exploration, development, and management of hydrocarbon resources** in complex structure regions."

[Diagenesis and pressure evolution in Ediacaran carbonate rocks in the North Slope \(Penglai area\) of the central Sichuan Basin \(SW China\)](#) (6/24): The Penglai area is an emerging giant gas field in the Sichuan Basin **supporting the carbon neutrality goal. To accelerate the exploration**, this study combines petrographic observations using optical and cold cathodoluminescence microscopy, fluid inclusion microthermometry, Raman spectroscopy, 1D basin modeling and fluid inclusion PVTX modeling techniques to reveal the paleo-fluid P-T evolution in the second member of the Dengying Formation (Ediacaran age)...**Results from this study, will provide a basis for further natural gas exploration** and risk prediction in the DBRs of the Sichuan Basin, as well as valuable insights for exploring deep carbonate reservoirs with similar conditions around the globe.

[Evaluation of shale oil and gas plays - Part I: Shale reservoir property modelling of the North Sea Kimmeridge Clay Formation](#) (6/24): «These areas show good potential based on all investigated properties, with respect to industry standards...**the best areas for the potential exploitation of shale oil and gas** are located within the central part of the 4.6 km deep Witch Ground Graben, as well as subsidiary regions of the 3.8 km deep Piper Shelf and Claymore-Tartan Ridge."

[Prediction method for the porosity of tight sandstone constrained by lithofacies and logging resolution](#) (9/24): "The prediction method based on lithofacies control and weight analysis can be applied to other tight sandstones, providing reliable **technical support for oil and gas exploration and development.**"

[Implications of multi-stage deformation on the differential preservation of Lower Paleozoic shale gas in tectonically complex regions: New structural and kinematic constraints from the Upper Yangtze Platform, South China](#) (2/24): «**The aim of the study is to facilitate the improved exploration and exploitation of the shale gas** in the region."

[Shale oil content evaluation and sweet spot prediction based on convolutional neural network](#) (9/24): «Shale oil content prediction is currently the focus of exploration. Traditional prediction methods are less accurate, and a large number of analytical tests can increase the cost of exploration...This study provides a new idea for evaluating hydrocarbon micromigration of

shale oil and **predicting favorable zones and the grading evaluation of oil content in petroliferous basins around the world.**"

[Integrating \$\mu\$ CT imaging of core plugs and transfer learning for automated reservoir rock characterization and tomofacies identification](#) (7/24): «The developed technique represents a **significant advance in reservoir characterization**, offering rapid and accurate identification of rock properties that can **improve exploration and development strategies.**"

[Organic geochemical heterogeneity of Cretaceous mudrocks and reassessment of oil sources in the Tano Basin, Ghana](#) (4/24): "The Tano Basin in Ghana, situated within the South Atlantic margin, is a **significant area for petroleum exploration**...These new geochemical findings shed light on the paleoenvironmental conditions and source rock characteristics of the region, **significantly contributing to our understanding of the petroleum evolution and potential** of the Tano Basin.»

[Impacts of sedimentary characteristics and diagenesis on reservoir quality of the 4th member of the Upper Triassic Xujiahe Formation in the western Sichuan Basin, southwest China](#) (6/24): «This study can not only lay a foundation for the **further exploration and development of tight sandstone gas** in the study area, but also provide a scientific basis for the study of tight sandstone in other areas."

[Depositional facies and evolution of sponge-microbial-constructed carbonate platforms in the lower Cambrian \(Stage 3\), Tarim basin, China: Understanding from anatomy](#) (9/24): «These datasets would provide a useful analogue for perceiving the facies-constrained porosity and heterogeneity in the deeply buried counterparts in the basin, **helpful for making exploration strategy** for the deeply-buried hydrocarbon resources.»

[Geologic characterization of the Lower Paleozoic black shale of the Niutitang Formation: Implications for a shale gas potential in western Hunan, China](#) (5/24): «Various shale plays have been compared globally and identified as potential **targets for shale gas exploration.**"

[Water distribution in pore systems and its influences on gas-bearing property of deep shale: A case study of the Longmaxi Formation in the Luzhou area, southern Sichuan Basin](#) (5/24): «These findings are expected to enhance the understanding of the influence of pore water on gas-bearing properties, which will provide some **new guidance for deep shale gas exploration and**

development.”

[Molecular and carbon isotopic geochemistry of oils with different fluorescence color from the Upper Jurassic Qigu formation and oil accumulation process in Yongjin area, Junggar Basin in China](#) (10/24): “This research not only provides theoretical guidance for the production of oil in the Qigu Fm, but also has **importance for deep oil and gas exploration** in the Yongjin area.”

[Investigating the hydrocarbon potential of the Paleogene coal seams in Kapuni Field, Taranaki Basin, New Zealand: Implications for coal-oil correlation](#) (7/24): «Hydrocarbon generation in Taranaki Basin, New Zealand, has been proven in several source rocks within the syn- and post-rift basin-fill sedimentary successions...These results demonstrate the generation and expulsion of coal-oil, thereby **shedding light on the prospectively of the Paleogene plays** in the Taranaki Basin.»

[Oil cracking under closed-system pyrolysis: Implications for deep oil occurrence and related source determination](#) (8/24): «These findings present **useful information for deep petroleum exploration** in the BBB.»

[The Palaeozoic of a future high potential hydrocarbon fold-thrust belt through the Zagros Basin, Iran](#) (7/24): «The objective of this research is to present and to comment on the petroliferous formations in this particular region...it could help to emphasize the importance of exploring the region for **potential hydrocarbon resources**.”

[The Dominant Influence of Muddy Bottom Currents on Organic-rich Fine-grained Sedimentary Rocks: the Lower Congo Basin, West Africa](#) (7/24): «The findings have **implications for the exploration of deep water hydrocarbons**.”

[Investigating the Potential of Unconventional Resources in the Midland Basin: A Comprehensive Chemostratigraphic Analysis of a Cline Shale \(Wolfcamp-D\) Core](#) (7/24): “An optimal landing zone and a sweet spot are delineated for hydrocarbon production within the lowstand deposits of the upper Cline Shale interval.”

[Depositional environments and source rock potential of some Upper Palaeozoic \(Devonian\) coals on Bjørnøya, Western Barents shelf](#) (5/24): “Upper Palaeozoic strata are **potential sources for hydrocarbon plays** on the Norwegian Barents Shelf...Here, we investigate the organic geochemical composition and source rock potential of coals and organic-rich mudstones of Late

Devonian to middle Permian ages.

[The geomechanical response of the Gulf of Mexico Green Canyon 955 reservoir to gas hydrate dissociation: A model based on sediment properties with and without gas hydrate](#) (9/24): «Gas hydrate is commonly found concentrated in sand- and silt-rich reservoirs and these are thought to have great potential as an energy resource. To evaluate this potential, it is critical to understand their in-situ stress state and their behavior during production. We explore the geomechanical behavior of sandy silt sediments from a hydrate reservoir at Green Canyon GC 955, deep-water Gulf of Mexico without hydrate and compare these results to previous work on the same sandy silty sediments with hydrate present.»

[Coupling control of organic and inorganic rock components on porosity and pore structure of lacustrine shale with medium maturity: A case study of the Qingshankou Formation in the southern Songliao Basin](#) (6/24): «The dominant lithofacies and their formation conditions were identified, **providing a theoretical basis for the selection of sweet spots** of this type of shale oil.»

[Controls on mechanical properties of a carbonate mudstone: Insights from non-destructive techniques and geochemical data](#) (3/24): “This study quantifies geomechanical properties of carbonate mudrocks in the Arabian intra-shelf basin...Geomechanical characteristics such as rock strength are fundamental factors that determine the success of an unconventional play economically.”

[Assessment of the hydrocarbon potential in the black shales of the Jurassic Khatatba Formation and generated hydrocarbons, North Western Desert, Egypt: Depositional mechanism of organic rich rocks related to syn-rift differential subsidence](#) (6/24): «Data integration from this study can be used to show the variation in organic richness (TOC) and thermal maturity (Tmax) in the area between the four wells, which will **help define the exploration risk and provide for a new vision for more exploration activity**.”

[The thermal history of Permian carbonate strata reconstructed with clumped isotopes and U–Pb dating: Eastern Sichuan Basin, SW China](#) (5/24): «This study is important for understanding the regional tectono-thermal evolution history and hydrocarbon generation in the Sichuan Basin. It provides fundamental information **for further hydrocarbon exploration** in the Sichuan Basin.»

[Depositional environment and source rock distribution of the Late Cretaceous Rakopi formation in the deep-water Taranaki Basin, New Zealand](#) (2/24):

«Understanding depositional systems is important in **petroleum exploration**...This study aims to describe the depositional environments and potential source rock areas of the Rakopi Formation in the Deepwater Taranaki Basin.»

[Oil shale enrichment mechanisms in the Lower Cretaceous Jiufotang Formation from the Ludong sag, Songliao Basin, Northeast China](#) (9/24): «This study attempts to (1) characterize the depositional features of the oil shale-bearing successions, (2) analyze the characteristics and distribution of oil shales, (3) consider the effects of gravity flows and volcanic activity on oil shale accumulation, and (4) build a comprehensive depositional model for oil shale enrichment and **provide the theoretical basis for future exploration in other energy basins**.»

[Estimating total organic carbon of potential source rocks in the Espírito Santo Basin, SE Brazil, using XG-Boost](#) (4/24): «The results indicate the potential of machine learning for TOC prediction in large, heterogeneous data sets, outperforming the traditional $\Delta\log R$ method and offering a promising tool for the usage of available public data sets in similar applications, such as the oil and gas (O&G) industry's **exploration phase or field reassessment**.»

[Mesoscale migration of oil in tight sandstone reservoirs by multi-field coupled two-phase flow](#) (6/24): «This study reveals the mesoscopic-scale mechanism of oil migration in tight sandstone reservoirs and may prove useful in the **exploration and development in such reservoirs**.»

[Lithofacies assemblage and effects on diagenesis in lacustrine tight sandstone reservoirs: Samples from Upper Triassic Yanchang Formation, Ordos Basin, China](#) (7/24): «This study contributes to understanding the mechanism behind diagenetic variations in tight sandstones and the reservoir evaluation. Consequently, it offers geological reference for the development of unconventional oil and gas resources in comparable lacustrine basins.»

[Source rock potential and spatial distribution of the stratigraphic formations in the central Mediterranean Ridge: Evidence from mud volcanic deposits and 2D seismic data](#) (2/24): «The study of this material, combined with the available seismic data, can **improve**

the geological understanding of this frontier exploration area. In this paper, biostratigraphic and geochemical studies are performed on mud breccia deposits from five Mud Volcanoes (MVs) in the central MR, aiming to define the sediments' stratigraphic origin and **assess the source rock potential** of the individual formations. In addition, regional seismic data is used to reveal the spatial distribution of the major lithostratigraphic formations in the subsurface...**the discovered solid hydrocarbons and oil droplets point to an active petroleum system** in the region.»

[Lithofacies, architecture and evolution of carbonate tidal delta system: Implications for reservoir heterogeneity \(mid-Cretaceous Mishrif Formation, Southeast Iraq\)](#) (8/24): «The aims of this paper are (1) to characterize the sedimentary architecture, rock fabric, and petrophysical properties (porosity and permeability) of the tidal delta system of Mishrif Formation in Southeast Iraq; and (2) to enhance understanding of carbonate tidal delta heterogeneity **to facilitate the development of oil and gas fields** in the region and beyond in the Middle East.»

[Facies prediction in a mature oil field of Cretaceous age in the Calumbi Formation \(Sergipe-Alagoas Basin, Brazil\) by using an outcrop analogue approach](#) (4/24): «This approach is both unprecedented and pivotal, **revealing previously unknown exploratory potential** in the surrounding areas of the overexploited Cidade de Aracaju Oilfield.»

[Mapping palaeoshorelines of river-dominated deltas in lacustrine ramp settings: Application of sedimentological analyses to the Triassic Yanchang Formation \(Ordos Basin, China\)](#) (6/24): «The results can **inform exploration** in the Ordos Basin, providing guidance on the potential for **extending exploration basinward**.»

[High resolution sequence cyclostratigraphic modeling of Albian – Cenomanian succession based on statistical, time series and palynofacies analyses in Meleiha Basin in the Western Desert, Egypt](#) (6/24): «The integrated sequence stratigraphic modeling accomplished in the present study increases our understanding of the source/reservoir distribution in the Albian Cenomanian succession and will be **of great benefit for current and future exploration plans** in the Meleiha basin.»

[Lithofacies characteristics and genetic mechanism of hybrid sedimentary rocks in Da'anzhai member, Sichuan Basin](#) (4/24): «The findings of this study not only deepen the understanding of sedimentary process of the lacustrine hybrid sediments, but also have **import-**

ant theoretical significance for lacustrine oil and gas exploration and development." *The authors would like to thank PetroChina Southwest Oil and Gas Field Company for providing core samples and other necessary geological data from LA1 and RA1 wells for this research work.*

[Evaluation of pore structure characteristics of deep clastic rocks in the Huangliu formation of LD-X area, Yinggehai Basin](#) (6/24): «Clastic oil and gas reservoirs continue to have significant exploration potential and production in the current energy pattern...These findings lay the foundation for studying the evolution path of high-quality reservoir pore structure and **identifying favorable reservoirs.**»

[Inhomogeneous strain partitioning in the Cenozoic Bohai Bay Basin controlled by pre-existing crustal fabrics and oblique subduction: Insights from the Jizhong and Huanghua subbasins](#) (12/24): «Our study sheds new lights on strain partitioning during rift basin evolution and the formation mechanism of the BBB, which could deepen the understanding of rift basin formation in general and oil and gas exploration within it.»

[Diagenetic Evolution and cementation mechanism in Deep Carbonate Reservoirs: A Case Study of Dengying Fm. 2 in Penglai, Sichuan Basin, China](#) (9/24): «Our research indicates that the development of high-quality reservoirs in deep-to-ultra-deep microbial dolomites is a result of complex multi-factor interactions and multi-stage discontinuous modifications, leading to strong heterogeneity within the reservoirs...Remarkably, even under exceptional ultra-deep conditions, high-quality microbial dolomite carbonate reservoirs can still develop and be preserved, presenting **significant potential for oil and gas exploration.**»

[Volcanic-controlled basin architecture variation and dynamic sediment filling in the South Lufeng Sag, South China Sea](#) (9/24): «The findings pave the way for the extensive application of this methodology in **petroleum development across various geographic regions.**»

[Diagenetic archives of the deeply-buried Cambrian Xiaerbulake Formation microbialite reservoirs, Bachu-Tazhong area, Tarim Basin, China](#) (9/24): «The deep-burial Cambrian Xiaerbulake Formation microbialites reservoir hosts significant hydrocarbon in the Tarim Basin. However, limited understandings of fluid-rock interactions from deposition to deep-burial regimes hamper **petroleum exploration.** Here, petro-

logical observations, *in-situ* elemental contents and porosity-permeability analyses were performed to understand the complex interactions and the microbialites performance.»

[Organic geochemistry and 1D-basin modeling in the Taranaki Basin, New Zealand: Implications for deltaic-source rocks of the Cenozoic oil and condensate reservoirs](#) (10/24): «Successful exploration and exploitation can potentially enhance and **increase the world's hydrocarbon reserves.** Such activities request a clear understanding of the petroleum system...The present study plays a role in **characterizing the source rocks and improving the understanding of the petroleum system** of the Taranaki Basin.

[Formation mechanism of carbonate cement in tight sandstone reservoirs in the depression zone of foreland basin and its impact on reservoir heterogeneity: The upper Triassic Xujiahe Formation in Western Sichuan foreland basin, China](#) (9/24): «In recent years, tight sandstone reservoirs, harboring **substantial oil and gas resource potential**, have emerged as a promising resource...[a] knowledge gap has resulted in prediction errors concerning reservoir quality, severely hampering tight sandstone exploration...this study seeks to clarify the formation mechanism of carbonate cement in tight sandstone reservoirs.»

[Source of quartz cement and its impact on reservoir quality in Jurassic Shaximiao Formation in central Sichuan Basin, China](#) (1/24): «Insufficient study significantly impedes our comprehension of diagenetic mechanisms and the development of reservoir pore systems in this particular area, both of which are crucial for **guiding petroleum exploration endeavors.**The main goals of this study include...to investigate the diagenetic processes connected with quartz cementation»

[Vertical heterogeneity of Gulong shale oil governed by the OM precursors and oil accumulation: Implications for shale oil exploration in the Songliao Basin, North-eastern China](#) (5/24): «**The selection of favorable layers for shale oil development** remains uncertain due to significant variations in oil production of different intervals in the Formation (Q₁–Q₉). In this study, the geochemical features of shale, the content and chemical features of extracted oils in different shale intervals are analyzed in detail, and the favorable intervals and mechanism for shale oil accumulation are also addressed.»

[Complementary laboratory experiments and molecular dynamics simulation method to investigate the mobili-](#)

[ty of shale oil: The Permian Fengcheng Formation in the Mahu Sag, Junggar Basin](#) (7/24): «This study focused on the mobility of shale oil in the Fengcheng Formation of Mahu Sag through multistep rock-eval pyrolysis experiments and molecular dynamics simulations....the accurate evaluation of the mobility of shale oil is one of the key issues to be solved in the process of **shale oil exploration and development.**»

[Influence of coal rock on tight sandstone reservoirs in coal seam roofs: A case study of the lower jurassic in the Taibei sag, Turpan-Hami Basin, China](#) (7/24): "Tight sandstone gas is a hotspot and difficult area in the field of unconventional oil and gas exploration, and it has attracted a great deal of attention from explorers and scholars in recent years...This [paper] provides a theoretical basis for the evaluation of coal measure tight sandstone reservoirs and sweet spot prediction of coal measure natural gas resources."

[Implications of the depositional and diagenetic attributes on the reservoir properties of the siliciclastic mangahewa formation, Taranaki Basin, New Zealand: Integrated petrographical and petrophysical studies](#) (6/24): «Our study provides valuable insights into the intricate petrophysical properties of the Mangahewa reservoir, **enhancing the predictability of the reservoir behavior and optimizing hydrocarbon production** in this challenging geological setting.»

[Reservoir characteristics and controlling factors of the middle–high maturity multiple lithofacies reservoirs of the Lianggaoshan Formation shale strata in the north-eastern Sichuan basin, China](#) (3/24): "The Lianggaoshan Formation, which is located in the northeastern part of the Sichuan Basin, is an important shale oil producer. However, due to the effects of complex petrography, a wide range of maturity, and lower organic matter (OM) content in comparison to other areas, the pore characteristics of different lithofacies are unclear, which severely limits exploration and development. Therefore, by using geochemical, petrological and pore structure characterization experiments, this study thoroughly examines the pore properties of several lithofacies in the Lianggaoshan Formation in Northeast Sichuan."

[Formation mechanism of high-quality Palaeogene "compositional mixing" reservoirs in lacustrine rift basins: A case from the offshore Bohai Bay Basin, China](#) (9/24): "This study offers novel insights and a model for understanding the formation mechanism of CMRs, providing **implications for future global petroleum exploration** in mixed sediment reservoirs."

[Sedimentology, depositional processes, and sequence stratigraphy of deep lacustrine fine-grained sedimentary rocks in the lower Oligocene Xiaganchaigou Formation, Qaidam Basin, Northwestern China](#) (8/24): «This study provides a new understanding of the sedimentology of deep lacustrine fine-grained deposits and **sheds light on exploring unconventional hydrocarbon resources** in terrigenous deep-water settings.»

[Petrophysical characterization of the Late-Cretaceous Logbaba Formation in the Kribi/Campo sub-basin, Cameroon: Implication on deep-water hydrocarbon exploration](#) (8/24): «Deep-water hydrocarbon exploration in the Kribi/Campo sub-basin offshore Cameroon is targeting the promising Campanian-Maastrichtian turbidite reservoirs...The findings from this study extend the understanding of the reservoir characteristics of the Upper Cretaceous Logbaba Formation, which will **further enhance hydrocarbon prospectivity** offshore Cameroon.»

[Tectono-sequence Evolution of an Extensional Strike-slip Composite Basin, a Case Study of the Miaoxi'nan Sub-sag in the Eastern Bohai Bay Basin](#) (10/24): "This study provides vital insights into the tectono-sequence dynamics of extensional strike-slip composite basins, with **implications for future hydrocarbon exploration and exploitation.**"

[Silurian to early Devonian overmature hot shales in Eastern Taurus: Source rock characteristics and links to North African petroleum systems](#) (6/24): «We aspire to contribute significantly to the existing body of knowledge, paving the way for future investigations and **the development of more effective exploration strategies** in the region."

[How marine incursions affect the sedimentary environment and the quality of source rocks in the Upper Cretaceous Songliao Basin, NE China](#) (9/24): "Key insights for predicting **"sweet spots"** for shale oil exploration in the Qingshankou Formation of the Songliao Basin." ***We would like to thank the National Natural Science Foundation of China and PetroChina Science and Technology Project for their financial support.***

[Assessment of thermal maturity in Lower Cambrian organic-rich shale in south China using integrated optical reflectance and Raman spectroscopy of pyrobitumen](#) (2/24): "In this study, we...determine the thermal maturity of Lower Cambrian organic-rich shales... Thermal maturity is critical to hydrocarbon generation

evaluation, and it is also a key indicator in **shale oil and gas exploration**"

[Classification and reservoir characteristics of lacustrine carbonate conglomerate in the Shulu Sag of the Bohai Bay Basin](#) (6/24): "Six wells, including ST1H, in the tight carbonate reservoirs of the lowermost sub-member of the third member of the mid-Eocene Shahejie Formation yield industrial oil flow, which shows **good prospects for tight oil exploration**."

[Seismic lithology and geological implications of pre-salt jurassic carbonate rocks in the Amu Darya Right Bank](#) (7/24): «lithology and lithofacies analyses based on good control cannot meet the subsequent exploration and developmental activity requirements, seriously restricting the further expansion of oil and gas exploration in the ADRB Block. The purpose of this study is to accurately characterize the lithofacies of the pre-salt Jurassic carbonate sequence and identify the distribution patterns of reefs and shoals in the eastern ADRB.» This work was supported by the CNPC's technology projects such as "Research on the Technology for the Mechanism and Exploration Evaluation of Overseas Deep Reservoirs"

[Depositional facies and diagenetic control on reservoir quality of the Aptian Dariyan Formation, NW Persian Gulf](#) (7/24): «Integrating our findings into exploration workflows could enhance decision-making processes, minimize risks, and **maximize the success rate of hydrocarbon discoveries** within the Dariyan Formation."

[Genesis mechanism of laumontite cement and its impact on the reservoir of siliciclastic rock: A case study of Jurassic Shaximiao Formation in central Sichuan Basin, China](#) (7/24): «This exploration in the evolution of authigenic laumontite within clastic sedimentary rocks aims to provide new insights and considerations. Furthermore, it **seeks to offer a theoretical basis for oil and gas exploration** in the Shaximiao Formation of the Sichuan Basin and analogous basins featuring laumontite sandstones.» ***We are grateful that the Shaximiao Formation core samples and geological data were provided by PetroChina Southwest Oil & Gas Field Company and the Research Institute of Exploration and Development.***

[Depositional and diagenetic controls on reservoir properties of the lower Cambrian Khewra Sandstone, eastern salt range, Sub-Himalaya, Pakistan](#) (3/24): «The bounding unconformities and variation of compositional and textural patterns determine the

reservoir quality. The dynamic interaction among deposition, tectonics and diagenesis yields a **comprehensive understanding of reservoir potential on a global scale**."

[The joint controls of tectonism, sedimentation and diagenesis on reservoir quality in the East China Sea Basin](#) (7/24): «By using log, seismic and core test data, we developed a method that uses tectonism, sedimentation and diagenesis **to evaluate sweet spot distribution** of the third (Mbr 3), fourth (Mbr 4) and fifth (Mbr 5) members of the Oligocene Huagang Formation in the Xihu Depression, East China Sea Basin.»

[Influence of faults on late-stage migration of methane-rich gas in a major unconventional hydrocarbon accumulation: Montney Formation, western Canada](#) (6/24): "Recognizing fault control on the intraformational migration of hydrocarbons at the regional scale can shed new light on the present-day distribution of hydrocarbon fluids within the Montney Formation, and **assist in the future economic evaluation and development of this world-class unconventional petroleum resource**. This study of the Montney Formation, benefitting from a wealth of publicly available subsurface data, provides a well-documented analogue for evaluating intraformational hydrocarbon migration in other unconventional petroleum accumulations."

[Lacustrine shale lithofacies and depositional environment in the paleocene second member of the funing formation, subei basin, China: Insights into shale oil development prospects](#) (6/24): "These new characterizations have significant implications for considering favorable lithofacies...provide **valuable insights and guidance for future shale oil exploration** in the Qintong Sag of the Subei Basin.»

[Effects of post-oil bitumen on the nanopore development of shales: New insights from a stepwise thermal simulation experiment on small shale plug samples](#) (10/24): «As exploration progresses, shale gas exploration becomes increasingly difficult. Therefore, there is an urgent need to innovate and develop enrichment theories of shale gas to guide its exploration and development in new fields...typical marine and marine-continental transitional shale samples with Type IIa and Type IIb kerogen were selected for the experiment, which has practical significance in **guiding present shale gas exploration**... The purpose of this study is to reveal the pore development models and mechanisms of post-oil bitumen and

provide new evidence for the evaluation of shale pore development."

[Diagenetic alterations induced by lamina-scale mass transfer and the impacts on shale oil reservoir formation in carbonate-rich shale of the Permian Lucaoguo Formation, Jimusar Sag](#) (4/24): «It is hoped that the research results can deepen the understanding of the diagenesis of carbonate-rich shale, so as to predict the characteristics of authigenic carbonate development and provides **important guidance to shale oil exploration and development** in study area.»

[Origin and microbial degradation of thermogenic hydrocarbons within the sandy gas hydrate reservoirs in the Qiongdongnan Basin, northern South China Sea](#) (7/24): «Our findings are highly significant for the evaluation and exploration of thermogenic gas hydrate accumulations worldwide.»

[U–Pb detrital zircon ages from Cretaceous - Paleogene white sandstone member in Western Tabei Uplift \(China\) as provenance indicators](#) (2/24): «The Western Tabei Uplift is one of the largest first-level structural units in the Tarim Basin with great potential for oil and gas resources...Our finding could shed new light on the provenance and sedimentary model of Cretaceous-Paleogene white sandstone member in the Western Tabei Uplift and provide **a theoretical basis for further exploration of lithological oil reservoirs** in this section.»

[Petroleum System Analysis of Fujairah Basin, Eastern Offshore of the United Arab Emirates](#) (10/24): "The Fujairah basin, located on the eastern margin of the United Arab Emirates, forms part of the hinterland basin of the Oman-UAE mountains. Despite its geological significance, **the hydrocarbon potential of this basin remains unexplored. This study aims to address this knowledge gap** by using 2D seismic reflection data, three exploration wells, geochemical data from one well, a 2D velocity section, and two pseudo-wells."

[Characteristics and Main Controlling Factors of the Sangonghe Tight Sandstone Reservoirs in the Shengbei Sub-sag of the Turpan-Hami Basin, China](#) (10/24): "The Sangonghe tight sandstone hydrocarbon reservoirs in the Shengbei Sub-sag of the Turpan-Hami Basin are **key areas for hydrocarbon exploration**. However, previous research has mostly focused on petrological characteristics, physical properties, and pore types. There is a lack of understanding regarding diagenesis, microscopic pore-throat features, and the impact of overpressure on the reservoir. This gap in knowledge poses a disad-

vantage for future studies and hydrocarbon exploration...this study thoroughly analyzed the main controlling factors for the reservoirs, providing a **theoretical foundation for the evaluation, exploration, and development of tight sandstone reservoirs** in the Shengbei Sub-sag."

[Evidence for regional fluid migration in the Eagle Ford Formation, Austin Chalk, and Buda Limestone of south-central and west Texas, USA](#) (8/24): «These results have **significant implications for assessment for hydrocarbon exploration and production of conventional, hybrid, and self-sourced reservoirs** in south Texas and other basins.»

[Rock-physics Modeling and Pre-stack Seismic Inversion for the Cambrian Superdeep Dolomite Reservoirs in Tarim Basin, Northwest China](#) (6/24): «We apply the established density indicator to achieve **precise density prediction** for superdeep dolomite.»

[Provenance and tectonic settings of the lower Permian siliciclastic rocks in central Inner Mongolia: Implications for the evolution of the Paleo-Asian Ocean](#) (3/24): «The study on the depositional environment, material source, and tectonic background of the Shoushangou Formation is also **important for the oil and gas evaluation in this area**. Thus, the lithological, paleontological and stratigraphic characteristics of the Shoushangou Formation in the West Ujimqin area are studied"

[Sequence stratigraphy driven by tectonic subsidence and astronomical forcing: A case study from the Miocene Pearl River Mouth Basin, South China Sea](#) (11/24): «Sequence stratigraphy has been widely used in the **exploration of oil and gas** in continental margins and basins since its inception due to its practicality...In this study, we selected wells A1 and B2 in the Huizhou Depression of the PRMB for cyclostratigraphic and sequence stratigraphic analyses.»

[Tectonic–paleogeographic evolution of the Late Triassic in the Sichuan basin, SW China: Constraints from sedimentary facies and provenance analysis of the Xujiahe Formation](#) (2/24): «The findings of this study contribute to a broader understanding of the Xujiahe Formation regional variations and their **implications for hydrocarbon exploration** in Sichuan Basin.»

[Impact and implications of hydrothermal fluids migration in the Frolov hydrocarbon province in West Siberia](#) (6/24): «The goal of this study is to identify hydrothermal processes and their impact on pore space and organic maturity **to better predict the spatial**

distribution of unconventional reservoirs...Our workflow should significantly enhance the efficiency of the exploration process"

[Structural and stratigraphic controls on reservoir architecture: A case study from the lower Oligocene Vicksburg Formation, Brooks County, Texas](#) (2/24): «This zone is characterized by listric-normal faults that have formed highly faulted rollover anticlines, which are valuable structural traps for **for hydrocarbon exploration**...a valuable reference for similar geological systems and reservoirs worldwide"

[Study on the relationship between shale organic matter development and paleowater depth—A new understanding of the condensed section](#) (11/24): «The results of this study are of great significance **for shale oil and gas exploration** in China, and provide a new direction for the discovery of shale oil and gas sweet spots.»

[Impact and implications of hydrothermal fluids migration in the Frolov hydrocarbon province in West Siberia](#) (6/24): «The goal of this study is to identify hydrothermal processes and their impact on pore space and organic maturity **to better predict the spatial distribution of unconventional reservoirs**...Our workflow should significantly enhance the efficiency of the exploration process"

[Depositional facies controls on reservoir rock typing and heterogeneity: Devonian siliciclastic succession, south central Ghadames basin, Libya](#) (5/24): «Promoting the predictability of the best reservoir targets.»

[Genesis of honeycomb buildups in the Permian Zechstein Group, Southern North Sea](#) (9/24): "The sedimentological understanding provided by this study not only **de-risks frontier exploration** but also provides insight into carbonate growth in restricted platform recovery scenarios."

[Critical re-assessment of Middle and Late Miocene submarine fans in offshore southern and western Taranaki Basin, New Zealand, to update the paleogeography](#) (3/24): «The new Taranaki Basin deep-water fans documented here, may have significance for **hydrocarbon exploration** in deep water parts of Taranaki Basin, which is largely unexplored.»

[Stratigraphic evolution and sediment dispersal in a marine rift-basin: The case of the Lewis trough, Eastern Dampier sub-basin \(Australia\)](#) (3/24): «Understanding the stratigraphic evolution of marine rift basins

allows to predict reservoir location and extent."

[Structural and stratigraphic controls on reservoir architecture: A case study from the lower Oligocene Vicksburg Formation, Brooks County, Texas](#) (2/24): «This zone is characterized by listric-normal faults that have formed highly faulted rollover anticlines, which are valuable structural traps for **for hydrocarbon exploration**...a valuable reference for similar geological systems and reservoirs worldwide"

[Paleoenvironmental reconstruction of the Berriasian organic-rich interval of the Vaca Muerta Formation \(Neuquén Basin, Argentina\): Insights for the characterization of unconventional hydrocarbon shale reservoirs](#) (5/24): "The results of our study position the BORI as an **attractive interval for unconventional hydrocarbon production**"

[Characteristics and an accumulation model of a bauxite gas reservoir in the southwestern Ordos Basin](#) (8/24): «These findings have significant implications for natural gas exploration in Al-bearing rocks in North China and other regions.»

[Determination of multistage oil charge processes in the Ediacaran Dengying gas reservoirs of the southwestern Sichuan basin, SW China](#) (6/24): «This research reveals the timing of multistage oil charging events in the southwest Sichuan basin...determining the timing of hydrocarbon charge is critical to understand the regular pattern of hydrocarbon accumulation, providing **important guidance for deep and ultra-deep exploration.**"

[Structural style & kinematic analysis of deformation in the northern Dezful Embayment, Zagros Fold-Thrust Belt, SW Iran](#) (9/24): "A comprehensive understanding of structure and kinematic characteristics of fold and thrust belts provides significant information for **hydrocarbon exploration and production**. The kinematic evolution and structural style of three subsurface oilfields, Zelo, Lali and Karun, in the northern part of the Dezful Embayment, a significant petroleum province of the Zagros Fold-Thrust Belt in SW Iran, were investigated using 2D seismic data."

[Prototypical basin reconstruction and evolutionary models for the Precambrian of the Qinshui Basin, North China Craton](#) (9/24): "The thick Precambrian strata in the Qinshui Basin (QB) have **high potential for hydrocarbon exploration**. Tectonic evolution restoration and prototype basin reconstruction are key to hydrocarbon exploration and evaluation for Precambrian strata. We studied the 2D/3D seismic data and Precambrian field

outcrops of the QB to elucidate its geological attributes, major regional unconformities, tectonostratigraphic framework, tectonic evolution and prototype basin."

[Deciphering the origin and secondary alteration of deep natural gas in the Tarim basin through paired methane clumped isotopes](#) (2/24): "This novel approach may aid hydrocarbon exploration in deeply buried petroleum systems worldwide."

[Bedding-parallel fracture density prediction using graph convolutional network in continental shale oil reservoirs: A case study in Mahu Sag, Junggar Basin, China](#) (7/24) «We have explained how the model is generated step by step and ultimately predicted the response of the logging curve, which can be used as a theoretical geological basis for the exploration and development of shale oil."

[Characteristics and correlations of rock components, structure, and physical properties of deep clastic reservoirs in the LD-X area of Yinggehai Basin, western South China Sea](#) (7/24): «The results provide a profound analysis of the lithology of the LD area in the Yinggehai Basin and lay the foundation for understanding the development pattern of high-quality reservoirs and predicting their distribution.»

[Geochemical properties, mechanism of formation, and source of solid bitumen in the Ediacaran Dengying Formation from the central to northern Sichuan Basin, China](#) (1/24): "This research successfully obtained insights into the source and genetic mechanism of paleo-oil reservoirs by analyzing the properties of high-maturity solid bitumens, which can guide further exploration and development of deep petroleum resources."

[A modified surface to volume \(SVR\) method to calculate nuclear magnetic resonance \(NMR\) surface relaxivity: Theory and a case study in shale reservoirs](#) (12/24): "Surface relaxivity (2) is a critical parameter for converting nuclear magnetic resonance (NMR) T2 data to pore size distribution (PSD)...This study represents the first attempt to examine 2 variations across different pore ranges in shale reservoirs. The methodology presented can be applied to other formations, enhancing NMR data application in both laboratory settings and well logging...Nuclear magnetic resonance (NMR) is a fast and nondestructive method for quantitatively characterizing rock porosity, fluid saturation, and pore size distribution (PSD). It plays a significant role in the exploration and development of conventional and unconventional resources such as sandstones, shales,

and coals."

[A new method of the hydrocarbon secondary migration research: Numerical simulation](#) (2/24): "The proposed method introduces a powerful approach to analyzing and predicting hydrocarbon migration and accumulation, fostering improved decision-making in exploration endeavors."

[Determination of in situ hydrocarbon contents in shale oil plays: Part 3: Quantification of light hydrocarbon evaporative loss in old cores based on preserved shales](#) (2/24): "This research has great implication for estimating in situ hydrocarbon potential using conventional coring samples."

[Influence of basement high and detachment on the kinematics of a fold-and-thrust belt in the central South Yellow Sea Basin, China: Insights from analog modeling](#) (2/24): "This study is of significant importance to guide future petroleum exploration in the central South Yellow Sea Basin."

[Stratigraphic architecture of the synrift interval in the northern Pletmos Basin, offshore South Africa](#) (2/24): "This research enhances our understanding of the potential for hydrocarbon reserves in the northern Pletmos Basin."

[Seismic data, cross-section balancing, and hydrocarbon prospectivity of the western Sulaiman fold belt, north-west Pakistan](#) (2/24): "We have applied the line-length balancing technique to construct the cross-section to resolve the overall geometry of the frontal duplex for assessment of the play and hydrocarbon exploration."

[Tectonism and fracture-related dissolution induced the formation of the large-scale metamorphic granite reservoir: Implications from Bozhong 26–6 Precambrian bedrock trap, offshore Bohai Bay basin, Northern China](#) (2/24): "These research results can deepen scientific understanding surrounding the formation mechanism of buried-hill reservoirs and provide a geological model for reservoir prediction."

[Evaluation of sweet spots for a tight sandstone reservoir: A quantitative study of diagenesis in the fourth member of the Oligocene Huagang Formation, Xihu Depression, East China Sea Shelf Basin](#) (5/24): «Reservoir sweet spot evaluation is very important for tight sandstone gas exploration and development. Due to the characteristics of large burial depth, strong diagenesis heterogeneity, and prominent importance of diagenetic facies, sweet spot evaluation is the focus and

difficulty of unconventional oil and gas exploration and development."

[Petrophysical and seismo-stratigraphic analysis of the tertiary formations of the South onshore of the Rio Del Rey Basin \(Cameroon margin, Gulf of Guinea\) from well logs and seismic data](#) (12/24): "This study focused on the South onshore of the RDRB aims to delineate lithofacies, possible reservoirs with the potential to contain hydrocarbons (oil/gas), and evaluate the hydrocarbon quality and productivity through well logs and seismic data." *The authors would like to acknowledge TOTAL E&P for providing the subsurface data and SCHLUMBERGER for providing the Petrel software, and Petromine as part of this work was carried out in its laboratory of University of Douala (Cameroon)*

[Insights into the formation and growth of authigenic chlorite in sandstone: Analysis of mineralogical and geochemical characteristics from Shaximiao Formation, Sichuan Basin, SW China](#) (9/24): "This study aims to advance the theoretical understanding of authigenic chlorite growth and provide **crucial data support for oil and gas exploration** in the region."

[Hydrothermal alteration mechanisms of an Archaean metamorphic buried hill and the models for reservoir zonation, Bozhong depression, Bohai Bay Basin, China](#) (6/24): «This study may serve as **a reference for the hydrocarbon exploration** in metamorphic buried-hill reservoirs.»

[Gas-in-place content and occurrence state of deep shale gas in the Luzhou area, Sichuan Basin, China](#) (2/24): «The results are of great significance in evaluating the resource quantity of deep shale gas, **predicting "sweet spots" and formulating development plans.**"

[Analysis of the filling patterns and reservoir development models of the Ordovician paleokarst reservoirs in the tahe oilfield](#) (3/24): "It is highly important **to guide the exploration and development of carbonate oil and gas fields** to comprehensively study the formation process and mechanism of carbonate reservoir spaces and summarize the filling laws and reservoir development models of ancient karst areas...The development models corresponding to different patterns are summarized **to support the development and potential exploration of ancient cave-containing carbonate reservoirs.**

[Volcanic lithofacies control the space in unconventional, rhyolitic hydrocarbon reservoirs: The Hailar Basin, NE](#)

[China](#) (7/24): «...**promising targets for oil and gas exploration.** The facies model we obtain from the Hailar Basin may be extended to similar rhyolitic rocks in other basins hosting unconventional reservoirs.

[Petroleum system analysis of the komombo basin, southern Egypt: Insights from basin modeling and hydrocarbon geochemistry](#) (9/24): «This study integrates seismic, borehole, and geochemical data, coupled with 1D and 2D basin models, **to evaluate the hydrocarbon potential** and analyze the petroleum system within the Komombo Basin."

[Seismic Sedimentology Analysis of Meter-Scale Thin Sand Bodies in the Jurassic Qigu Formation, Yongjin Area, Junggar Basin](#) (8/24): «Extensive exploration has led to the discovery of substantial oil and gas resources in the Jurassic Qigu Formation in the Junggar Basin, which is the primary oil-bearing layer and has a **promising exploration potential**...This study was conducted within the framework of seismic sedimentology theory to investigate the spatiotemporal distribution patterns, evolution of sedimentary systems, and sedimentary models of the thin sand bodies in the Yongjin area of the Jurassic Qigu Formation in the Junggar Basin. Based on the collected data."

[Identification of complex crude oil categories in ultra-deep petroleum systems based on a new fluorescence analysis method: An example from the southwestern Tabei Uplift, Tarim Basin, China](#) (7/24): "Ultra-deep (burial depth >6000 m) petroliferous basins have large petroleum potential. In the last two decades, great breakthroughs have been achieved in ultra-deep petroleum exploration, and ultra-deep oil and gas resources have made increasing contributions to global petroleum production...The complicated crude oil categories significantly impeded the determination of the sources and formation mechanisms of crude oils, and how to effectively classify the categories of crude oils is **a critical issue in ultra-deep petroleum exploration**...The purpose of this study was to reveal the relationships of fluorescence parameters with geochemical and physical parameters for ultra-deep crude oils and establish correlation diagrams based on fluorescence parameters for identifying crude oil categories, which may provide new approaches for revealing the sources and formation mechanisms of crude oils in ultra-deep petroleum systems."

[Insights into the Wetting Mechanisms in Low-Permeability Sandstone Reservoirs and its Evolution Processes: the shahejie Formation in the Dongying Depression, Bohai Bay Basin](#) (10/24): "With increasing extent and

intensity of oil and gas exploration in recent years, low-permeability oil as an unconventional oil and gas resource has become a research hotspot in the field of oil and gas exploration...Our research provides valuable insights into the formation mechanisms of low-permeability sandstone reservoirs, with a view of **providing theoretical evidence for the exploration and development of such reservoirs.**"

[Geochemistry and accumulation of the ultra-deep Ordovician oils in the Shunbei oilfield, Tarim Basin: Coupling of reservoir secondary processes and filling events](#) (9/24): "The objective is to utilize organic geochemical methods to develop a nuanced depiction of the hydrocarbon accumulation complexities of the Tarim Basin, offering **valuable insights for the exploration of ultra-deep petroleum.**"

[Evaluation of Fluid Mobility and Factors Influencing the Deep Tight Sandstone of the Third Member of the Shahejie Formation in the Jiyang Depression, Bohai Bay Basin](#) (9/24): «With decreasing production from conventional oil reservoirs, tight oil reservoirs with immense resource potential have become an important topic in the field of oil exploration and development...a model for evaluating the fluid mobility for the deep tight sandstone reservoirs in the Linnan Depression is established, with the aim of providing **theoretical support for the next step of oil development and evaluation**...The Paleogene Es3 section of the Linnan Depression contains **significant tight oil resources** within its lacustrine delta-turbidite facies sandstone deposits."

[Diagenesis and reservoir quality evolution of estuarine sandstones: Insights from the Cenomanian-Turonian Yolde Formation, northern Benue Trough, NE Nigeria](#) (11/24): "These findings would provide useful insights that would **reduce the risks of exploration** of the sandstones and also supplies potential input data for forward diagenetic modelling of their subsurface equivalents in similar depositional settings elsewhere."

[Organic geochemical characterization of the seeped oils and Paleogene source rocks in the Southwest Java Basin \(SWJ\), Indonesia; tectonostratigraphic consideration on oil to source rock correlation](#) (7/24): "The findings of this study are expected to provide **supplementary information to researchers exploring the hydrocarbon prospect** of the South West Java region"

[Preliminary analysis of the indicators and accumulation models of gas hydrates in the central Zhongjiannan Basin, western South China Sea](#) (6/24): «The geophysical

indicators of gas hydrates are found for the first time in the central Zhongjiannan Basin of the SCS, yielding an **important reference for further exploration and development.**"

[Distribution of Permian and Triassic strata in the Laoshan Uplift, Southern Yellow Sea, using seismic attributes](#) (6/24): «Our findings will **aid in the exploration and evaluation of early hydrocarbon resources** in the LSU.»

[Integrated seismic-stratigraphic, sedimentological and petrophysical approaches for characterizing the reservoir potential of early Cretaceous Alam El Bueib formation in the Meleiha concession of North Western Desert, Egypt](#) (2/24): "The Early Cretaceous late syn-rift sediments of Alam El Bueib Formation host potential, however poorly-explored reservoir targets in the north Western Desert of Egypt...this study integrates seismic, sedimentological, and petrophysical data from Meleiha concession in the north Western Desert to build evolutionary models for Alam El Bueib succession and **predict the architecture of the potential reservoir facies**...Comprehensive identification of seismic facies, and linking their architecture with the sedimentary basin evolution are elemental **for hydrocarbon exploration and development endeavours.**"

[Evolution of Mesozoic paleo-uplifts and differential control on sedimentation on the southern margin of Kuqa Depression, Tarim Basin](#) (3/24): "This study will help elucidate the development and evolution of the paleo-uplifts on the southern margin of Kuqa Depression, northern Tarim Basin, clarify the relationship between provenance and sedimentary system, and **guide the oil and gas exploration in Tarim Basin and other basins** with the similar background globally."

[Geological reservoir characterization tasks based on computer vision techniques](#) (12/24): "Reservoir characterization is of great importance in oil and gas exploration and production...this review focused on understanding what types of data are commonly used, what problems are demanding attention in computer vision, through what methods these problems are usually solved and what tools are used for this purpose."

[Petroleum accumulations in the tarim basin during various tectonic stages as revealed by U–Pb dating of multi-phase calcite veins in deeply buried carbonate reservoirs](#) (6/24): "Constraining the evolutionary history of fluid activity and the process of oil charging in the deeply buried carbonate reservoirs is **crucial for fur-**

ther hydrocarbon exploration and development. In this study, we conducted an integrated study combining petrography, geochemistry, fluid inclusion analysis, and in-situ U–Pb dating of multi-phase calcite veins collected from the Ordovician carbonate reservoirs, Akeyasu area, Tarim Basin.”

[Organic geochemical characterization and hydrocarbon generation modeling of Paleozoic-Paleogene shales, Wadi Sirhan basin, south-eastern Jordan](#) (12/24): “This knowledge is valuable to delineate and **assess the future hydrocarbon potential** of the Wadi Sirhan Basin, as well as in other prospective areas of similar geological approach.”

[Fault system dynamics and their impact on ordovician carbonate karst reservoirs: Outcrop analogs and 3D seismic analysis in the Tabei region, Tarim Basin, NW China](#) (9/24): “The Tabei Uplift in the Tarim Basin of NW China represents an area with **significant hydrocarbon exploration potential**. This paper describes the effects of multi-phase faults on structural and hydrocarbon systems in the Tabei Uplift utilizing high-quality 3-D seismic, geological outcrops and drilling and production data... This analysis not only refines our understanding of the region’s geodynamic history but also aids in **optimizing exploration and development strategies**.” *The authors thank the Petro China Tarim Oil Field Company for providing seismic data, core samples, and other data used in this study.*

[Fault characterization and its significance on hydrocarbon migration and accumulation of western Tazhong Uplift, Tarim basin: Insight from seismic, geochemistry, fluid inclusion and in situ U-Pb dating](#) (9/24): “This research will illustrate oil and gas charging history and provide further **evidence for deep oil exploration** in the Tarim Basin.” *We are grateful to the Tarim Oilfield Company of CNPC for their collaboration and the reviewers for their valuable comments on this study.*

[Cenozoic faulting leading to petroleum escape in SW Ordos Basin, China: evidence from fault-related calcite in situ U-Pb dating, rare earth elements and fluid inclusions](#) (8/24): “Finding an effective way to link the fault movement to petroleum escape is **key to understand the potential of petroleum exploration** in the basin...This study will provide a novel insight into the petroleum leakage along the fault zone in the SW Ordos Basin.”

[Controls of tectonics and paleoclimate on depositional-diagenetic evolution and pore types of Upper Creta-](#)

[ceous successions \(Sarvak Formation\) in the Abadan Plain, Iran](#) (9/24): “This research aids in **reducing exploration risk** and enhancing the efficiency of hydrocarbon recovery in the Zagros Basin.” *We extend our appreciation to the National Iranian Oil Company for their valuable support and provision of data, which significantly contributed to the completion of this study.*

[Reconstruction of large-scale anisotropic 3D digital rocks from 2D shale images using generative adversarial network](#) (8/24): “Digital rock technology has played a significant role in **unconventional oil and gas exploration and development**. Current techniques face challenges such as high cost or low efficiency when reconstructing 3D pore structures at the nanoscale, which limit the study of rock physical properties in reservoirs. To address these issues, this work proposes an efficient generative adversarial network workflow for generating large-scale anisotropic 3D digital rocks from 2D images.”

[Geochemical characteristics of Ordovician crude oils in the F117 strike-slip fault zone of the Fuman oilfield, Tarim basin: Implications for ultra-deep hydrocarbon accumulation in the Tarim basin](#) (5/24): “This study could provide significant exploration **guidance for further ultra-deep oil and gas exploration** in the Fuman oilfield.”

[Coupling of source rock gas expulsion intensity and reservoir quality in time and space-a key to determine gas accumulation in Upper Paleozoic tight sandstones of the Mugua gas field, Ordos Basin, China](#) (6/24): “The dissolution and quartz-cemented facies within the Benxi, Taiyuan, and Shanxi Formations, intimately interbedded with hydrocarbon source rocks, exhibit good reservoir quality. They offer ideal conditions for gas accumulation, making them **prime candidates for exploration and development**.”

Materials Today Communications
[Simulation and experimental study on amphiphilic modified graphene oxide for EOR](#) (7/24): “As a non-renewable resource, petroleum plays an indispensable role in our life. However, it is difficult to explore new oil fields, and it is difficult for conventional oil fields to produce oil in harsh reservoirs with low recovery and low permeability because of high water content. Therefore, **the amount of oil produced cannot meet people’s demand for oil...it is particularly important to choose a new method to enhance oil recovery**. In recent years, nanoparticles have appeared in the public’s field of vision...[this paper] provides a direction for the application of amino acid modified

nanoparticles in oil displacement.”

Measurement: Sensors

[Optimization of coal seam pressure fracturing fluid system in the eastern edge of the Ordos Basin based on IoT sensors](#) (4/24): «By using ionic surfactants as fracturing fluids, the surface tension of the fracturing fluid can be effectively reduced, the porosity of coal samples can be increased, and the flow and **extraction of coalbed methane can be promoted.**»

[Characteristics of middle-high-rank coal reservoirs and prospects for CBM exploration and development in western Guizhou, China](#) (6/24): «This paper comparatively analyzes the characteristics of middle- and high-rank coal reservoirs in the western Guizhou region...and **analyzes the exploration and development potential** and direction of middle-high-rank CBM in the region.»

Micron

[A comparative approach employing microCT for the analysis of Cenozoic foraminifera from the Brazilian carbonate equatorial platform](#) (5/24): «Worldwide, some of the largest hydrocarbon reservoirs are located in tropical neritic carbonate deposits. Biostratigraphic and paleoenvironmental analyzes of these sedimentary records are often based on the study of foraminiferal assemblage. Foraminifera-based biozones are widely employed in the oil industry to support drilling processes that, alongside petrophysical prospecting, define interval favorable for exploiting hydrocarbon resources...the present study aims to compare different methods of analyzing foraminifera assemblages.”

Natural Gas Industry B

[A mathematical model for predicting the productivity of fractured horizontal wells of tight sandstone gas: A case study in the Sulige gas field](#) (4/24): «This model provides **valuable guidance on predicting productivity in tight sandstone gas reservoirs.**»

[Mechanical properties and optimization of deflecting drills with ultra-short radius flexible drill pipes](#) (4/24): «**To increase oil and gas production**, old well tapping and the deep development of thin and poor oil reservoirs have gradually become a focus of marine oil and gas development...The flexible drill pipe is the key component in the drilling process of an ultra-short radius horizontal well...In this study, geometric and mechanical models of a flexible drill pipe are established”

[Numerical modeling of deep coalbed methane accumu-](#)

[lation in the central-eastern Ordos Basin, China](#) (8/24): «Deep coalbed methane (CBM) has become one of the most significant **potential sources of natural gas** in China. However, the exploration and development of deep CBM in China is still in an initial stage, and its accumulation-forming characteristics require further study. Therefore, taking the No. 8 deep coal seam in the central-eastern region of Ordos Basin as an example, this study investigated the geologic characteristics of CBM accumulations to establish a numerical model.»

[Exploring the prospects of deep natural gas resources from the geochemical parameters of the Shahejie Formation source rocks in the Banqiao depression](#) (8/24): «This article conducts multiple experimental studies on the geochemistry of Shahejie Formation source rock in the Banqiao Depression of the Bohai Bay Basin, including pyrolysis, TOC, chloroform bitumen A determination, vitrinite reflectance, kerogen microscopic component identification, saturated hydrocarbon chromatography, and saturated hydrocarbon chromatography–mass spectrometry, to evaluate the Shahejie Formation and provide **support for natural gas exploration** in the Banqiao Depression.»

[Fluid activity characteristics of shallow shale veins in the Wufeng–Longmaxi Formation in the Shixi syncline in northern Guizhou and their significance for shale gas preservation](#) (10/24): “This study provides a scientific basis **for identifying favorable areas for oil and gas exploration** in northern Guizhou and the surrounding areas.”

[Pore heterogeneity and evolution of the Lower Silurian Longmaxi shale reservoir in the Southern Sichuan Basin: Responses to sedimentary environment](#) (10/24): “As the cornerstone for evaluating the storage capacity of shale reservoirs and **assessing the viability of shale gas exploitation**, shale pores play a very important role in shale reservoirs. Based on drilling well and test data, deep learning, and artificial intelligence for image analysis, the types, characteristics, structures, and vertical heterogeneity of shale pores were studied.”

[Hydrocarbon accumulation process and reservoir-forming models of structure A in the central inversion tectonic belt of the Xihu Depression, East China Sea Basin](#) (8/24): «These reservoir formation models are critical for guiding the exploration of a series of large traps, including structure A and its surrounding structures, and they have important reference significance **for natural gas exploration** in other basins.»

[Types of lithofacies in the Lower Cambrian marine shale of the Northern Guizhou Region and their suitability for shale gas exploration](#) (10/24): "The RTSS and MTSS with a RO range of 2.0%–3.0% stand out as the most **favorable target shale types for shale gas exploration and development.**"

Ocean Engineering

[Multi-objective optimization framework for deepwater riser jetting installation parameters using deep reinforcement learning](#) (10/24): «Optimizing conductor casing jetting installation in offshore oil and gas exploration is essential for underwater wellhead reliability...These findings present a groundbreaking approach for conductor casing jetting, offering greater precision and efficiency in offshore drilling operations and the potential to redefine industry standards.»

[Mechanical analysis of mud return on deepwater drilling riser system](#) (6/24): «The exploration and development of offshore oil and gas are shifting towards deep waters due to the growing energy demand. This transition poses significant challenges for offshore oil and gas equipment, particularly the riser system, which is considered a critical component...The paper examines the mechanisms and effects of mud forces generated by mud return on the deepwater drilling riser system.»

[The stress field simulation of a novel M-type convex stepped bottomhole and the rate of penetration enhancement mechanism of a new type of central-grooved PDC bit for offshore deep & ultradeep well drilling](#) (2/24): «The focus of global oil & gas development is moving towards the offshore deep and ultradeep formations. However, the offshore deep & ultradeep is a changing task due to the low rock-breaking efficiency, low rate of penetration (ROP) and huge drilling costs...This work provides a promising method and a tool to **improve ROP for offshore deep & ultradeep well drilling.**"

[Research on simulation model of deepwater drilling and optimization method of drilling parameters based on energy](#) (11/24): "Rich oil reservoirs are present in deepwater and ultra-deepwater, but the challenging ocean environment limits the benefits of drilling engineering during exploration and development. Surface parameter optimization based on simulation models is a crucial method for enhancing drilling ROP(Rate of penetration). However, challenges such as large module scale and high coupling difficulty need to be addressed. This study establishes a full-scale deepwater drilling system simulation model through

multi-software joint modeling, taking into account factors such as the disturbance of the periodic dynamic riser model to the drilling string system, interaction of bit and rock, impact between the drilling string system and the riser/wellbore, etc."

[Strength and tightness analysis of wellhead flange connections considering ultrahigh-pressure conditions](#) (9/24): «Flanges play a crucial role as connection equipment and are extensively utilized in the **exploration and extraction of oil and gas**...Despite harboring substantial oil and gas resources, the drilling and extraction processes in these high-temperature, high-pressure wells entail formidable challenges and costs...Overall, this paper significantly contributes to the understanding and optimization of UHP wellhead flanges in the oil and gas industry."

[Numerical investigation on the flow field characteristics of a new type of double-stage jetting PDC bit for deep-water shallow formations drilling](#) (12/24): "Deepwater is the focus and hot spot of current and **future global oil and gas exploration and development**...in order to reduce the cost of deepwater oil and gas development and search for strategic breakthrough in the field of deepwater oil and gas resource, the safe and efficient deepwater shallow formations drilling remains to be a technical problem that in urgently need to be addressed...In this paper, a new efficient soil-breaking approach by forming a concave-stepped bottomhole with double-stage jet drilling in deepwater shallow formations is presented."

[An MINLP model for optimal sandwich pipe design based on structural and thermal criteria](#) (2/24): "The offshore production of oil and gas has moved into deepwater and ultra-deepwater regions. The ability to withstand external pressure becomes a primary concern for subsea pipes...The main objective of this study is to develop a suitable optimal design model for SPs so that their efficiency can be fully exploited."

[Refined VFIFE modeling on dynamic behaviours of deepwater S-lay pipeline in overbend section](#) (6/24): "To meet the ever-growing demand for oil and gas, the offshore oil-gas industry has extended into deepwater and ultra-deepwater areas. Currently, offshore pipelines are the most economical and effective method for maritime oil and gas transportation...[this paper] provides important theoretical references for the **installation design of deepwater pipelines.**"

[Integrated finite element analysis and machine learning approach for propagation pressure prediction in](#)

[hybrid Steel-CFRP subsea pipelines](#) (11/24): «In recent years, the **exploration of oil and gas** in deep and ultra-deep-water regions has been increasing through the utilization of **deep-water engineering equipment**...In contrast to traditional methods for predicting the collapse and propagation pressure of deep-sea pipelines, which often rely on empirical formulas and conventional finite element analysis (FEA), this study introduces a novel approach aimed at overcoming their inherent limitations.»

Ore & Energy Resource Geology

[Evaluation of top seal capacity by pseudo-capillary pressure model in Suriname offshore Basin](#) (10/24): «Seal rock, in hydrocarbon exploration, generally defines the relatively low permeable rock, which acts as a barrier for the hydrocarbon to migrate...this work integrates drilled well data such as Special Core Analysis (SCAL) with Mercury Injection Capillary Pressure (MICP) from the laboratory, wireline logs, conventional core, and side wall core data from 11 drilled wells with high-quality 3D QAPSDM seismic dataset to evaluate the seal efficiency and its variability over an area of approximately 4750 sq km.»

[Comprehensive Characterization of Micro-pore Structures in Different Lithologies of the Lacustrine Fine-grained Mixed Sedimentary Reservoir of the Shahejie Formation in the Jiyang Depression](#) (11/24): «This study provides a theoretical basis for the exploration and development of fine-grained sedimentary reservoirs.»

Organic Geochemistry

["This journal welcomes contributions that support and advance the UN's sustainable development goals"](#)

[Source and significance of Cretaceous oil seepage in the northern Ordos Basin, China](#) (1/24): «The zone between the Dongsheng gas field and the Wulanger Uplift is therefore likely to have very good accumulation and preservation conditions and may offer a **promising exploration prospect** for natural gas.»

[Geochemical fingerprints of Dongpu Depression crude oils in Bohai Bay Basin, northern China: Insights from biomarkers and isotopic compositions of selected alkylnaphthalenes and alkylphenanthrenes](#) (9/24): «The research shows the importance of the aromatic isotopic compositions in petroleum system characterization and could be used as a **reference for a practical exploration campaign of petroleum**...With increasing oil demand this study enhances our knowledge of petroleum geochemistry, especially crude oil samples discovered in the Dongpu Depression and the Bohai Bay Basin. Thus,

this research has the potential to improve comprehension of the Cenozoic oil quality in the Dongpu Depression and have broader implications.»

[Gas-phase reaction of CH₄ and H₂S – Evidence from pyrolysis experiments and case study from the Sichuan Basin](#) (8/24): «Among the most important aspects of natural gas exploration is the identification of gas sources and understanding the different processes experienced by the gas since formation and until production...In recent years, volatile organic sulfur compounds (VOSC), such as thiols, sulfides and thiophenes, were proposed as a potential geochemical proxy for the **evaluation of natural gas reservoirs**...The current study aims at developing a novel, complementary VOSC proxy for the analysis of dry gas.»

[Palaeogeography, Palaeoclimatology, Palaeoecology Organic matter enrichment in shale deposited proximal to paleo-uplifts and its impact on shale gas exploration](#) (1/24): «Results of the present study contribute supplementary information regarding the mechanism of organic matter enrichment in shale and can **provide guidance for shale gas exploration and development** in geologically similar regions.»

[Enrichment mechanism of organic matter and silicon in lower Cambrian shale of the Yangtze Platform](#) (8/24): «We are especially interested in elucidating organic carbon and silicon enrichment mechanisms of the Niutitang Formation that will benefit shale gas exploration and development of these deposits...Results of the present study offer theoretical **guidance for future shale gas exploration and development** efforts in geologically similar regions.»

Palaeoworld

[This journal welcomes contributions that support and advance the UN's sustainable development goals, in particular SDG 13 \(Climate Action\)](#)

[Middle to Upper Ordovician stable carbon isotope stratigraphy and sedimentary facies in the Shunbei and Tahe areas, northern-central Tarim, China](#) (8/24): «The Shunbei area, located in northern-central Tarim (Northwest China), represents a new, **important area for petroleum and gas exploration**. This study presents high-resolution, conodont biostratigraphically controlled stable carbon isotope data from 540 samples of four deeply buried (7000–8000 m) wells in the Shunbei area and its nearby Tahe area spanning the Middle to Upper Ordovician for detailed chemostratigraphic correlations.” **This work was supported by the SINOPEC Northwest Company**

Petroleum

[Sedimentary characteristics and lithofacies paleogeography of the Cambrian in Sichuan basin, Southwest China](#) (6/24): «Research on the Cambrian in Sichuan basin has important theoretical significance and practical application value in **guiding hydrocarbon exploration**. This study focuses on sedimentary characteristics and lithofacies paleogeography in the Cambrian in Sichuan basin.”

[A hybrid machine learning approach based study of production forecasting and factors influencing the multiphase flow through surface chokes](#) (6/24): «The presented intelligent modeling approach is more advantageous than empirical relationships and provides better generalization for **the prediction of oil prediction**.”

[Performance of evolutionary optimized machine learning for modeling total organic carbon in core samples of shale gas fields](#) (3/24): “The results show that, independent of the metaheuristic used to guide the model selection, optimized extreme learning machines attained the best performance scores according to six metrics. Such hybrid models can be used in exploratory geological research, particularly for unconventional oil and gas resources.”

[Experimental and Modelling studies on static sag of solid weighting powders in Polysulfonate workover fluids at high temperature and high pressure](#) (9/24): “With the continuous increase in oil and gas exploration, the number of deep wells, ultra-deep wells, and high-temperature exploration wells has been increasing, and the requirements for the temperature resistance and thermal stability of water-based workover fluids are also increasing...The experimental method and the correlation proposed in this work provide a fresh approach to predict and control the static sag of workover fluids at HTHP.”

[Characteristics and genesis of shoal facies reservoir of the Lower Ordovician Tongzi Formation in southeastern Sichuan Basin, China](#) (9/24): «The study can be used as a reference for the further exploration of Ordovician petroleum in the Sichuan Basin and other regions owning similar geological settings.»

[Paleo-uplift forced regional sedimentary evolution: A case study of the Late Triassic in the southeastern Sichuan Basin, South China](#) (9/24): “This study is of great significance for understanding of both stratigraphic division and sedimentary evolution providing theoretical

support for the exploration and development of oil and gas.”

Petroleum Exploration and Development
Editor-in-Chief: Dai Jinxing, RIPED, PetroChina, China

[Enrichment model and major controlling factors of below-source tight oil in Lower Cretaceous Fuyu reservoirs in northern Songliao Basin, NE China](#) (4/24): «Comprehensive analysis suggests that the Fuyu reservoir in the Qijia–Gulong Sag has good conditions for tight oil enrichment and has been less explored, and it is **an important new zone for tight oil exploration in the future**.”

[Exploration breakthrough and factors for enrichment and high-yield of hydrocarbons in ultra-deep clastic rocks in Linhe Depression, Hetao Basin, NW China](#) (10/24): “The **significant breakthrough of ultra-deep oil and gas exploration** in the Linhe Depression reveals the good potential of ultra-deep clastic rocks in this area, and provides **valuable reference for oil and gas exploration of ultra-deep clastic rocks** in other areas.”

[Accumulation sequence and exploration domain of continental whole petroleum system in Sichuan Basin, SW China](#) (10/24): “Based on the theory and concept of the whole petroleum system, **the continental shale gas and tight gas resources in the Sichuan Basin have great potential**, especially in the central and western parts with abundant unconventional resources.”

[Research advances on the mechanisms of reservoir formation and hydrocarbon accumulation and the oil and gas development methods of deep and ultra-deep marine carbonates](#) (8/24): «The findings are expected to provide **technical supports for the exploration and development of deep and ultra-deep carbonate oil and gas reservoirs**.”

[Whole petroleum system in Jurassic coal measures of Taibei Sag in Tuha Basin, NW China](#) (6/24): «The new understanding of the whole petroleum system in the coal measures could further enrich and improve the geological theory of the whole petroleum system, and provide **new ideas for the overall exploration of oil and gas resources** in the Tuha Basin.»

[Hydrocarbon accumulation characteristics in basement reservoirs and exploration targets of deep basement reservoirs in onshore China](#) (2/24): “...have favorable conditions for hydrocarbon accumulation, and thus they are considered as the **main targets for future exploration** of deep basement reservoirs.»

[Impact of Tethyan domain evolution on the formation of petroleum systems in the Sichuan super basin, SW China](#) (10/24): "Future oil and gas exploration should focus on potential gas systems during the Sinian rift period, Cambrian pre-salt gas systems in the eastern and southern Sichuan, as well as whole oil and gas systems of Permian and Triassic."

[Evaluation of source rocks and prediction of oil and gas resources distribution in Baiyun Sag, Pearl River Mouth Basin, China](#) (10/24): "The present geothermal field of the sag was reconstructed, and the evolution of tectonic-thermal evolution history was restored. Based on this work, the thermal simulation experiment and numerical simulation were carried out to predict the type, scale, and distribution of hydrocarbon resources in the sag, in order to provide technical support for the exploration deployment of the Baiyun Sag."

[A technique for enhancing tight oil recovery by multi-field reconstruction and combined displacement and imbibition](#) (2/24): «Field application in Block Yuan 284 of the Huaqing Oilfield in the Ordos Basin has demonstrated that this technology increases the recovery factor by 12 percentage points, enabling large scale and efficient development of tight oil."

[Petroleum geological characteristics and exploration targets of the oil-rich sags in the Central and West African Rift System](#) (2/24): «The combination of reservoir and cap rocks inside source rocks of basins with multiple superimposed rifting stages, as well as the lithologic reservoirs and the shale oil inside source rocks of strong inversion basins are important fields for future exploration in basins of the COWARS.»

[Natural gas exploration potential and favorable targets of Permian Fengcheng Formation in the western Central Depression of Junggar Basin, NW China](#) (6/24): «...the gas-generating potential of the Fengcheng source rock is evaluated, the distribution of large-scale effective source kitchen is described, the genetic types of natural gas are clarified, and four types of favorable exploration targets are selected."

[Enrichment conditions and resource potential of coal-rock gas in Ordos Basin, NW China](#) (10/24): "Based on the sedimentary environment and distribution characteristics of deep coal rocks in the Ordos Basin, this paper investigated their hydrocarbon generation characteristics, reservoir performance, gas content, and accumulation play, elucidated the geological characteristics and enrichment conditions of coal-rock gas in the

Ordos Basin, and identified the favorable areas for coal-rock gas enrichment, in order to point out the future direction of coal-rock gas exploration and provide a theoretical foundation for large-scale exploration and development of coal-rock gas in China."

[Hydrocarbon accumulation in deep ancient carbonate-evaporite assemblages](#) (2/24): «As a result, the Cambrian strata in the Tazhong Uplift North Slope, Maigaiti Slope and Mazatag Front Uplift Zone of the Tarim Basin, the Cambrian strata in the eastern-southern area of the Sichuan Basin, and the inter-evaporite Ma-4 Member of Ordovician in the Ordos Basin, China, are defined as favorable targets for future exploration."

[Igneous intrusion contact metamorphic system and its reservoir characteristics: A case study of Paleogene Shahejie Formation in Nanpu sag of Bohai Bay Basin, China](#) (4/24): «The proposal and application of the geological model of the intrusion contact metamorphic system are expected to promote the discovery of exploration targets"

[Tectono-sedimentary evolution and oil-gas geological significance of first to third member of Ordovician Majiagou Formation in Ordos Basin, NW China](#) (10/24): "The source rocks developed diachronously at the bottom of Majiagou Formation form a favorable source-reservoir assemblage with the shoal facies reservoir distributed around the slope of 01m2–01m3, and they have certain exploration potential for natural gas."

[Research progress and development of deep and ultra-deep drilling fluid technology](#) (8/24): «The research progress of deep and ultra-deep drilling fluid technology systematically reviewed, the key problems existing are analyzed, and the future development direction is proposed.»

[Formation of large- and medium-sized Cretaceous volcanic reservoirs in the offshore Bohai Bay Basin, East China](#) (6/24): "The out-source volcanic buried hills in the Bodong low uplift are favorable exploration targets. These buried hills are in the structural fault zones, and are located in or closely adjacent to hydrocarbon-rich sags with good hydrocarbon charging conditions. Meanwhile, these buried hills are covered by hydrocarbon source rocks or thick mudstones of the Paleogene Dongying Formation, which provide good preservation conditions. For example, BZ8-3S and LK7-1 are favorable exploration breakthrough targets."

[Coal-rock gas: Concept, connotation and classification](#)

[criteria](#) (8/24): «The paper summarizes the technical and management challenges and points out the research directions, laying a foundation for the management, exploration, and development of coal-rock gas in China.»

[Main controlling factors and exploration enlightenment of aluminous rock series gas reservoirs in Ordos Basin, NW China](#) (6/24): «The gas reservoirs of aluminous rock series, which are clustered at multiple points in lenticular shape, are **important new natural gas exploration fields with great potential** in the Upper Paleozoic of North China Craton.»

[Episodic hydrothermal alteration on Middle Permian carbonate reservoirs and its geological significance in southwestern Sichuan Basin, SW China](#) (2/24): «Hydrothermal dolomite reservoirs with local connected pore/vugs and fractures have **exploration potential.**»

[Petroleum exploration and production in Brazil: From onshore to ultra-deepwaters](#) (8/24): «Summarizing and reviewing Brazil's exploration and development journey from onshore, shallow water, deepwater, ultra-deepwater to the pre-salt, as well as its successful practices and theoretical and technological advancements, holds **significant reference value for global deepwater petroleum exploration and development.**»

[Discovery and petroleum geological significance of delta in the third member of Oligocene Lingshui Formation in southern Baodao Sag, Qiongdongnan Basin, South China Sea](#) (4/24): «The delta of the Ling 3 Member is coupled with fault blocks to form diverse traps, which are **critical exploration targets** in southern Baodao Sag.»

[Iteration and evaluation of shale oil development technology for continental rift lake basins](#) (8/24): «This article summarizes and analyzes the achievements in drilling, fracturing and development technology iterations for shale oil in continental rift lake basins, especially the shale oil in the Jiyang Depression, and proposes the development direction for technological iteration in shale oil development with the intent to accelerate the establishment of a series of efficient development technologies for shale oil in continental rift lake basins and provide **a reference for achieving benefit development of shale oil.**»

[Reservoir characteristics and formation model of Upper Carboniferous bauxite series in eastern Ordos Basin, NW China](#) (2/24): «This recognition provides geological basis

for the exploration and development of natural gas in the Upper Carboniferous in the study area and similar bauxite systems.»

[Genetic mechanism and main controlling factors of high-quality clastic rock reservoirs in deep and ultra-deep layers: A case study of Oligocene Linhe Formation in Linhe Depression, Hetao Basin, NW China](#) (6/24): «With the progress in global oil and gas exploration, onshore deep to ultra-deep strata have become one of the important exploration fields...The findings are expected to **provide technical supports for selecting future exploration targets** and evaluation and prediction of deep and ultra-deep clastic reservoirs.»

[Distribution patterns of tight sandstone gas and shale gas](#) (8/24): «The authors systematically review the research history of the distribution of tight sandstone gas and shale gas reservoirs, analyze the distribution characteristics and genetic types of shale gas and tight sandstone gas reservoirs, in order to **provide technical support for the exploration and development of shale gas and tight sandstone gas reservoirs.**»

[Sedimentary build-ups of pre-salt isolated carbonate platforms and formation of deep-water giant oil fields in Santos Basin, Brazil](#) (8/24): «The result not only provides an important basis for the advanced selection of potential play fairways, bidding of new blocks, and deployment of awarded exploration blocks in the Santos Basin, but also provides a reference for the global selection of deep-water exploration blocks in passive continental margin basins.»

[Hydrocarbon accumulation and orderly distribution of whole petroleum system in marine carbonate rocks of Sichuan Basin, SW China](#) (8/24): «The hydrocarbon accumulation characteristics of each whole petroleum system are analyzed...Large-scale marginal-platform reef-bank facies zones, deep shale gas, and large-scale lithological complexes related to source-connected faults are **future marine hydrocarbon exploration targets** in the Sichuan Basin.»

[Characteristics and hydrocarbon accumulation model of Paleogene whole petroleum system in western depression of Qaidam Basin, NW China](#) (10/24): «All these findings are helpful to supplement and expand the WPS theory in the continental lake basins in China, and **provide theoretical guidance and technical support for oil and gas exploration** in the Qaidam Basin.»

[Geological characteristics and exploration breakthroughs of coal rock gas in Carboniferous Benxi For-](#)

[mation, Ordos Basin, NW China](#) (4/24): “To explore the geological characteristics and exploration potential of the Carboniferous Benxi Formation coal rock gas in the Ordos Basin, this paper presents a systematic research on the coal rock distribution, coal rock reservoirs, coal rock quality, and coal rock gas features, resources and enrichment...Substantial breakthroughs have been achieved, with the possible reserves over a trillion cubic meters and the proved reserves over a hundred billion cubic meters”

[Influences of different alkaline and acidic diagenetic environments on diagenetic evolution and reservoir quality of alkaline lake shales](#) (2/24): «Dolomitic shale in the transitional zone and siltstone in the marginal zone have relatively high content of free shale oil and strong fracability, and are favorable “sweet spots” for shale oil exploitation and development.”

[Dynamic simulation of differential accumulation history of deep marine oil and gas in superimposed basin: A case study of Lower Paleozoic petroleum system of Tahe Oilfield, Tarim Basin, NW China](#) (10/24): “This study provides a reference for the dynamic quantitative evaluation of deep oil and gas in the Tarim Basin”

[Three-dimensional structural models, evolutions and petroleum geological significances of transtensional faults in the Ziyang area, central Sichuan Basin, SW China](#) (6/24): «The major reservoirs in this area are expected to achieve breakthroughs in oil and gas exploration.”

Petroleum Research
Editor-in-Chief: Chengzao Jia, China National Petroleum Corporation, China

[Characteristics and genesis of tuffaceous shale oil lithofacies: A case study of Lucaogou Formation in Santanghu Basin](#) (3/24): “...of great significance for selection of shale oil exploration zones.”

[Identification and Tracing of Near-Source Petroleum Transport System Based on Reservoir Bitumen Index \(RBI\) Method: A Case Study of the Lower Cambrian in the Tazhong-Bachu Area, Tarim Basin, China](#) (6/20): «The Lower Cambrian carbonate reservoir is considered a near-source discrete petroleum transport system, providing great potential for further oil and gas exploration in the Lower Paleozoic in the Tazhong-Bachu area.»

[Applicability of deep neural networks for lithofacies](#)

[classification from conventional well logs: An integrated approach](#) (2/24): «Oil and gas exploration holds significant promise for deep learning and could experience a breakthrough. This research also lays the groundwork for us to further the thorough fusion of conventional oil and gas exploration and artificial intelligence.»

[Shale gas accumulation mechanism of deep-buried marine shale of Wufeng Formation of Upper Ordovician to Longmaxi Formation of Lower Silurian in southeastern part of Sichuan Basin](#) (8/24): «This study provides a reference for exploration and development of deep shale gas in Sichuan Basin and other areas.»

[Research on slim-hole drilling technology for shale gas geological survey in China](#) (9/24): “This research provides substantial advances in drill-core technology and improvements in exploration efficiency. Moreover, it provides a reference frame for well structural design and selection of construction technology for shale gas exploration drilling projects.”

[Reservoir identification of marine facies carbonate shoals in the Middle Permian in the Sichuan Basin](#) (3/24): “New theories and methods are needed to support the oil and gas exploration in shoal subfacies reservoirs...This forecasting approach can effectively reduce the risk of shoal subfacies reservoirs prediction caused by the heterogeneity of marine carbonates. Therefore, it can provide a scientific basis for the prediction of high-frequency cycles of the shoal subfacies developed in platform facies and platform margin facies in other marine carbonate sedimentary basins.”

[Development characteristics and controlling mechanism of different microfracture combinations in shale reservoir: A case study of silurian longmaxi formation in Weiyuan area](#) (7/24): «The development characteristics and laws of fractures are of great significance in the exploration and development of shale oil and gas. This study examines organic-rich shales of the Wufeng–Longmaxi Formation in the Weiyuan area of the Sichuan Basin.»

[Identification of carbonate sedimentary facies from well logs with machine learning](#) (6/24): “This study is helpful for identifying complex sedimentary facies of carbonate reservoirs from well logs...Determining the petrophysical properties of sedimentary facies is important to provide practical guidance for oil and gas exploration.”

[Electrofacies-driven 3D-static reservoir modeling of the Late-Cenomanian AbuRoash'G lithounit \(Abu-Gharadig Basin, Egypt\): Sequence stratigraphic and geomodel constraints for a gas-bearing estuarine system](#) (7/24): «Estuarine-systems, developed upon transgressive-phases, feature high-quality reservoir-facies, e.g. tidal-bars, that are important stratigraphic-plays critical for hydrocarbon exploration-development...in this study, we performed 3D-static geocellular reservoir-modeling process...The tidal-bar facies' efficient reservoir quality **calls for attention and testing in future development plans** and investigation in similar settings.»

[Sedimentary microfacies of Member 5 of Xujiahe Formation in the Dongfengchang area, Sichuan Basin](#) (3/24): «These research findings are helpful to **guide the subsequent exploration of T_3X_5 gas reservoir** and also theoretically significant for investigating the depositional evolution of the Xujiahe Formation in central Sichuan Basin.»

Petroleum Science

[Quantitative prediction model for the depth limit of oil accumulation in the deep carbonate rocks: A case study of Lower Ordovician in Tazhong area of Tarim Basin](#) (2/24): «The maximum burial depth of the Lower Ordovician carbonate reservoir in the Tazhong area does not exceed this depth, which indicates **the feasibility and prospect of deep carbonate oil exploration in this field.**»

[Geometry and formation mechanism of tension gashes and their implication on the hydrocarbon accumulation in the deep-seated strata of sedimentary basin: A case from Shunnan area of Tarim Basin](#) (2/24): «This study not only provides seismic evidence for the formation and evolution of super large STGs, but also provides certain **guidance for oil and gas exploration** in this area.»

[Rock physics properties and influencing factors of subsalt carbonate reservoir of Ordovician Majiagou Formation in central Ordos Basin](#) (5/24): «These findings enable the accurate recognition of the seismic elastic characteristics of high-quality dolomite reservoirs in mound-shoal environments, thus providing a rock physics experimental basis for **improving the precision of seismic reservoir prediction** in the study area.»

[Gas prediction in tight sandstones based on the rock-physics-derived seismic amplitude variation versus offset method](#) (6/24): «...suggesting that the

obtained results are suitable for reliable **predictions of tight sandstones** with high gas enrichments.»

[Insights into microscopic oil occurrence characteristics in shales from the Paleogene Funing Formation in Subei Basin](#) (7/24): «These findings may enhance the understanding of the microscopic occurrence characteristics of shale oil and will contribute to **guide resource estimation and shale oil sweet spot exploitation** in the Gaoyou Sag, Subei Basin.»

[Influence of tectonic preservation conditions on the nanopore structure of shale reservoir: A case study of Wufeng-Longmaxi Formation shale in western Hubei area, south China](#) (2/24): «This study is significant to clarify the scale of shale gas formation and enrichment in complex tectonic regions, and helps in the **selection of shale sweet spots.**»

[Stochastic seismic inversion and Bayesian facies classification applied to porosity modeling and igneous rock identification](#) (4/24): «Porosity is a petrophysical property that plays a key role in **petroleum exploration and production**...We presented a three-step approach that employs quantitative seismic interpretation routines for the porosity modeling of the Brazilian presalt carbonate reservoirs»

[A systematic review of machine learning modeling processes and applications in ROP prediction in the past decade](#) (5/24): «Fossil fuels are undoubtedly important, and drilling technology plays an important role in realizing fossil fuel exploration; therefore, the prediction and evaluation of drilling efficiency is a key research goal in the industry...The results demonstrate that machine learning models can significantly improve the accuracy of ROP prediction and are a powerful tool to **promote efficient and intelligent fossil fuel exploration operations.**»

[Research on multi-wave joint elastic modulus inversion based on improved quantum particle swarm optimization](#) (10/24): «This method can offer theoretical guidance for horizontal well placement and help identify approximate location of oil and gas reservoirs, thereby reducing exploration risks and increasing the success rate of drilling.»

[Geophysical prediction of organic matter abundance in source rocks based on geochemical analysis: A case study of southwestern Bozhong Sag, Bohai Sea, China](#) (2/24): «The results indicate that the E_2S_{1+2} and E_2S_3 have **better hydrocarbon generative potentials** with the highest OM abundance, the E_3d_3 are of the

second good quality, and the $E_3d_2^L$ have poor to fair hydrocarbon generative potential.»

[Impacts of proppant distribution on development of tight oil reservoirs with threshold pressure gradient](#) (2/24): “Aiming at the development of unconventional oil reservoirs in Triassic Chang-7 Unit, Ordos Basin of China, we presented an integrated workflow to investigate how (1) proppant placement in induced fracture and (2) non-linear flow in reservoir matrix would affect well productivity and fluid flow in the reservoir.»

[Coupled Effects of Paleofluid Evolution on Ultra-deep Microbialite Reservoir Modification: A case study of the upper Ediacaran Deng-2 Member within the Penglai area of central Sichuan Basin, SW China](#) (11/24): “The research outcome may update our understanding on the retention mechanism and the insights for further hydrocarbon exploration of Precambrian ultra-deep microbial reservoirs.”

[The effects of various factors on spontaneous imbibition in tight oil reservoirs](#) (2/24): «Slickwater fracturing fluids have gained widespread application in the development of tight oil reservoirs...the poor reservoir properties and higher water injection pressure of tight reservoirs complicate their development by conventional means...The purpose of this paper is to provide theoretical support and a scientific basis for fracture modification using slickwater fracturing fluid in tight reservoirs.»

[Complementary testing and machine learning techniques for the characterization and prediction of middle Permian tight gas sandstone reservoir quality in the northeastern Ordos Basin, China](#) (8/24): «Tight gas sandstones (TGSs) are valuable resources worldwide... The objectives of this study are to provide a systematic scheme to evaluate and predict the reservoir quality of TGSs in the study area and similar regions.»

[An adaptive physics-informed deep learning method for pore pressure prediction using seismic data](#) (4/24): «Formation pore pressure is one of the most important reservoir parameters during hydrocarbon exploration and development...In this study, we propose a novel adaptive physics-informed deep learning model with the name CGP-NN, which can predict the pore pressure values directly from seismic attributes data.”

[Depositional model of the Member Deng-2 marginal microbial mound-bank complex of the Dengying Formation in the southwestern Sichuan Basin, SW](#)

[China: Implications for the Ediacaran microbial mound construction and hydrocarbon exploration](#) (4/24): “The goal is to determine the significance of the Ediacaran microbial mound construction process and future worldwide hydrocarbon explorations.”

[Machine learning-based grayscale analyses for lithofacies identification of the Shahejie Formation, Bohai Bay Basin, China](#) (7/24): «It is of great significance to accurately and rapidly identify shale lithofacies in relation to the evaluation and prediction of sweet spots for shale oil and gas reservoirs...This method can not only effectively characterize the material composition of shale, but also numerically characterize the development degree of shale laminae, and solve the problem that difficult to identify millimeter-scale laminae based on logging curves, which can provide technical support for shale lithofacies identification, sweet spot evaluation and prediction of complex continental lacustrine basins.”

[Statistical assessment of the financial performance of shale-gas wells coupling stochastic and numerical simulation](#) (7/24): «Shale gas operations involve very large financial investments, which require thorough financial studies to make adequate investment decisions...In this study, we propose a methodology for the development of dynamic financial analysis tools for shale gas investments that include an estimate of the probability of the occurrence or financial risks or their quantification.”

[3D rock physics template-based probabilistic estimation of tight sandstone reservoir properties](#) (4/24): «The application of well-log and seismic data demonstrates that our 3D rock physics template-based probabilistic inversion approach performs well in predicting the spatial distribution of high-quality tight sandstone reservoirs in southwestern China.»

[Systematic prediction of the gas content, fractures, and brittleness in fractured shale reservoirs with TTI medium](#) (5/24): «The main objective is to optimize the development of shale gas-rich areas by predicting seismic sweet spot parameters in shale reservoirs.”

[Three-dimensional internal multiple elimination in complex structures using Marchenko autofocusing theory](#) (7/24): “Multiples and primaries often overlap because of the rugged seabed structure, leading to poor imaging effects that directly affect the exploration and development deployment of offshore oil/gas fields...we conclude that the 3D Marchenko autofocusing method serves as an effective tool for predicting and removing

of internal multiples from 3D seismic data.”

[Control and prediction of bedding-parallel fractures in fine-grained sedimentary rocks: A case from the Permian Lucaogou Formation in Jimusar Sag, Junggar Basin, Western China](#) (9/24): «The workflow based on multi-scale matching and stepwise progression can be applied in similar fine-grained sedimentary rocks, providing reliable technological **support for the exploration and development of hydrocarbons.**”

[Detailed oil-source correlation within the sequence and sedimentary framework in the Fushan Depression, Beibuwan Basin, South China Sea](#) (8/24): «The E1s2 reservoir in the Yong'an area belonging to Group B oil, are adjacent to the source kitchen and could be considered as the **favorable exploration area in the future...** Advancement of a comprehensive understanding of the oil source relationship and its distribution within the study area is of great importance, as it would **improve an understanding of hydrocarbon accumulation and the accuracy of petroleum resource evaluation** in the sag.” *This study was funded by the South Oil Exploration and Development Company of PetroChina*

[Experimental deformation of shales at elevated temperature and pressure: Pore-crack system evolution and its effects on shale gas reservoirs](#) (7/24): «An ideal model of micro pore-crack system evolution in deformed shales is further proposed, which can provide **guidance for the exploration of shale gas resources** in the deep or structurally complex zones.»

[The evolution of clay mineral and its indication of hydrocarbons under overpressure: An example from the shale of the Qingshankou Formation in the Gulong Sag](#) (7/24): «This study contributes to a better understanding of the relationship between clay mineral evolution and shale reservoir overpressure, offering **valuable insights for the accurate assessment of shale oil.**”

[Synthesis of temperature and salt resistance silicon dots for effective enhanced oil recovery in tight reservoir](#) (5/24): “The rapid increase in global demand for petroleum resources has presented significant challenges to the petroleum industry...Core flooding experiments showed promising EOR potential of Si-QDs in ultra-low permeability (0–1 mD) reservoirs, indicating that Si-QDs serve as a promising EOR agent for effectively developing tight reservoirs.”

[Evolution and generation mechanism of retained oil in lacustrine shales: A combined ReaxFF-MD and pyrolysis](#)

[simulation perspective](#) (7/24): «This study combines ReaxFF-MD simulation with pyrolysis simulation experiments to propose the thermal evolution stages and formation mechanism of retained oil enrichment in lacustrine shale oil, and provides information on lacustrine shale retained oil and favorable intervals and **target areas for shale oil exploration.** The successful exploration of the Ek₂ in the Cangdong Sag shows that lacustrine shale has **huge potential for retained oil resources.**”

[Rock physical characteristics of deep dolomite under complex geological conditions: A case study of 4th Member of Sinian Dengying Formation in the Sichuan Basin, China](#) (4/24): «This research, taking a specific deep carbonate reservoir as an example, is an attempt to develop and demonstrate a novel seismic rock physical research method for chemical sedimentary rock and provide a **scientific basis for effective seismic evaluation of deep marine carbonate reservoirs.**”

[Architectural characterization of carbonate tidal channels in the Mishrif Formation, H Oilfield, Iraq](#) (7/24): «This analysis demonstrates that the best reservoir quality within the tidal channels is located in the bend of the tidal channel near the inner lagoon and open sea, it provides the **geological models for later exploration and development** in the Mishrif Formation.»

[Main controlling factor and mechanism of gas-in-place content of the Lower Cambrian shale from different sedimentary facies in the western Hubei area, South China](#)[Author links open overlay panel](#) (6/24): “The deep-water shelf facies is **the most favorable target for the Lower Cambrian shale gas exploration and development** in the western Hubei area, South China.»

[Characteristics, main controlling factors and densification mechanisms of unconventional tight reservoirs in Triassic Yanchang Formation in southern Ordos Basin, China](#) (9/24): “These results provide an important basis for predicting the distribution of exploitable zones in the Chang 8 sandstone and other adjacent tight sandstones...Our results improve the current understanding of the development and characteristics of extremely low permeability tight sandstone reservoirs, specifically the mechanism by which high-quality reservoirs form in the Zhenjing area. Our results should therefore provide an **improved scientific basis for oil and gas exploration and the development of tight reservoirs.**” *We thank the Research Institute of Petroleum Exploration and Development of Sinopec North China Oil and Gas Company for provide geologi-*

cal data and their laboratory assistances.

[Concise extraction and characterization of the pore-throat network in unconventional hydrocarbon reservoirs: A new perspective](#) (6/24): «This method of identification has some obvious **applications in tight sandstone oil reservoir exploration and development.**»

[A review of reservoir damage during hydraulic fracturing of deep and ultra-deep reservoirs](#) (2/24): «Deep and ultra-deep reservoirs have gradually become the primary focus of **hydrocarbon exploration**...These insights hold significant guiding importance for **advancing the efficient development of deep oil and gas reservoirs** and effectively mitigating reservoir damage.»

[Quantitative characterizations of anisotropic dynamic properties in organic-rich shale with different kerogen content](#) (4/24): “Understanding the quantitative responses of anisotropic dynamic properties in organic-rich shale with different kerogen content (KC) is of **great significance in hydrocarbon exploration and development**...In this study, our main focus is to establish the quantitative correlations between the kerogen content and directional dynamic properties, while considering anisotropy in organic-rich shale.”

[Oilfield analogy and productivity prediction based on machine learning: Field cases in PL oilfield, China](#) (3/24): «This study proposes a method using data mining technology to search for similar oil fields and predict well productivity.»

[Understanding the hydrocarbon generation potential on jurassic coal-measure source rocks in the Junggar Basin: From the perspective of hydrogen-rich molecular structure](#) (4/24): “We conducted Fourier transform infrared spectroscopy (FTIR) experiments to explore the composition of the macromolecular structure of the coal-measure source rocks and demonstrate the association between the molecular structure and the hydrocarbon potential.” *We thank the Shengli Oil Company of Sinopec for approving the publication.*

[A novel fracture-cavity reservoir outcrop geological knowledge base construction method considering parameter collection and processing, mutual transformation of data-knowledge, application and update](#) (2/24): «These geological results offer crucial insights into the mechanisms underlying the characterization and classification of the KFCS. Additionally, they provide **valuable guidance for the exploration and development of underground karst**

reservoirs.”

[Prediction and quantification of effective gas source rocks in a lacustrine basin: Western Depression in the Liaohe Subbasin](#) (3/24): «This method offers theoretical support for further natural gas resource estimations and the **identification of promising exploration areas**” *The authors would like to thank CNPC Liaohe Oilfield Exploration Company for data support, for making an academic license available for the use of Petrel, and for helpful discussions on the topics addressed in this work.*

[Differences and identification on multi-time hydrocarbon generation of carboniferous-permian coaly source rocks in the Huanghua Depression, Bohai Bay Basin](#) (4/24): «We provided **important support for the evaluation, prediction, and exploration of oil resources** from global ancient coaly source rocks.»

[Research on thermal insulation materials properties under HTHP conditions for deep oil and gas reservoir rock ITP-Coring](#) (3/24): “The results can provide references for the optimization and engineering application of materials and thus technical **support for deep oil and gas resource development.**”

[Identification of reservoir types in deep carbonates based on mixed-kernel machine learning using geophysical logging data](#) (6/24): «In recent years, carbonate reservoirs in the deep layer of petroliferous basins have become **increasingly important exploration targets worldwide**...Different types of carbonate reservoirs exhibit distinct storage and percolation capacities over a range of scales, resulting in significant heterogeneity of reservoir quality and discrepancy of hydrocarbon enrichment within carbonate reservoirs, which poses potential risks for effective exploitation...To improve the identification accuracy, a new mixed kernel Fisher discriminant analysis (MKFD) method was proposed in this paper **for identifying reservoir types in deep carbonates** using geophysical logging data.»

[Risk assessment of oil and gas investment environment in countries along the Belt and Road Initiative](#) (4/24): “The research findings may provide scientific decision-making **recommendations for the Chinese government and oil enterprises to strengthen oil and gas investment cooperation** with countries along the Belt and Road Initiative.»

[Paleoenvironmental reconstruction and organic matter accumulation of the paleogene shahejie oil shale in the Zhanhua Sag, Bohai Bay Basin, Eastern China](#) (3/24):

«The research results may have implications for the genetic mechanisms of organic matter accumulation. They will provide **theoretical and technical insights into the exploration and development of shale oil.**»

[New progresses of fine-grained sediment gravity-flow deposits and their importance for unconventional shale oil and gas plays](#) (5/24): «These insights may **broaden the exploration scope of shale oil and gas**, which have important geological significances for unconventional shale oil and gas.»

[Microfacies and diagenetic alteration in a semi-deep to deep lacustrine shale: The Yanchang Formation in the Ordos Basin, China](#) (1/24): «These findings contribute to a comprehensive understanding of shale properties, aiding in the prediction of shale oil exploration potential in the studied area.»

[Joint inversion of crack properties of tight carbonates from electrical conductivity and ultrasonic velocity](#) (5/24): «Understanding the effects of cracks on the elastic and electrical properties of tight carbonates is **crucial for the exploration and development of deep and ultra-deep carbonate reservoirs**. In this work, the porosity, electrical conductivity and ultrasonic velocities of two brine-saturated carbonate samples (where the pore space is dominated by cracks) are measured jointly at different effective pressures (5–90 MPa), as well as the velocities with saturating nitrogen at the same pressure conditions.»

[Quantitative effect of kerogen type on the hydrocarbon generation potential of Paleogene lacustrine source rocks, Liaohe Western Depression, China](#) (2/24): «This study can quantitatively characterize the hydrocarbon generation potential of source rocks with different kerogen types, and facilitate a quick and accurate assessment of hydrocarbon resources, providing **strategies for future oil and gas exploration.**»

[Sedimentary paleoenvironment and its control on organic matter enrichment in the Mesoproterozoic hydrocarbon source rocks in the Ordos Basin, southern margin of the North China Craton](#) (8/24): «The black shale of the Mesoproterozoic Cuizhuang Formation in the Changcheng System in Yongji city, North China Craton, is a potential source rock. Understanding the organic matter enrichment mechanism is **crucial for evaluating source rock resources** and understanding oil and gas accumulation mechanisms. In this study, we evaluated the sedimentary paleoenvironment and organic matter enrichment mechanisms of shale using thin section observations, mineral composition

analysis, organic geochemistry, and elemental geochemistry...understanding the patterns of organic matter enrichment is crucial for guiding oil and gas exploration and identifying potential hydrocarbon resources...it is crucial to study the potential high-quality source rocks in the Paleoproterozoic strata **to promote deep and ultradeep oil and gas exploration** in the North China Craton.»

[Differences in Hydrocarbon Accumulation and Controlling Factors of Slope Belt in Graben Basin: A Case Study of Pinghu Slope Belt in the Xihu Sag of the East China Sea Shelf Basin \(ECSSB\)](#) (6/24): «The findings of this research provide strong evidence for the breakthrough of hydrocarbon exploration potential in this region and offer theoretical guidance for offshore hydrocarbon exploration in China Seas.»

[Radiation efficiency and energy distribution from a borehole dipole source in the vertical transverse isotropic formation](#) (9/24): «The significance of dominant excitation-frequency bands is validated by field data, emphasizing their pivotal role. These results offer valuable insights for designing DSRS measurement strategies, which have **broad application expectations for unconventional oil and gas exploration.**»

[Interpretation and characterization of rate of penetration intelligent prediction model](#) (2/24): «As the exploration of underground resources gradually advances to deep and hard formations, low rate of penetration (ROP) and high energy consumption have become the main factors affecting the drilling efficiency of PDC bit...By utilizing the linear characterization equation, the paper provides an intuitive display of the contribution of input features to the ROP.»

[Origin of facies-controlled dolomite and exploration significance of the Middle Permian Qixia Formation in central Sichuan Basin, Western China](#) (8/24): «The intraplateform shoal dolomite of the Middle Permian Qixia Formation is currently considered the key target of hydrocarbon exploration in the central Sichuan Basin...The goals were to: (1) further clarify the dolomite distribution and dolomitization mechanism; and (2) **provide support and reference for subsequent hydrocarbon exploration and evaluation** of the Qixia Formation.»

[Stratigraphic framework and sedimentary evolution during the Cryogenian-Ediacaran transition in north-eastern Sichuan Basin, South China](#) (4/24): «Thus, the Ediacaran System in the northeastern Sichuan Basin should be given high priority, especially the Doushantuo

and Dengying source-reservoir-cap rocks combination, **to realize large-scale, efficient exploration**"

[Dynamic Evolution mechanism of the fracturing fracture system—Enlightenments from hydraulic fracturing physical experiments and finite element numerical simulation](#) (9/24): «This study aims to elucidate the dynamic evolution mechanism of the fracturing fracture system during the **exploration and development of complex oil and gas reservoirs**...This research provides theoretical support and effective guidance for hydraulic fracturing design in tight oil and gas reservoirs."

[The mechanical properties of Lucaogou shale layered samples and the influence of minerals on fracture propagation](#) (9/24): "With regard to the Lucaogou Formation in Junggar Basin, it shows significant exploration potential and becomes the primary exploration target in the northwestern China. The lithology of shale oil reservoir there represents great variation in a vertical direction with bedding planes. Thus, it is fairly essential to understand the mechanical properties and fracture characteristics of different layers, which is the key to optimize the drilling and hydraulic fracturing strategy... This study reveals the difference of mechanical properties between the oil layer and interlayer, and the influence of mineral composition and distribution on micro-crack propagation."

[Linearized waveform inversion for vertical transversely isotropic elastic media: Methodology and multi-parameter crosstalk analysis](#) (2/24): «The linearized waveform inversion for VTI-elastic media presented in this article provides quantitative information of the rock properties that has the potential to help **identify hydrocarbon reservoirs**."

[Impact of volcanism on the formation and hydrocarbon generation of organic-rich shale in the Jiyang Depression, Bohai Bay Basin, China](#) (6/24): «This study helps to further understand the organic-inorganic interactions caused by typical geological events and provides a guide for the next step of shale oil exploration and development in other lacustrine basins in China.»

[Intelligent seismic AVO inversion method for brittleness index of shale oil reservoirs](#) (9/24): "The brittleness index (BI) is **crucial for predicting engineering sweet spots and designing fracturing operations in shale oil reservoir exploration and development**...To enhance the accuracy of inverted brittleness index and support engineering sweet spot identification and fracturing

improvement, we propose an intelligent seismic AVO inversion method specifically tailored for brittleness index in shale oil reservoirs."

[Physics and Chemistry of the Earth, Parts A/B/C](#)
["This journal welcomes contributions that support and advance the UN's sustainable development goals"](#)

[A comprehensive study on optimizing reservoir potential: Advanced geophysical log analysis of zamzama gas field, southern indus basin, Pakistan](#) (10/24): «This research provides a detailed and comprehensive understanding of reservoir characteristics, thereby **increasing the potential for further hydrocarbon exploration and production** in the study area.»

[Reconstruction of Subsurface Potential Hydrocarbon Reservoirs Through 3D Seismic Automatic Interpretation and Attribute Analysis](#) (9/24): "This research reconstructs potential subsurface hydrocarbon reserves using advanced geological modeling tools. **This tool allows us to accurately locate hydrocarbon deposits** and explore trap structures. Two potential hydrocarbon zones were identified."

[Powder Technology](#)
[Study on the mechanical properties of sandstone-shale composite continental shale gas based on the discrete element method](#) (1/24): "China has abundant continental [shale oil](#) resources, and multiple [shale oil](#) exploration and development demonstration zones have been established, making it a key field for oil and gas exploration and development...it is of great significance to study the rock mechanics characteristics of sandstone-shale composite....This further deepens the understanding of the mechanical properties of sandstone-shale samples.»

[Proceedings of the Geologists' Association](#)
[This journal welcomes contributions that support and advance the UN's sustainable development goals](#)

[Evaluation of the Late Messinian Abu Madi sandstone reservoirs in the West Al Khilala gas field, Onshore Nile Delta, Egypt](#) (2/24): "In this study, we integrated cores and wireline logs to evaluate the petrographical and petrophysical properties of the Late Miocene Abu Madi sandstone reservoir from the onshore WAK gas field...Lateral distribution of the petrophysical parameters infers a superior reservoir quality towards the central part of the studied field which should be targeted for future infill development well drilling. The reservoir heterogeneity was mapped to **substantially decrease the uncertainty of future**

drilling." *The authors are grateful to the Egyptian General Petroleum Corporation (EGPC), El Mansoura, and Petroceltic Petroleum companies for providing the data used in this work.*

Results in Earth Sciences

[Petroleum systems of the Iranian Zagros Fold and Thrust Belt](#) (12/24): "Petroleum systems of the Zagros basin are reviewed in a regional context...Asymmetric folds provide the most important type of hydrocarbon traps in the ZFTB and stratigraphic traps remain to be explored in the future."

[Reservoir Characterization of GABO Field in the Niger Delta Basin using Facies and Petrophysical Analyses](#) (9/24): "By resolving persistent challenges related to reservoir continuity, facies distribution, and property variability, **this study offers valuable information for improved exploration and production** campaigns in the region."

[Paleogene to Neogene sequence stratigraphy and deep-water depositional systems in Kribi-Campo/Rio-Muni margin \(Offshore Cameroon-Equatorial Guinea Margin\)](#) (12/24): «The main goal of this study is to document the Tertiary deepwater depositional systems in the Kribi-Campo sub-basin **to aid in the development of untapped petroleum resources.**"

Results in Engineering

[Research on the relationship between hydrocarbon source-reservoir assemblage system and lacustrine level changes in Triassic period of Lunnan area](#) (3/24): «The results provide **a relatively reliable means for oil and gas exploration.**"

[Crude oil industry remote monitoring and management based on Industrial Internet of things and edge computing integration: A comprehensive survey](#) (10/24): "This study goes over crude oil production guidelines and unresolved research difficulties. The IIOT and EC integration are viewed as a possible approach for establishing domestic services and corporate procedures **for increasing crude oil production...** Despite environmental concerns and geopolitical conflicts, crude oil production remains crucial, driving global energy policies and economies."

[Machine Learning Prediction of Permeability Distribution in the X Field Malay Basin Using Elastic Properties](#) (11/24): «This research highlights a robust method for predicting permeability distribution using elastic properties, which can significantly enhance the efficiency of reservoir assessment. By enabling accurate

permeability predictions with minimal well data, this approach **facilitates the rapid identification of high-potential zones**, potentially replacing traditional geophysical methods."

Rock Mechanics Bulletin

[Identifying perforation locations for hydraulic fracturing treatment in deep and tight sandstone gas reservoirs](#) (7/24): «By implementing these efforts and procedures, **the success rate of fracturing deep and tight gas reservoirs can be significantly enhanced.**"

[Simultaneously improving ROP and maintaining well-bore stability in shale gas well: A case study of Luzhou shale gas reservoirs](#) (7/24): «It is significantly crucial for petroleum engineers to improve ROP, which can effectively **promote the progress of petroleum exploration and development** and improve resource exploitation efficiency and economic benefits...This study addresses the challenge of low ROP in the horizontal section of shale gas wells within the Luzhou block, Sichuan Basin."

RSC Advances

[On the role of disjoining pressure in nanofluid-assisted enhanced oil recovery: a mini-review](#) (7/24): «Enhanced oil recovery (EOR) stands as a pivotal and indispensable phase within the oil production process, designed to **extract crude oil from reservoirs that would otherwise remain unrecoverable...**This review focuses on the role of disjoining pressure in the presence of nanofluids and its consequential impact on the EOR processes." ***This work was supported by the National Natural Science Foundation of China, PetroChina Basic Research and Strategic Reserve Technology Research Fund Project, the Scientific Research and Technology Development Project of RIPED, PetroChina, and Fundamental Research Funds for the Central Universities.***

Sedimentary Geology

[This journal welcomes contributions that support and advance the UN's sustainable development goals](#)

[Sedimentary characteristics of mixed source fine-grained gravity-flow and its significance for shale oil exploration in a lacustrine depression basin: A case study of the Chang 7₃ Sub-member of the Triassic Yanchang Formation in Ordos Basin, NW China](#) (4/24): «This study investigates the transport and evolution of fine-grained gravity-flow deposits in lacustrine basins, focusing on the relationship between fine-grained deposits and their respective source-reservoir combinations. Such knowledge is **vital for the exploration and development of unconventional oil and gas**

resources”

[The role of compaction in the diagenetic evolution of Pre-Salt Aptian deposits of Santos Basin, Brazil](#) (6/24): «The discovery of huge oil accumulations in the South Atlantic Pre-Salt carbonate lacustrine deposits has attracted much exploration and research interest on these challenging reservoirs, but no work has focused on the compaction processes...The Pre-Salt carbonate deposits of the Santos Basin represent one of the most significant petroleum accumulations in the World... Recognizing how carbonate rocks respond to overburden or tectonic stress is essential to assess these rocks...This work aimed to identify the main compaction features and their role in the diagenetic evolution of two major oilfields from the Barra Velha Formation of Santos Basin.” ***We are grateful to Petrobras for allowing us to publish this paper and for funding this study***

[Development characteristics and formation patterns of Ordovician breccia in the Huainan coalfield](#) (7/24): «A valuable reference for comprehending the genesis of breccias, as well as **the development and utilization of oil and gas resources globally.**”

Solid Earth Sciences

[This journal welcomes contributions that support and advance the UN's sustainable development goals, in particular SDG 13 \(Climate Action\)](#)

[Structural modeling of the southern Kohat Basin and Frontal Ranges; implications for tectonic evolution and hydrocarbon play](#) (6/24): “Kohat’s fold-thrust belt, including the Karak area has emerged as **an important hydrocarbon fertile region** of the western Himalayan orogenic system...a more comprehensive mapping and structural evaluation of the Karak trough and the surrounding regions is thus vital...Comprehensive geological mapping, structural analysis, and stratigraphic correlations observed in the field provide fundamental elements to better understand the structural style of the area...The current structural studies suggest the Karak fault zone may contain ensuring structural traps at the Lockhart’s top, as anticipated by seismic data, possibly represent a structural entity that is suitable for hydrocarbon exploration”

[Spectrochimica Acta Part B: Atomic Spectroscopy Elemental quantitation and evaluation of hydrocarbon in shale using fiber-optic laser induced breakdown spectroscopy](#) (6/24): «Reliable and rapid evaluation methods to determine the hydrocarbon properties and

composition of shale are urgently needed...**The abundance and hydrocarbon generation potential were evaluated** based on predicted pyrolytic parameters.” □

Tectonophysics

[The method and application of numerical simulation of high-precision stress field and quantitative prediction of multiperiod fracture in carbonate reservoir](#) (8/24): «The application of this method for quantitative prediction of fractures can effectively **improve the accuracy of exploration and development** of carbonate fractured reservoirs.»

[Subsurface basement structures of Usangu basin, East African rift system, with implications for basin structural configuration and hydrocarbon potential](#) (10/24): “The Usangu basin is a rift basin developed along the Eastern arm of the East African rift system trending in the NE-SW direction...The depth range of the sediments obtained implies that the basin has **potential for hydrocarbon exploration** with the possibility of natural gas occurrence.” ***This work was funded as a scholarship by Shell Tanzania, formerly known as BG Tanzania.***

Theoretical and Applied Fracture Mechanics

[Study on fracture propagation behavior of deep high-temperature shale gas based on the modified MERR criterion](#) (6/24): «Deep shale gas resources (situated at depths exceeding 3500 m) emerges as a crucial focus in China’s **unconventional resource exploration and development**. However, the high-temperature characteristics of in-situ reservoirs pose challenges...The results of this study are of paramount importance in understanding the fracture behavior of deep high-temperature shale.”

[Effect of size and anisotropy on mode I fracture toughness of coal](#) (2/24): «The research results have reference significance for crack **initiation and propagation in hydraulic fracturing** of coal seam.»

[Investigating failure modes and Micro-Crack classification in Mao phyllite under notched Semi-Circular bend testing](#) (4/24): «This study provides a more comprehensive understanding to the fracture behaviors and failure process of layered rock, **benefits to the construction of underground projects.**”

Unconventional Resources

[“An open access journal with a particular focus on energy transition and achieving net-zero emission targets...This journal welcomes contributions that support and advance the UN's sustainable development goals”](#) ***Editor-in-Chief: Barry Jay Katz, Chevron Corpo-***

ration

[The Early Cretaceous structural features and its influence on hydrocarbon accumulation in the southern Hurenbuqi depression, Erlian Basin](#) (2024): "This study is of great significance for analyzing the enrichment regulations of hydrocarbon and **guiding the next oil and gas exploration.**"

[Characteristics and model of meandering-river-delta reservoir architecture of member Chang-6 in Fuxian area, Triassic Ordos Basin](#) (2024): «These insights contribute to the theoretical framework **for subsequent exploration and development activities** in the Fuxian Oilfield.»

[Fractures in faulted sandstone reservoir](#) (2024): "This study can provide some **new ideas for the exploration and development of tight oil reservoirs** in faulted sandstone area."

[Geological characteristics and developmental achievements of the large presalt carbonate gas fields in the Amu Darya Basin](#) (2024): «By systematically reviewing the exploration and development strategy of the Amu Darya Gas Field, **this study theoretically guides the efficient exploration and development of large subsalt carbonate gas fields** with similar geological configurations.»

[Productivity drivers in North American tight and shale plays: A comprehensive analysis of completion trends, stimulation parameters, and geological characteristics](#) (2024): «This study not only provides technical **guidance for the unconventional oil and gas developments** in North America, but can also serve as a valuable guide for similar projects elsewhere.»

[Diagenetic characteristics and microscopic pore evolution of deep shale gas reservoirs in Longmaxi Formation, Southeastern Sichuan basin, China](#) (2024): "The Lower Silurian Longmaxi Formation is the favorable target area for deep shale gas exploration and development in southeastern Sichuan Basin. Based on whole-rock X-ray diffraction analysis, scanning electron microscope, reservoir evolution thermal simulation experiment and nitrogen adsorption experiment, the diagenetic characteristics of deep shale reservoir in Longmaxi Formation were analyzed, and the reservoir pore evolution law was clarified...We clarify diagenetic features and their impact on the pore development and evolution, with a view to providing a reference basis for the exploration and development of the deep-lying shale gas potential in this area, and

provide reference opinions on the selection of areas for exploration and development of deep shale gas reservoirs under the same geological conditions in other regions.

[High-resolution sequence stratigraphy research based on continuous wavelet transform and INPEFA -- A case study in the Kalashayi Formation, Tarim Basin, China](#) (7/24): «Interpretation of sequence boundaries stands as a **primary objective in oil and gas exploration**, particularly in the context of sequence correlations within high-resolution (fourth-order and below) sequence frameworks, where the accurate identification of sequence boundaries holds paramount significance for subsequent development strategies...this study conducts high-resolution sequence stratigraphic research on the Carboniferous Kalashayi Formation in the Tahe region of the Tarim Basin."

[The influence of pore throat heterogeneity and fractal characteristics on reservoir quality: A case study of Chang 8 Member tight sandstones, Ordos Basin](#) (10/24): "Among the unconventional resources, there is a growing focus on the **exploration and development of tight sandstone oil and gas reservoirs**...this study focuses on employing diverse methodologies to determine the fractal dimension in order to effectively describe the pore throat system of reservoirs with distinct diagenetic characteristics."

[Reservoir Evaluation Method Based on Explainable Machine Learning with Small Samples](#) (10/24): "Reservoir classification and evaluation of fractured gas reservoirs are essential for **optimizing development strategies and enhancing oil and gas recovery rates**. In this study, we utilized geological and engineering parameters to construct new feature dimensions and applied the K-means clustering algorithm to classify reservoirs into three categories based on unobstructed flow rates...This framework not only deepens the understanding of complex reservoir characteristics but also optimizes reservoir classification accuracy, providing robust technical support for the efficient development of unconventional oil and gas resources."

[The present-day *in-situ* stress field and its effect on shale gas development in Zigong area of southern Sichuan Basin](#) (2024): "With the development of oil and gas theory and the advancement of exploration and development, the importance of unconventional oil and gas such as shale oil and gas and tight oil and gas, which have abundant reserves, is increasingly prominent and has become a key part of the global energy structure... The target layer for the study area is the Wufeng-

Longmaxi Formation, with the Layer S1_l1-1 subdivided into S1_l1-1-1, S1_l1-1-2, S1_l1-1-3 and S1_l1-1-4 layers. The Layer S1_l1-1 and Wufeng Formation are the **key layers for exploration and development in the area.**"

[Pore development characteristics and controlling factors of Lower Cambrian Qiongzhusi shale gas reservoir in Sichuan Basin, China](#) (7/24): «The research on the high-quality shale gas reservoir of Qiongzhusi Formation can provide certain **theoretical guidance for the exploration and development of shale gas.**" *We would like to thank the Research Institute of Petroleum Exploration and Development and the Southwest Oil and Gas Field of PetroChina for providing the related core samples and geological data in the Qiongzhusi Formation, Sichuan Basin.*

[A novel method for quantitative evaluation of oil content and mobility in shale oil reservoirs by NMR logging: a case study of the inter-salt shale oil in the Jiangnan Basin](#) (2024): «The experimental scheme...will provide an important basis for resource evaluation, optimal formation selection and efficient development of shale oil reservoirs. Shale oil, as an important succeeding field for oil and gas exploration, has huge resource potential."

[Geochemical characterization and paleo-burial history modelling of unconventional resources: A case study from the Kimmeridge Clay Formation \(KCF\) in the UK North Sea](#) (2024): «In this study, we have combined the analysis of total organic carbon/pyrolysis and vitrinite reflectance geochemical data from KCF samples with 1D basin modelling to investigate the potential for shale oil and gas plays in the Outer Moray Firth region. **The results of geochemical evaluation show that most of the samples have very good to excellent hydrocarbon generation potential** and contain predominantly oil-prone Type-II kerogen.»

[Comparative experimental investigation on permeability and pressure bearing capacity of different types of temporary plugging bodies](#) (2024): «The findings could inform the selection and optimization of temporary plugging agents, ultimately **enhancing the efficiency and success of tight reservoir production.**" *This work was supported financially by the Beijing Natural Science Foundation Project, the National Natural Science Foundation of China, and the PetroChina Science and Technology Innovation Foundation Project.*

[Organic petrography and geochemistry of the Fu 2 member of the Paleocene Funing formation, Gaoyou](#)

[Depression, Subei Basin, Eastern China: Implications for shale oil potential](#) (2024): "The lower Shale 4 and upper Shale 5 interval (3650–3700 m), with high TOC and high oil saturation index, is identified as the sweet-spot interval of the Fu 2 Member **for shale oil exploration.**"

[Detailed analysis of seismic reflection characteristics of tight sandstone reservoirs in the upper paleozoic of the ordos basin: A case study of block X](#) (2024): «Tight sandstone gas represents a crucial domain for **augmenting reserves and boosting oil and gas production** in the Ordos Basin....we achieved high-precision identification of tight sandstone reservoirs