SKYTRUTH

2012 Annual Report

From the Desk of the President: In the day-to-day rush, it can sometimes be hard to find the time to step back and look at the big picture. At SkyTruth, though, most of what we do is "look at the big picture" -- the phenomenal perspective of satellite imagery, aerial photos, and spatial data that help us see the environmental issues affecting our entire planet. To name just one example, exporting coal to Asia will not just impact public health and wildlife habitat in the Powder River Basin and Appalachia, but also the health and quality of life in the Pacific Northwest and Gulf Coast communities that dozens of mile-long trains will pass through daily, respiratory health from all who breathe the air polluted by power stations in smog-plagued China, and global climate change that will influence us all. However, even as we monitor problems the earth is facing, we remain hopeful that bringing these images to public attention will motivate care for our planet.

In 2012, our talented GIS analyst Sara Scoville-Weaver departed to further her career in the field of GIS and remote sensing, but in September we brought on David Manthos as our new Outreach and Communications Director to help spread the SkyTruth vision. With the skills and leadership of our CTO and chief lab-rat, Paul Woods, we developed data-driven approaches to improve understanding of environmental impacts for issues that aren't clearly shown by satellite images alone, such as unconventional shale-gas drilling and hydraulic fracturing (fracking) in the East.

Combining the power of modern mapping technology with a vibrant grassroots response to environmental issues, we have high hopes for SkyTruth and the "skytruthing" movement in 2013:

Stay tuned - we have a lot of great work ahead of us! **- John**

“SkyTruth unveils the toxic truths of a toxic industry. In the hands of community activists, SkyTruth’s database is a sharp, steely weapon to puncture the armor of sinister secrecy that protects America’s fracking cabal.”

–Robert F. Kennedy, Jr., President of Waterkeeper Alliance

Above: Hydraulic Fracturing Operation, Wetzel County, WV - Nov. 15, 2012: SkyTruth/LightHawk
Below: View from Senaca Rocks, WV - Monongahela National Forest: David Manthos, SkyTruth

SkyTruth envisions a world where all people can see and understand the environmental consequences of human activity everywhere on the earth, and are motivated to take action to protect the environment.

To make this vision a reality - SkyTruth works to:

Produce scientifically credible visuals and data to educate the public and decision-makers about environmental issues...

...Advance government and industry transparency...

...motivate environmental protection...

...engage grassroots citizen science initiatives...

...and build the "skytruthing" movement.

Producing scientifically credible visuals and data to educate the public and decision-makers about environmental issues:

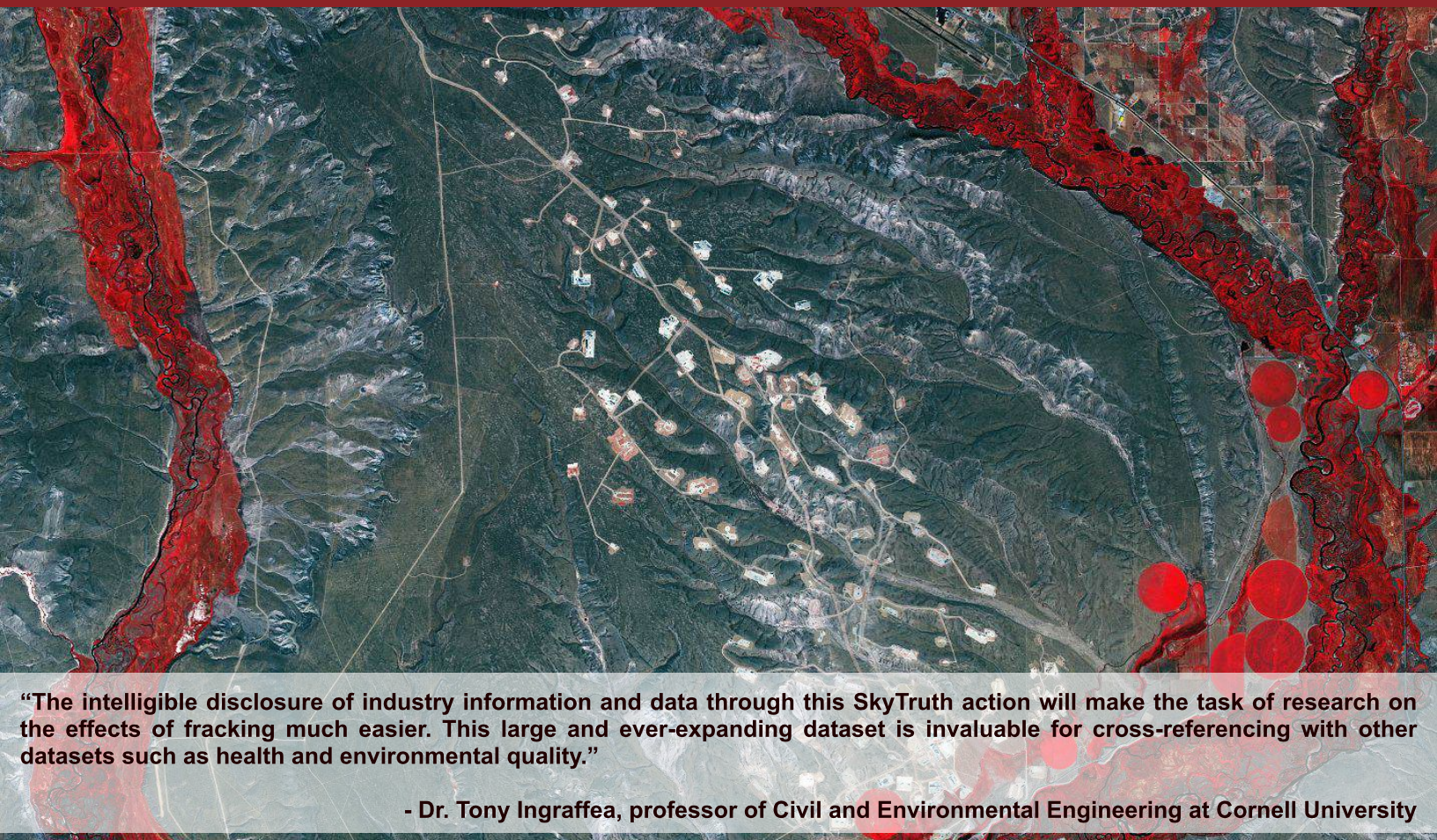
In 2012, SkyTruth documented oil-spill incidents in the Gulf of Mexico and around the world, off the coasts of Brazil and Nigeria in particular. We launched a website for the Gulf Monitoring Consortium (GMC) at the beginning of the year, and recently welcomed the Louisiana Bucket Brigade and Gulf Restoration Network as new partners in the GMC.

In June and November we coordinated fly-overs of some of the most active gas drilling fields in the Marcellus Shale, documenting fracking operations in Pennsylvania and West Virginia. After extensive programming and data-crunching, we released our Fracking Chemical Database to help support research into the issue of fracking and shale oil/gas development through hydraulic fracturing.

SkyTruth co-authored a peer-reviewed paper with Duke and Baylor University researchers, “How Many Mountains Can We Mine? Assessing the Regional Degradation of Central Appalachian Rivers by Surface Coal Mining,” published in July by the Journal of Environmental Science and Technology. The research used SkyTruth’s multi-decade satellite image analysis of mountaintop removal (MTR) coal mining in Appalachia to correlate mining activity with downstream water contamination.

With advanced synthetic aperture radar (ASAR) satellite images provided by the European Space Agency (ESA) we identified a polluting vessel off the coast of Angola. We accomplished this by analyzing radar satellite images of an oil slick (from bilge dumping) and comparing it to satellite-collected data transmitted by ships to help avoid collisions. According to one expert, this is the first time anyone in the public sector has used these tools to both spot a vessel at sea engaged in illegal activity and identify the perpetrator.

Below: Detail from a September 2012 satellite image of natural gas drilling infrastructure on public lands in the Green River Valley near Pinedale, Wyoming.



“The intelligible disclosure of industry information and data through this SkyTruth action will make the task of research on the effects of fracking much easier. This large and ever-expanding dataset is invaluable for cross-referencing with other datasets such as health and environmental quality.”

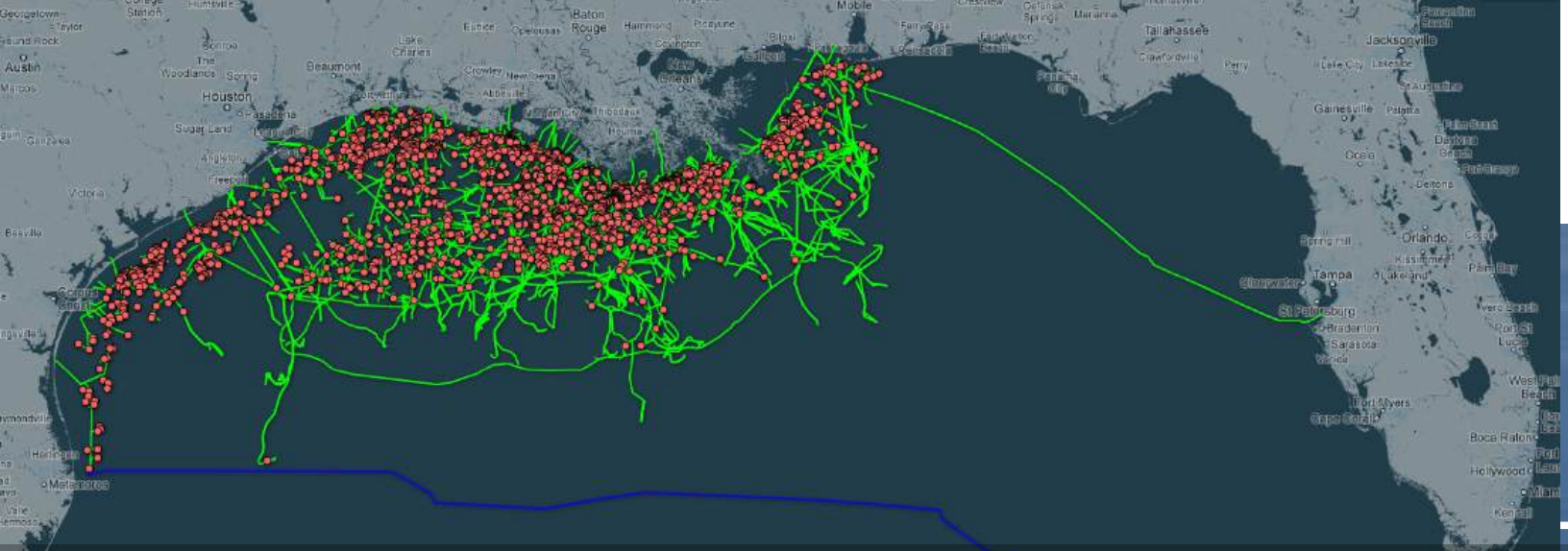
- Dr. Tony Ingraffea, professor of Civil and Environmental Engineering at Cornell University

Using Light Detection And Ranging (LiDAR) data, we created 3-D landscape visualizations (see above) of a controversial MTR mine in West Virginia, produced a simulation of a mile-long coal train to represent the impact of coal-export to Asia from the Powder River Basin in Wyoming through the Pacific Northwest, and are looking for chronic pollution at coal-export terminals in the Gulf Coast region. Working with our partners in the Gulf Region, we identified and produced imagery of coal and petroleum sites damaged by Hurricane Isaac in late August.

Advancing government and industry transparency:

To support citizen response and better groundtruthing of environmental incidents, we continue to develop the SkyTruth Alerts system, an automated email alert tool available to the public as a free, geographically-customized subscription. Our system takes information directly from government data resources including the Coast Guard’s National Response Center (NRC) for spills and releases, the National Oceanic and Atmospheric Administration’s (NOAA) Incident News feed for shipping accidents, and all reported new drilling permits/SPUD dates/drilling violations in West Virginia and Pennsylvania (with drilling alerts for Colorado in beta-testing) and industry provided fracking chemical disclosures. The Alerts System also powers the Louisiana Bucket Brigade’s popular iWitness Pollution Map and our Gulf Oil Spill Tracker, enabling citizen documentation of oil pollution incidents and impacts. In December, after we inquired about discrepancies in a report of a mobile drilling rig in distress, NOAA’s Incident News team expressed interest in incorporating parts of our Alerts system for their upcoming website redesign.

In November, after considerable programming work and extensive research, we released a database of fracking chemicals reported by industry, a resource previously inaccessible to the public. We used our experience in compiling this database to meet face-to-face with top officials at the Department of the Interior in DC, and providing recommendations to the Bureau of Land Management regarding disclosure regulations in their upcoming ruling on developing Federal and Indian lands for unconventional shale oil and shale gas resources.



"If it weren't for your daily alerts and useful maps showing what things look like on the ocean surface from several miles up, we'd be spending a lot more money on fuel trying to guess where the latest leaks are occurring. Spaceborne and airborne instruments make a powerful combination, when each is piloted and crewed by people who really care about protecting what those instruments are looking at."

-Dr. Bonnie Schumaker, On Wings of Care

Above: SkyTruth map of active oil infrastructure in the Gulf of Mexico based on data from the BOEM.
Below (Background): Chronic Oil slick from hurricane damaged Taylor Platform #23051 Photo: On Wings of Care

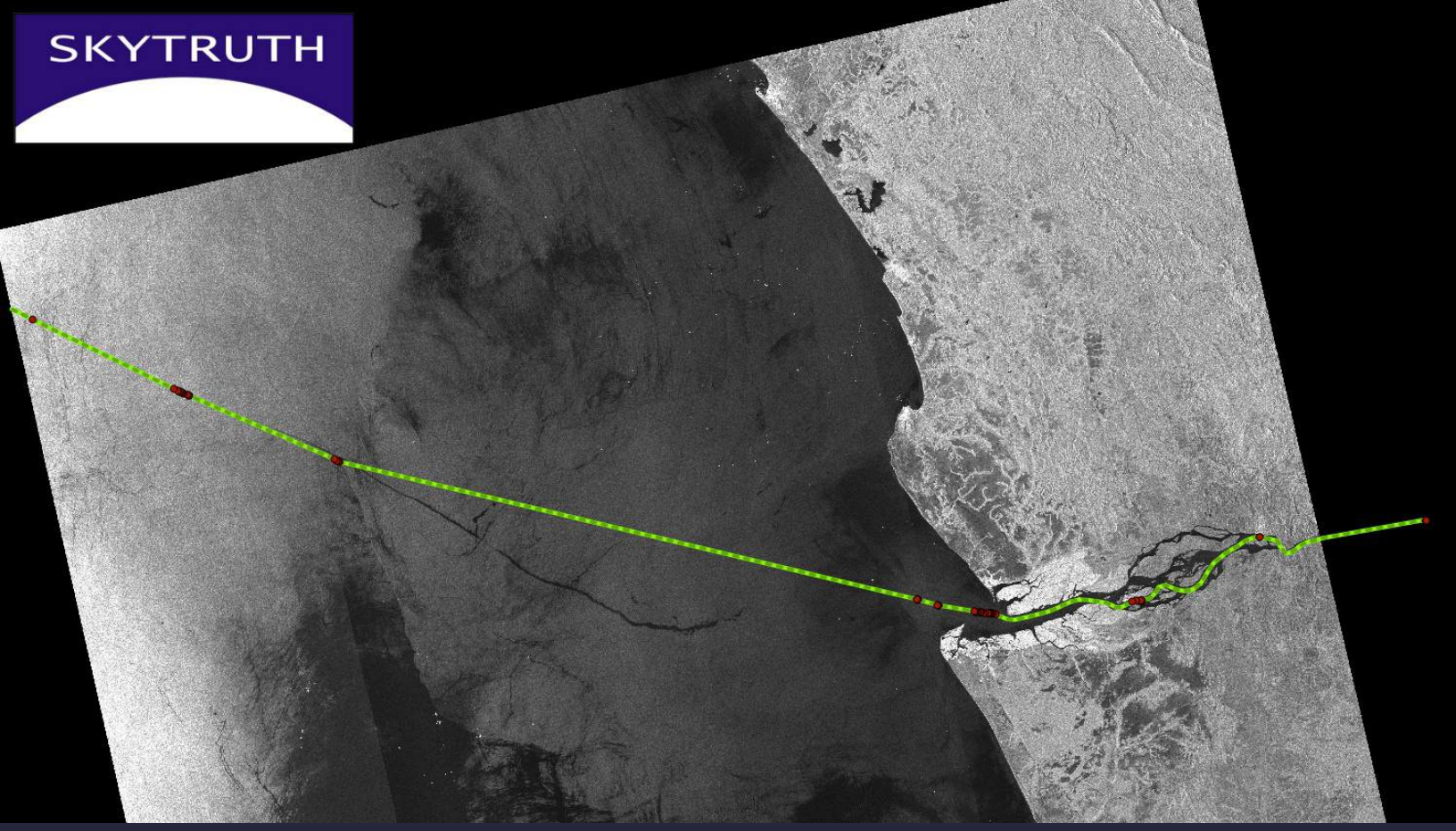
Motivating environmental protection:

Our compelling images, combined with a more robust communication strategy, will motivate concern for our environment, and turn that concern into action with our guidance and tools. Our Alerts system provides timely information about pollution events and industry activity, a major factor in mobilizing and targeting citizen response; and we are working to increase our visibility to the public, facilitated by hiring an Outreach and Communications Director in September.

SkyTruth offers internship opportunities for students of environmental issues to gain real world experience tackling environmental issues through remote sensing and spatial analysis. We work with groups in Pennsylvania and West Virginia to document unconventional shale gas activity from the air and present our work to the public through presentations, our websites and social media platforms, and other media outlets such as radio and through our partners in the environmental NGO community. With enhanced Alerts, improved technical tools and capabilities, and a redesigned website forthcoming, we expect to continue to see strong growth in our efforts to produce resources and promote them where they are most needed.

Engaging grassroots citizen science initiatives:

SkyTruth is working to support citizen-scientist monitoring efforts in the Marcellus Shale fairway and the coalfields of Appalachia, building online tools to record environmental quality information collected by volunteers and document pollution events. These resources will help to aggreate a wide range of environmental health indicators being sampled across these regions and make that information more accessible to citizens, NGOs, and researchers. Currently, SkyTruth is working with the ALLiance for Aquatic Resource Monitoring (ALLARM) and Appalachian Voices to assist the grassroots movement that has emerged from citizens concerned with monitoring and protecting the health of their local environment.



Above: Micro-satellites tuned to listen in on location data broadcast by ships recorded the path of a bilge dumping vessel off the coast of Angola. The oil slick is visible on this radar satellite image which documented the 92-mile long dump in April.

Building the SkyTruthing movement:

Enabled by high-speed internet, powerful personal computers, and the democratization of geospatial data and tools, our long-term goal is to launch the “skytruthing” movement. With tools and data provided by us, ordinary citizens and other organizations become "skytruthers" monitoring, analyzing and publishing findings about environmental changes using much of the same data, tools and techniques that we use.

SkyTruth is laying the building blocks for this in the form of tools -- SkyTruth Alerts, Gulf Oil Spill Tracker, Fracking Chemical Database, etc. -- to recruit, retain and grow citizen interest and participation in key environmental issues. We are also researching how to develop simple image analysis and classification techniques that can be used by non-specialists to contribute to our knowledge of the environment through remote sensing. Through this movement, we hope to empower a new generation to see their impact on the planet, and take action to change it.

If you can see it, you can change it...

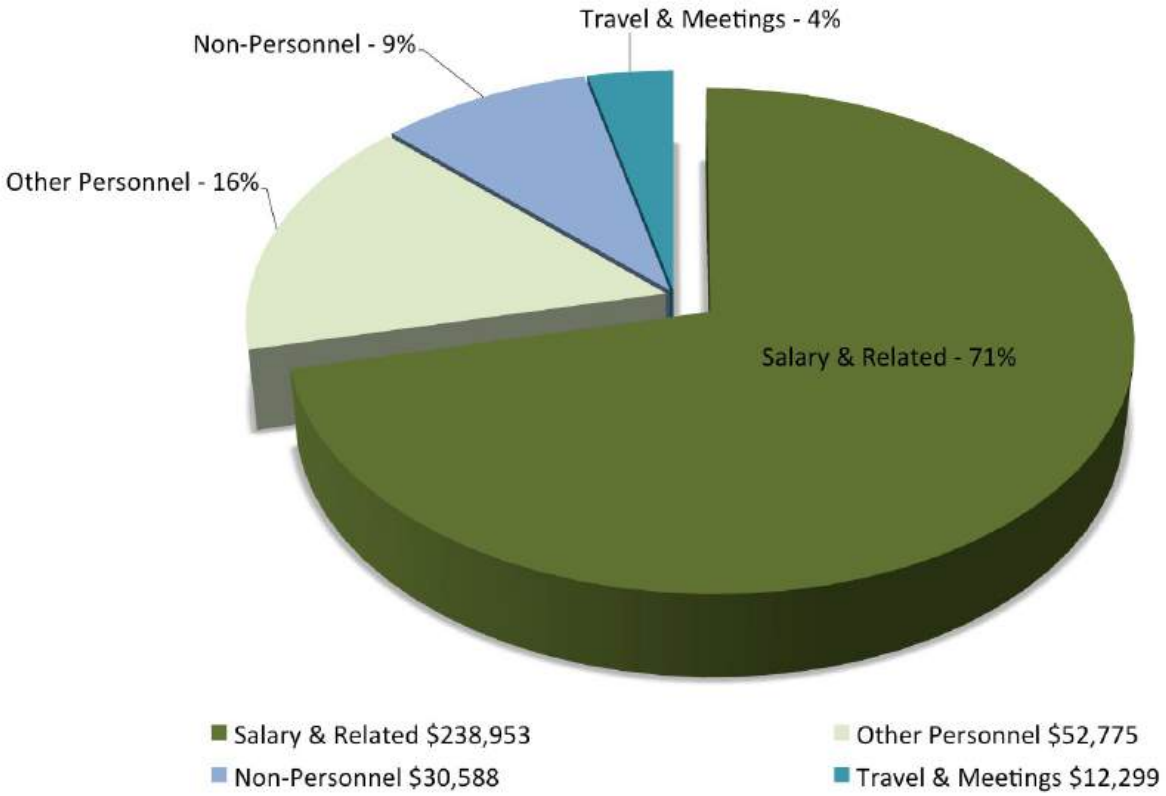
To Catch a Bilge- Dumper...

On April 6, 2012, an eight-ton satellite orbiting 780 kilometers above the earth snapped an image of a 90-mile long oil-slick off the coast of Angola, Africa. A couple of months later, using radar satellite images and GPS data transmitted by ships' Automated Information System (AIS) radio transponders, we became the first to publically document and identify a vessel illegally dumping on the open ocean - all using only space-based data.

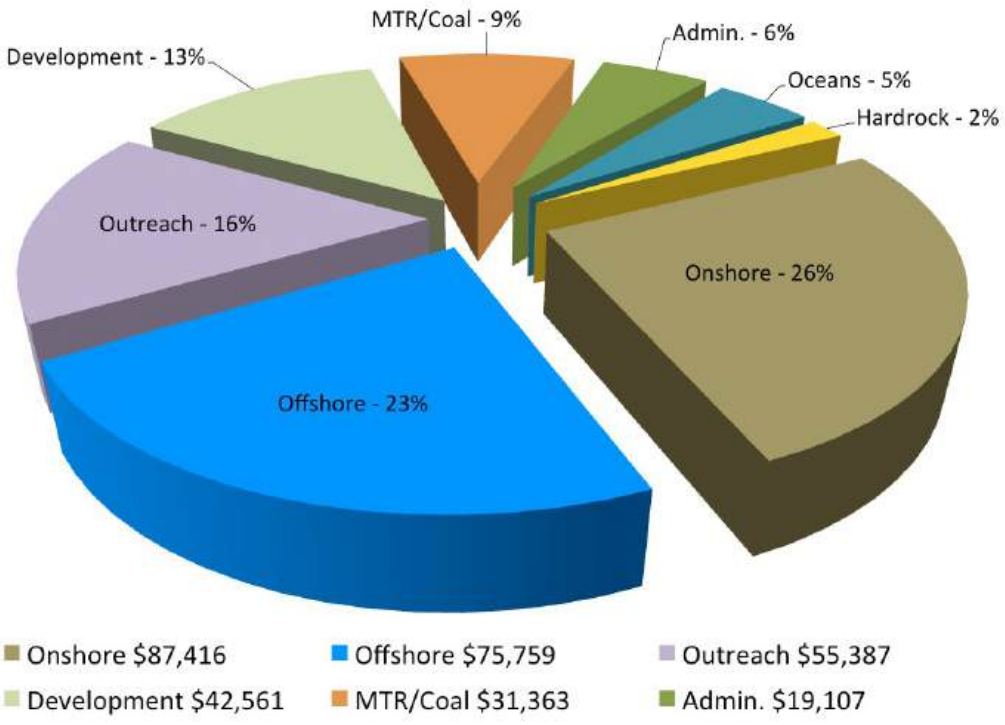
In 2013, we will be working with the Pew Environment Group's Global Ocean Legacy program to apply this approach to assessing the severity of Illegal, Unreported and Unregulated (IUU) fishing activity in marine protected areas in the South Pacific.

SkyTruth Financials

Expense by Category



Expense by Program



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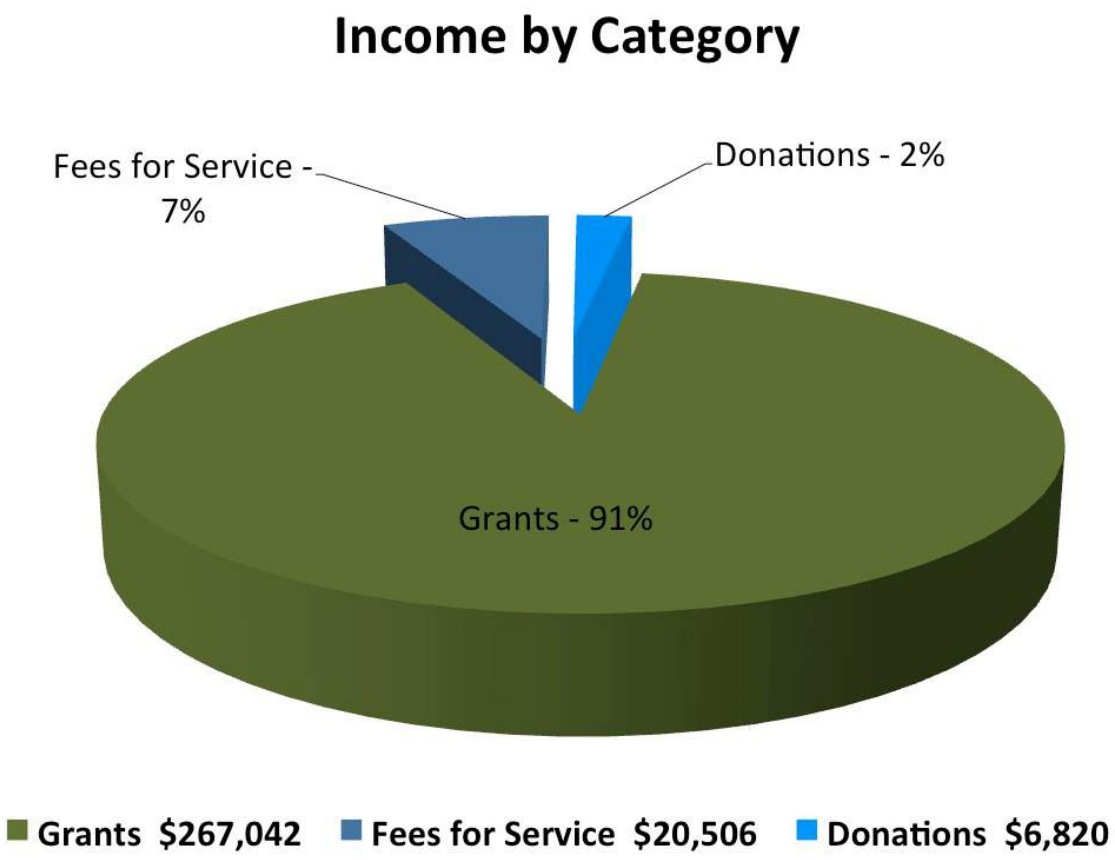

About Us...

SkyTruth is a 501 (c) 3 non-profit using remote sensing and digital mapping to motivate and empower new constituencies for environmental protection. We are based in the Eastern Panhandle of West Virginia, about 70 miles from Washington, D.C. in the historic community of Shepherdstown. We have four full-time staff and a wide range of volunteers and student interns with skills ranging from computer programming to remote sensing and image analysis. SkyTruth was founded in 2001 by John Amos (far right) and has gained national recognition as an objective and credible resource for information on environmental issues ranging from the rate of oil spilled during the Deepwater Horizon - Gulf Oil Spill, to tracking decades of mountaintop removal mining on satellite imagery. Learn more on the web at:

- www.skytruth.org -

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