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MEER

NEWSLETTER

THE LATEST NEWS AND UPDATES FROM MEER

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Advancing Cooling Strategies in August

Welcome to the August edition of the MEER newsletter. This month, we're sharing key updates from our sites in Freetown and India, where floating reflectors and other surface-based solutions are being tested to support climate resilience and community wellbeing.

As the world faces intensifying heat and shifting seasons, MEER continues its mission to build sustainable climate adaptation and mitigation solutions—designed to cool cities and regions through safe, scalable, and locally grounded approaches. Whether on rooftops, reservoirs, or agricultural land, our work is focused on protecting the most vulnerable and restoring thermal balance where it's needed most.

We're also pleased to share insights this month from Dr. Ye Tao, who is currently attending a major cooling symposium in China, contributing to global discussions on passive climate intervention.

Thank you, as always, for your continued interest and support.

NEWS FROM FREETOWN

Constructing and Deploying a Bamboo Floating Mirror Prototype

In June, the MEER Africa team completed the successful construction and initial deployment of a bamboo-based floating solar mirror designed to reflect sunlight from the surface of a water body. This prototype represents an important milestone in MEER's ongoing exploration of low-cost, scalable passive cooling interventions that can be constructed using locally available or repurposed materials. The goal of the floating mirror is to reduce water evaporation and heat absorption by increasing surface albedo over small bodies of water, such as reservoirs or ponds, potentially contributing to local thermal regulation.

The structure was designed with an emphasis on simplicity, sustainability, and replicability. Bamboo was selected as the primary framing material due to its strength, light weight, and availability in the region. For flotation, we used discarded PET bottles, arranged vertically and securely housed within split bamboo channels. These bottles were thoroughly cleaned and repurposed to provide buoyancy in a resourceful and environmentally responsible manner. PET cordage, which is durable and resistant to ultraviolet exposure, was used throughout the structure for binding, lashing, and securing components.

Construction began by cutting the bamboo poles to a standardized length and splitting them longitudinally to create channels for bottle placement. These halves were then reassembled to form a rectangular frame, with bottles inserted tightly between the bamboo layers to form the buoyant base. The bottles were evenly distributed to ensure a stable and balanced flotation, and cross-bracing was added in an X-pattern to reinforce the frame against torsion and flexion, particularly under wind or water stress.

With the base frame completed, secondary bamboo beams were lashed across the structure perpendicularly to create a support grid for the mirror surface. This grid not only provided a stable platform for the reflective film but also distributed the load evenly, improving the overall structural integrity. Additional vertical and diagonal struts were introduced in locations where shear forces were anticipated or where the structure required enhanced rigidity.

The reflective surface consisted of lightweight mirror film sheets, cut precisely to size and attached to the bamboo grid using PET cord. Small, intentional gaps were left between the sheets to allow air and water vapor to move through the surface, minimizing the wind resistance and making it easier to maintain the platform in the future. Once secured, the mirror panels provided a high degree of solar reflectivity, clearly visible in the bright midday sun.

Deployment took place in a shallow, calm body of water near the edge of the village. The structure was carefully lifted and floated into position, where it immediately demonstrated neutral buoyancy and even flotation across the frame. Fine adjustments were made to the tension of the cords to ensure that the mirror panels remained flat and optimally aligned to reflect incoming solar radiation. Once in position, the structure was anchored with simple tethers to prevent lateral drift while allowing for gentle movement with surface currents.

Initial field observations confirmed the functionality of the design. The mirror reflected sunlight efficiently, the frame remained stable, and there was no indication of water ingress into the PET bottles or sagging of the frame. In the coming weeks, the team will monitor the platform's behavior under varying weather conditions, measuring ambient and surface temperatures, observing the longevity of materials, and documenting any structural changes. The data gathered will inform decisions about future iterations, including potential scaling up to larger surface areas or adapting the design for different aquatic environments.

The bamboo floating mirror is both an engineering prototype and a proof of concept for a broader category of passive, reflective climate interventions. Its successful construction and launch mark a step forward in MEER's effort to design and implement grassroots-driven climate solutions using materials and techniques that are accessible, affordable, and low-impact. Future updates will include quantitative performance assessments and potential modifications based on observed performance in real-world conditions.

NEWS FROM INDIA

From Scorching Heat to Monsoon Rains - MEER Sheets In Action

In the last month, MEER’s India team returned to the field in Pune to assess the impact of our ongoing urban cooling pilot. Over several days, the team visited households where MEER’s reflective roofing sheets had been installed earlier this year as part of a climate adaptation initiative. These check-ins weren’t just about collecting feedback — they formed part of a comprehensive audit of our scientific experiments, including inspections of our temperature and humidity sensors, rooftop weather station, and all active monitoring systems.

Despite weeks of intense rainfall, the results are promising. The monsoon has washed away accumulated dust, leaving the rooftops gleaming — but more importantly, the core performance of the reflective materials remains strong. Residents consistently reported that indoor temperatures stayed significantly cooler during the peak summer months, and now, during the rains, the roofing is holding up impressively well, preventing leaks and adding a sense of structural reassurance to homes that are often vulnerable during storm season.

The dual functionality of MEER’s passive cooling sheets — reducing solar heat gain while also offering durable waterproofing — is proving to be a highly effective solution for homes in rapidly warming urban environments. In places like Pune, where summers are growing hotter and monsoons increasingly unpredictable, simple surface-based technologies like these offer a scalable, low-cost strategy for year-round climate resilience.

These latest field audits reaffirm MEER’s commitment to scientifically rigorous, community-informed deployment. As we continue to monitor the data from our sensors and field interviews, we’re preparing a detailed technical brief to share the outcomes more broadly. For now, one thing is clear: resilient materials and localized solutions can go a long way in protecting communities from the frontlines of climate disruption.

Inflatable Dome in China

Beyond its environmental and social benefits, the dome's surface has a high albedo—meaning it reflects a large percentage of sunlight rather than absorbing it. This reflective quality could help maintain lower temperatures within the dome itself, improving working conditions for laborers during the intense summer heat. There's also potential for a subtle cooling effect in the surrounding area, especially in densely built urban zones where heat islands are a concern.

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A MESSAGE FROM DR. YE TAO

Advancing Global Dialogue on Reflective Climate Solutions

Dear Members and Supporters,

I am writing to share reflections from an inspiring international symposium I attended last week in Xi'an, China, which focused on advancing feasible and effective responses to the escalating climate crisis. The International Open Collaborative on Direct Climate Cooling brought together leading scientists, policymakers, and practitioners committed to exploring the science, ethics, and pathways to global governance of direct cooling technologies.

MEER was honored to co-organize this gathering, in partnership with the Chinese Academy of Sciences (Institute of Atmospheric Physics), China Huaneng, and LONGi, the leading photovoltaics company in the world. The event created space for deep interdisciplinary exchange across the physical sciences, public policy, industry, and civil society. Participants engaged with the urgent question of how surface-based interventions—such as MEER's own scalable reflector technologies—can complement emissions reductions and help societies adapt to rising heat.

Key sessions included overviews of recent technical advancements in Thermal Radiation Management (TRM) and Solar Radiation Modification (SRM), governance challenges posed by planetary-scale interventions, and case studies of field experiments, including several aligned with MEER's ongoing pilot projects. I had the privilege of participating in and chairing multiple roundtables on adaptation strategies for heat-vulnerable regions. I met with several international research partners to discuss future collaborations, particularly in Africa and South Asia.

One of the most essential takeaways from this symposium was the growing recognition that cooling technologies grounded in material reality—like those MEER is developing—must be part of any serious climate response. There is a widening consensus that emissions reduction alone will not be sufficient to prevent irreversible harm in many parts of the world.

Looking ahead, we are building on these dialogues to strengthen MEER's research and implementation networks further. I remain grateful for your continued support, and I look forward to sharing updates from our next round of field deployments and international engagements in the coming months.

Warm regards,
Dr. Ye Tao
Founder, MEER

COULD GIANT BLANKETS AND OTHER EXTREME ACTIONS SAVE GLACIERS?

From plastic covers to snow machines, scientists race to slow the great melt

As glaciers retreat across the globe, scientists and ski resort operators alike are turning to increasingly extreme measures to buy time for the planet's vanishing ice. From giant thermal blankets to experimental snow machines and even painting mountaintops white, a patchwork of local interventions is emerging in response to a global emergency.

One such effort took place during the winter of 2021–2022 on the Diavolezza ridge in Switzerland's Upper Engadine Mountains. At 3,000 meters above sea level, amid ski slopes and panoramic views of iconic Alpine peaks, a network of snow guns blasted man-made snow—not just for skiers, but to help preserve the nearby Morteratsch Glacier. The glacier, a popular site for hikers and researchers alike, has shrunk by nearly a third in length since 1860 and continues to retreat.

The pilot project aimed to test whether strategic snowmaking could provide a protective layer over the glacier during warmer months, reflecting sunlight and insulating the underlying ice. The urgency is real: scientists estimate that even under the most optimistic climate scenario—limiting global temperature rise to 1.5°C—about half of the world's mountain glaciers will vanish by 2100.

And the losses are already staggering. Swiss glaciers have shrunk by 60% since 1850, with a record 6% volume loss occurring just last year alone. "People were shocked, including glaciologists," says Christian Huggel, a glaciologist at the University of Zurich. "Retreat is going faster than thought."

The Alpine region is particularly vulnerable. Warming is occurring more than twice as fast as the Northern Hemisphere average, making glaciers in these mountains especially susceptible to collapse. The impacts extend far beyond skiing: accelerated glacier melt contributes to water shortages, increased rockfalls, flash floods, and ultimately, sea level rise.

In response, unconventional solutions are being tested around the world. In Switzerland, some have proposed massive physical shields to block katabatic winds—cold, dense air currents that can strip snow and ice from glaciers. In the Andes, scientists have floated the idea of whitewashing dark rock surfaces near glaciers to enhance reflectivity and reduce heat absorption.
While climate experts are clear that only deep reductions in greenhouse gas emissions can address the root of the crisis, such geoengineering-style adaptations may help slow the loss temporarily. Still, these interventions are expensive, labor-intensive, and limited in scope.
As global temperatures continue to climb, the question remains: Can local stopgaps preserve some of the world's most iconic ice fields long enough for meaningful climate action to take hold?

DON’T MISS THIS MONTH’S MEERTALK!

FEEDBACK CORNER

Thank you for continuing on this journey with us. Our MEER newsletter is created for you—our community of supporters, readers, and changemakers—and we're deeply grateful for the time you take to stay connected with our work. Each edition is our way of sharing progress, ideas, and opportunities to act together on climate solutions.

We want this space to truly serve you, so if you have any thoughts on how we can make it more useful, engaging, or inspiring, please don't hesitate to reach out. Your feedback helps us grow and ensures we're bringing you the updates that matter most. You can share your suggestions anytime by emailing us at info@meer.org—we'd love to hear from you.