March 2026

NEWSLETTER

THE LATEST NEWS AND UPDATES FROM MEER

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Welcome to the March 2026 edition of the MEER Newsletter

This month marks a period of visible progress across our engineering, research, and community partnerships. From construction advancing on the ground in Sierra Leone to student engagement and technical outreach in India, MEER's work continues to move steadily from concept to implementation.

Our teams are preparing for expanded field trials and longer-term monitoring of passive cooling systems in heat-vulnerable regions. At the same time, we are refining materials, strengthening local fabrication capacity, and deepening collaboration with researchers and communities who are central to this work.

What connects these efforts is a shared objective: translating surface-based cooling science into practical, affordable solutions where conventional cooling remains inaccessible or unaffordable. Each build, presentation, and materials test contributes to a growing evidence base around durable, scalable heat adaptation.

As extreme heat intensifies globally, the importance of grounded, measurable, and locally embedded cooling solutions continues to grow. March reflects meaningful steps forward in building that foundation.

NEWS FROM AFRICA

Building Local Cooling Capacity in Sierra Leone

Work continues in Sierra Leone at our component fabrication site, developed in close collaboration with Sierra Leone Dance Troupe, where the team is building a sustainable cooling centre designed to support the next phase of MEER's field work.

The structure is being constructed primarily from locally sourced bamboo, alongside up-cycled and recycled plastic bottles, demonstrating how low-cost, widely available materials can be repurposed into climate-relevant infrastructure. A key feature of the center is its highly reflective rooftop, engineered to reduce solar heat gain and deliver passive daytime cooling. This approach lowers internal temperatures without the need for air-conditioning, electricity, or complex mechanical systems — a critical consideration in settings where energy access is limited and heat stress is rising.

Beyond the building itself, the cooling center is strategic infrastructure for MEER's wider research and deployment program. It functions as a fabrication hub for producing essential components used in larger trials and experimental installations, including modular elements made from recycled plastics. Having this capability on site allows rapid iteration, repair, and scaling, while keeping costs low and reducing dependence on imported materials.

A central aim of the project is skills transfer and local capacity-building. Community members are being trained to fabricate components using simple, repeatable processes and locally available tools. This training creates practical technical skills, supports local employment, and opens up new economic opportunities linked to climate adaptation and sustainable construction. Over time, this model is intended to support local ownership of production and maintenance, strengthening resilience beyond the lifetime of any single trial.

The cooling centre also acts as a living demonstration site — a place where researchers, community members, and visitors can see passive cooling principles in action, understand the materials and techniques involved, and contribute feedback that informs future designs. Lessons learned here will feed directly into larger-scale experiments, expanded deployments, and future cooling centres across Sierra Leone and other heat-vulnerable regions.

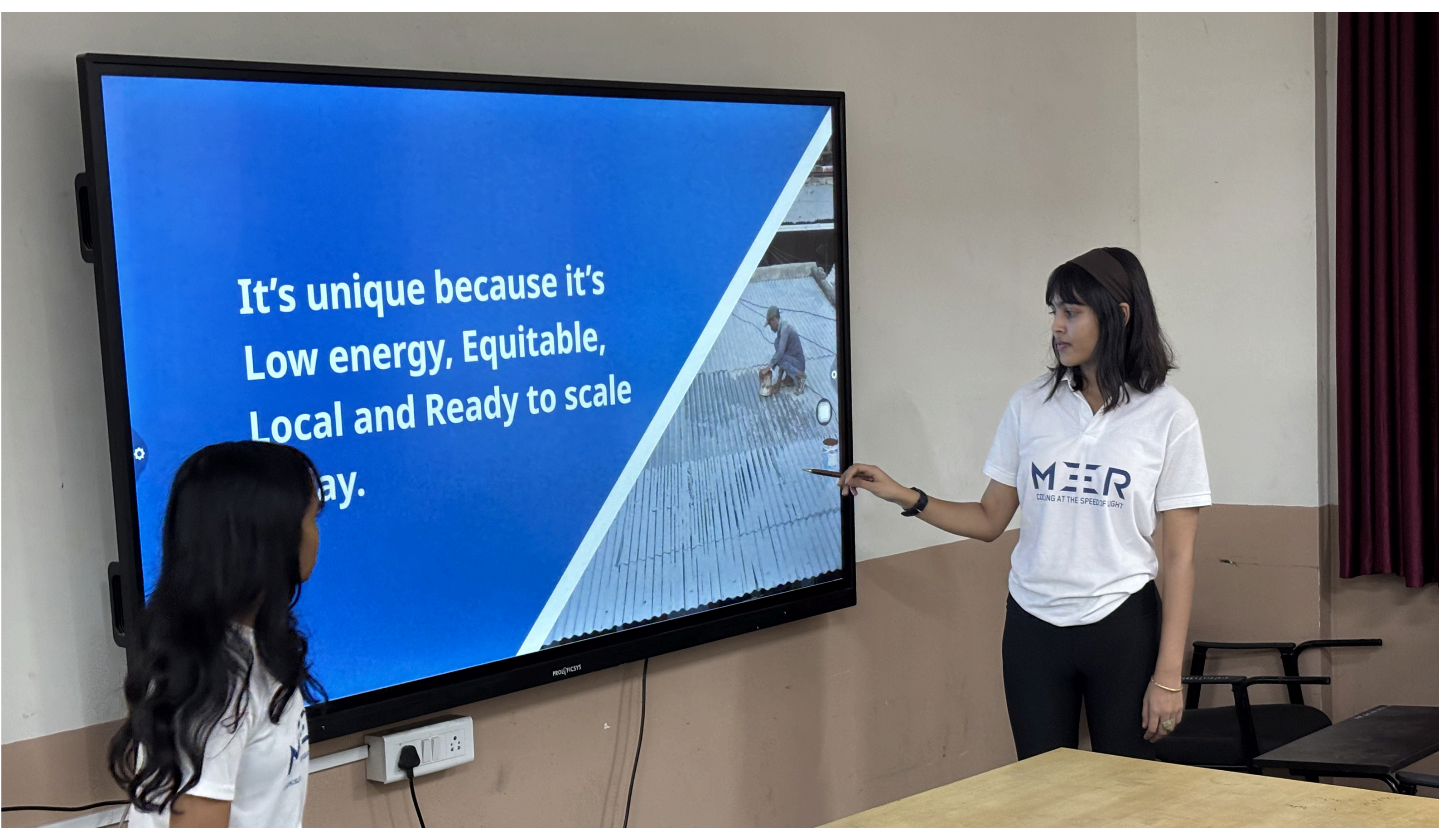
As work progresses through 2026, this facility will underpin MEER's transition from small-scale prototyping to scalable, community-embedded cooling solutions — combining climate science, circular materials, and local livelihoods to address extreme heat where it is felt most acutely.

NEWS FROM INDIA

Engaging Students on Passive Cooling and Climate Adaptation at Fergusson College, Pune

The MEER team in India conducted a 45-minute presentation at the Department of Environmental Science, Fergusson College, Pune, led by Bunny and Samiksha, engaging undergraduate and postgraduate Environmental Studies students as well as the Head of Department. The session was designed as an introductory and engagement-focused discussion to familiarise students with MEER's surface-based cooling approach and its relevance as a climate adaptation strategy in heat-vulnerable regions.

The presentation introduced the fundamentals of heat transfer and solar radiation, including surface absorption, albedo, and the influence of roofing materials on indoor thermal conditions. These concepts were then contextualised through a comparison between conventional active cooling systems, such as air conditioning, and passive cooling approaches that operate without electricity. The discussion emphasised why surface-based reflection and radiative cooling are particularly suited to low-resource settings where energy access is limited and heat stress is increasing.



MEER's technology and field deployments were presented through an overview of reflective sheets and coatings, their design logic, and observed performance in hot, informal, and low-income housing contexts. The team highlighted how these interventions reduce heat gain at the roof surface before it enters the structure, and how they can complement traditional building techniques rather than replace them. Potential applications across villages, informal settlements, and heat-exposed urban housing were discussed, alongside the possibility of organising a future field visit for interested students to observe installations and monitoring approaches directly.

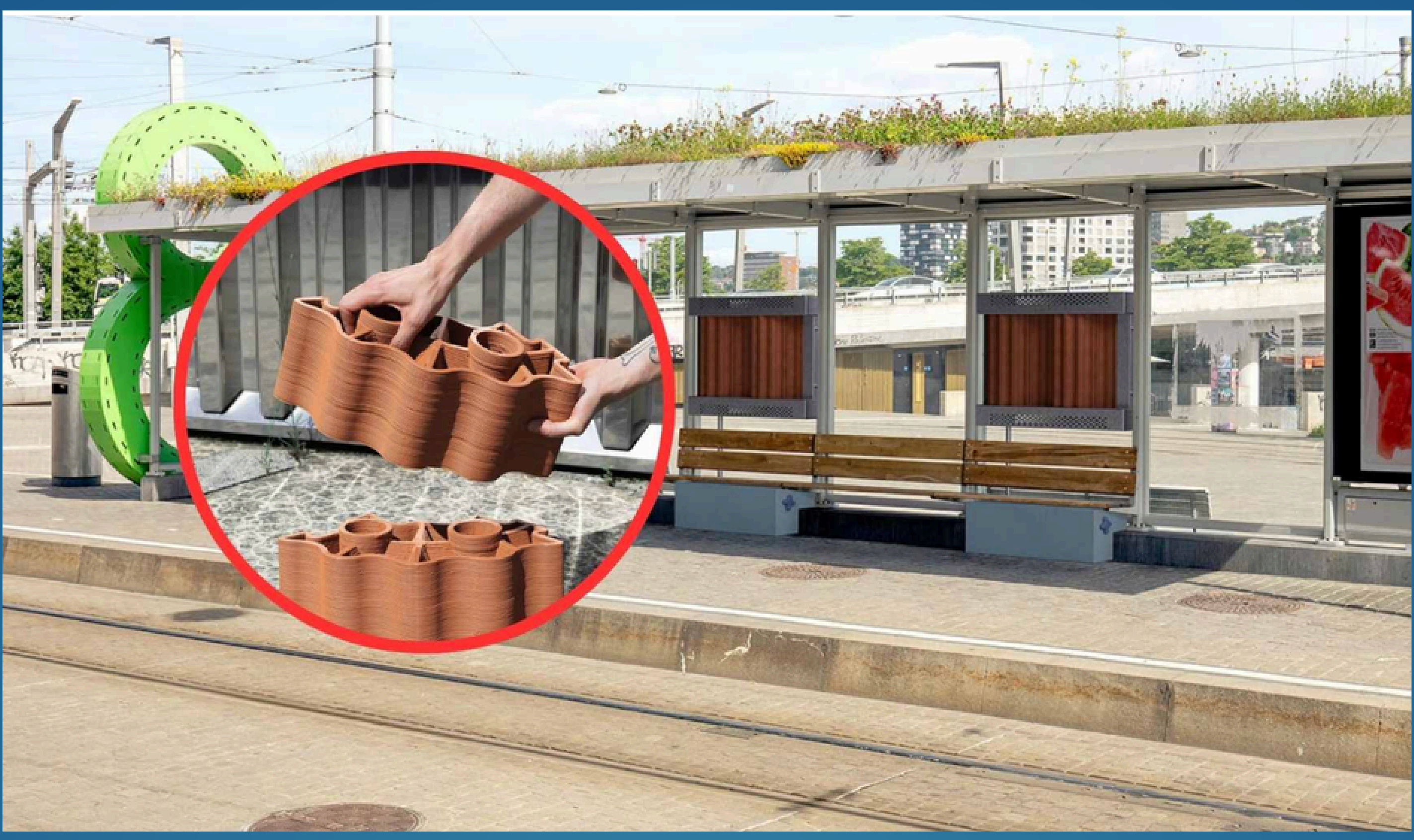
The interactive discussion that followed reflected strong technical engagement from students. Questions focused on cost, materials, effectiveness, and manufacturing pathways. The team explained that MEER aims to maintain a low per–square-metre cost range to support scalability, that aluminium is incorporated as a thin reflective layer within a polymer matrix to enhance reflectivity, and that while some manufacturing currently takes place in the United States, localisation of production is actively pursued wherever feasible. Comparisons with traditional mud housing highlighted that reflective surfaces address heat gain at the surface level, making them particularly effective for hard-roofed structures such as tin, concrete, and tile.

Overall, the session generated substantial interest in the material science, affordability, and real-world performance of MEER's cooling solutions. Several students expressed interest in volunteering, research collaboration, and field engagement. The presentation successfully strengthened awareness of low-cost, passive cooling as a critical component of climate adaptation and opened pathways for continued academic and field-based collaboration.

A brick that cools bus stops during heatwaves—no plugs, just simple physics.

Extreme heat is increasingly turning cities into heat traps, especially during long summer heat waves when concrete, asphalt, and glass absorb and retain the sun's energy. In the United States, extreme heat is already the leading weather-related cause of death, killing more people each year than hurricanes or floods. As temperatures rise worldwide, finding ways to stay cool without relying entirely on energy-intensive air conditioning has become an urgent priority.

One promising idea comes from two industrial design students in Switzerland, Andrin Stocker and Luc Schweizer of Zurich University of the Arts. They developed Bloc, a modular terracotta brick system designed to cool outdoor spaces using water, clay, and solar power. Their concept was named a national runner-up in the 2025 James Dyson Award, reflecting growing interest in passive and low-energy cooling solutions.



Bloc works through evaporative cooling. When water evaporates, it absorbs heat from the surrounding air, similar to how sweat cools the human body or how traditional clay water pots keep drinking water cool. Each Bloc unit is a porous terracotta brick that absorbs water. A small solar-powered fan pulls warm air through the wet channels inside the brick, and as the water evaporates, the air exits cooler. In testing, Bloc has achieved air temperature reductions of up to 9°C.

The system is designed as modular street furniture that can be stacked or arranged near bus stops, schoolyards, plazas, and other public spaces. These installations create small pockets of cooler air where people wait, rest, or pass through. Inspired by natural forms such as cactus ridges, the bricks also shade themselves, improving cooling efficiency while blending into urban environments.

Terracotta cooling systems have been explored before, including projects highlighted by the United Nations Environment Programme in India. What sets Bloc apart is its combination of integrated water storage, modular scalability, and solar-powered airflow, which helps maintain performance even in more humid climates.

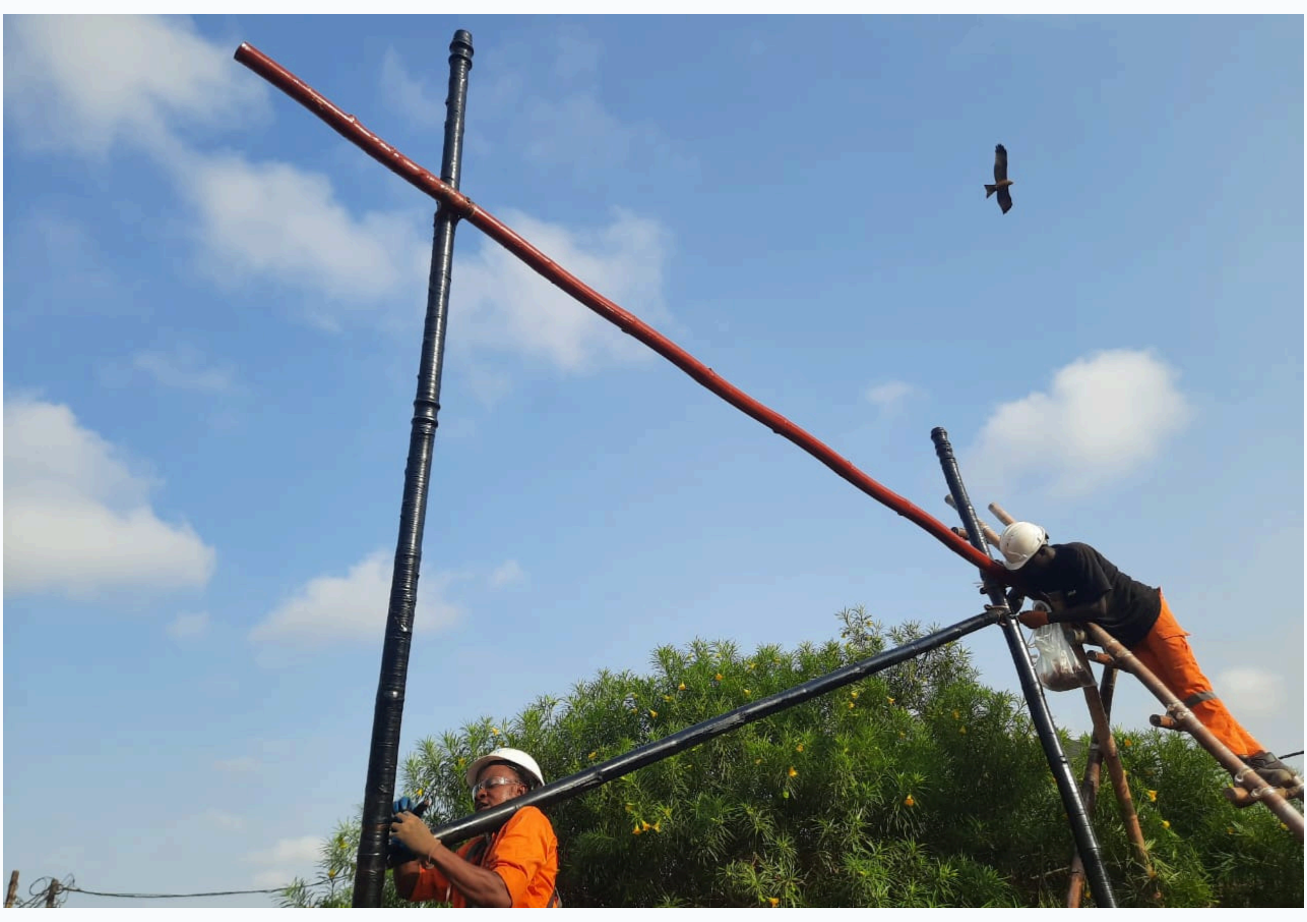
The next step for Bloc is real-world testing to evaluate durability, long-term performance, and public use. In a warming world, localized cooling solutions like Bloc could play an important role in making cities safer and more livable—one shaded, cooler spot at a time.

A MESSAGE FROM DR. YE TAO

Engineering Momentum at the Dance Troupe Site

March has been defined by steady, hands-on engineering progress at the Dance Troupe site in Freetown. What began as a conceptual training and adaptation space is now visibly taking shape. The structural frame is in place, the geometry is defined, and the project has moved decisively from drawings and prototypes into physical reality.

This build remains an active and evolving process. Each day on site presents practical challenges that require adjustment, refinement, and ingenuity. Rather than slowing us down, this has strengthened the project. The Dance Troupe structure has become a living laboratory — a place where techniques are tested, materials are understood more deeply, and engineering decisions are improved in real time.



Working with bamboo as the primary structural material has required careful attention to joint stability, load transfer, and long-term durability in a humid coastal climate. At the same time, we have continued refining our PET-based fastening and clamping systems, learning how recycled materials can be integrated into structural and shading components in ways that are both practical and robust. These are not theoretical exercises; they are solutions developed on the ground, under real conditions.

The core structure is now standing securely, and the space is beginning to feel coherent and purposeful. While there is still work ahead — including finishing elements and final detailing — the engineering phase has progressed well. We expect the building to be fully completed within the next few weeks.

Importantly, this project is about far more than one structure. The Dance Troupe site is designed to demonstrate that low-cost architecture can deliver meaningful passive cooling without relying on energy-intensive systems. The building is shaped to maximise shade, encourage airflow, and reduce heat accumulation through geometry rather than machinery. It reflects our wider belief that adaptation in heat-vulnerable communities must be both technically sound and materially responsible.

Embodied carbon has been a central consideration throughout. By prioritising bamboo and reclaimed materials over conventional concrete and steel-heavy construction, the structure carries a significantly lower carbon footprint. In a world facing escalating heat and emissions simultaneously, climate adaptation must not deepen the problem it seeks to solve. This building represents an attempt to align thermal performance with material sustainability.

Perhaps the most encouraging outcome this month has been the growth in local technical capacity. The engineering process has involved constant learning — adjusting connection methods, refining assembly techniques, and improving workflow on site. That knowledge now sits within the team in Sierra Leone, strengthening our ability to replicate and scale future builds.

The Dance Troupe project is progressing well. It is not yet finished, but the foundations — structurally and technically — are strong. As we move toward completion, this building will stand not only as a functional cooling space, but as a demonstration of what grounded, iterative engineering can achieve in challenging environments.
We are building carefully, learning continuously, and preparing for the next stage of MEER's work.

WATCH FEBRUARY'S MEERTALK !

CLIMATE NEWS

When White Paint Fades: Why Durability Is the Real Climate Question

A new urban heat study has delivered a simple but powerful message: reflective roofs do not stay reflective forever.

Tracking cool roofs across New York City over several years, researchers found that a significant share of buildings that initially met high reflectivity standards experienced measurable performance decline within just a few years. Much of that degradation occurred early. The implication is clear. Installation is only the beginning. Performance over time is what ultimately determines impact.

Cool roofs are widely recognised as an effective tool for reducing urban heat. By reflecting sunlight rather than absorbing it, they lower surface temperatures and help reduce indoor heat, particularly in top-floor rooms. In dense cities, where dark surfaces trap and re-radiate heat, reflective materials can meaningfully moderate the urban heat island effect.

But when reflectivity fades, cooling weakens. Dust accumulation, pollution, ultraviolet exposure and simple wear gradually reduce albedo. As surfaces darken, more heat is absorbed. The cooling dividend shrinks.

This matters everywhere. It matters even more in the Global South. Across parts of Africa, South Asia and Latin America, temperatures are already reaching dangerous thresholds. Informal settlements with metal roofs can experience extreme indoor heat. Electricity access is often limited, and air-conditioning systems are either unaffordable or unavailable. In these contexts, passive cooling is not a luxury — it is survival infrastructure.

A coating that reduces indoor temperatures by even a few degrees can significantly reduce heat stress, improve sleep, protect vulnerable populations and lower reliance on unstable grids. But if that coating degrades quickly, the protection erodes just as quickly.

This is where the distinction between conventional reflective paint and Passive Daytime Radiative Cooling (PDRC) paint becomes important. Standard high-albedo paints primarily reflect incoming sunlight. They reduce heat gain by bouncing a portion of solar radiation back into the atmosphere. PDRC paints go further. In addition to reflecting sunlight, they are engineered to radiate heat away from the building as infrared radiation through the atmospheric window. This dual mechanism — high solar reflectance combined with thermal emission — allows surfaces not only to absorb less heat but also to actively shed it.

The result is a more powerful cooling potential under direct sun, and in some conditions, the ability to cool surfaces below ambient air temperature. For buildings in extreme climates, that additional mechanism can be critical.

PDRC coatings also offer advantages in energy efficiency. By lowering surface and indoor temperatures more effectively, they can reduce cooling loads where air conditioning is available and extend comfort periods where it is not. In energy-constrained regions, that difference can translate into lower electricity demand, reduced costs and improved grid resilience.

At MEER, we are researching passive daytime radiative cooling materials as part of a broader surface-based heat mitigation strategy. Our focus is not just on laboratory reflectivity values, but on real-world performance and long-term viability. We are working with manufacturers to develop formulations that maintain cooling performance over time while remaining cost-effective for large-scale deployment in heat-vulnerable regions.

Affordability is essential. Many advanced cooling materials on the market today remain out of reach for the communities that need them most. For passive cooling to become a structural adaptation rather than niche innovation, it must be scalable and cost-effective.

Urban heat is intensifying. Climate projections indicate that extreme heat events will become more frequent and more severe. In regions with limited access to electricity and cooling infrastructure, surface-based interventions will play an increasingly central role in protecting human health.

The lesson from recent research is straightforward: reflectivity must endure. Cooling that fades after a short period is not resilience. Durable passive cooling — scientifically defensible, economically viable, and scalable — is one of the areas MEER is actively advancing through our materials science research.

In a warming world, adaptation will not depend only on how bright a surface is on day one. It will depend on how long that brightness — and that cooling — lasts.

MEERTalk

Robert Tulip

Author and Member of the Healthy Planet Action Coalition

Sunlight Reflection:

The Business Case for an Albedo Accord

SUNDAY
MARCH 1, 2026

3:00 PM EST
8:00 PM GMT

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KLAUS RICHTER

The Climate Acceleration Debate: Could 3°C Arrive by 2050?

ON THE

MEER

PODCAST

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Thank You for Being Part of Our Journey

As we move through the early months of 2026, we want to thank everyone who continues to follow, support, and engage with MEER's work. Your interest and trust make it possible for us to move from research and design into real-world testing and delivery.

This month marks an important period of groundwork and coordination, as teams prepare for major field trials, expand monitoring and evaluation efforts, and strengthen student engagement and collaboration. These steps may be less visible than installation or deployment, but they are essential to ensuring that our cooling interventions are robust, responsible, and effective.

MEER's approach remains rooted in collaboration, careful science, and community partnership. As heat risks continue to intensify, building evidence that links practical cooling solutions to measurable health and social benefits is more important than ever.

We are grateful to be moving forward together and look forward to sharing further progress in the months ahead. Thank you for being part of this work — and part of this journey.