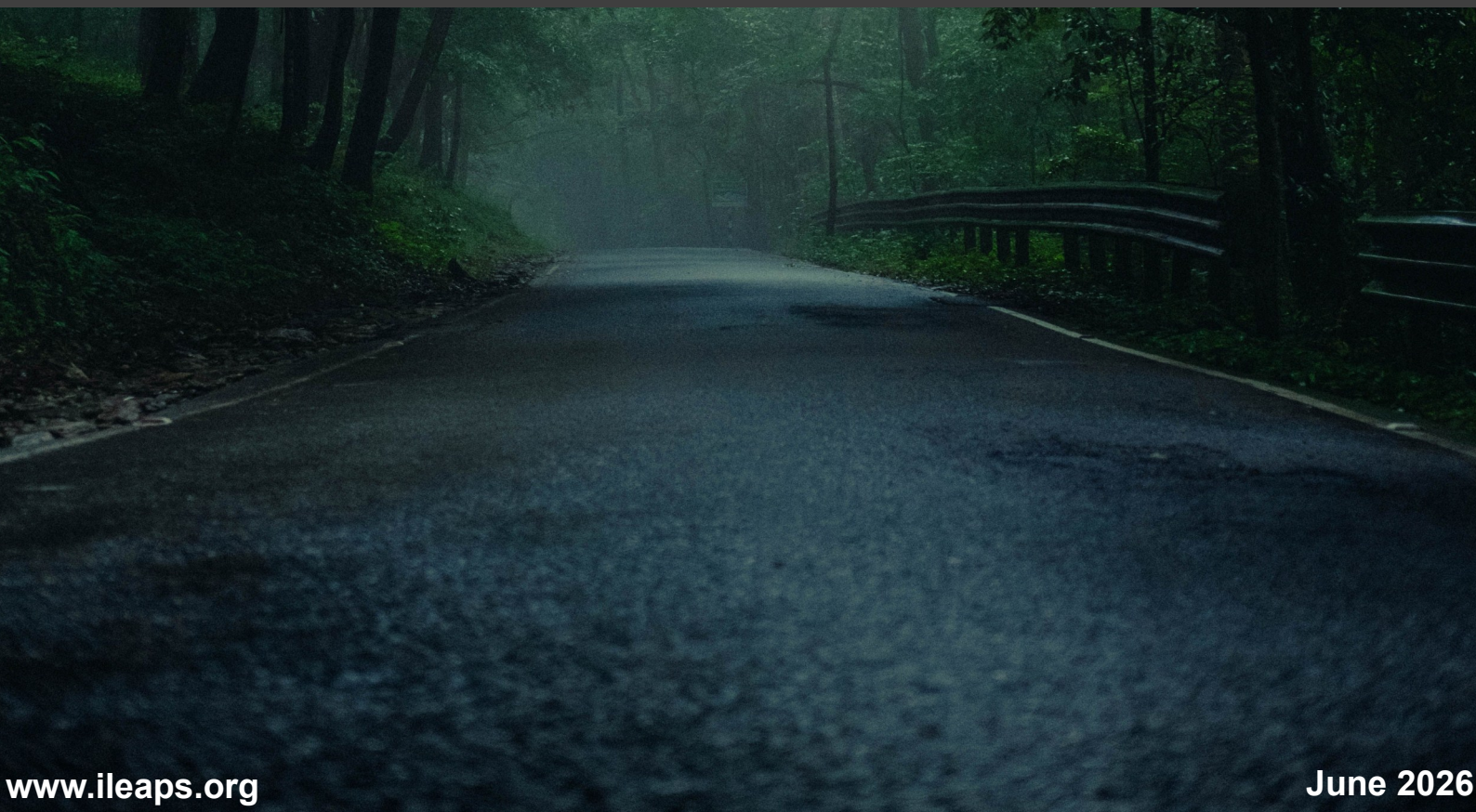
ileaps | Integrated Land Ecosystem - Atmosphere Processes Study

Newsletter



Contents

Science Updates

iLEAPS Activities

iLEAPS Events

Honours & Recognitions

Contents

Upcoming Events

Community

Image Credit

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Editor's Note

Dear iLEAPS Community,

The June 2026 issue of the iLEAPS Newsletter reflects a period of continued scientific advancement, expanding international collaborations, and growing recognition of the need for integrated approaches to understand the complex interactions between the land surface, atmosphere, ecosystems, and society.

A central theme emerging from this issue is the increasing importance of understanding the role of terrestrial ecosystems in regulating the global carbon and water cycles. The opinion piece on terrestrial carbon and water cycles in India highlights both the significant contribution of ecosystems to climate mitigation and the pressing need for coordinated observations and long-term monitoring networks. As climate variability intensifies and demands on natural resources continue to grow, developing robust scientific frameworks for monitoring ecosystem processes becomes essential for sustainable environmental management and informed policy decisions.

This issue also brings attention to the rapidly changing Himalayan environment. The field campaigns conducted at the Gangotri and Satopanth glaciers provide valuable insights into the influence of light-absorbing aerosols on snow and ice processes. Such studies demonstrate the importance of combining atmospheric observations, cryospheric measurements, and modelling approaches to better understand the feedback mechanisms between aerosols, glaciers, and regional climate systems. These efforts contribute significantly to improving our understanding of water security and environmental changes affecting millions of people dependent on Himalayan river systems.

Another major highlight is the development of SkyCast, India's first integrated atmospheric profiling system designed for aviation weather intelligence. This initiative exemplifies how long-term scientific research can be translated into operational applications that directly benefit society. By integrating advanced observational technologies and providing near-real-time monitoring of atmospheric conditions, SkyCast represents a significant step forward in improving aviation safety, weather forecasting capabilities, and our broader understanding of boundary-layer processes.

The activities highlighted from the European Geosciences Union General Assembly further reinforce the interdisciplinary nature of iLEAPS. Discussions on climate justice, urban sustainability, human health, and societal resilience remind us that addressing environmental challenges requires not only scientific excellence but also meaningful engagement with communities, policymakers, and diverse stakeholders. The increasing emphasis on ethical, inclusive, and equitable approaches to climate action reflects the evolving role of Earth system science in supporting societal transformation.

This issue also marks an important milestone with the launch of the new iLEAPS Dry and Arid Lands Working Group. Drylands represent some of the most vulnerable yet critically important regions of the Earth system, facing increasing pressures from climate change, land degradation, biodiversity loss, and water scarcity. Strengthening international collaboration in these regions will contribute significantly to advancing scientific understanding and developing sustainable solutions for resilience and adaptation.

Finally, we are delighted to celebrate the achievements of members of our community, including the recognition of Dr. Ben Poulter with the prestigious Copernicus Medal 2026. Such achievements serve as an inspiration and highlight the significant contributions of the iLEAPS community to advancing global Earth system science.

As environmental challenges become increasingly interconnected, the need for collaborative, interdisciplinary, and solution-oriented science has never been greater. The contributions presented in this issue demonstrate that meaningful progress arises from the

integration of observations, modelling, technological innovation, and international cooperation.

This issue stands as a testament to the dedication, enthusiasm, and collective efforts of researchers, students, and partners across the global iLEAPS community. We sincerely thank all contributors for sharing their valuable work and experiences. We hope this edition inspires further scientific dialogue, strengthens existing collaborations, and encourages new partnerships as we continue working together towards a more sustainable and resilient future.

With warm regards,

Editorial Team
iLEAPS Newsletter – June 2026

[OPINION PIECE] Terrestrial Carbon and Water Cycles in India: A Perspective on the Current Understanding and Upcoming Priorities

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With a significant share in the global carbon sink, the terrestrial ecosystems play a major role in climate mitigation. In recent times, they have emerged to be the largest carbon sink,1 well surpassing the ocean, which has traditionally dominated the global carbon budget. Tropical forests are known to store a large amount of carbon in their biomass, which has been resilient for some time2, until recently, when several major forests in the world have become a net source of carbon, driven by episodic warming or land-use change3. Additionally, the soils provide the largest terrestrial sink of carbon due to their vast reservoirs of organic carbon in non-water-limited regions and inorganic carbon stocks in drylands4. However, warming is also concurrently driving more carbon emissions from some of the world's most carbon-rich soils, such as peatlands5. Apart from this, partially or fully inundated ecosystems, such as mangroves, seagrass, sequester carbon at a larger rate than inland ecosystems, but their overall role remains restricted due to a much smaller geographic span and methane (CH4) emission6.

India is the most populous nation in the world, with a large landmass featuring heterogeneous land usage and diverse natural resources distributed across its length and breadth. Agricultural lands occupy the largest share in this country, and being blessed with fertile soils and water resources, India is one of the world's major agrarian economies. Additionally, it is registering rapid industrial growth in recent times, driven by energy-intensive economic activities. Agricultural and industrial activities together can increase carbon emissions from this region. On the other hand, India also boasts some of the world's densely forested and highly biodiverse regions, which occupy one-fifth of its landmass.

It also ranks in the top ten countries in the world in terms of mangrove coverage. Together, these terrestrial ecosystems offer a potentially large carbon sink. However, as in most developing regions, land is a heavily constrained resource here, burdened with the responsibilities to support a booming population, ambitious infrastructure developments, ensure food security, feed, and fibre production and climate mitigation measures. Meanwhile, such developments are also resulting in increased water demands, which, clubbed with shrinking freshwater resources, depleting groundwater reservoirs and shifting rainfall patterns, are becoming a bottleneck towards sustainable development.

With such a mosaic of emission hotspots and carbon stores, it is of paramount importance to identify the stocks of carbon, and their strengths and drivers, for which long-term, seamless high-frequency monitoring of surface-atmosphere carbon, water, and energy exchanges using dedicated flux towers equipped with Eddy Covariance and other associated hydrometeorological and plant physiological measurements, at dedicated locations representative of different land-use and land cover, is required. Multiple initiatives have been taken earlier to monitor such exchanges; however, these efforts have most often been initiated to address diverse research questions and consequently have remained confined to the regions and periods of interest. Therefore, such efforts have not yet culminated in a dense network, unlike AmeriFlux, ICOS, etc.

There have also been attempts to quantify forest biomass and soil carbon stocks in the country. Such efforts, however, diverge largely from each other, and all of them suffer from two main limitations. First, in the absence of in situ measurements, remotely sensed products or model simulations have been used, which remain highly uncertain. Secondly, such budgets are not updated in regular intervals with a commonly agreed-upon protocol among the stakeholders. Nonetheless, some budgets yet remain inconclusive, such as the belowground biomass stock, and the soil organic and inorganic carbon stocks.

In recent times, the requirement of such coordinated efforts, targeted towards an improved understanding of terrestrial carbon and water cycles, and more accurate carbon and water budgets for India and South Asia has been realised, which will serve three major purposes. First, it will constrain the global carbon budgets with less uncertainty. Second, it will result in improved remotely sensed and model development, further boosting our capability for real-time monitoring, ecosystem health assessment, and ecological forecasting. Finally, it will be central to India's reporting of its intended nationally determined contribution (INDC) as required for the Paris Climate Accord. Following this, at least one major synthesis study has been conducted in recent times7 that identified the following.

The capacity of carbon sequestration varies significantly among the Indian forests, based on age, composition, climate, and location. Indian summer monsoon remains the major driver of the hydrological cycle in the country; however, it is incorrect to assume that it has the same impact on all the ecosystems native to this region. While it promotes growth of the 'Kharif' croplands, it im-

-poses a strong 'radiation-limitation' in others. The ecosystems in Northeast India enjoy a surplus water supply that practically makes them radiation-driven and have a high water use, whereas the mangroves experience water shortages due to the additional energy required to filter salt from the saline water, thereby limiting their carbon uptake. Many mature forests are found to release as much carbon as they take up, due to increased respiration, stemming from their age.

Consequently, these findings further highlight the following key gap areas. Several major biogeographic zones still remain 'unmeasured', such as the Western Ghat rainforests and high- altitude Himalayan rangelands. Among the diverse crop portfolios of this region, carbon emissions have only been reported from rice, wheat, sesame, jute, and citrus. Furthermore, the anaerobic CH4 emission and evapotranspiration from the vast tracts of irrigated croplands remain ungauged.

In such a scenario, several challenges emerge for the future, when precipitation is projected to have wide and unprecedented spatiotemporal variabilities, characterised by shorter but intense spells of rainfall, separated by prolonged dry periods8. Moreover, the changes in monsoon in response to climate variability and planetary-scale events such as ENSO are still not fully understood. Weakening or shifting precipitation patterns may result in reduced runoff and riverine discharge, affecting the cropland productivity, which, coupled with land degradation, may further fuel the conversion of land for agricultural purposes. Furthermore, different extreme events, such as droughts, floods, heat or cold extremes, will be prevalent in different geographic regions; however, their impacts on the exposed terrestrial ecosystems are unknown due to shorter measurement records.

Organic and inorganic carbon stocks in Indian soils stand at 22 and 13 GtC, respectively9. However, these should be periodically reassessed as warming will trigger carbon loss from soil as well as higher emission of root exudates. Biogenic volatile organic compound emissions from Indian forests have never been measured, which should be done, however, as they play an important role in Ozone production, which in turn has been shown to damage the plants at high exposure. More process studies are required to fully understand the impact of reflecting and absorbing aerosols on plant carbon uptake. CO2 and CH4 emissions from wetlands are largely overlooked but must be measured and accounted for in the budgets. Rapid developments and a shifting population pattern make it important to measure the emissions from urban agglomerations. Therefore, a network of flux towers in India should be designed accordingly to monitor natural, agricultural and urban carbon and water cycles. Specifically, such a comprehensive network is necessary to support the ongoing and upcoming space missions, such as NISAR, TRISHNA, and GISAT-2, aimed at more effective space-based monitoring of carbon and water cycles, by providing them with quality ground truth data. Equipped with better monitoring and modelling capabilities, the nation will be in a better place for socio-economic impact assess-

-ment and requisite policy development. Therefore, the aforementioned considerations should shape the future research landscape on terrestrial carbon and water cycles in India.

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Chasing Soot on Ice: Field Campaigns at the Gangotri and Satopanth Glaciers

Upper Ganga Basins | June 2026
MAPAN, Metropolitan Air Quality and Weather Forecast Services
Indian Institute of Tropical Meteorology (IITM), Pune

The high-altitude glaciers of the Indian Himalayas are retreating faster than almost anywhere else on Earth, and soot is a large part of the story. Black and brown carbon aerosols emitted across the various sources are lofted into the mountains and, once they settle onto snow and ice, darken the surface enough to measurably accelerate melt. Quantifying that effect requires observations made directly on the glacier, not just in the atmosphere above it — which is precisely what a joint field expedition to the Gangotri and Satopanth glaciers set out to do in June 2026.

The campaign, part of ongoing research activities at IITM, combined atmospheric aerosol monitoring, snow-impurity sampling, and surface energy balance measurements at two glaciers within a single seasonal window. Gangotri and Satopanth were chosen deliberately: both are major valley glaciers of the Bhagirathi–Alaknanda river system — the primary headwater source for the Ganga, which feeds hundreds of millions of people downstream — yet they sit in contrasting topographic settings, offering a natural test of how local terrain shapes aerosol deposition and melt response.

Why June Matters

Timing was central to the campaign design. The pre-monsoon-to-monsoon transition is the period when transport of carbonaceous aerosol from the Indo-Gangetic Plain and surrounding arid regions typically peaks, and when the resulting deposits have their strongest effect on a snowpack since this campaign window is during the ablation period. Capturing this window at both glaciers simultaneously makes it possible to separate genuine regional aerosol signals from site-specific noise — a distinction that is easy to lose when campaigns are spread across different years or seasons.

Instrumentation and Measurements

At each site, an AE36S aethalometer was deployed to measure Black Carbon and, for the first time at an Indian Himalayan glacier, Brown Carbon concentration — a light-absorbing organic aerosol fraction that is frequently overlooked in glacier studies despite its significant contribution to shortwave absorption. Snow density and depth were logged at multiple points across each glacier, and snow samples were collected across a range of locations and depths for subsequent laboratory quantification of light-absorbing impurity concentrations and their relationship to albedo reduction.

Surface energy balance was independently constrained us-

-ing a net radiometer and an evapotranspiration sensor, while an automatic weather station (AWS) recorded the meteorological. Together, these instruments allow the aerosol and albedo observations to be tied directly to the physical drivers of melt, rather than treated as a separate diagnostic.

Closing the Model Validation Gap

Regional models such as WRF-Chem remain essential tools for projecting how aerosol deposition and glacier mass balance will evolve under changing conditions at finer resolutions, effectively capturing the complex Himalayan Orography, but their performance over the Indian Himalaya is still poorly validated. Complex topography, patchy snow cover, and strong local illumination gradients make this terrain particularly difficult to simulate, and prior evaluations elsewhere in the region have shown that model bias can be substantial even where domain-averaged performance looks reasonable. Ground observations of the kind collected here — co-located aerosol, snow, and energy balance measurements — provide exactly the kind of benchmark needed to identify where and why such models diverge from reality, rather than simply confirming that they do.

Beyond model validation, resolving the spatial variability of carbonaceous aerosol loading alongside atmospheric observations is a prerequisite for estimating aerosol-induced radiative forcing with any confidence — a quantity that feeds into the broader question of how the atmosphere and cryosphere feedback on one another under continued warming.

Two Glaciers, One Season

Gangotri, one of the largest valley glaciers in the Indian Himalaya, and Satopanth, situated within the Alaknanda basin, present genuinely different topographic and environmental settings. Running observations at both sites over the same seasonal window turns this into a natural comparative experiment: differences in snow properties, albedo, impurity loading, and meteorological drivers between the two glaciers can be attributed to local setting rather than to timing, strengthening any conclusions drawn about how terrain modulates aerosol–snow interactions across the Upper Ganga Basin.

Field Logistics

Data collection at this high-altitude site was particularly challenging due to the combined effects of harsh terrain and adverse weather conditions. Base camps for the two glaciers were established near the glacier snout, well above 3,600 -3900 m amsl, with the team making repeated ascents onto the ablation zones themselves to service the aethalometers, maintain the AWS masts, and recover snow samples before diurnal warming altered their properties. Solar arrays were the only viable power source for continuous aethalometer operation, and instrument enclosures had to be weather-proofed against the sudden snowfall events that are common even in June at these elevations — conditions visible in several of the images below. The logistics are as much a part of building a Himalayan glacier dataset as the

instruments themselves, and they are a major reason these kinds of datasets remain rare.

Outlook

The expedition leaves behind a field dataset that couples carbonaceous aerosol loading, snow physical properties, and surface meteorology across two glaciers in a single season a combination that has been rare in Himalayan cryosphere research to date. The immediate next steps are laboratory analysis of the collected snow samples and validation of the aethalometer, radiometric, and AWS records into ongoing WRF-Chem and snow energy balance modelling work. More broadly, the dataset is intended as a durable reference point: a place future campaigns and model evaluations over the Ganga Basin can return to as the understanding of light-absorbing impurities on Himalayan ice continues to develop.

SCIENCE HIGHLIGHTS

- First simultaneous Black Carbon and Brown Carbon dataset from an Indian Himalayan glacier, using a 7-wavelength AE36S aethalometer.
- Concurrent surface energy balance measurements (net radiation, Sensible heat flux, Latent Heat flux, ground heat flux, pressure, temperature, and Wind) at two glaciers within a single seasonal window.
- Direct comparison between Gangotri and Satopanth glaciers under contrasting topographic and basin settings.
- Dataset designed explicitly for benchmarking WRF-Chem and snow energy balance models over complex Himalayan terrain.

(a) Heat Flux plate deployed on the glacier surface

(b) Solar array powering continuous power supply to field instrumentation

(c) Automatic Weather Station recording meteorological parameters

(d) Evapotranspiration sensor installed on the glacier ablation zone

(e) AE36S Aethalometer for Black and Brown Carbon quantification

(f) Field camp under seasonal snowfall at the glacier site

SkyCast: An Integrated Atmospheric Profiling System for Aviation Weather Intelligence

Dense fog, low-level wind shear, turbulence, and rapidly evolving boundary-layer conditions remain among the most significant weather hazards affecting aviation over northern India, particularly during the winter months. These phenomena reduce visibility, disrupt airport operations, and pose substantial challenges for aircraft take-off and landing. Addressing these hazards requires continuous monitoring of the three-dimensional atmospheric structure rather than relying solely on conventional surface observations. In response, the Indian Institute of Tropical Meteorology (IITM), Pune, under the Ministry of Earth Sciences' Mission Mausam, has developed SkyCast—India's first integrated, operational boundary-layer profiling system for aviation weather monitoring at Indira Gandhi International Airport (IGIA), New Delhi.

SkyCast combines multiple state-of-the-art remote sensing instruments into a unified observational platform capable of continuously monitoring the atmospheric boundary layer. The Radar Wind Profiler (RWP) provides high-resolution vertical profiles of horizontal wind speed and direction, enabling early detection of wind shear, low-level jets, and evolving kinematic structures. A Microwave Profiling Radiometer (MWR) retrieves continuous temperature and humidity profiles without the need for radiosonde launches, allowing real-time identification of temperature inversions, boundary-layer evolution, and atmospheric stability. Near-surface turbulent motions are observed using SODAR (Sonic Detection and Ranging), while the Ground-based Fog and Aerosol Spectrometer (GFAS) characterises the microphysical properties of aerosols and fog. Complementing these measurements, the CL61 depolarisation ceilometer provides continuous observations of cloud base, aerosol layers, and the vertical evolution of fog. The synergistic integration of these instruments delivers a comprehensive description of atmospheric thermodynamic, kinematic, and microphysical processes.

The scientific foundation of SkyCast is built upon more than a decade of observations from the Winter Fog Experiment (WiFEX), initiated by IITM in 2015. Long-term measurements of boundary-layer dynamics, aerosol–fog interactions, turbulence, and thermodynamic evolution have substantially advanced the understanding of fog formation and dissipation over the Indo-Gangetic Plain. SkyCast represents the operational translation of this research, transforming continuous atmospheric observations into actionable aviation weather intelligence.

Unlike conventional observing systems, SkyCast continuously updates atmospheric profiles every few minutes, enabling near-real-time detection of hazardous weather conditions.

Integrated algorithms generate automated alerts for wind shear, turbulence, inversion formation, visibility degradation, and other aviation hazards, providing critical situational awareness for air traffic management and flight operations. Beyond aviation, the high-frequency observations contribute to numerical weather prediction, boundary-layer research, air-quality studies, and urban meteorological applications. As India expands advanced atmospheric observing networks under Mission Mausam, SkyCast establishes a benchmark for next-generation integrated aviation weather systems, strengthening both operational forecasting capability and scientific understanding of the lower atmosphere.

Updates from EGU26

I had the opportunity to present at an EGU Union session in Vienna, titled "Climate change, morals, values and policies." The session was convened Noel Baker and moderated by Mario Sharfbillig. The climate challenge is no longer only about understanding the Earth system, it is also about understanding ourselves as humans.

As a global society, response to climate change information and climate action policies is shaped not only by scientific evidence, but also by moral values, cultural identities, religious beliefs, fears, and psychological dynamics.

Attitudes that may appear irrational often reflect deeper questions of meaning, trust, and social belonging. How can scientists and governments communicate climate science in ways that resonate with diverse societies without resorting to manipulative tactics? How can decision-makers design ethical and inclusive policies that inspire meaningful action at individual, community, and societal levels?

This Union Symposium brought together experts from multiple disciplines to explore these questions through both scientific research and practical experience. Speakers examined the moral, psychological, cultural, and social dimensions that shape public engagement with climate change. Perspectives from religious traditions, as well as indigenous and marginalized communities, broadened the dialogue and offered insights into how climate communication and policy can become more inclusive, trustworthy, and impactful.

The session was recorded, and is available at https://www.egu26.eu/session/58582

Gabriel Filippelli

iLEAPS Science Committee co-Chair

Updates from EGU26

Eddy covariance (EC) measurements provide high-frequency observations of ecosystem carbon, water, and energy exchanges, while satellite observations and ecosystem models enable these measurements to be extended from local to regional and global scales.

Recent advances in Earth observation and process-based modelling are creating new opportunities to integrate EC, satellite, and modelling approaches for improved monitoring of ecosystem responses to climate variability and extreme events.

This integrated framework supports more accurate estimation of terrestrial fluxes and enhances our understanding of ecosystem dynamics across spatial and temporal scales.

Dr Pramit Kumar Deb Burman, iLEAPS ECR and WG member, has been engaged in hosting the following sessions on these aspects on several international platforms.

1. Activities in the last quarter:

Session in the European Geophysical Union (EGU) General Assembly 2026

Pramit Kumar Deb Burman co-convened Session BG2.4, “Novel methods for bridging understanding of carbon, nitrogen, and water fluxes from leaf to continental scales", featuring 20 oral presentations, 15 on-site poster presentations, and 2 virtual poster presentations.

iLEAPS Contributions at EGU26

The iLEAPS community had a strong presence at the European Geosciences Union (EGU) General Assembly 2026, convening and contributing to interdisciplinary sessions that highlighted the connections between climate change, urban environments, human health, sustainability, and societal resilience.

Climate Change: What Policies and Actions for Vulnerable and Marginalised People?

On 4 May 2026, iLEAPS SSC member Pallavi Saxena convened the Townhall Meeting "Climate Change: What Policies and Actions for Vulnerable and Marginalised People?" (TM19), together with co-conveners Semeena Valiyaveetil Shamsudheen and David Crookall from the Agricultural Research for Development, France. The session provided an important platform for discussing how climate policies and adaptations actions can better address the needs of vulnerable and marginalised communities with a distinguished line of panelists – Dr. Elias Symeonakis, an expert in the field of Remote Sensing of Land Degradation; Dr. Juliette Rooney-Varga, Director of the Climate Change Initiative, co-directs the Rist Institute for Sustainability and Energy, and professor of environmental science at the University of Massachusetts Lowell; Prof. Kamna Sachdeva from the Delhi Skills and entrepreneurship University; Prof. Gabriel Filipelli, Director of the Center for Urban Health and Executive Director, Environmental Resilience Institute at Indiana University; and Dr. Saurabh Sonwani, Assistant Professor at Department of Environmental Studies, Zakir Husain Delhi College, University of Delhi, New Delhi, India. Participants explored challenges associated with climate justice, equity, social inclusion, and community resilience, while identifying opportunities for more effective engagement between researchers, policymakers, and stakeholders.

Urban Air Pollutants in the Anthropocene: Composition, Chemistry and Health Impacts

The session "Urban Air Pollutants in the Anthropocene: Composition, Chemistry and Health Impacts" (AS3.28) was convened by Saurabh Sonwani, with co-conveners Semeena Valiyaveetil Shamsudheen and Atul Kumar Srivastava. Co-organised with BG10, the session examined the evolving nature of urban air pollution in a rapidly changing world. Presentations addressed pollutant sources, atmospheric chemistry, transport processes, exposure pathways, and health impacts, while highlighting emerging challenges and opportunities for improving urban air quality and public health.

Urban Ecosystems, Human Health and Well-being: A Way Towards Sustainability

Pallavi Saxena also convened the session "Urban Ecosystems, Human Health and Well-being: A Way Towards Sustainability" (BG1.13), together with co-conveners Semeena Valiyaveetil Shamsudheen, Giles B.

Sioen from Future Earth,Japan, and Eliani Ezani, iLEAPS SSC member. The session focused on the role of urban ecosystems in supporting human health, enhancing climate resilience, and promoting sustainable development. Contributions explored ecosystem services, biodiversity, green infrastructure, urban planning, and nature-based solutions, emphasizing the importance of interdisciplinary approaches for creating healthier and more sustainable cities.

Together, these sessions demonstrated iLEAPS' commitment to advancing integrated Earth system science and fostering dialogue across disciplines to address some of the most pressing environmental and societal challenges of our time.

New iLEAPS Dry and Arid Lands Working Group to Launch at LeXtra Workshop, AOGS 2026

iLEAPS will participate in the LeXtra Workshop on 2 August 2026 in Fukuoka, Japan, held in conjunction with the Asia Oceania Geosciences Society (AOGS) Annual Meeting 2026. The workshop will bring together researchers and stakeholders working across land–atmosphere interactions, ecosystem processes, climate variability, sustainability science, and societal resilience.

A major highlight of the event will be the formal announcement of the new iLEAPS Working Group on Dry and Arid Lands (DAL-WG). The DAL-WG has been established to advance Earth system understanding, prediction, and resilience across the world's drylands, including deserts, rangelands, savannas, and dryland agricultural systems.

Drylands cover more than 40% of the Earth's land surface and support the livelihoods of over two billion people. Yet these regions are particularly vulnerable to climate change, land degradation, water scarcity, biodiversity loss, and increasing pressures on food and energy systems. Addressing these challenges requires closer collaboration across disciplines and sectors.

The DAL-WG will provide an international platform for scientists, practitioners, policymakers, and local stakeholders to collaborate on key topics including land–atmosphere feedbacks, ecosystem resilience, climate adaptation, sustainable land management, dust and aerosol processes, water security, and environmental change in dryland regions. The working group will also support capacity development, knowledge exchange, and the co-production of solutions that enhance resilience in dry and arid environments.

The launch of the DAL-WG at the LeXtra Workshop marks an important milestone for iLEAPS and reflects the growing recognition of drylands as critical components of the Earth system. Participants will have the opportunity to contribute to shaping the vision, priorities, and future activities of this new international working group.

Honours and Recognitions

Congratulations to Dr Ben Poulter on Receiving the Copernicus Medal 2026

The iLEAPS community warmly congratulates our previous Scientific Steering Committee co-Chair Dr Ben Poulter on being awarded the prestigious Copernicus Medal 2026. This distinguished award recognises his outstanding scientific contributions to understanding the global carbon cycle and greenhouse gas dynamics, as well as his leadership in international Earth system science initiatives.

Dr Poulter has played a pivotal role in advancing global assessments of carbon and methane budgets, improving our understanding of terrestrial ecosystem processes, and strengthening the scientific foundations for climate mitigation and adaptation. His work exemplifies the interdisciplinary and societally relevant research that lies at the heart of the iLEAPS mission.

We extend our sincere congratulations to Ben on this well-deserved recognition.

iLEAPS Japan at AOGS 2026 (AOGS 2026 | Home

iLEAPS Japan will actively participate in the 23rd Annual Meeting of the Asia-Oceania Geosciences Society (AOGS 2026) by hosting a dedicated scientific session and lecture. The session has received 40 abstract submissions, providing a valuable platform to showcase the scientific progress of iLEAPS Japan, present ongoing research, and discuss future directions. This engagement highlights the active participation of the Japanese iLEAPS community and fosters scientific collaboration and knowledge exchange across the Asia–Oceania region.

Pramit Kumar Deb Burman will chair Session BG11, "Bridging Towers with Satellites: Advancing Ecosystem Carbon–Water–Energy Cycle Monitoring from Site to Global Scale," which has received 14 submissions.

Dates: 2–7 August 2026
Venue: Fukuoka International Congress Center, Fukuoka, Japan
More details: https://www.asiaoceania.org/AOGS2026/Home

10th International Conference on Fog, Fog Collection, and Dew

Conference Overview

The International Conference on Fog, Fog Collection, and Dew is a triennial global event that brings together researchers, scientists, and practitioners to discuss fog, dew, and atmospheric water collection technologies. The conference focuses on the physical processes of fog and dew formation, their environmental impacts, and advances in sustainable water harvesting techniques, especially in arid and semi-arid regions. Organized by The International Fog and Dew Association (IFDA), this conference serves as a platform to share research, solutions, and advancements in sustainable water resources.

Scientific Themes

- Fog and Dew collection as a water resource
- Fog and Dew measurement and monitoring, including in-situ sensors and collectors
- Fog and Dew field campaigns in different environments

Upcoming Events

- Fog as a water resource and its effects on human activities, including transportation, renewable energy, communications, and health
- Chemistry of Fog and Dew
- Fog and Dew Physics
- Ecosystem interaction with Fog and Dew
- Studies of ice fog, riming, and frost
- Satellite remote sensing of fog and low clouds
- Numerical modelling and forecasting of fog and dew

Host Institution

The conference will be hosted at the Indian Institute of Tropical Meteorology (IITM), Pune, a premier research institute under the Ministry of Earth Sciences, Government of India.

IITM is known for major fog research initiatives such as the Winter Fog Experiment (WiFEX), aimed at improving fog nowcasting and operational forecasting over North India.

Important Dates

Dates: 22 – 26 September 2026

Venue: Meghdoot Auditorium, Indian Institute of Tropical Meteorology (IITM), Pune, India

More details: https://ews.tropmet.res.in/fogdew26/register.php

APARC General Assembly 2026 (APARC GA-2026)

Atmospheric Processes and their Role in Climate (APARC) is a core project of the World Climate Research Programme (WCRP). As part of its quadrennial conference series, the APARC General Assembly brings together an international community of scientists working across atmospheric processes, composition, dynamics, and climate variability and change.

The APARC General Assembly 2026 will focus on advancing our understanding of the atmosphere and its role in the climate system. The scientific program will cover a wide range of themes, including:

1. Toward High-Resolution Representation of the Climate System
2. Atmospheric Composition and Its Variability in a Changing Climate
3. Dynamical and Thermodynamic Fingerprints of Climate Forcing
4. Circulation, Composition, and Extreme Events in the Tropics
5. Climate Prediction from Sub-Seasonal to Decadal Scales
6. APARC Science with and for Society

The General Assembly provides a unique platform for researchers and professionals to present and share their latest findings, recognize scientific achievements, identify knowledge gaps, engage in focused discussions, and collaboratively shape how the APARC community can address emerging scientific and societal challenges.

The deadline for abstract submission is 30 April 2026.

Additionally, an Early Career Researcher (ECR) event will be held on 11 October 2026 at IITM, Pune, specifically for early-career researchers and students.

Dates: 12-16 October, 2026

Venue: IITM, Pune, India

More details: https://aparc2026.tropmet.res.in

Upcoming Events

7th iLEAPS Open Science Conference, Hiroshima, Japan

The 7th iLEAPS (Integrated Land Ecosystem-Atmosphere Processes Study) Open Science Conference will be held in Hiroshima, Japan, with the iLEAPS-Japan committee. https://esd.nies.go.jp/ileaps-japan/eng/ https://esd.nies.go.jp/ileaps-japan/ from the National Institute for Environmental Studies https://esd.nies.go.jp/ileaps-japan/ hosting the event at Hiroshima University. The conference is scheduled for March 1-5, 2027.

Location: Hiroshima University, Hiroshima, Japan.

Dates: March 1-5, 2027 (with pre-conference events on February 27-28).

Sponsor: iLEAPS (Integrated Land Ecosystem-Atmosphere Processes Study).

Organized by: iLEAPS-Japan, with support from the National Institute for Environmental Studies.

Focus: Open Science within the context of iLEAPS' research on land-atmosphere interactions

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