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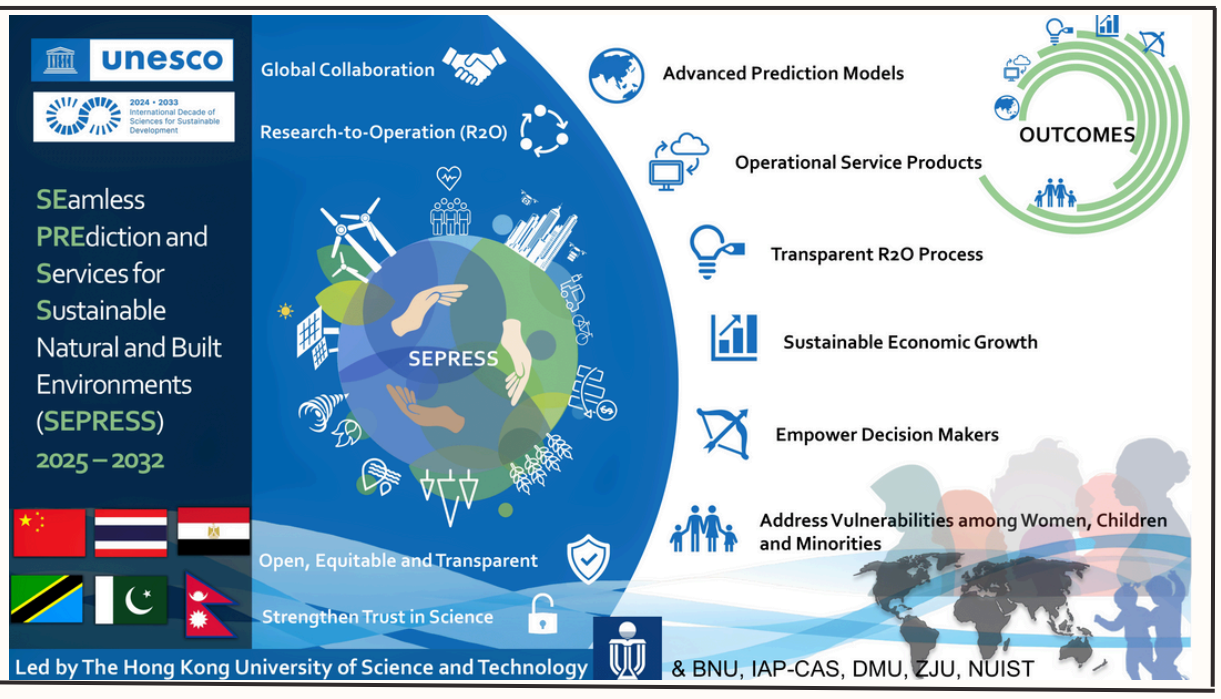
NEWSLETTER

HKUST CLIMATE PROGRAM RECEIVES UNESCO RECOGNITION

BREAKING NEWS

Pioneering Climate Resilience and Sustainability: HKUST Launches Landmark UNESCO-Backed Initiative To Drive Global Sustainable Solutions.



Hosted by the HKUST World Sustainable Development Institute (WSDI) and the Otto Poon Centre for Climate Resilience and Sustainability (CCRS), **the Seamless Prediction and Services for Sustainable Natural and Built Environments (SEPRESS) Programme** has been officially recognized by **UNESCO** as a **flagship initiative** of the International Decade of Sciences for Sustainable Development (2024–2033).

Led by Prof. Mengqian Lu, director of both WSDI and CCRS, SEPRESS is an 8-year international programe that hosts and coordinates global scientific and operational initiatives. Through an equitable "research-to-operation (R2O)" framework, it delivers accurate climate and weather services across regions — including targeted support for Least Developed Countries (LDCs).

On **May 7, 2025**, SEPRESS was showcased at the United Nations Headquarters in New York during the Science, Technology and Innovation Forum for the SDGs (STI Forum) — drawing strong global attention as a **UN-featured initiative**.

"Together, we are not only advancing science but also empowering communities to build a safer and better future," said Prof. Lu. "SEPRESS unites global expertise with local impact, turning cutting-edge climate science into actionable strategies for clean energy, disaster resilience, and equitable, development."

With over **USD 2.5 million in project funding**, and two gold award-winning technology transfers (ezpie & meteoNEX), SEPRESS has already engaged partners from **Asia, Africa, and the Middle East** — including toptier institutions and national agencies.

Looking Ahead

SEPRESS is accelerating towards building **global partnerships** and delivering **climate resilience and sustainable development** impact across the **UN SDG agenda.**

Prof. Lu will represent SEPRESS at a high-level international forum this July at the United Nations Headquarters in New York. SEPRESS is ready to accelerate towards building global partnerships and delivering climate resilience and sustainable development impact across the UN SDG agenda.

[Shanghai, May 25, 2025] — A delegation from HKUST, led by Provost Prof. Yike Guo, Deputy Director of HKUST-Shanghai Center Ms. Wenxin Qian and Director of CCRS Prof. Mengqian Lu, visited the Shanghai Meteorological Service to engage in in-depth discussions and collaboration.

During the visit, a strategic cooperation memorandum was formally signed by Deputy Director of the Shanghai Meteorological Service Mr. Xiaotu Lei and Prof. Mengqian Lu. The signing ceremony was witnessed by Director-General of the Shanghai Meteorological Service Mr. Lei Feng and Provost Prof. Yike Guo.

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CCRS MARKS SUCCESSFUL KICKOFF WITH FIRST INTERDISCIPLINARY MEETING

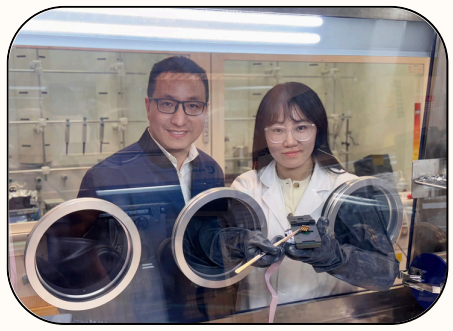
On April 23, 2024, the Otto Poon Centre for Climate Resilience and Sustainability (CCRS) at HKUST successfully hosted the initial interdisciplinary engagement meeting. Since its establishment, the Centre has rapidly attracted more than 30 faculty members from multiple disciplines, with new members continuing to join. To further strengthen its academic depth and impact, CCRS also actively invites external advisors to contribute their insights.

The Centre's interdisciplinary scope spans including Earth Engineering, Sustainable Urban Development, Social and Human Sciences, Weather Derivatives and Finance, Renewable Energy, and AI for SDGs. During the meeting, researchers shared their latest research progress, engaged in academic exchange, and explored opportunities for interdisciplinary collaboration — laying a strong foundation for future joint research initiatives.

As a comprehensive and interdisciplinary research platform, CCRS is committed to facilitating high-impact research projects through the integration of internal and external resources. As the Centre's work progresses, it is expected to propose a series of forward-looking, cross-disciplinary research initiatives. By engaging early-career researchers and leveraging the expertise of its international advisory team, CCRS aims to address the complex challenges of global climate change through innovative and impactful scientific solutions.

HKUST SOLAR CELL RESEARCH BREAKTHROUGH ADVANCES SUSTAINABLE DEVELOPMENT APPLICATIONS

In a significant advancement for boosting renewable energy generation development, a research team led by Professor Yuanyuan Zhou from the School of Engineering of the Hong Kong University of Science and Technology (HKUST) has taken the lead in breaking through studies of the nanoscale properties of perovskite solar cells (PSCs). This initiative has resulted in the development of more efficient and durable cells, poised to substantially diminish costs and broaden applications, thereby connecting scientific research with the needs of the business community.



Prof. Yuanyuan Zhou (left) and Dr. Mingwei Hao (right) demonstrate a stability test of their newly developed cation-homogenized perovskite solar cells.

Their technology advances have paved the way for future collaboration contributing to SEPRESS. Professor Lu and Professor Zhou are currently spearheading a new idea that leverages and integrates the advances in their domain expertise, combining renewable energy research with climate resilience and sustainable development strategies. This interdisciplinary collaboration is gradually advancing the CCRS and SEPRESS projects from conceptual stages toward substantive applications, demonstrating innovative capabilities in addressing global sustainable development challenges.

HKUST ENGINEERS PREDICTS GLOBAL WEATHER SHIFTS FROM 2028

Dr. Tat-Fan Cheng

HKUST engineers have successfully forecast that from 2028, the world will face increased "precipitation whiplashes" - rapid alternations between extreme dry and wet conditions. This trend is driven by an acceleration of the Madden-Julian Oscillation (MJO). Led by Dr. Tat-Fan Cheng from CCRS, the research enables 2–6-week advance warnings of extreme weather events. Their findings formed the foundation for the award-winning meteoNEX system, providing crucial prediction services for disaster management, agriculture, and infrastructure planning worldwide.

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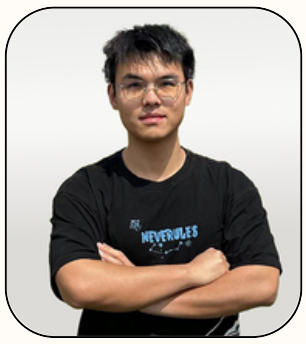
AI FOUNDATION MODELS IN WATER SCIENCE: HKUST RESEARCHERS PUBLISH COMPREHENSIVE EVALUATION

HKUST researchers have published a pioneering study evaluating AI foundation models in water science, the first systematic assessment of these technologies in hydrometeorology. Led by Dr. Lujia Zhang from CCRS as the first author, the research tested advanced models including GPT-4o, Claude 3.5 Sonnet, and Gemini 1.5 Pro across four key tasks: data processing, event diagnosis, forecast and prediction, and decision-making. While achieving strong performance on computational problems and extreme weather analysis, the study also found limitations in reliable prediction capabilities and identified challenges including hallucination issues. The team proposed strengthening human-machine collaboration and developing domain-specific models as key future directions.

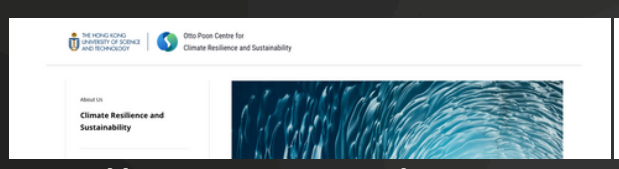


Dr. Lujia Zhang

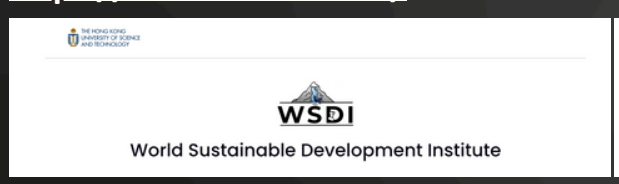
CWWF2025: GLOBAL CLIMATE EXPERTS TO CONVENE AT HKUST IN JULY

The 5th Climate, Weather and Water Forum (CWWF2025) will take place at HKUST from July 2–4, 2025, bringing together international experts across disciplines. Hosted by the Otto Poon Center for Climate Resilience and Sustainability, the forum will feature four key focus areas: Seamless Prediction and Services, Physical Understanding and Modeling, AI for Earth Science, and a special spotlight on Atmospheric Rivers and Extremes. It will also include dedicated poster sessions for sharing research. The event welcomes participants from all career stages, providing an inclusive platform for addressing urgent environmental challenges. For more information, please visit the CWWF 2025 website: https://cemlu.people.ust.hk/CWWF2025.html.

🎉 CCRS WSDI DMS Websites Are NOW AVAILIBLE! ✨ Check Them Out 👇



https://ccrs.hkust.edu.hk/



https://wsdi.hkust.edu.hk/

https://dms-shanghai.hkust.edu.hk/

✨Our Featured T-Shirt Designs!👕

inspired by **UNESCO SEPRESS** and also to celebrate the establishments of **CCRS** and **WSDI**

✦ **DESIGNED BY** ✦
Kexin Tu · Lu Tang · Yuxian Pan
Mengqian Lu · Jing Yang