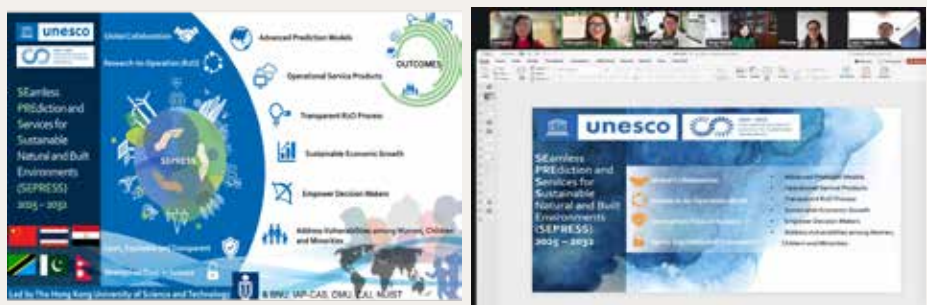


Quarterly Review

KEY HIGHLIGHTS

May

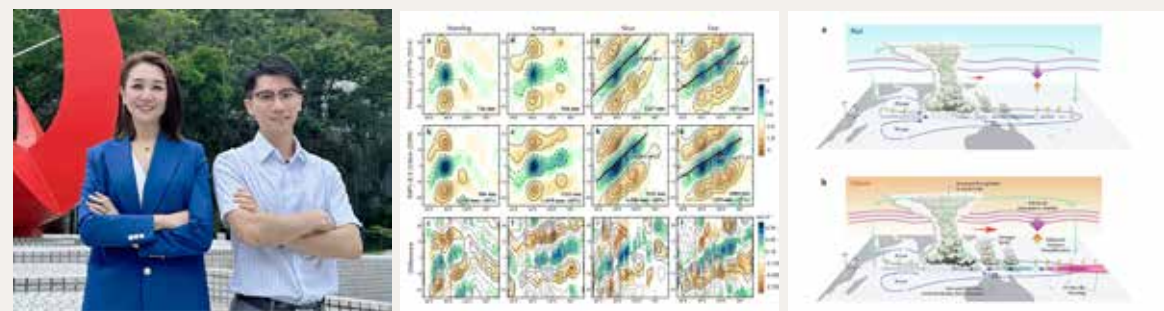
HKUST Climate Program Receives UNESCO Recognition



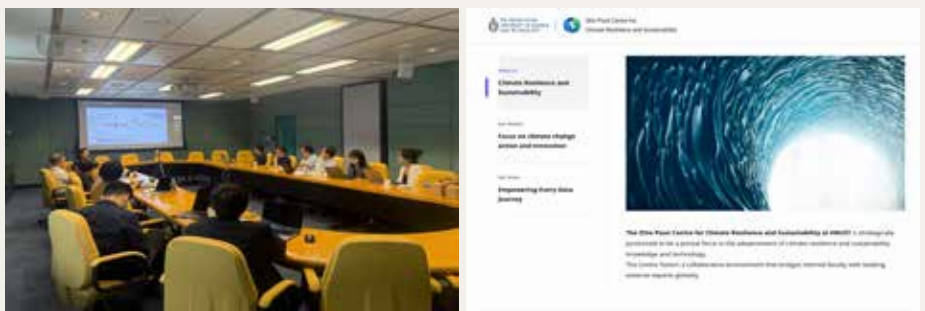
HKUST and Shanghai Meteorological Service Sign Strategic Cooperation MOU



HKUST Engineers Predict Global Weather Shifts From 2028



CCRS Members to Advance Interdisciplinary Collaboration in Sustainable Urban, Energy, and AI for SDGs



June

HKUST Unveils Otto Poon Center for Climate Resilience and Sustainability



UN Resident Coordinator in China Mr. Siddharth Chatterjee Visits HKUST to Explore Climate and Sustainability Research



CCRS and the Shanghai Meteorological Bureau Will Deepen Their Cooperation in the Field of Climate Finance



Prof. ZHOU Yuanyuan's Breakthrough in Perovskite Solar Module Technology Showcased at HKUST Unicorn Day



July

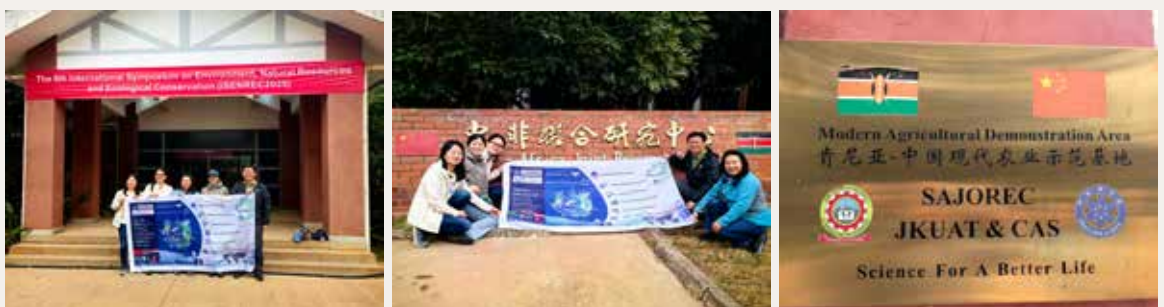
SEPRESS: Breakthrough in Cross-Domain Subseasonal Prediction



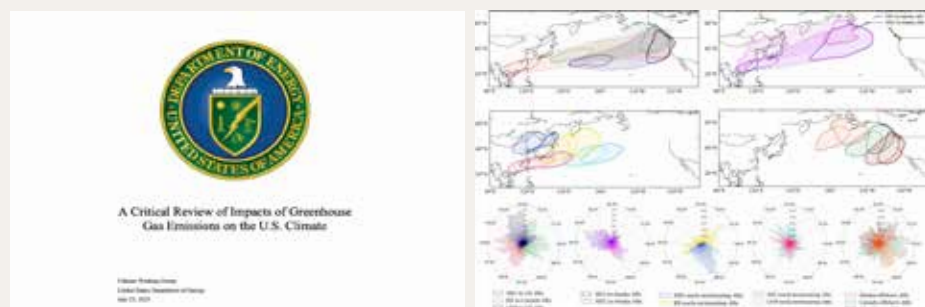
IFCE Delegation Visits HKUST to Explore IAR Collaboration and Blue Economy



SEPRESS Team Explores Agricultural Climate Services in Kenya



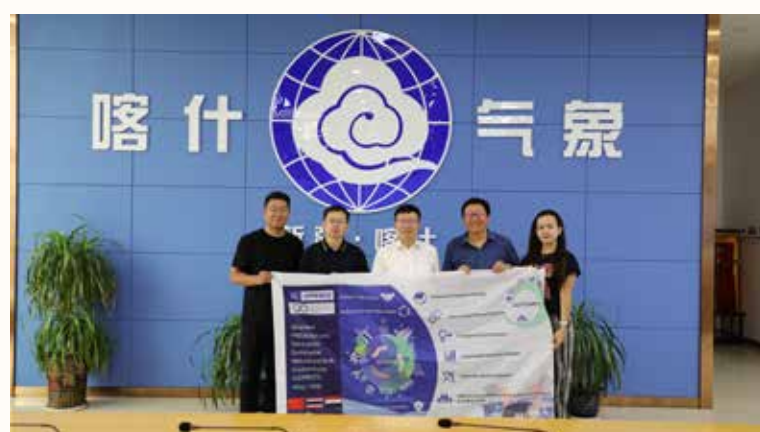
CCRS Research on Cross-Pacific Atmospheric Rivers Cited by U.S. DOE Climate Report



NEWSLETTER

SEPRESS ADVANCE: SEPRESS Team Visits Kashgar Meteorological Bureau to Discuss Seamless Forecasting Technology Enhancement

On the morning of August 14, 2025, the SEPRESS project delegation, led by **Prof. BAO Qing** at the Institute of Atmospheric Physics, Chinese Academy of Sciences, and **Prof. JIAN Jun** from Dalian Maritime University, visited the Kashgar Meteorological Bureau. They were warmly welcomed by **ZHAO Yongjun**, Director of the Kashgar Meteorological Bureau, **MAYIRE Ehmet**, Director of the Meteorological Observatory, and **CHEN Tuohai**, Head of the Operations Department. The visit led to in-depth discussions on meteorological and climate challenges facing the region.



Group photo of SEPRESS team members: Researcher BAO Qing (2nd from Right), Prof. JIAN Jun (2nd from Left), with Kashgar Meteorological Bureau officials - Director ZHAO Yongjun (3rd from Left), Observatory Director MAYIRE Ehmet (1st from Right), and Operations Division Head Chen Tuohai (1st from Left).



Staff members of Kashgar Meteorological Bureau introduce their operational work to the SEPRESS team.

Director MAYIRE introduced the weather and climate characteristics of the Kashgar region and its monitoring and early warning systems. Director ZHAO outlined the hydro-meteorological and geological hazards in the Kashgar region, key meteorological factors, and challenges in seamless forecasting that need to be addressed. In response, Prof. BAO Qing suggested solving these issues through dynamic downscaling of the seamless weather-climate forecasting system model and coupling it with regional station observation data. Prof. JIAN Jun proposed establishing meteorological data sharing mechanisms with upstream "Belt and Road" friendly countries to improve forecasting technology for meteorological-related disasters.

Furthermore, **Prof. LU Mengqian**, Director of CCRS and Chair of SEPRESS, conducted a field survey in the Tashkurgan region. Located in the eastern Pamir Plateau, which was formed simultaneously with the Himalayan orogeny, this region possesses abundant glacial freshwater resources. During the investigation, the team focused on changes in highland lake systems, including Lake Bandirlang. Under the influence of climate change, the glaciers that feed these lakes are experiencing accelerated melting, with increasingly prominent glacier tongue retreat. The accelerated glacier melting not only leads to a stage-wise increase in lake area and water levels, but, with the long-term decline in glacier storage, may also affect the sustainable supply of water resources in the future. This region also features extensive highland wetland resources and unique plateau vegetation ecosystems, making it a crucial observation area for climate change research, with significant scientific importance for understanding the regional impacts of global climate change.



Field documentation of glacier melting and glacier tongue retreat on the Pamir Plateau.



Lake Bandirlang in Tashkurgan region.

Led jointly by **CCRS** and **WSDI**, **SEPRESS** has been endorsed by **UNESCO** as part of the **International Decade of Sciences for Sustainable Development (IDSSD, 2024-2033)** action plan, dedicated to providing solutions for multi-domain needs related to climate change and sustainable development through continuous innovation in seamless weather and climate prediction technology.

The Financial Meteorology Innovation Team of the China Meteorological Administration (CMA) Visits CCRS

On August 6th, 2025, **Dr. ZHAO Yanxia**, Chief Scientist of the Financial Meteorology Innovation Team of the China Meteorological Administration, led her team on a visit to CCRS. During this visit, the team engaged in in-depth discussions with the research team of the CCRS director, **Prof. LU Mengqian**, as well as the research team of **Dr. TANG Bo**, Assistant Director of Institute for Financial Research at HKUST. The meeting focused on the research progress and potential areas of collaboration in the field of financial meteorology.

At the meeting, Dr. ZHAO introduced the team's recent advancements in the field of financial meteorology. She emphasized the increasing importance of weather derivatives in managing climate risks against the backdrop of global climate change.

Prof. LU provided an overview of the research center's focus, which is on the significant challenges posed by climate change across various industries. The center is committed to driving innovation and practical applications through interdisciplinary research in the field of climate change.

Finally, Prof. LU warmly welcomed Dr. ZHAO and her team to the center and expressed confidence in the future cooperation between Shanghai and Hong Kong. She highlighted that the integration of meteorology and finance will be key to addressing the challenges of climate change and advancing green development. The collaboration between the teams is expected to bring more innovations and breakthroughs to these fields.



In the front row, from far left: Dr. TANG Bo (Assistant Director, HKUST Institute for Financial Studies), second from left: YANG Jie (Director, Shanghai Meteorological Bureau Emergency Response Division), second from right: Dr. ZHAO Yanxia (Chief Scientist, CMA Financial Meteorology Innovation Team), and far right: Prof. LU Mengqian.

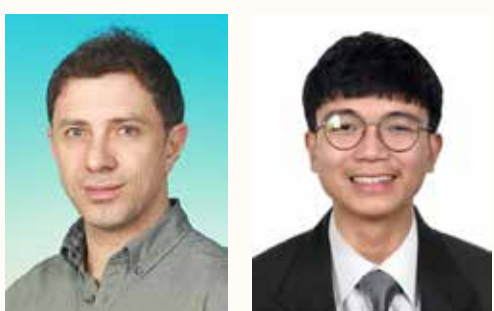
HKUST Researchers Develop Advanced Electrocatalyst for Green Hydrogen Production

Anion exchange membrane water electrolyzers (AEMWE) offer a clean, cost-effective method for hydrogen production, but their performance is hindered by the low activity and durability of oxygen evolution reaction (OER) electrocatalysts. This study, led by **Dr. SUN Yan** from the research group of **CCRS member Prof. SHAO Minhua**, developed an advanced electrocatalyst combining silver nanoparticles with phytic acid-decorated NiCo layered double hydroxide. AEMWE devices with this electrocatalyst achieved impressive current densities of 1 A cm⁻² at 1.65 V and 5 A cm⁻² at 2.04 V, while maintaining stable operation at 1 A cm⁻² for 650 hours. Their findings highlight the effectiveness of oxygen vacancies and phosphate ions in enhancing OER performance, emphasizing the significance of surface modification for advancing and durable electrocatalysts in AEMWE applications.



Prof. SHAO Minhua Dr. SUN Yan

HKUST Advances Cement Bamboo Frame Technology through Engineering-Based Design and Innovative Connection Development



Prof. Elias G. DIMITRAKOPOULOS
Dr. Giorgio ROBEL

The global housing crisis demands innovative and sustainable solutions, as conventional materials like cement and steel, while foundational to the industry, are costly, limited, and generate significant carbon emissions.

Bamboo, a fast-growing, renewable resource with impressive mechanical properties, presents a promising alternative. However, knowledge gaps and improper practices limit its use as a fully engineered structural system. Led by **Dr. Giorgio ROBEL** from **CCRS member Prof. Elias G. DIMITRAKOPOULOS'** research team, this research advances full-scale bamboo structures by characterizing the mechanical behavior of wall panels using Cement Bamboo Frame Technology (CBFT). CBFT has built over 2,500 affordable homes with treated bamboo as the primary structural component. The study aims to develop design analytical formulas and validated numerical models to shift CBFT from empirical methods to engineered design, accelerating design processes, improving reliability, and widening impact. The research also seeks to improve CBFT connections and identify sustainable infill materials to increase bamboo's stiffness and capacity.

This work supports global housing needs and aligns with Hong Kong's Climate Action Plan 2050 for sustainable development.