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NEWSLETTER

SEPRESS Advance: SEPRESS Program Endorsed by the WMO World Weather Research Programme

Recently, the **"Seamless Prediction and Services for Promoting Environmental and Societal Sustainability" (SEPRESS)** program, led by the Hong Kong University of Science and Technology, was **endorsed by the World Meteorological Organization (WMO) World Weather Research Programme (WWRP)**. Following its earlier recognition by UNESCO, this marks another major milestone for SEPRESS within the global scientific collaboration network, underscoring its growing contributions to international research on climate and sustainable development.

Current Endorsed Projects

Seamless Prediction and Services for Sustainable Natural and Built Environment (SEPRESS) Program

Linking with the Working Groups on Societal and Economic Research Applications (SERA)

(2025 - 2032)

Overview: The SEPRESS initiative is tailored to strengthen trust in science by offering reliable weather and subseasonal climate prediction services. It aims to bridge the gap between scientific advancements and societal needs through an equitable and transparent "research-to-operation" (R2O) process. SEPRESS will support projects that are committed to open science principles and enhance knowledge synthesis. The initiative is designed to develop services specifically tailored to meet the diverse needs for accurate weather and climate predictions across various sectors and regions. This approach supports sustainable development and assists communities in adapting to climate change and the escalating risks posed by natural disasters.

SEPRESS was endorsed by WWRP.

The WWRP endorsement provides SEPRESS with a broader framework for international collaboration. Information about SEPRESS has already been published on the official WWRP website, further enhancing its international visibility and scientific impact. Moving forward, SEPRESS will actively strengthen its research networks and technical exchanges with WWRP partners, deepening the study and application of seamless prediction technologies. Its development goals align closely with WWRP's core mission—particularly through collaboration with the **Societal and Economic Research Applications (SERA)** working group—by advancing the translation of scientific research into practical applications. Through interdisciplinary collaboration and innovative service practices, SEPRESS aims to enhance the role of meteorological and climate science in supporting disaster risk reduction, socioeconomic development, and sustainability, providing forward-looking and impactful scientific support.

The **World Weather Research Programme (WWRP)**, initiated and coordinated by the **World Meteorological Organization (WMO)**, is a global scientific initiative dedicated to advancing weather prediction science through international research and collaboration. It focuses on Earth system prediction from minute to monthly timescales, aiming to improve forecast accuracy, usability, and socioeconomic relevance—thereby supporting disaster prevention, risk reduction, and sustainable development through scientific innovation.

As part of the **United Nations "International Decade of Science for Sustainable Development" (IDSSD, 2024–2033)**, SEPRESS addresses the multifaceted challenges of climate change and sustainable development. It advances seamless weather and climate prediction technologies and promotes the practical application of scientific research to deliver targeted solutions. Led by HKUST, the founding committee of the SEPRESS programme comprises leading institutions from around the world, including those from **Mainland China**, as well as global collaborators from **Tanzania**, **Egypt**, **Pakistan**, **Nepal**, and **Thailand**, with an expanding network of partners. The program aims to serve critical decision-making needs in water resource management, agriculture and food security, public health, energy, and transportation, fostering the effective integration of scientific research with societal applications.

SEPRESS Representatives Attend the 12th CSSP-China Annual Science Meeting, Sharing Latest Progress on Seamless Prediction and Services
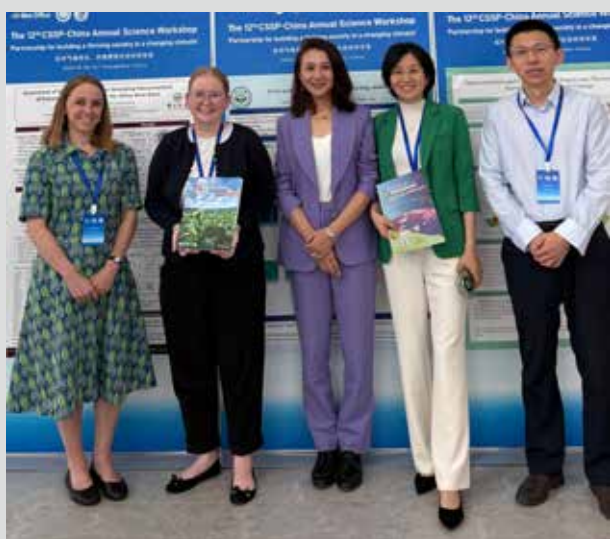

SEPRESS core members Prof. LU Mengqian and Prof. YANG Jing with representatives from the UK Met Office and CMA.

The 12th Annual Science Meeting of the China–UK Climate Science for Service Partnership (CSSP-China) opened in Guangzhou on October 20, 2025. The meeting was **co-hosted by CMA, the UK Met Office**, and **IAP-CAS**, and **co-organized by the National Climate Center and the Guangdong Meteorological Bureau**.

During the meeting, core members of the SEPRESS team, Prof. LU Mengqian and Prof. YANG Jing, participated and held in-depth discussions with the UK Met Office on seamless prediction and services. Prof. LU introduced the overall goals of the SEPRESS program and the related work of CCRS. Both sides expressed strong confidence in establishing long-term collaboration in the future. Prof. YANG delivered an invited talk on subseasonal agricultural prediction services and joined related discussions, sharing the team's latest research and applications in this area.

SEPRESS Monthly Outlook Ongoing: Forecast for Near-Surface Air Temperature in China, November 2025
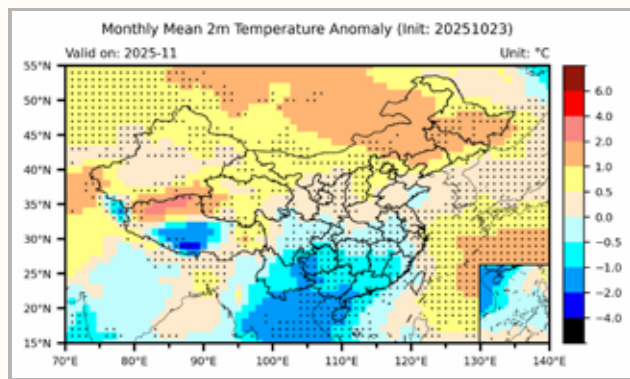
Predicted monthly mean surface air temperature anomaly over China and surrounding regions in November 2025.

It is projected that in November 2025, near-surface air temperature across China will exhibit a "warmer in the north and cooler in the south" spatial pattern. Among southern regions, South China (Guangdong, Guangxi, and Hainan province), Yunnan, Guizhou, and the southern part of the Tibetan Plateau are expected to experience the most notable below-average temperatures, with anomalies reaching approximately 1–2°C below the climatology. On the global scale, La Niña conditions remain in place, with sea-surface temperatures (SSTs) in the central-to-eastern equatorial Pacific about 0.5–1°C below average, indicating a weak to moderate La Niña event. Meanwhile, a negative Indian Ocean Dipole (IOD) continues to develop, and mid-latitude SSTs over the North Pacific—especially offshore of eastern China—remain warm anomalies. Under this background, cold-air outbreaks are expected to continue moving southward, influencing large parts of China during November. In southern China, the interaction between cold and warm air will intensify, leading to frequent rapid temperature change, particularly over Yunnan Province. Compared with historical averages, the overall amplitude of day-to-day temperature variability across China is below average, while northeast China, Yunnan and parts of Xinjiang may experience relatively stronger fluctuations.

Overall Assessment

In summary, China's temperatures in November 2025 are expected to feature a "warmer-north, cooler-south" pattern. Frequent temperature variations in the southern regions may affect energy supply and demand, transportation, public health, and the management of overwintering crops, thus requiring early preparedness and adaptation measures. Continuous monitoring of the La Niña and negative IOD events is recommended, as their subsequent evolution will provide important guidance for winter (December 2025 – February 2026) climate outlooks.

The present results are derived from the objective prediction methods developed by the SEPRESS team. The related products are scientific and technical outcomes, which can serve only as technical references for disaster prevention and mitigation, and should not be regarded as decision-making bases. It is recommended to further monitor subsequent forecasts issued by relevant official agencies.

Note: Day-to-day temperature variability is defined as the difference between the daily temperature anomaly and that of the preceding day. The monthly amplitude of day-to-day temperature variability is represented by the monthly mean of the absolute values of these differences.

Strengthening Hong Kong's Capacity for Sustainable Development through Ecological Civilization Research

The project "Strengthening Hong Kong's Capacity to Achieve Sustainability and Shape the Sustainable Development Narrative through Policy Innovation" has reached the first milestone. We have now appointed a team to focus on one of the project's most essential tasks – examining the concept of ecological civilization and its implications for sustainability in the Greater Bay Area (GBA). The team currently consists of **CCRS member Prof. Christine LOH** and **Prof. CHEN Shi**.

Prof. Christine LOH   Prof. CHEN Qing

Ecological civilization is a core national development principle guiding China's environmental and socio-economic transformation. As Guangdong, the largest part of the GBA, advances under this nationally relevant framework, the concept provides a valuable lens for understanding how regional sustainability goals are evolving. Although Hong Kong and Macao, under "one country, two systems," are not obliged to adopt it, studying its philosophical and policy foundations offers timely insights into how Hong Kong can align more closely with GBA efforts while strengthening its own sustainable development path.

The research will explore how ecological civilization and sustainable development can complement one another. We expect the desktop research phase to be completed by the end of 2025, after which we will begin preparing to engage stakeholders in examining how the concept might apply to specific policy areas, such as climate change and biodiversity.

https://ccrs.hkust.edu.hk

meteoNEX Wins Third Prize at HICOOL 2025 Global Entrepreneurship Competition

The award-winning project, **meteoNEX**, focuses on subseasonal-to-seasonal (S2S) prediction and services. On October 17, 2025, **it won Third Prize at the HICOOL 2025 Global Entrepreneurship Competition**. Recognized by **UNESCO** as part of the **International Decade of Sciences for Sustainable Development (IDSSD, 2024–2033)**, the SEPRESS Programme advances science-to-impact pathways by accelerating R2O for sustainable natural and built environments.

Hailed as a global bellwether for innovation and entrepreneurship, the HICOOL Global Entrepreneur Summit brought together top innovators from over 100 countries and regions this year. After multiple rigorous rounds including preliminary review, regional contests, semifinals, and finals, the HICOOL 2025 Global Entrepreneurship Competition held 155 high-level events and ultimately selected 200 winning projects from 10,055 entries spanning 139 countries and regions—underscoring the award's high caliber and competitiveness.

HKUST delegation at the HICOOL 2025 awards ceremony. Prof. Tim CHENG, Vice President for Research and Development (5th from right), Mr. LIAO Xuexian, meteoNEX project representative (6th from right).

meteoNEX focuses on subseasonal-to-seasonal (S2S) prediction and services powered by artificial intelligence and an in-house global climate dynamical model. The team is led by **Prof. LU Mengqian**, Director of CCRS at HKUST, with **Mr. LIAO Xuexian** representing the project in the competition. Leveraging the team's global climate dynamical model and multi-source AI fusion, meteoNEX delivers higher-accuracy, more stable forecasts with longer lead times and integrated decision services. It significantly enhances early-warning effectiveness in disaster risk reduction, while providing actionable meteorological decision support for weather- and climate-sensitive sectors such as the low-altitude economy, agriculture, renewable energy, and aviation—helping enterprises optimize scheduling and operations, reduce risks and costs, and improve energy and resource allocation efficiency.

Team from the Otto Poon Center for Climate Resilience and Sustainability at HKUST Visits the Otto Poon Research Institute for Climate-Resilient Infrastructure at PolyU

Prof. LI Xiangdong (Far Left), Director RICRI; Prof. LU Mengqian (Second from Left), Director of CCRS; Mr. LIAO Xuexian (Far Right), Administration Officer, CCRS.

On October 28, 2025, Prof. Mengqian Lu, Director of CCRS at HKUST, led the CCRS team to visit RICRI at The Hong Kong Polytechnic University. Prof. Xiangdong Li, Director of RICRI, warmly welcomed Prof. Lu and the CCRS delegation.

During the meeting, Prof. Lu introduced CCRS's current research areas and recent developments. The center's research covers a wide range of topics, including **Earth Engineering, AI for SDGs, Renewable Energy, Water Technology, Sustainable Urban Development, Ocean Science, Social and Human Science, and Weather Derivatives and Finance.**

Prof. LU highlighted the importance of incorporating **Finance** into CCRS's research portfolio, noting that **finance provides essential support for turning innovative ideas into reality, enabling scientific research to generate tangible societal benefits.**

She also introduced **SEPRESS, a UNESCO-endorsed project led by CCRS**, and highlighted the center's mission to **establish an interdisciplinary and globally connected research platform that brings together leading experts to accelerate the transition from research to practical implementation**. CCRS is dedicated to developing and deploying technologies that can swiftly address pressing environmental challenges.

Prof. LI Xiangdong commended CCRS's achievements and shared RICRI's significant contributions to enhancing Hong Kong's infrastructure resilience through several key programs. Prof. LU expressed her appreciation for RICRI's work and confidence in future collaborations between the two centers to jointly advance regional and global climate resilience and sustainability.