

NEWSLETTER

SEPRESS Advance: WMO World Weather Research Programme SERA Working Group Meeting Held at HKUST

From 8 to 10 October 2026, the World Meteorological Organization (WMO) World Weather Research Programme (WWRP) Working Group on Societal and Economic Research Applications (SERA) held its meeting at the Hong Kong University of Science and Technology (HKUST), hosted by the HKUST World Sustainable Development Institute (WSDI).

The meeting was co-chaired by SERA Co-Chairs **Carla Mooney** and **Isadora Jiménez**. Working group members Everisto Mapedza, Nekeisha Spencer, Ricardo Branco, and Rongkun Liu, as well as WMO WWRP staff member Isha Bhasin, attended the meeting, with some members joining online.



Joint workshop between the SERA Working Group and endorsed projects.

On the first day of the meeting, **Prof. LU Mengqian** — Director of the HKUST World Sustainable Development Institute (WSDI), Director of the Otto Poon Center for Climate Resilience and Sustainability, and Chair of the SEPRESS programme — delivered the welcome address and presented HKUST's research landscape in climate change and sustainable development. The three-day event comprised internal working sessions of the SERA Working Group and a joint workshop with WWRP-endorsed collaborative projects.

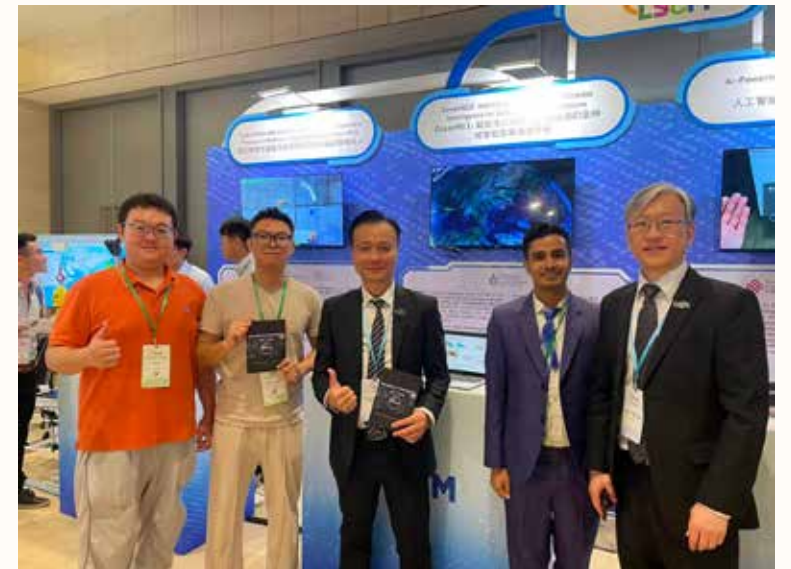
On the morning of 10 October, the SERA Working Group held a joint workshop (WWRP Workshop) with WWRP-endorsed collaborative projects. Prof. LU Mengqian introduced the SEPRESS programme, which she leads and HKUST spearheads, and which has received dual endorsement from the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the WMO World Weather Research Programme (WWRP). The programme is dedicated to translating seamless weather-to-climate prediction technologies into actionable climate resilience solutions. Prof. Bao Qing and Prof. Liu Hongbo from the Institute of Atmospheric Physics, Chinese Academy of Sciences, and Prof. Jian Jun from Dalian Maritime University presented the Himalayan South Slope Extreme Precipitation Formation Mechanisms and Sub-seasonal Dynamical Prediction project (HI-Rain). Prof. Jia Xiaojing from Zhejiang University and Prof. Yin Shuiqing from Beijing Normal University introduced the Western Central Himalayan South Slope Heatwave Attribution Analysis and Intelligent Seasonal Prediction Model project (HI-Heat). Prof. Soledad Garcia Ferrari from the University of Edinburgh, Co-Chair of Urban-PREDICT, presented this WMO/WWRP urban early warning project, which combines advanced weather forecasting with community- and place-specific insights to build more effective early warning systems for cities. The projects also exchanged views on potential future collaborations with SERA. In the afternoon, the Working Group held a closed-door session for internal discussions.

The meeting further strengthened the synergy between the SERA Working Group and its endorsed projects. As a global programme centred on HKUST, SEPRESS is highly complementary to Himalayan regional projects such as HI-Rain and HI-Heat in the areas of sub-seasonal prediction and socioeconomic services, laying the groundwork for future joint activities and regional climate resilience collaboration in South Asia. Looking ahead, SEPRESS will continue to leverage its global seamless climate prediction system to provide data and forecast products in support of the SERA Working Group's research and applications, jointly advancing weather and climate services to benefit climate-vulnerable regions such as South Asia.

OceanNEX Debuts at 20th LSCM Summit, Drawing Strong Industry Interest in Subseasonal Forecasting for Ports and Shipping

Hong Kong, 14 October 2026, The 20th Logistics and Supply Chain Management (LSCM) Summit, themed "Linking Minds, Empowering Innovation," provided the stage for OceanNEX to present its subseasonal-to-seasonal (S2S) prediction model to a cross-sector audience of logistics professionals, researchers, and technology developers.

OceanNEX addresses a persistent operational gap: today's weather forecasts provide only 3–5 days of notice, far too short for ports and shipping lines to prepare for typhoons, storm surges, or persistent sea fog. Subseasonal prediction, spanning roughly 7 to 30+ days, bridges short-range forecasts and seasonal outlooks, offering the multi-week horizon needed to schedule arrivals, manage cargo, adjust staffing, and coordinate transport. OceanNEX delivers decision-grade typhoon, storm surge, and extreme weather intelligence within this window, helping ports shift from reactive closures to proactive, science-informed planning. The exhibition was framed under the theme "Seamless Weather to Climate Prediction for Resilient Port and Shipping Operations."



Group photo of OceanNEX team members and LSCM representatives at the LSCM Summit.

At the event, **Dr Dipendra Lamichhane**, Forecast Scientist with the research group led by **Prof. LU Mengqian** at HKUST, presented the OceanNEX model. He outlined the full decision chain from forecast to action, showing how raw forecast data is refined and translated into actionable guidance for real-world port and shipping operations.

The presentation drew strong interest from representatives across multiple sectors, including Hong Kong International Aerospace, the Logistics and Supply Chain MultiTech R&D Centre Limited, and Orient Overseas Container Line Ltd. (OOCL). Attendees engaged actively with the team, probing the model's lead-time performance, its handling of typhoon risk, and its potential integration into existing port and fleet planning workflows. Numerous other participants from terminal operations, shipping lines, supply chain technology, and academic research also visited the exhibit, sparking wide-ranging discussions on the model's applications. The strong turnout underscored a growing consensus: as climate variability intensifies and supply chains face mounting pressure, OceanNEX offers the multi-week foresight needed to keep global logistics moving safely, efficiently, and proactively.

HKUST Researchers' S2S-HazardAgent Shortlisted Among Top 20 in MAZU Global Intelligence Innovation Application Challenge



S2S-HazardAgent platform homepage. The multilingual AI-powered platform for subseasonal-to-seasonal multi-hazard risk analysis and early-warning support, developed for climate resilience applications in Brazil.

S2S-HazardAgent, developed by CCRS Director **Prof. LU Mengqian**'s team in collaboration with CCRS member **Prof. YUAN Binhang**'s group at HKUST, was shortlisted among the Top 20 application scenarios in the MAZU Global Intelligence Innovation Application Challenge on September 10, 2026. With **LI Chenyue** and **DENG Wen** serving as project co-leads, the system aims to bridge the gap between scientific forecasts and actionable climate risk management.

S2S-HazardAgent integrates multi-source climate and disaster data with AI agent orchestration to support subseasonal-to-seasonal multi-hazard analysis and early-warning services. Its capabilities include evidence-grounded reasoning, spatiotemporal analysis, compound hazard diagnosis, and automated early-warning report generation, translating complex climate information into actionable decision support.

On July 17, 2026, Prof. LU delivered a keynote presentation at the World Artificial Intelligence Conference (WAIC 2026), titled "Mazu Global Digital Intelligence Innovation Application Case: AI Agent Orchestration for Multi-Hazard Subseasonal-to-Seasonal Risk Analysis & Early-Warning Support." The presentation highlighted the development of S2S-HazardAgent in Brazil under the SEPRESS initiative, representing MAZU's first application in South America through South-South cooperation. The showcased system demonstrates potential applications across disaster management, agriculture, and energy sectors.

System Demo: <https://disaster-database-v3.vercel.app/>

New Study Reveals How Deep-Sea Clams and Their Symbionts Adapt to Changing Environments

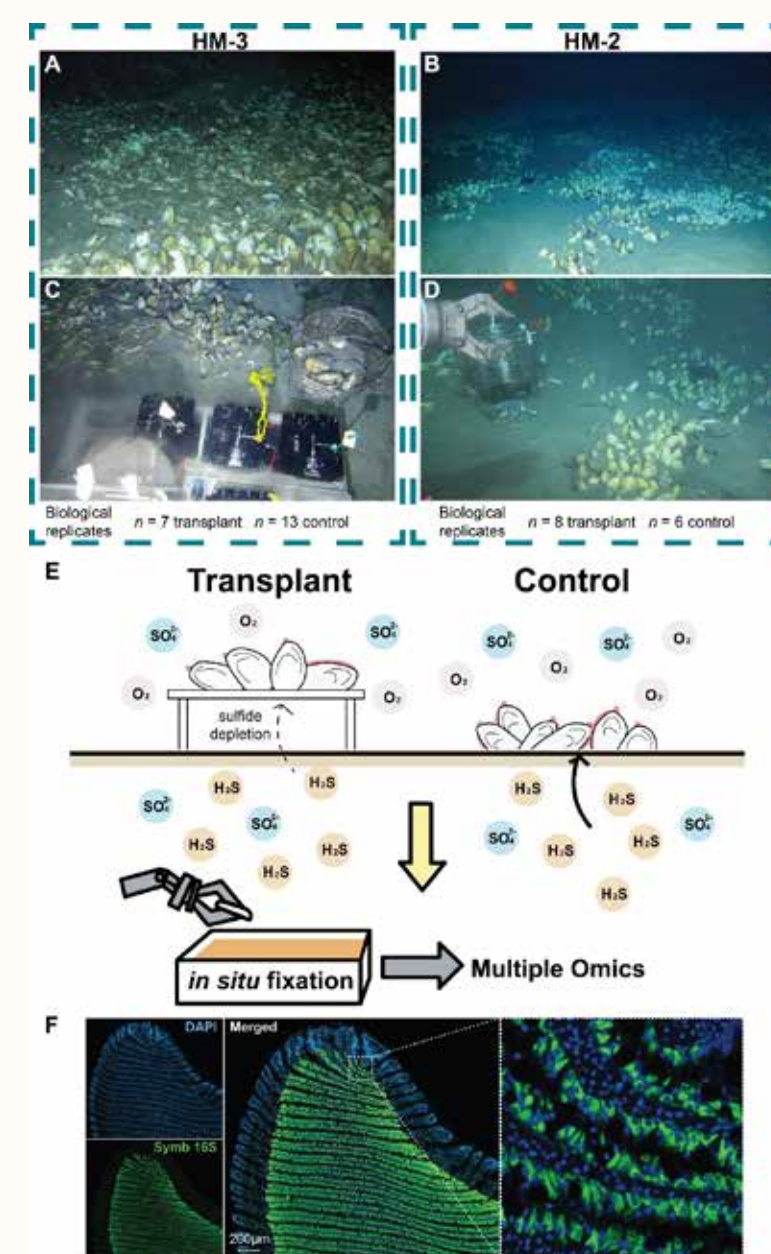
A recent study published in *Science Advances* has revealed how deep-sea clams and their bacterial symbionts work together to survive fluctuations in chemical energy supply at cold seeps. Led by CCRS member, **Prof. Peiyuan QIAN** from the Hong Kong University of Science and Technology (HKUST) and international collaborators, the study provides new insights into the resilience of deep-sea chemosynthetic ecosystems.

Using *in situ* transplantation experiments at the Haima cold seep in the South China Sea, the team investigated how the clam *Archivesica marissinica* and its sulfur-oxidizing symbionts respond to reduced hydrogen sulfide availability. By integrating multi-omics analyses with microscopy, the researchers uncovered a tiered adaptation strategy involving metabolic flexibility, host regulation of symbiont populations, and metabolic cooperation.

Under sulfide limitation, bacterial symbionts adjusted their sulfur metabolism, potentially increasing their reliance on alternative energy substrates such as thiosulfate. Meanwhile, the host regulated symbiont abundance according to the severity of energy limitation, maintaining symbiotic populations under moderate stress while increasing symbiont degradation under severe stress. The findings also suggest that host sulfide detoxification may support bacterial energy metabolism, further strengthening the partnership.

This research provides rare *in situ* experimental evidence of how deep-sea chemosynthetic symbioses maintain functional stability under environmental fluctuations. It advances our understanding of the mechanisms supporting cold seep ecosystem resilience and biodiversity in a changing ocean.

The study represents a collaborative contribution to the UN Decade Programmes **CliMetS** and **MOCSI**.



Deep-sea *in situ* transplant experiments corresponding to moderate (HM-3) and severe (HM-2) sulfide depletion.

HKUST Business School Representative Attends UN SDSN University



The 4th UN SDSN University Presidents Meeting for East Asia and the Pacific, attended by 141 participants online.

On 14 October 2026, the 4th University Presidents Meeting (UPM) for East Asia and the Pacific, hosted by the United Nations Sustainable Development Solutions Network (UN SDSN), was held online. Prof. LU Mengqian, Director of the HKUST World Sustainable Development Institute, attended on behalf of the HKUST Business School.

The meeting aimed to examine the evolving role of higher education in advancing sustainable development, with topics including strengthening regional cooperation, reinforcing the science-policy interface, and harnessing the transformative potential of new technologies. Prof. Jeffrey Sachs, President of SDSN, delivered the opening

remarks. Christine Arab, Regional Director for Asia and the Pacific at UN Women, and Datuk Dr. Habibah Abdul Rahim, Director of the Southeast Asian Ministers of Education Organization (SEAMEO), each delivered keynote speeches, offering multilateral perspectives on mobilising higher education in service of sustainable development.

During the presidential roundtable, Sibrandes Poppema, President of Sunway University (Malaysia); Nicole Webster, Deputy Vice-Chancellor (Research) at the University of Tasmania (Australia); Bernard S. Oca, President of De La Salle University (Philippines); and Sun Sun Lim, Provost of Singapore Management University, each presented their institutional strategies for advancing the Sustainable Development Goals. The session was followed by an open discussion, with presidents and senior administrators from over 150 universities across East Asia and the Pacific participating in the exchange.

The meeting further strengthened HKUST's engagement with SDSN and regional universities. Going forward, HKUST will continue to leverage its strengths in sustainability education and research, deepen relevant collaborations, and contribute to advancing the United Nations Sustainable Development Goals.