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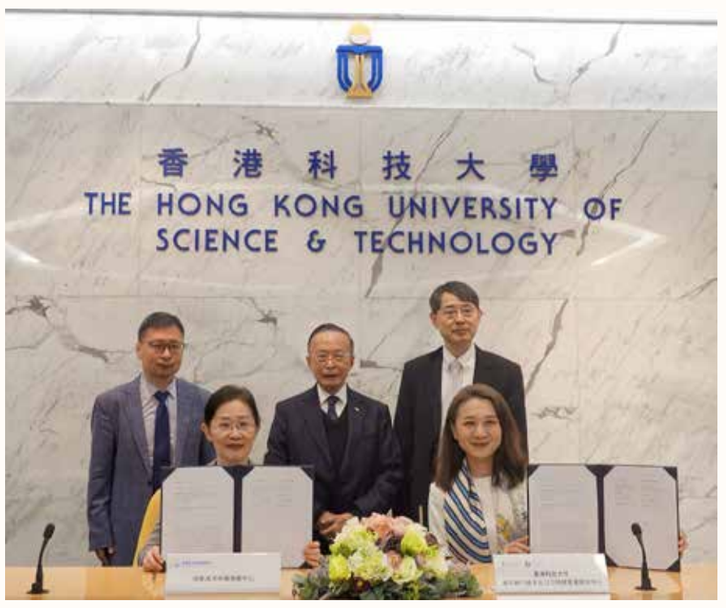
NEWSLETTER

GROUND BREAKING: HKUST and the National Marine Environmental Forecasting Center Sign Memorandum of Understanding

On March 13, 2026, the Hong Kong University of Science and Technology (HKUST) and the National Marine Environmental Forecasting Center (NMEFC) held a Memorandum of Understanding (MoU) signing ceremony and inaugural collaborative exchange meeting at the Sir Sze-yuen Chung Council Chamber, HKUST. The Otto Poon Center for Climate Resilience and Sustainability (CCRS) at HKUST served as the lead unit on behalf of the University in signing the MoU and will be responsible for the execution and advancement of subsequent collaboration. **Ms. KANG Jian**, Director of NMEFC, and **Prof. LU Mengqian**, Director of CCRS at HKUST, signed the memorandum on behalf of their respective organizations, with **Dr. Ir Otto POON**, Chairman of the Board of Analogue Holdings and Founder of the Otto Poon Charitable Foundation, **Mr. LI Zhiqiang**, Head of the Operational Science and Technology Division of NMEFC, and **Prof. QIAN Peiyuan**, Chair Professor of the Department of Ocean Science at HKUST, serving as witnesses to the signing ceremony.



CCRS at HKUST and NMEFC successfully signed the MoU. Front row, from left: Ms. KANG Jian, Director of NMEFC; Prof. LU Mengqian, Director of CCRS at HKUST. Back row, center: Dr. Ir Otto POON, Chairman of the Board of Analogue Holdings and Founder of the Otto Poon Charitable Foundation; back row, from left: Mr. LI Zhiqiang, Head of the Operational Science and Technology Division, NMEFC; back row, from right: Prof. QIAN Peiyuan, Chair Professor, Department of Ocean Science, HKUST.

Following the signing ceremony, the two parties held a series of academic presentations and roundtable discussions on topics including advances in operational ocean forecasting, the Seamless Prediction and Services (SEPRESS) program, the UN Ocean Decade, and tsunami early warning technologies. Both sides agreed to pursue long-term and substantive collaboration in the fields of ocean science, climate change, environmental forecasting, disaster early warning, artificial intelligence applications, and Arctic shipping support, jointly advancing the translation of research outcomes and the cultivation of high-level talent.

Group photo of attending guests.

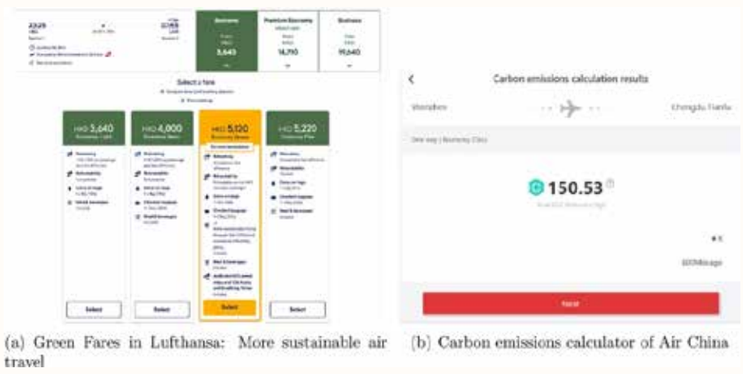
The signing of this MoU marks a significant step forward for both parties in responding to the United Nations International Decade of Sciences for Sustainable Development (IDSSD) initiative. As the first year of China's 15th Five-Year Plan, the Government Work Report has clearly set forth the strategic directive to "develop the marine economy and build a maritime power," positioning the ocean as a strategic frontier for high-quality development. Together, the two parties will actively respond to the spirit of the Two Sessions, serve China's dual carbon goals and the marine science and technology innovation strategy outlined in the 15th Five-Year Plan, empower the building of a maritime power and ecological civilization through scientific and technological innovation, and contribute to enhancing China's capabilities in marine environmental forecasting and climate resilience.

HKUST Researchers Analyze Reputation Investment Strategies for Green Skies: Insights on Herd Effects and Customer Heterogeneity

With the increasing focus on Environmental, Social, and Governance (ESG) and the International Air Transport Association (IATA)'s carbon reduction targets, airlines are implementing strategies such as Sustainable Aviation Fuel (SAF) and participating in the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) to enhance their corporate social responsibility (CSR). However, the high production costs of SAF present challenges in balancing CSR efforts with profitability.

Prof. JIAN Sisi(left) and her team member(right).

This study, led by **CCRS member Prof. JIAN Sisi**, investigates how CSR reputation, particularly regarding the adoption of SAF, affects airlines' investment and pricing strategies. sequential decision model was developed to analyze the interactions among CSR reputation, pricing strategies, herd effects, and customer heterogeneity. The model distinguishes between two pricing strategies: uniform pricing with standard green services and differentiated pricing with tailored services.



(a) Green Fares in Lufthansa: More sustainable air travel (b) Carbon emissions calculator of Air China

Carbon Emission Reduction Services Offered by Airline Carriers.

The results demonstrate that while herd behavior incentivizes investments in reputation, a critical threshold determines the relative effectiveness of uniform versus differentiated pricing. The inherent costs associated with implementing differentiated pricing demand greater efficiency gains to surpass those achievable through uniform pricing.

These findings offer valuable managerial insights for government and airline investment policies. From a governmental perspective, promoting environmental investment by airlines can be facilitated through instrument such as leveraging public credibility to emphasize the need for carbon reduction initiatives, utilizing advertising to provide free publicity for leaders in carbon reduction, and offering subsidies for SAF. These approaches can effectively reduce the costs associated with reputation investment for airlines, ultimately encouraging them to cultivate a stronger environmental reputation.

Link of the article: https://www.sciencedirect.com/science/article/pii/S0191261526000135

HKUST Study Reveals Bidirectional Coupling Between Atmospheric Rivers and Marine Heatwaves in the North Pacific

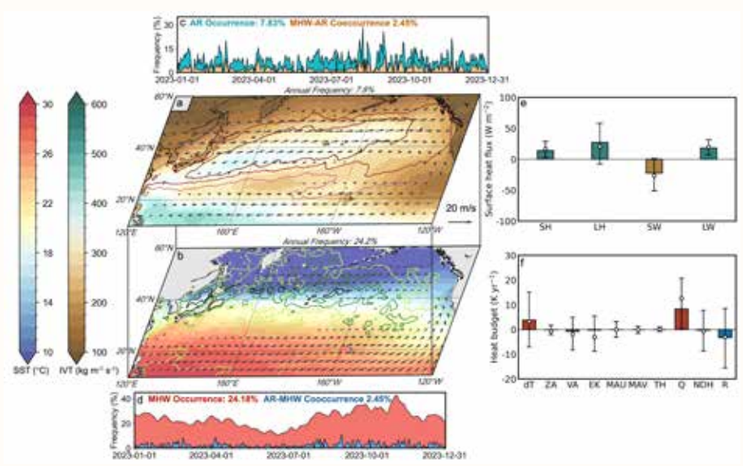


Figure: Representation of ARs, MHWs, and associated physical factors in 2023.

Atmospheric rivers (ARs) and marine heatwaves (MHWs) are two high-impact extremes that strongly shape ocean–atmosphere exchange, yet their event-scale coupling has remained insufficiently quantified. In this study, **Dr. ZHANG Lujia, SONG Yurong, HUANG Wen**, from **CCRS Director Prof. LU Mengqian**'s team analyze AR–MHW interactions over the North Pacific using long-term reanalysis and satellite products (ERA5 and NOAA OISST), complemented by ECCO2 mixed-layer heat-budget diagnostics. They show that longer and more intense events are far more likely to overlap, leading to pervasive cross-linkage: nearly 85% of ARs and 57% of MHWs are connected to the other system during their lifetimes. Co-occurrence hotspots emerge in the mid-latitudes, where both phenomena preferentially develop. Mechanistically, ARs enhance ocean surface warming and exacerbate MHW intensity, primarily through increased net surface heat flux dominated by latent heat flux, with additional contributions from downward longwave radiation and sensible heat flux north of ~40°N; cloud changes (especially mid- and high-level cloudiness) further modulate shortwave and longwave components. Conversely, MHWs exert a modest suppressing effect on local AR intensity by weakening horizontal winds and by mesoscale convection/cyclonic disturbances that disrupt integrated vapor transport—an influence partly offset by enhanced moisture availability over warm SST anomalies. The results highlight a bidirectional, event-based coupling between atmospheric and oceanic extremes and motivate extending this framework to other basins and future warming scenarios to better anticipate compound climate risks.

HKUST Researchers Launch S2SSERVICEBENCH: A Multimodal Benchmark for Evaluating AI-Driven "Last-Mile" Climate Services

Prof. YUAN Binhang(left), LI Chenyue(middle), DENG Wen(right).

S2S forecasts provide a critical planning window of roughly 2 weeks to 2 months for climate resilience and sustainability, yet a major bottleneck remains the "last mile": transforming scientific forecasts into trusted, actionable climate services. To address this challenge, **CCRS Director Prof. LU Mengqian**'s team, together with **CCRS member Prof. YUAN Binhang**'s group at HKUST, recently introduced S2SSERVICEBENCH, a new multimodal benchmark designed to evaluate whether state-of-the-art multimodal large language models and agentic systems can reliably generate decision support from operational S2S service products. With LI Chenyue and DENG Wen as co-first authors, the benchmark is curated from a real operational climate-service system and spans 10 service products, 150+ expert-selected cases, six high-impact application domains, and three service levels, yielding around 500 tasks and 1,000+ evaluation items. Benchmark results show that current models still face substantial challenges in actionable signal comprehension, converting uncertainty into executable handoffs, and producing stable, evidence-grounded planning for dynamic hazards. The study also finds that standardized agentic workflows do not consistently improve performance, highlighting the need for dedicated climate-service agents with domain-specific representations, evaluation-aligned guardrails, and service-aware tooling. By offering a rigorous, service-grounded evaluation framework, S2SSERVICEBENCH aims to accelerate trustworthy AI deployment for climate resilience and sustainable development.

35 Anniversary (35A) Event: HKUST Hosts the Inaugural International Conference on Perovskite Solar Cells (IC-PSC) to Advance Next-Generation Photovoltaics

The Hong Kong University of Science and Technology (HKUST) successfully hosted the International Conference on Perovskite Solar Cells (IC-PSC) from 24 to 27 February 2026 at the Kaisa Group Lecture Theater (IAS LT). The conference brought together experts from numurous institutions worldwide across the Asian, European, Austrian and American courtry/regions, reflecting the strong international and cross-sector engagement in next-generation photovoltaic research.

Group photo of invited speakers, organizers and participants of IC-PSC.

The conference opened with Welcome Remarks delivered by **CCRS member Prof. GUO Yike**, Provost of HKUST and International Academician of the Chinese Academy of Engineering, who emphasized the strategic importance of next-generation photovoltaic technologies in addressing global energy and sustainability challenges. The conference was chaired by **CCRS member Prof. ZHOU Yuanyuan** (HKUST) and Prof. Alex Kwan Yue Jen (City University of Hong Kong), with Prof. Xinhe Bao, Academician of the Chinese Academy of Sciences, serving as Honorary Chair.

Prof. GUO Yike(left), Provost of HKUST, and Prof. ZHOU Yuanyuan(right), Conference Co-Chair from HKUST, delivered welcome remarks at the opening ceremony of IC-PSC.

IC-PSC featured more than 20 invited talks delivered by internationally recognized experts, including Prof. Yongfang Li (CAS), Prof. Nam-Gyu Park (SKKU), Prof. Jinsong Huang (UNC), Prof. Michael Saliba (University of Stuttgart), Prof. Letian Dou (Emory University, USA), and Prof. Tae Woo Lee (SNU), among others. Topics covered wide-bandgap and tandem architectures, interfacial engineering, mechanical reliability, tin-based perovskites, green processing, scalable module fabrication, and recycling strategies. Dedicated Spotlight Talk Sessions and Junior Researcher Talks provided a platform for emerging investigators to present cutting-edge findings, fostering cross-generational dialogue within the field.

The conference was organized by the Department of Chemical and Biological Engineering, HKUST Energy Institute, and the School of Engineering, with **support from the Otto Poon Center for Climate Resilience and Sustainability(CCRS)**, and multiple academic and industrial partners. The event further strengthened Hong Kong's position as a strategic hub for advanced energy materials research and international collaboration.

By convening global leaders and rising scholars under one platform, IC-PSC reinforced HKUST's commitment to advancing perovskite science and accelerating the development of next-generation sustainable energy technologies.