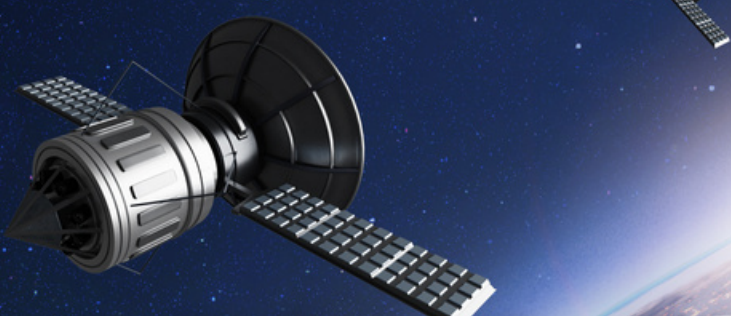




LSGI & RILS RESEARCH SEMINAR

Sea-Level Science in Southeast Asia

 **17 NOV 2025 (MON)**

 **10:30 AM - 12:00 NN**

 **Z205, POLYU**

 **ENGLISH**

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Dean

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City University of Hong Kong*



ABSTRACT

No matter how quickly nations lower emissions now, the world is looking at about 15 to 30 centimeters of sea-level rise through the middle of the century, given the long-drawn impact of climate change on the oceans and ice sheets. Even under a stable climate, sea-level rise is expected to continue slowly for centuries. Beyond 2050, sea-level rise becomes increasingly susceptible to the world's emission choices. If countries choose to continue their current paths, greenhouse gas emissions will likely result in $\sim 3^{\circ}\text{C}$ of warming by 2100, and a sea-level rise of up to 0.8 meters. Under the most extreme emissions scenario, rapid ice sheet loss from Greenland and Antarctica could lead to a sea-level rise approaching 2 meters by the end of this century and over 5 meters by 2150.

Here I highlight three studies in which current methodologies and historical and geological data sources from Southeast Asia can constrain future projections, and how accurate projections can motivate the development of new sea-level research questions to mitigate and adapt to climate change. First, periods of rapid ice melting accelerated sea-level rise $\sim 14,500$ and $\sim 11,500$ years ago that significantly reduced land area and forced early human migration across the region. During these periods, thresholds of coastal habitat survival were also surpassed resulting in large-scale losses. Singapore became an island at approximately 9,000 years ago. Second, a new fusion method for estimating high end sea-level rise provided a more reliable assessment of scientific uncertainty. We estimate that by 2100, global sea levels will very likely rise between 0.3-1.0 m under low emissions and 0.5-1.9 m under high emissions. Third, under high emissions, nearly all mangroves and most saltmarshes forests, and a considerable number of coral reef islands would be beyond their sea-level rise tipping point for survival.

BIOGRAPHY

Professor Benjamin P. Horton is Dean of the School of Energy and Environment at City University of Hong Kong and a leading coastal scientist specializing in sea-level change and coastal resilience. He has received major accolades, including the Plinius Medal (EGU), Voyager Award (AGU), and W. Storrs Cole Award (GSA). Professor Horton is a Fellow of both the Geological Society of America and the American Geophysical Union. He served as a Review Editor for the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report, contributing to global coastal policy through scientific leadership and interdisciplinary research.

Moderator: Prof. Jianli CHEN, Chair Professor of LSGI, member of RILS

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