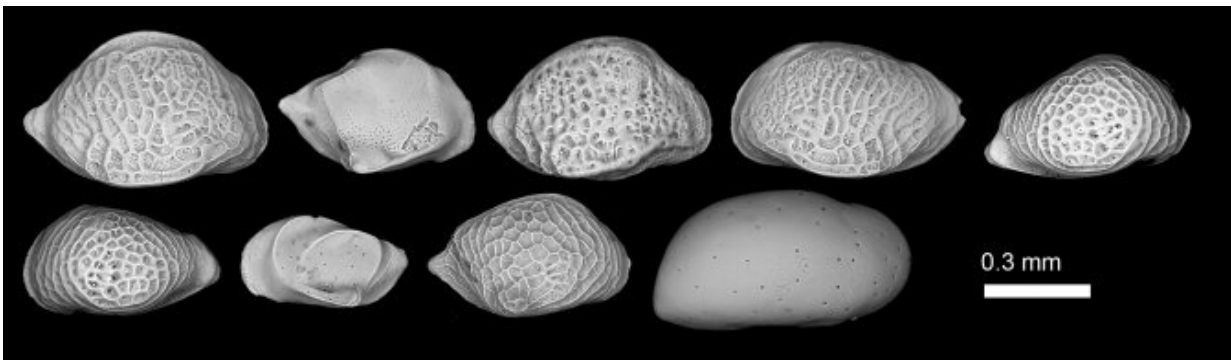


Paleontologists discover solid evidence of formerly elusive abrupt sea-level jump

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Scanning Electron Microscopy image of typical deep-sea (bathyal) ostracod species from the study sites. Credit: The University of Hong Kong

Meltwater pulses (MWP) known as abrupt sea-level rise due to injection of melt water are of particular interests to scientists to investigate the interactions between climatic, oceanic and glacial systems. Eustatic sea-level rise will inevitably affect cities especially those on coastal plains of low elevation like Hong Kong. A recent study published in *Quaternary Science Reviews* presented evidence of abrupt sea level change between 11,300-11,000 years ago in the Arctic Ocean. The study was conducted by Ms Skye Yunshu Tian, Ph.D. student of School of Biological Sciences and Swire Institute of Marine Science, the University of Hong Kong (HKU) during her undergraduate final year project in the Ecology & Biodiversity Major, solving the puzzle of

second largest meltwater pulse (labelled as "MWP-1B" next to the largest and already well understood MWP-1A).

During the last deglaciation, melting of large ice sheets in the Northern hemisphere had contributed to profound global sea level changes. However, even the second largest MWP-1B is not well understood. Its timing and magnitude remain actively debated due to the lack of clear evidence not only from [tropical areas](#) recording near-eustatic sea-level change, but also from high-latitude areas where the ice sheets melted.

The research study, led by Ms Tian under the supervision of Dr. Moriaki Yasuhara, Associate Professor of School of Biological Sciences, HKU and Dr. Yuanyuan Hong, Postdoctoral Fellow of School of Biological Sciences, HKU, and in collaboration with scientists in HKU and UiT The Arctic University of Norway, discovered a robust evidence of formerly elusive abrupt sea-level jump event during the climatic warming from the last ice age to the current climate state. The study presented evidence of abrupt sea level change between 11,300 and 11,000 years ago of 40m to 80m in Svalbard, the Arctic Ocean. High time-resolution fossil records indicate a sudden temperature rise due to the incursion of warm Atlantic waters and consequent melting of the covering ice sheets. Because of the rebound of formerly suppressed lands underneath great ice load, the sedimentary environment changed from a bathyal setting (having deep-sea species shown in Image 1) to an upper-middle neritic setting (having shallow-marine species shown in Image 2) at the study sites. This is the first solid evidence of relative sea-level change of MWP-1B discovered in ice-proximal areas.

The research group used fossil Ostracoda preserved in two marine sediment cores as a model organism to quantitatively reconstruct the water depth changes in Svalbard in the past 14,000 years, as this small (usually

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