The University of Hong Kong
School of Biological Sciences

Public Seminar

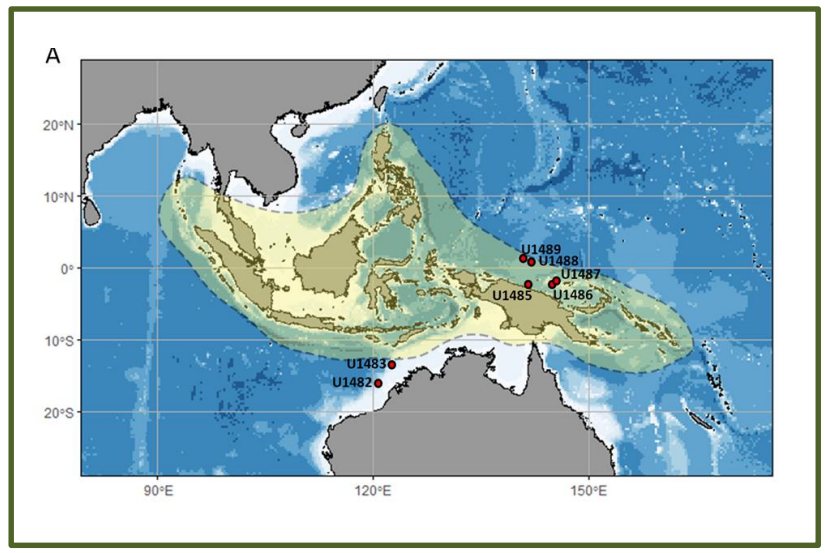
Impacts of Pliocene–Pleistocene global climatic events on tropical deep-sea biota: Investigation based on IODP Expedition 363 Western Pacific Warm Pool

Date: 24 July 2024 (WED)

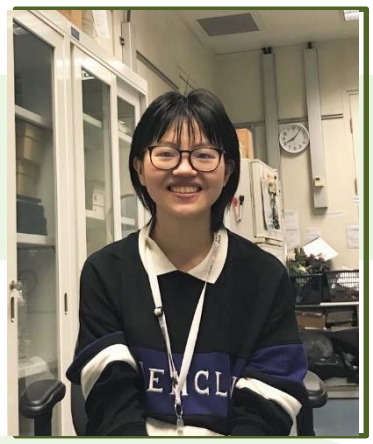
Time: 2:00 PM HKT

Venue: Zoom

6N-11,KBSB



About the speaker:



Zhang Jingwen is a Mphil candidate in Dr.YASUHARA lab. She joined HKU in 2021 and has since been working on topics related to marine ostracods. Her interests are in Indo-Pacific deep-sea ostracod paleoecology and Eocene shallow-marine latitudinal diversity gradients.

Abstract:

The Western Pacific Warm Pool (WPWP) is important in the global climatic system. At the same time, it is the place of the highest marine biodiversity, as it largely overlaps with the Coral Triangle biodiversity hotspot. Past climate and oceanographic changes could have affected the ecosystems and biodiversity of this most biodiverse marine region on Earth. However, biotic responses to Neogene climatic changes remain poorly understood and even Modern biodiversity of this region is not well understood in most taxonomic groups.

In this project, we investigated Neogene paleobiological changes in the WPWP and Coral Triangle region using the IODP Expedition 363 materials and microfossil Ostracoda (Crustacea) as a model system to better understand the biodiversity and biotic response to climatic and oceanographic changes in this region.

The main results of this study include:
(1) The biodiversity of both shallow and deep water of the WPWP is possibly underestimated.
(2) As the channel transporting vapor and heat from the Pacific Ocean to the Indian Ocean, the Indonesian Throughflow (ITF) started to restrict at ~10 Ma and recovered at ~4 Ma. This event was reflected in ostracods as a three-staged taxonomical composition shift.
(3) From the late Pliocene to the early Pleistocene, the dominant oxygen-low north-sourced deep water was alternated by the high-oxygen south-originated deep water. This led to the upslope migration of low oxygen-preferred *Krithe* to shallower water and the dominance of high oxygen-preferred trachyleberidids in deep water in the Pleistocene.
Other results include an assemblage shift related to the environmental change of the Sepik River and an abundance change related to surface productivity.