

## Multidisciplinary investigations of Arctic deep-sea extreme environments and transferable insights to tropical studies

by

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Host: Dr Tan Koh Siang

Please Register: <https://nus->

[sg.zoom.us/webinar/register/WN\\_Z9xWsgnzQMyOreBvWaQYLA](https://nus-sg.zoom.us/webinar/register/WN_Z9xWsgnzQMyOreBvWaQYLA)



### **ABSTRACT:**

Arctic extreme environments, such as cold seeps and hydrothermal vents, can reveal unexpected links to tropical studies and sea-level research. They are associated with unique biogeochemical processes and faunal assemblages closely connected to subsurface fluid migration activities. However, they are increasingly threatened by climate change and anthropogenic activities. In this presentation, we show how we apply a multidisciplinary and multiproxy approach to characterize biogeochemical processes and faunal assemblages. You will see how these processes are intricately linked to carbon cycling.

### **About the Speakers:**

**Dr. Claudio Argentino:** Biogeochemical processes occurring in the anoxic sediments of methane seeps lead to the precipitation of carbonate minerals, which can persist throughout the geological record. This represents a natural pathway for long-term carbon sequestration. I will present case studies from modern methane seeps located in the Norwegian Arctic, with emphasis on sediment biogeochemistry and paleo-reconstructions. Interestingly, similar processes occur in the anoxic, organic-rich sediments of mangrove environments, where dissolved inorganic carbon released during organic matter degradation and/or anaerobic oxidation of methane is partially incorporated into newly formed minerals. The dynamics of these processes are highly sensitive to sea-level changes.

**Dr. Ines Barrenechea Angeles:** The use of foraminifera and sedimentary eDNA provides powerful tools to investigate ecosystem responses to environmental change. Foraminifera, with their sensitivity to environmental conditions, and sedimentary eDNA, which captures genetic signals from past and present communities, offer complementary insights when combined with environmental data. I will showcase case studies from the Arctic and other regions, demonstrating how the analysis of foraminifera distribution, isotopic composition, genetic diversity, and sedimentary eDNA can reveal biota responses to anthropogenic impacts or in chemical-based ecosystems.