

Time Capsule of Tropical Climate and Environmental Changes via Corals and Trees

Speaker: Dr Intan Suci Nurhati
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Chair: Prof Alan Zeigler, Department of Geography, NUS

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Place: Earth Lab (AS2 02-03), Department of Geography, NUS

Abstract

The climate science community comprises a synergy of scientists collecting present observational data that are useful to constraint future climate model projections. As such, collectively we would be able to better inform our societies on the regional signatures of climate change. However, long and continuous climate records as an important recipe for conducting high-fidelity climate studies are scarce, particularly from the tropical regions. Therefore my paleoclimate research utilizes reef-building corals and tropical trees as time capsules that store the histories of our climate and environments over the past decades to centuries. Corals and trees could provide high (sub-monthly) resolution climate and environmental records, thus most suitable for complementing the shorter temporal coverage of observational data.

In this talk, I will share my works in extracting coral geochemical (i.e. stable isotopic, trace metal) signals to reconstruct past variations in sea-surface temperature, salinity/rainfall, and ocean circulations; as well as anthropogenic pollutants such as heavy metal lead. Over the land, tree-based paleoclimate records hold a great potential to improve the spatial coverage of long rainfall records. However, its utility in the tropics has been hampered by the lack of clear annual ring structures that are commonly studied in high-latitude trees to infer past rainfall variability.




Here, I will also how my tree work may help to overcome this scientific challenge by unlocking rainfall records in trees via isotope geochemistry.

About the Speaker

Dr. Intan Suci Nurhati is a Senior Postdoctoral Associate at the Singapore-MIT Alliance for Research and Technology (SMART)'s Center for Environmental Sensing and Modeling. Originally from Indonesia, she received the Freeman Asian Scholarship to earn her B.A. from Wesleyan University (USA) in 2005, with double majors in Earth and Environmental Sciences and Economics. She then received her Ph.D. from Georgia Institute of Technology (USA) in 2010.

Intan has led numerous marine and terrestrial field expeditions in Indonesia, Asia, the Middle East, as well as a National Geographic expedition to remote central tropical Pacific islands. She was recently awarded the Green Talents Award by the German Federal Ministry of Education and Research, and the Best Young Scientist Award by the IOC-WESTPAC.

ADMISSION IS FREE – ALL ARE WELCOME

CONVENORS:  Dr Karen Lai (karenlai@nus.edu.sg)  Dr Sin Harnng Luh (geosinhl@nus.edu.sg)  Dr Winston Chow (winstonchow@nus.edu.sg)

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