Physical Research Laboratory

Geosciences Division

Tuesday Seminar

Reconstruction of ocean deoxygenation using Iodine/Calcium (I/Ca) ratios in marine carbonates

Abstract

Oxygen is an essential element for all the heterotrophic organisms in the oceans. Decrease in the ocean oxygen levels has been observed since the middle of the 20th century. This ocean deoxygenation ranks among the most important changes occurring in marine ecosystems. The oxygen content of the ocean constrains productivity, biodiversity, and biogeochemical cycles. Major extinction events in the Earth's history have been associated with warm climates and oxygen-deficient oceans, and under current trajectories, anthropogenic activities could drive the ocean toward widespread oxygen deficiency.

The current climate models and observations generally agree on the loss of oxygen from the oceans. But these models tend to underestimate oxygen spatial variability and temporal trends, especially in the tropical thermoclines. This disagreement between models and observations is problematic for future predictions, as these regions host large open ocean oxygen minimum zones (OMZs), where a further decrease in oxygen levels could have large impacts on ecosystem and biogeochemistry. In such a case, reconstruction of the ocean deoxygenation from the geological past may provide insight into future deoxygenation. For such long-term predictions, a geochemical proxy is required to reconstruct past oxygen levels. One such proxy is Iodine/Calcium (I/Ca) ratios in foraminifera.

In this talk, I shall discuss how past ocean levels are reconstructed using I/Ca ratios in foraminifera.

Speaker: Mr. Deepak Kumar Rai
SRF, GSDN

Date	Time	Venue
6-July-2021	16:00 Hrs	Bluejeans

All are invited to attend and participate in discussion

A. K. Sudheer, Geosciences Division