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Variations in the abundance of Micro-fauna during the late Pleistocene and Holocene: Andaman Sea

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An important unsolved puzzle in Andaman Sea is the variations in the abundance of micro-fauna especially during the late Pleistocene and Holocene. In order to deduce this puzzle, three gravity cores retrieved onboard Samudra Manthan (SM) from Andaman Sea during cruise 231 is utilized. The key micro-fauna examined for the present work are foraminifera, radiolaria and pteropods. The investigation reveals that in core GC-01 and GC-03, there is a rise in radiolarian content at two levels. While in core GC-02, there is a sharp rise in pteropod content towards the bottom that is manifested as a sharp fall in radiolarian content. A multi-proxy attempt is undertaken to solve this puzzle. In this regard oxygen isotope ratio studies and grain size analysis is carried out at a higher resolution. The stable isotope results are used for generating relative chronostratigraphy and inferring the paleoclimate. An age ranging from 0.94 Kyr-12.39 Kyr is established for core (GC-02) collected near Narcondam Island through peak matching and correlation with available record. The important finding of this work is, the determination of two Marine Isotopic Stages (MIS), i.e. MIS 2 and MIS 1. Apart from this, two colder events [8.2Kyr and Younger Dryas (YD)] are also marked for the first time around Narcondam Island. The grain size analysis for the cores GC-01 and GC-02, suggest that silt is predominant towards top, while clay content rises towards the bottom. On the other hand in core GC-03 clay is predominant at the top and bottom, while silt is showing dominance in the middle. The coarse fraction is less and listing its presence as a small peak.

The interpretation of data suggests that in Andaman Sea, the abundance in pteropods content and good preservation is seen during YD, inferring that colder environment favours the formation and the preservation of pteropods. Similar observations were noticed by [1]. The grain size analysis also exhibit positive correlation with oxygen isotope results, as there is a rise in clay content during that period. Clay generally deposit in low energy conditions (like weak monsoon), thus favouring the preservation of pteropods. Regarding the radiolarian abundance especially during the Pleistocene and Holocene. The plausible explanation is that the radiolaria is considered as a warm water form [2]. Surface temperature (SST>280 C) and moderately lower salinity (~33.5 psu) favours sudden rise in radiolarian content during warm periods. Radiolaria is also used as a monsoon proxy [2] and the intensity of monsoon generally stronger during humid and warm climate. This also confirmed that radiolaria is a warm water species and showing dominance during the warm period.

References:

- [1] Sijinkumar, A.V., Nath, B.N., Guptha, M. V. S., (2010). *Marine Geology* 275 (2010) 221–229.
- [2] Gupta, S. M., (2009). *Earth Science India*, Vol.2 (I); 1-20.

