

Indian researchers find more evidence of factors escalating global warming

New Delhi, September 1 (Vigyan Samachar): An Indian study has pointed out that intense denitrification ongoing in the Arabian Sea would likely escalate global warming in the near future. By analysing sediment samples covering the last 600 thousand years from the eastern Arabian Sea basin, researchers at the National Centre for Polar and Ocean Research (NCPOR) in Goa have found that current conditions on the Earth are conducive to escalating temperatures around the world. Although denitrification has been happening for millions of years, it occurs more strongly in warm interglacial periods. The Earth is going through one such warm interglacial period now.

Researchers at NCPOR have made these findings by analysing samples from a 1.1 kilometre (km) deep sediment core from the Arabian sea basin. These were obtained by drilling seabed during the International Ocean Discovery Program (IODP), which is an international research collaboration for drilling of ocean basins using specialized drilling ships. The present study was a part of the IODP Expedition 355 carried out on drillship named *JOIDES Resolution* at Laxmi Basin, nearly 490 km west of India's coast.

Analysis of sediment core samples revealed the extent of denitrification—a process by which bacteria breakdown organic matter in the sea to nitrous oxide—a powerful greenhouse gas that speeds up global warming. A long-term record of denitrification from the eastern Arabian Sea basin was missing till date, but now NCPOR researchers have evidence of intense denitrification during warm interglacial periods, which weakens during the interspaced cold glacial periods. Based on these findings, they note that global temperatures would rise in the coming future.

The NCPOR research team included Manish Tiwari and his doctoral students Shubham Tripathi and Padmasini Behera. They have published their findings in a recent issue of the journal *Current Science*. According to Manish Tiwari, scientist in-charge of paleoceanography at NCPOR and corresponding author of the study, “understanding evolution and dynamics of denitrification at a high resolution spanning multiple glacial-interglacial cycles is a strong body of evidence that denitrification can contribute to global warming through the production of nitrous oxide. Our study, therefore, is a significant leap in this direction”.



JOIDES Resolution (research drilling ship of International Ocean Discovery Program) used for collecting sediment core samples from eastern Arabian Sea basin during April-May 2015 (left) and a section from the 1.1 km long sediment core used for the present study (right). Photo Courtesy IODP.