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## Concern over rapid warming of Indian Ocean



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**UNPREDICTABLE:**The warming of the Indian ocean could lead to climatic changes.

The rapid warming of the Indian Ocean could be responsible for the uncertainties of the Asian monsoon and the reduced rainfall over the Indian sub continent, according to monsoon meteorologists and ocean scientists participating in a national workshop on Climate Change and Sustainable Development.

Director, Indian National Centre for Ocean Information Services (INCOIS) Dr .Satish Shenoi said the Indian Ocean was warming faster than other oceans. Latest studies had revealed that the excess heat sequestered by the Pacific Ocean from greenhouse gas emissions was transported to the Indian Ocean through an ocean current known as the Indonesian Throughflow. Consequently, upper ocean heat content had been slowly decreasing in the Pacific.

The Indian Ocean, he said, was now home to 70 per cent of all the heat taken up by oceans across the globe. This unprecedented heat uptake since 2003 had the potential to change atmospheric circulation, affecting the Asian monsoon and impacting on the marine ecosystem.

The rise in Sea Surface Temperature (SST) in the western Indian Ocean during the period from 1901 to 2012 coincided with a weak monsoon circulation and reduced rainfall over the Indian sub continent. The mean Sea Level Rise (SLR) recorded in oceans across the world rose from 1.5- 2 mm per year in the 20th century to 3.1 mm per year during the last decade. However, the rate of SLR in the Indian Ocean during the last decade was as high as 4.12 mm per year.

Dr. Shenoi said the El Nino Southern Oscillation (ENSO) representing a warm phase was found to have a strong relationship with the lesser number of cyclones generated in the Bay of Bengal during the period from October to December. The decrease in the number of monsoon depressions over the Bay of Bengal translated into lesser rainfall for the sub continent.

INCOIS, he said, was strengthening its network of tide gauges to quantify sea level rise along the Indian coast. He stressed the need for more studies on ocean acidification and increase in dissolved inorganic carbon in surface waters.

Noted monsoon researcher P.V. Joseph said the uncertainties posed by climate change factors could have disturbed the cycle of dry and wet epochs dictated by the performance of the Asian monsoon. He said India faced multiple problems due to climate change issues like sea level rise, glacier melting, increased frequency of severe weather, decrease in rainfall, increased frequency and intensity of heat waves and pollution of air, water and food sources.

The workshop was organised by the National Centre for Earth Science Studies (NCESS) in collaboration with the Centre for Climate Change

Research (CCCR) under the Indian Institute of Tropical Meteorology (IITM), Pune.

Dr.M. Sudhakar, Director, NCESS, Dr. M.Rajeevan, Director, IITM and Dr. R.Krishnan, Executive Director, CCCR were among those who led the sessions.

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