

## Impacts of climate change on marine plankton communities in tropical marine coastal ecosystems, southeast coast of India

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Global warming and the subsequent events of climate variability may have greater repercussions for marine ecosystems than for terrestrial ecosystems, because temperature influences water column stability, nutrient enrichment, and changes in the biodiversity of plankton communities and its reproductive cycles. Any change in the plankton diversity and abundance will have consequences on the marine food-web and on other trophic levels. In order to understand the impacts of climate variability and changes on the tropical coastal and marine ecosystems, study has been undertaken to investigate the diversity and abundance of plankton in the most important tropical estuarine system, a unique coastal marine environment in South India, as it is connected with mangrove ecosystem, brackish water and Bay of Bengal. The cumulative long term survey showed (25 years of intensive study from 1988 to 2013) remarkable variations in environmental parameters, chlorophyll a concentrations and diversity of species, abundance of phytoplankton and zooplankton communities. Besides that, it showed seasonal variations also: - being highest in summer (April - June) and lowest in monsoon (October - December). There were wide temperature fluctuations (range: 22.8 - 33.9°C), salinity gradients (3.1 - 34.8) and chlorophyll a concentrations (1.6 - 19.4 µg l<sup>-1</sup>). The overall mean abundance of phytoplankton 3.9 fold and zooplankton 3.2 fold were higher in summer than in monsoon. The low diversity and abundance of plankton during monsoon might be due to unfavorable climatological conditions, disappearance of many species, scarcity of food and high turbidity condition of the water column. The cumulative data on plankton diversity and abundance showed interesting observations on species distribution and abundance. The climate variability and changes exert major influence on the diversity of plankton communities and significantly affect the marine food webs and other trophic levels.

### Biography

Nallamuthu Godhantaraman, Director-UGC Academic Staff College and Adjunct Faculty, Centre for Ocean and Coastal Studies, University of Madras. Completed his M.Sc., in Marine Biology & Oceanography and Ph.D. in Marine Biology (specialized in microzooplankton population and production ecology in marine coastal ecosystems, South India), Annamalai University. Later did his JSPS Postdoctoral Research at Hiroshima University, Japan (1998-2000) and STA Postdoctoral Research at National Institute of Advanced Industrial Science & Technology (AIST), Hiroshima, Kure (Japan) (2000-2002). He has been nominated as Senate Member - Middle East University, United Arab Emirates and Visiting Fellow, Department of Marine Science, University of Calcutta, Kolkata. Dr. Nallamuthu has made significant contributions to research in the field of biological oceanography with special reference to population and production ecology of microzooplankton, climate change impacts on marine ecosystem and published over 25 research articles in refereed journals and chapters in books. Dr. Nallamuthu participated and delivered lectures in various national and international symposia/conferences/workshops (over 30) and visited countries like Japan, USA, UK, Germany, France, Portugal, Singapore, Malaysia, China and Thailand.

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