

PROJECT TITLE: Monitoring the environmental characteristics of the inshore waters in relation to fisheries

The main objective of the project was to study the environmental characteristics of the inshore from the east and west coast of India and its influence on pelagic fisheries. The important findings are:

- The sea water temperature in the inshore waters ranged between 23.0 to 33.5 °C in the west coast and between 23.8 to 32.6 °C in the east coast.
- Salinity values ranged between 0.4 to 37.8 ppt in the west coast and between 1.71 to 37.9 ppt in the east coast.
- Dissolved oxygen (DO) content in seawater ranged 0.01 to 8.9 ml/l in the west coast. Lowest DO value was observed off Mumbai (0.01 ml/l) while highest value was observed off Veraval (8.9 ml/l). The DO content ranged from 0.01 to 8.2 ml/l in the east coast. Lowest value was observed off Chennai (0.01 mg/l) while the highest value was observed off Vishakhapatnam (8.2 ml/l).
- The chlorophyll a concentrations ranged between 0.01 to 13.3 mg/m³ (mean 2.52 mg/m³) in the west coast, while in the east coast it ranged between 0.01 to 19.5 mg/m³ (mean 2.52 mg/m³). The zooplankton biomass at Mangalore ranged from 1.21 to 21.8 ml/m³ (mean 7.64 ml/m³) while at Mandapam, it ranged from 27 to 140 ml/m³ (mean 62.8 ml/m³).
- Significant positive correlations were observed between the field measured Sea Surface Temperature (SST) and satellite derived SST from the inshore waters at Cochin (R²= 0.73), Mangalore (R²= 0.80), Vishakhapatnam (R²= 0.81), Mandapam (R²= 0.65) and Tuticorin (R²= 0.72).
- Field and satellite derived oceanographic data have shown that coastal upwelling occurs during July – September with a peak in August resulting in high nutrient concentrations and biological productivity along the south west coast. Nearly 70% of the pelagic fish catch, dominated by oil sardine and mackerel was obtained during September – December, during or immediately after the upwelling season.

- Total pelagic fish catch in purse seine and drift gill net, and catches of fishes such as thryssa, carangids, mackerels, seerfishes and tunas showed significant positive correlations with bottom sigma t and significant negative correlations with bottom dissolved oxygen content (upwelling indicators) at Mangalore.

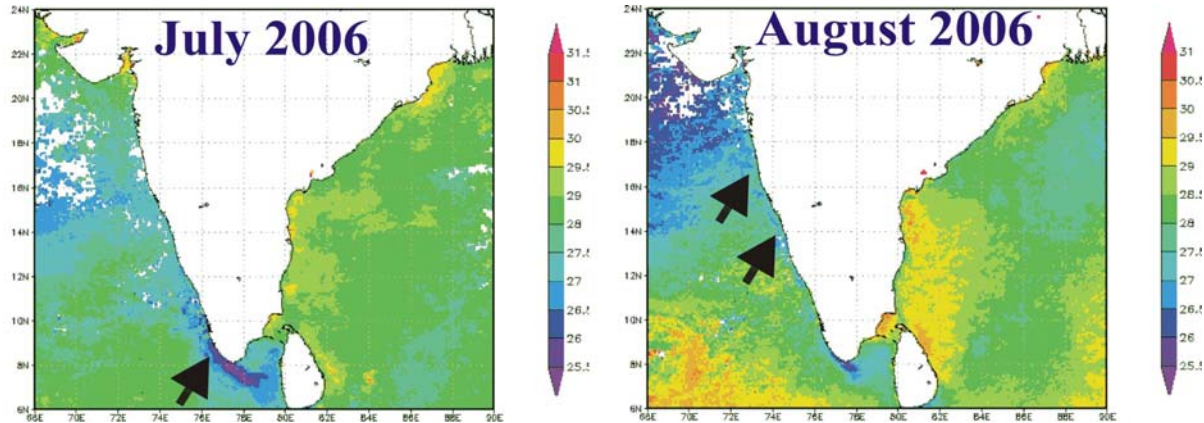


Fig. 1. Mean sea surface temperature (SST) map of the Arabian Sea & Bay of Bengal (MODIS 9-km spatial resolution data). Images were acquired using the GES-DISC interactive online visualization and analysis infrastructure (Giovanni). Arrows show the movement of upwelled water from southern tip to central west coast of India during July and August 2006.