Chlorophyll variability in the Arabian Sea and Bay of Bengal during last decade (1997-2007)

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Abstract: The variability in spatial and temporal distribution of Chlorophyll-*a* (Chlorophyll) and Sea Surface Temperature (SST) in the Arabian Sea (AS) and Bay of Bengal (BOB) is studied using satellite data. For chlorophyll analysis Sea-Viewing Wide Field-of-View sensor (SeaWiFS) derived eight days average Chlorophyll (mg m^{-3}) images from 1997 to 2008 have been used. The SST data derived from National Oceanic and Atmospheric Administration (NOAA) Advanced Very High Resolution Radiometer (AVHRR) were used to study the SST pattern. In order to understand the spatial and temporal distribution of Chlorophyll in the AS and the BOB, few representative locations were analysed to evaluate the change in pattern from 1997-2007. During the study few Open Ocean locations were observed, where Chlorophyll remains high consistently throughout the study period. Five representative locations were identified and analysed, four in the AS (Southwest AS) and one in BOB (Northeast BOB). The time series analysis has been done for all these location to understand the intra-seasonal, inter-seasonal, and decadal variability. Chlorophyll pattern shows in general high values during February to March in the AS and November to December in the BOB for all the years studied. The Chlorophyll values in general observed high, during 2007 – 08 as compared to 1997 – 98. The Chlorophyll values in the Northwest AS were of the order ~1.2 mg m^{-3} in the years of 2006-2008, as compared to ~0.8 mg m^{-3} during 1997-1999. The seasonality pattern is almost similar during the time span, but the duration of high productivity period has prolonged in recent years (2007-08. This has high relevance for the study of climate change/biogeochemical cycle analysis.

Key words: Chlorophyll, SST, Arabian Sea, Bay of Bengal, Remote Sensing