

INFLUENCE OF TROPICAL CYCLONE BAAZ AND FANOOS ON PHYTOPLANKTON BLOOMS (CHLOROPHYLL-A) OVER BAY OF BENGAL: A SATELLITE BASED OBSERVATION

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ABSTRACT

Landfall of TC's (tropical cyclone) constitutes one of the most destructive natural disasters that leading terrific annual losses in lives and property. Although in ocean, cyclone wind causes local mixing which results in the inoculation of nutrients into the upper layer of the ocean and triggering phytoplankton bloom. This study investigates phytoplankton blooms subsequent the passage of TC in the BOB (Bay of Bengal) basin. The fluctuation of sea surface temperature (SST), storm surface winds, precipitation and chlorophyll (Chl-*a*) were supervised for two consecutive tropical cyclone, Baaz (28th November to 2nd December, 2005) and Fanoos (6th -10th December, 2005). In the study, combined data sets of SST from AMSR-E, rainfall from TMI, wind speed from QuikScat and ocean color product from SeaWiFS are used to analyze physical, biological and optical process before, during and after the cyclone. Results established that mean Chl-*a* inversely correlated with the SST ($r = -0.62$, $p < 0.005$) and positively correlated with the average rainfall ($r = 0.51$, $p < 0.005$) and wind speed ($r = 0.49$, $p < 0.005$). Along track mean Chl-*a* concentrations after the cyclonic period increased from ~ 0.11 mg/m³ to 12.52 mg/m³. Increase of Chl-*a* concentrations varies from 34.91% to 87.46% in near the shore water and 38.24% to 79.63% in central bay, over a region of ~ 81 km² (a single pixel of Sea-WiFS data). 16 days after, patches of phytoplankton boom decreased significantly with values at ~ 0.056 to 4.23 mg/m³ and after 20 days elevated level of Chl-*a* concentration almost returned back to the pre-cyclone levels.

KEYWORDS: BOB, Tropical Cyclones, SST, Remote Sensing and Phytoplankton Blooms