

## Response of marine ecosystem to 2004 Tsunami in the Indian Ocean

DanLing TANG\*, H ZHAO, GM ZHENG, ZZ Yan, Ravi Kumar, and B. Satyanarayana,

Laboratory for Tropical Marine Environmental Dynamics (LED), South China Sea Institute of Oceanology, Chinese Academy of Sciences, 164 West Xiangang Road, Guangzhou-510301, P.R. China.

\*Corresponding author. Email: [lingzistdl@126.com](mailto:lingzistdl@126.com); Website: <http://lingzis.51.net/>.

Tel/Fax: +86 (20) 89023203.

### ABSTRACT

Satellite remote sensing data has revealed significant observations of Chlorophyll-*a* (Chl-*a*) and Sea Surface Temperature (SST) in the Indian Ocean during the south Asian tsunami (December 2004). Chl-*a* measurements derived from Moderate Resolution Imaging Spectroradiometer (MODIS) for 3 years (2002 to 2005) period and SeaWiFS for 7 years (1998 to 2004) period were examined. Around the epicenter of the earthquake, Chl-*a* concentration is found to increase prior to the disaster (26 December) and dispersed during the tsunami event, and enhanced again after 10 days, high SST ( $\sim 30\text{-}31^{\circ}\text{C}$ ) was observed in and around epicentral region. Meanwhile, large offshore phytoplankton blooms ( $\sim 300\text{ km}^2$ ) were observed two to three weeks after the tsunami. The Chl-*a* concentration in the coastal waters of the south-east Asian countries was found considerably low and diffused with the giant waves after the tsunami. Similar but relatively weak variations of Chl-*a* and SST are observed during the second earthquake on 28 March 2005. High Chl-*a* coupled with low SST in the vicinity of the earthquake may indicate the vertical mixing or cold upwelling water with enriched nutrients. The analysis is based on time-series data helps us to assess the tendency of Chl-*a* influenced by SST, wind, and upwelling water during the earthquake preparation processes.