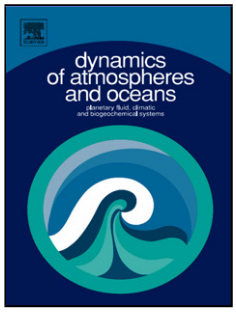

Title: Dynamical significance of tides over the Bay of Bengal

Authors: Chirantan Bhagawati, Suchita Pandey, Sumit Dandapat, Arun Chakraborty

PII: S0377-0265(17)30167-7
DOI: https://doi.org/10.1016/j.dynatmoce.2018.05.002
Reference: DYNAT 1054

To appear in: *Dynamics of Atmospheres and Oceans*

Received date: 6-12-2017
Revised date: 9-5-2018
Accepted date: 9-5-2018

Please cite this article as: Bhagawati C, Pandey S, Dandapat S, Chakraborty A, Dynamical significance of tides over the Bay of Bengal, *Dynamics of Atmospheres and Oceans* (2010), https://doi.org/10.1016/j.dynatmoce.2018.05.002

Dynamical significance of tides over the Bay of Bengal

Chirantan Bhagawati, Suchita Pandey, Sumit Dandapat and Arun Chakraborty

Centre for Oceans, Rivers, Atmosphere, and Land Sciences

IIT Kharagpur, India

Highlights

- The present work investigates the influence of tides on the Surface Circulations, Sea Surface Heights, Vertical Mixing, Potential and Kinetic Energy distributions, Sea Surface Temperatures (SST) as well as Net Heat Fluxes in the Bay of Bengal through numerical simulations using a high resolution (1/12°) ROMS.
- The model performance in simulating the basin averaged monthly surface circulation features by 64% compared to the simulation without tides.
- The energy exchange between tidal oscillations and eddies leads to redistribution of surface kinetic energy density with a net decrease of 0.012 Jm-3 in the western Bay and a net increase of 0.007 Jm-3 in the eastern Bay.
- Tidal mixing leads to decrease in monthly SST averaged over the entire which is maximum during Month-11 (0.17°C) followed by Month-6 (0.16°C) and Month-1 (0.1°C).
- The net enthalpy flux (sensible and latent heat flux) is observed to decrease by 6.5 Wm^{-2}, 9.8 Wm^{-2} and 7.8 Wm^{-2} due to the corresponding SST fall.