URSI AP-RASC 2019, New Delhi, India, 09 - 15 March 2019

Validation of Tropical Cyclone Heat Potential (TCHP) derived from satellite products over the North Indian Ocean

B. Jangir[(1)], and D. Swain* [(1)]
(1) Indian Institute of Technology Bhubaneswar, Jatni, Odisha, 752050, e-mail: dswain@iitbbs.ac.in; debadatta.swain@gmail.com

The North Indian Ocean (NIO) is home to severe depressions and frequent Tropical Cyclones (TCs). TCs are largely influenced by TC Heat potential (TCHP), a major ocean parameter responsible for genesis, intensification changes, as well as their propagation tracks. Hence, accurate estimation of TCHP is highly essential for better prediction of TC track and intensity changes. Conventionally, TCHP is estimated from *in situ* ocean temperature and salinity profiles. However, owing to the spatio-temporal limitations of *in situ* measurements, estimation of TCHP from satellite observations of ocean parameters namely, Sea Surface Temperature (SST) and Sea Surface Height Anomaly (SSHA) have attained significance in recent times. In order to examine the reliability of satellite based TCHP estimates and a view to fine-tune retrieval algorithms if necessary, satellite based delayed-time (DT) TCHP data from National Oceanic and Atmospheric Administration (NOAA) are inter-compared with *in situ* TCHP computed from temperature and salinity observations from Argo autonomous profiling floats. DT-TCHP products are generated using SST measurements and delayed-time AVISO SSHA gridded fields that merge all available satellite observations using an optimal interpolation technique and are available at 0.25° × 0.25° spatial resolution. The inter-comparison exercise in the NIO ranges for a 15 year period, spanning the years 2005 to 2015. The satellite based DT-TCHP products from NOAA are found to have a good match with TCHP from temperature profiles measured using Argo floats with correlation higher than 0.5. It is further found that DT-TCHP from NOAA are slightly overestimated compared to TCHP from Argo profiles. This difference may be interpreted as satellite's inability to capture accurately the daily ocean subsurface variability which are quite prominent in the TCHP computed from autonomous Argo temperature and salinity profiles in the study region.