A Flow-dependent Targeted Observation Method

Youmin Tang\textsuperscript{1,2} and Yaling Wu\textsuperscript{1}
\textsuperscript{1}Second Institution of Oceanography, Ministry of Natural Resources
\textsuperscript{2}University of Northern British Columbia, Canada (ytang@unbc.ca)

In this study, we developed a flow-dependent ensemble-based targeted observation method, by minimizing the analysis error variance under the framework of Ensemble Kalman filter (EnKF) data assimilation system. This method estimates the background error statistics as a flow dependent function. The covariance localization is also introduced for computing efficiency and alleviating the spurious observations. As a test bed, an optimal observation array of sea level anomalies (SLA) is designed for its seasonal prediction over the tropical Indian Ocean (TIO) region. Furthermore, the observing system simulation experiments (OSSEs) is used to verify the resultant optimal observational array using our recently developed coupled data assimilation system. A comparison between this flow-dependent method and the traditional method is also given.