Geophysical Research Abstracts
Vol. 19, EGU2017-19137, 2017
EGU General Assembly 2017

Evaluation of the HF-Radar network system around Taiwan using normalized cumulative Lagrangian separation.

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The Lagrangian separation distance between the endpoints of simulated and observed drifter trajectories is often used to assess the performance of numerical particle trajectory models. However, the separation distance fails to indicate relative model performance in weak and strong current regions, such as over continental shelves and the adjacent deep ocean.
A skill score described in detail by (Lui et.al. 2011) was applied to estimate the cumulative Lagrangian separation distances normalized by the associated cumulative trajectory lengths. In contrast, the Lagrangian separation distance alone gives a misleading result. The proposed dimensionless skill score is particularly useful when the number of drifter trajectories is limited and neither a conventional Eulerian-based velocity nor a Lagrangian based probability density function may be estimated.
The skill score assesses The Taiwan Ocean Radar Observing System (TOROS) performance. TOROS consists of 17 SeaSonde type radars around the Taiwan Island. The currents off Taiwan are significantly influenced by the nearby Kuroshio current. The main stream of the Kuroshio flows along the east coast of Taiwan to the north throughout the year. Sometimes its branch current also bypasses the south end of Taiwan and goes north along the west coast of Taiwan. The Kuroshio is also prone to seasonal change in its speed of flow, current capacity, distribution width, and depth.
The evaluations of HF-Radar National Taiwanese network performance using Lagrangian drifter records demonstrated the high quality and robustness of TOROS HF-Radar data using a purely trajectory-based non-dimensional index.

Yonggang Liu and Robert H. Weisberg, “Evaluation of trajectory modeling in different dynamic regions using normalized cumulative Lagrangian separation”, Journal of Geophysical Research, Vol. 116, C09013, doi:10.1029/2010JC006837, 2011