
Coastal wind retrieval from the China-France Oceanography Satellite scatterometer

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Résumé

The scatterometer onboard China-France Oceanography Satellite (CFOSAT) uses rotating fan beams to measure sea surface radar backscatter values at different incidence and azimuth angles. The backscatter measurements of CFOSAT scatterometer (CSCAT) are with relatively high spatial resolution. Therefore, it presents unprecedented opportunities for retrieving offshore wind fields. This paper introduces the main procedures as well as the key techniques of the coastal wind retrieval for CSCAT. In particular, a box-window is used to aggregate the high-resolution backscatters (namely slices in the level 1B data) into a certain wind vector cell (WVC) before performing the wind inversion. The coastal winds derived from the advanced scatterometer (ASCAT) and the QuikSCAT scatterometer are then used to verify the results of CSCAT coastal wind retrieval. It shows that the CSCAT winds are of good quality over the sea surface with offshore distance larger than 40 km, but degrades rapidly in quality for WVCs with offshore distance below 40 km. Further analysis indicates that the degraded statistical scores are mainly caused by some outliers that may be contaminated by the sea ice. In general, the CSCAT offshore winds are in good agreement with both the model forecasts and the buoy winds.

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