Data assimilation of ocean surface waves using Sentinel-1 SAR during typhoon Malakas - DTU Orbit (02/08/2019)

Data assimilation of ocean surface waves using Sentinel-1 SAR during typhoon Malakas

In this study, a data assimilation system is constructed in a third generation ocean surface wave model, MASNUM-WAM, to improve wave simulations. The data assimilation system uses Ensemble Adjustment Kalman Filter (EAKF) method, which is based on dynamic sampling. Difference between 24 h-interval wave parameter fields during the period 7-day before and after assimilation time, is used to construct dynamic ensemble, which is an approximation to background error. Eight experiments are carried out during typhoon Malakas to investigate the impact of different assimilating wave parameters to the simulation errors of significant wave height (SWH). Wave spectrum observations from satellite Sentinel-1 SAR are used for data assimilation. SWH, peak wave period, mean wave direction and wave spectrum are adjusted simultaneously when an observation is available. Results show that the data assimilation system improves the simulation of SWH during typhoon Malakas.

General information
Publication status: Published
Organisations: Department of Wind Energy, Resource Assessment Modelling, State Oceanic Administration China
Contributors: Sun, M., Yang, Y., Yin, X., Du, J.
Number of pages: 8
Pages: 35-42
Publication date: 2018
Peer-reviewed: Yes

Publication information
Volume: 70
ISSN (Print): 0303-2434
Ratings:
BFI (2018): BFI-level 1
Scopus rating (2018): SJR 1.623 SNIP 2.209
Web of Science (2018): Indexed yes
Original language: English
Keywords: Wave assimilation, Sentinel-1 SAR, Typhoon
DOIs:
10.1016/j.jag.2018.04.004
Source: FindIt
Source-ID: 2434432651
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review