



Towards the Operational Ensemble-based Data Assimilation System for the Wave Field at the National Weather Service

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The National Centers for Environmental Prediction (NCEP) of the National Oceanic and Atmospheric Administration (NOAA) provides the operational wave forecast for the US National Weather Service (NWS). Given the continuous efforts to improve forecast, NCEP is developing an ensemble-based data assimilation system, based on the local ensemble transform Kalman filter (LETKF), the existing operational global wave ensemble system (GWES) and on satellite and in-situ observations.

While the LETKF was designed for atmospheric applications (Hunt et al 2007), and has been adapted for several ocean models (e.g. Penny 2016), this is the first time applied for oceanic waves assimilation. This new wave assimilation system provides a global estimation of the surface sea state and its approximate uncertainty. It achieves this by analyzing the 21-member ensemble of the significant wave height provided by GWES every 6h. Observations from four altimeters and all the available in-situ measurements are used in this analysis.

The analysis of the significant wave height is used for initializing the next forecasting cycle; the data assimilation system is currently being tested for operational use.