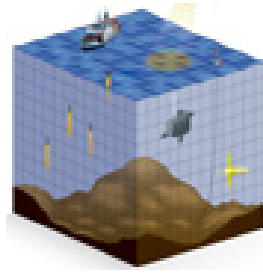


Joint ECMWF/OceanPredict workshop on Advances in Ocean Data Assimilation



Contribution ID: 21

Type: **Oral presentation**

Invited talk: Ensemble forecasting greatly expands the prediction horizon for internal “weather” of the ocean

Wednesday, 19 May 2021 10:00 (30 minutes)

Mesoscale eddies dominate energetics of the ocean, modify mass, heat and freshwater transport and primary production in the upper ocean. Eddy resolving ocean models (horizontal resolution finer than 10 km in mid-latitudes) show improved representation of mesoscale dynamics. However, mesoscale eddies, which are hard to constrain using available observations, are large contributors to the forecast error. As a consequence, the forecast skill horizon for ocean mesoscales in current operational models is shorter than 10 days. Here we show that this lack of predictive skill is due to high uncertainty in the initial location and forecast of mesoscale features that is not captured by the current generation of deterministic ocean modeling and assimilation systems. Using ensemble simulations, we account for this uncertainty, filter-out unconstrained scales, and, as a result, significantly extend the predictability of the ocean mesoscales (to between 20 and 40 days) than deterministic models. Results of this research suggest that leveraging advancements in ensemble analysis and forecasting should complement the current focus on high-resolution modeling of the ocean.

Which theme does your abstract refer to?

Development and assessment of data assimilation in forecasting applications (global and regional)

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Session Classification: Theme 8: Development and assessment of data assimilation in forecasting applications

Track Classification: Development and assessment of data assimilation in forecasting applications