

Air-Sea Coupling at the Ocean Mesoscale: Some Reflections on the Challenges for Coupled DA

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Abstract

Observations reveal that the ocean and atmosphere are significantly coupled at the ocean mesoscale, particularly in the region of ocean temperature fronts. Free-running coupled atmosphere-ocean simulations of the California Current system are able to reproduce the observed seasonal relationships between gradients in SST, wind stress curl, and wind stress divergence, and between SST and wind stress magnitude. However, attempts to initialize a coupled model using ocean data assimilation reveal the fragile nature of these coupled relationships, which are largely destroyed by the reinitialization process. The challenges that these experiments suggest for coupled data assimilation will be discussed.