Japan Geoscience Union Meeting 2014
(28 April - 02 May 2014 at Pacifico YOKOHAMA, Kanagawa, Japan)

AAS02-05 Room:314 Time:April 29 10:15-10:30

Optimization of nested ocean circulation model by four dimensional variational data assimilation system

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Optimization of a regional ocean circulation model by a data assimilation system is achieved by estimating optimal initial condition and external forcing terms which include boundary values. In a nested regional data assimilation system, extracting maximum information from optimized outer model through these control variables is crucial to obtain optimal performance of the nested regional data assimilation system and many schemes were proposed in the atmospheric and oceanic data assimilation studies. In this presentation, the optimization schemes of a nested atmosphere and ocean circulation model by four dimensional variation data assimilation system are summarized in a unified framework. Their performance will be analyzed using observability matrix of a variational data assimilation system constructed on regional ocean circulation model surrounding Japan islands.

Keywords: data assimilation, regional ocean circulation model