Geophysical Research Abstracts
Vol. 18, EGU2016-10031, 2016
EGU General Assembly 2016

Title: Persistance and propagation of eddies in a high-resolution data-assimilating model

Hans Ngodock, Elizabeth Douglass, and Matthew Carrier
Naval Research Laboratory, Stennis Space Center, United States (hans.ngodock@nrlssc.navy.mil)

High-resolution models can successfully resolve eddies and other mesoscale features. However, when data are assimilated, the persistence and propagation of coherent mesoscale structures is affected. Although eddy kinetic energy statistics are consistent with observations, assimilation is found to have adverse affects on eddy lifetimes and travel distances. The representation of eddies is examined in eddy-resolving models using two different methods of assimilation, 3D and 4D variational assimilation, which includes a time-component and as such should be more able to allow such structures to persist. The differences between eddy lifetime, travel distance, and size in the assimilative products is compared to eddies tracked in mapped altimetry, as well as to along-track altimetry. Analysis shows that while eddies form in equal numbers in the different frameworks, and are statistically comparable in size, eddies in the 4DVar product are more likely to maintain their structure and propagate for long distances than in the 3DVar product.