



The TOPAZ ocean and sea ice pilot reanalysis (2003 - 2008)

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Open ocean and sea ice reanalyses are expected for various applications, including boundary conditions for coastal models, ecosystem studies, design criteria for the offshore industry, climate studies. Reanalyses of the data-starved oceans are difficult to make both accurate and physically consistent simultaneously, in particular because of the non-linear ocean and sea ice dynamics and the evolution of the observation network over the last decades. This justifies the use of an advanced sequential data assimilation method, the EnKF, that makes the error covariance depend both on the system physics and on observations density.

The 4th version of the TOPAZ system thus consists of a 12 km HYCOM model implemented at NERSC and a dynamical data assimilation scheme (the Deterministic Ensemble Kalman Filter), running with 100 members and a bias estimation procedure.

The "Pilot" phase of the TOPAZ4 reanalysis covers the years 2003 - 2008 and is available through the OPeNDAP <http://topaz.nersc.no/thredds/> and is the Arctic component of the MyOcean public service.

The observations assimilated are along-track altimeter data, SST, ice concentrations, sea ice drift and in-situ temperature and salinity profiles from Argo buoys and the Nansen hydrographic database.

The presentation will cover the setup of the modeling and assimilation systems as well as assimilation diagnostics testifying the good health of the assimilation system. Some oceanographic validation will also be provided.