



Use of GOCE MDT and error information in NEMOVAR, a variational data assimilation scheme for NEMO

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NEMOVAR is a multivariate assimilation scheme which assimilates sea level anomaly (SLA), remotely sensed and in-situ sea surface temperature, profile temperature and salinity data, and sea ice concentration data. Assimilating the SLA data requires a MDT to be provided. Currently in the Met Office's operational ocean forecasting system, FOAM, we use the CNES-CLS09 MDT which is a combination of GRACE data, and a synthetic MDT based on dynamic heights and velocities from insitu observations. As GOCE data is accurate to higher resolutions than GRACE this provides the opportunity to use a purely GOCE based MDT while allowing a bias correction scheme running online in NEMOVAR to correct the smallest scales of MDT. The bias correction scheme is designed to focus the bias correction at shorter length scales less than 200km where the MDT errors are known to be larger.

Results are presented from the new Met Office NEMOVAR system running at 1/4 degree global resolution. Several experiments are performed testing different MDTs and bias correction schemes. We compare the bias corrected MDTs to alternative MDT products. The results are assessed by looking at the observation minus background errors. In addition we compare to surface drifters and by examination of transports estimated by the model along various standard sections.