

SST data assimilation in the UK Met Office's shelf sea models.

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The UK Met Office has two operational shelf seas models, the AMM7 model of the north west European shelf and the PGM4 model of the Persian gulf. In recent years we have begun to assimilate Sea Surface Temperature data into these models, and have witnessed a corresponding reduction in Temperature errors. Recently we have updated the data assimilation system used in the shelf sea models from an old analysis correction scheme to a new 3D-Var system that uses the NEMOVAR assimilation code. This poster presents the results from this upgrade

Our data assimilation system ingests observations from in-situ sources and the NOAA-AVHRR, METOP-AVHRR, TMI (PGM4 only) and SEVIRI satellite instruments; historically we have also used data from AMSR-E and AATSR. A 3DVar technique is used to calculate increments to the models surface temperature, which are then applied down to the base of the instantaneous mixed layer. Details of the method are given in this poster, with particular focus given to recent improvements in the data assimilation system. These improvements include the switch to 3DVar and also new error covariance specifications. In particular we present results from recent investigations into parameterising error covariances based upon the daily model state.

We present results showing the impact that our assimilation system has on the SST errors in hindcasts from both the PGM4 and AMM7 models. In both runs RMS and mean SST errors in one day forecasts are reduced. Impacts on other model parameters are also discussed.