The Met Office’s new analysis system for diurnal SST

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Abstract

Diurnal variations in skin Sea Surface Temperature (skin SST), which can be as large as several degrees, play an important role in determining the heat flux between the ocean and atmosphere. As such the Met Office has recently begun producing an analysis product of the diurnal cycle of SST (available through the MyOcean project). This product consists of three components: an underlying ‘foundation’ SST (based on the OSTIA analysis), a warm layer where solar heating is important, and a cool skin where cooling due to long wave radiation dominates.

A major development in the system is the use of a 4DVar data assimilation technique with multiple outer-loops to improve estimates of the warm layer. Observations assimilated come from the SEVIRI, GOES-W, MTSAT2, and NOAA-AVHRR infra-red satellite instruments. Through their assimilation, the observations act to update the applied heat and wind flux such that the diurnal cycle in the warm layer is improved.

In this poster the diurnal analysis system is described along with how it produces a skin SST product. Particular attention is paid to the data assimilation aspects and on the observation processing. Also shown are results obtained from a preliminary validation of the skin SST produced.