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## Variational bias correction of satellite oceanographic measurements incorporating observations of the bias..

We have developed a Variational Bias Correction scheme (VarBC) for estimating and correcting observation bias in satellite measured Sea Surface Temperature (SST), Sea Surface Height (SSH), and Sea Surface Salinity (SSS). In our methodology, VarBC has been implemented by updating our 3DVar data assimilation scheme so that it can estimate both the model state and observation biases simultaneously. A unique feature of our VarBC methodology is the use of ‘observations-of-bias’, which are the differences between biased and assumed unbiased observations (often called anchor observations). Observations-of-bias are used to provide additional constraints on the bias correction, allowing for improved estimates of the bias.

In this poster we outline the theory of our VarBC system, and present results from a number of experiments testing the method. In particular, we present results from toy experiments using the Lorenz 63 (L63) system, and a full blown ocean reanalyses produced by the Met Office’s FOAM ocean forecasting system. In both sets of experiments, our VarBC method is compared to a pure variational scheme with no observations-of-bias, and to an offline scheme that only used observations-of-bias.

The scheme is used operationally in the production of the Met Office’s daily ocean forecast to correct for biases in SST and SLA observations. We provide some details on how this is done and the impact it has had on the quality of our analysis.

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