Producing Regular Analyses Using the Bluelink Ocean Data Assimilation System: Information Content, Error Estimates and Scales

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The Ocean Model Analysis and Prediction System (OceanMAPS) developed within the Australian BLUElink project produces operational forecasts of the mesoscale ocean state and circulation. Within OceanMAPS, the BLUElink Ocean Data Assimilation System (BODAS) is used to assimilate Sea Surface Temperature (SST) satellite products, temperature and salinity profile data, as well as altimetry data from a variety of satellites. This presentation will focus on the choice, characterization and use of the real-time observations in BODAS, in particular of the L2P satellite-derived SST data. We will follow on to examine the impact of projecting surface observations onto the sub-surface ocean state. The effectiveness of vertical localization to impose a limit on the projection of SST into the subsurface is discussed in a univariate and multi-variate context. These results lead us to consider alternative choices for the Background Error Covariances (BECs) prescribed in the system using an ensemble, and how faithfully they represent its error-space. Focusing on the oceanic mesoscale, we will investigate how different ensemble configurations account for the error fields of the variables of interest.

Keywords: Data Assimilation; oceanic mesoscale; Background Error Covariances (BECs); multi-observation; multi-variate; Ensemble Optimal Interpolation; L2P satellite products.