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Treatment, Estimation, and Issues with Representation Error Modelling

Wednesday, 5 February 2020 14:30 (25 minutes)

Data assimilation schemes blend observational data, with limited coverage, with a short term forecast to produce an analysis, which is meant to be the best estimate of the atmospheric state. Appropriately specifying error statistics is necessary to obtain an optimal analysis. However, observations often measure a higher resolution state than coarse resolution model grids can describe. Hence, the observations may measure spatial or temporal scales or physical processes that are poorly resolved by the filtered version of reality represented by the model. This inconsistency, known as observation representation error, must be accounted for in data assimilation schemes. Further, representation error is a key, if not dominant, contributor to correlated observation errors which are often neglected.

This talk will provide an overview of current methods for estimating observation error and their ability to diagnose error of representation. Shortcomings of these methods will be addressed, including the implications of non-zero correlations between the background and observation error. Finally, we will discuss recent methods that aim to include flow dependence in the representation error model.

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