

SIAM Pseudo-Orbit Data Assimilation and the Roles of Uncertainty in Multi-Model Forecasting

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Abstract

Pseudo-orbit Data Assimilation (PDA) illustrates a new approach to forecasting with large imperfect models. The key advances are to allow long assimilation windows (unavailable to a filter), while providing information on model error as an output (rather than requiring it as an input as in traditional variational methods). PDA can also be used in forecast mode, to make true use of multimodel dynamics via cross pollination in time. This clarifies the meaning(s) of uncertainty and challenges to its quantification in real world forecasting.