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*“Uniform in time Error Estimates for Numerical Schemes of Downscaling Data Assimilation Algorithm Employing Coarse Scale Observations”*

In this talk I will recall a downscaling data assimilation algorithm for the Navier-Stokes and other related geophysical models. The algorithm is based on nudging the large spatial scales in the algorithm's solution toward the observed large spatial scales of the unknown reference solution. The algorithm's solution can be initialized arbitrary and shown to converge at an exponential rate toward the exact reference solution. This indicates that the dynamics of the algorithm is globally stable. Capitalizing on this fact I will also demonstrate uniform in time error estimates of numerical discretization of this algorithm, which makes the algorithm reliable upon implementation computationally. Furthermore, I will also present some recent results concerning a statistical version of this algorithm allowing for model and data errors.