



Synchronization and super modeling experiments with a complex climate model

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Super modeling refers to a novel multi-model ensemble approach. In this approach the models assimilate state information of the other models in the ensemble and adjust their state accordingly. These adjustments are trained on the basis of observations in order to improve the simulations of the connected ensemble. For this approach to work the models need to be able to synchronize on a common solution. In this study we connect an ensemble of complex atmosphere models that solve the primitive equations on the sphere and contain relatively simple parameterizations for radiation, convection, clouds and precipitation. The ensemble of atmosphere models are coupled to a single ocean model that simulates the 3D ocean circulation. The ocean receives weighted mean surface fluxes of the coupled atmospheres. We study the ability of the connected ensemble to synchronize on a common solution, study the properties of this solution and its dependence on the connections.