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A global non-hydrostatic weather forecast model in KIAPS using the spectral element on a cubed sphere

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This presentation covers an introduction to the current state of a non-hydrostatic global atmospheric model to be named the KIAPS integrated model (KIM). Efforts to resolve an excessive dissipation in small scales in KIM will be discussed. Also, simulated results for several idealized benchmark tests and full-physics forecasts will be shown.
The dynamical core of the model is using the Euler equation set in a flux form based on the terrain following mass-based vertical coordinate, which is discretized by horizontal spectral element method (SEM) and the vertical finite difference method (FDM) for the spatial discretization and a time-split third-order Runge-Kutta (RK3) for the time discretization. Owing to the virtue of SEM and the explicit time integrator, KIM can achieve easily a high level of scalability. The physics package coupled with the dynamical core is a standard physics package from existing models such as the GRIMs, WRF, and GFS.