Contribution ID: **5** Type: **not specified**

Global Nonhydrostatic Atmospheric Modeling using Spherical Centroidal Voronoi Meshes

Wednesday, 16 September 2020 15:45 (45 minutes)

During the last two decades global nonydrostatic atmospheric models have been developed that use alternative spherical tilings to latitude-longitude grids. The Model for Prediction Across Scales (MPAS) is one such model, and it uses a spherical centroidal Voronoi tessellation (SCVT) for its horizontal mesh. A C-grid staggering of the prognostic variables is used within MPAS so as to maximize the resolution capabilities in the nonhydrostatic solver for the strongly divergent motions characterizing convection. We will discuss the advances that were necessary to enable the C-grid staggering on the SCVT within a finite-volume formulation for the atmospheric solver, and we will also consider some of the advantages and disadvantages of employing this approach in a modeling system. Forecast examples and idealized test case results illustrate the effectiveness of the model for convection-permitting resolution. We will conclude with some thoughts on what constitute good test cases for global nonhydrostatic atmospheric solvers.

Presenter: SKAMAROCK, Bill (NCAR)

Session Classification: Moderator: Michail Diamantakis (ECMWF)