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Some Interesting Results with Element-based Galerkin Nonhydrostatic Atmospheric Models

Thursday, 17 September 2020 15:15 (45 minutes)

In this talk, I will present some recent results that we have obtained with our element-based Galerkin non-hydrostatic atmospheric models. The NUMA model is the computational engine inside of the U.S. Navy's NEPTUNE weather forecast system while CLIMA-atmos is the dynamical core inside of the ClimateMachine climate modeling system. Since the last time I presented at ECMWF (back in 2018) we have made progress in both of these systems in terms of: (1) numerics, (2) process studies, and (3) computational performance. I will discuss each of these 3 topics which includes advances in our time integration strategies, analysis of the effective resolution of local high-order methods (including numerous turbulence closures) and high-altitude simulations, and scaling on GPU computers.

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Session Classification: Moderator: Andreas Müller (ECMWF)