6.4   The impacts of convection-permitting resolution on tropical convection and extended global prediction skill in MPAS.

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This talk presents the preliminary results from novel 28-day global simulations using the Model for Prediction Across Scales (MPAS) at 3-km resolution. The experiments are motivated by the previously studied benefits of convection-permitting resolution for simulated tropical precipitation, propagating convection, the Madden-Julian Oscillation, and forecast biases. Inherent challenges to global high-resolution modeling are discussed, including the cost of computational resources, the availability of mass storage for model output, the processing and analysis of high resolution model output on an unstructured grid, and the unique complications of using a new variable-resolution model like MPAS. The 3-km simulations are compared to similar 15-km MPAS simulations, a Climate Forecast System version 2 (CFSv2) reforecasts, and global analyses to determine the impacts of convection-permitting resolution on the distribution and propagation of tropical convection, the structure and development of the MJO, extratropical teleconnection patterns, and global forecast skill.