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A Variable Resolution Global Ocean Model MARK PETERSEN, Los Alamos National Laboratory, LANL COSIM MPAS-OCEAN DEVELOPMENT TEAM — The Model for Prediction Across Scales (MPAS) is a new software framework for the rapid development of climate model components on unstructured grids. The grids may be quasi-uniform or variable density, on a sphere or rectangular domain, and may use quadrilateral cells, triangle cells, or Voronoi tessellations. MPAS variable density grids are particularly well suited to regional climate simulations. MPAS is developed cooperatively by NCAR MMM and the LANL COSIM team. The MPAS-Ocean component now includes most of the features of a full ocean-climate model. High resolution global simulations with full bathymetry have been run for hundreds of simulated years and produce realistic currents and eddying behavior. MPAS-Ocean may be run with z-level or isopycnal vertical coordinates, and includes high-order horizontal and vertical advection and implicit vertical mixing. Current efforts focus on split barotropic/baroclinic timestepping and improving performance.

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