New climate models: The ICON hydrostatic atmospheric model on triangular grids

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The Max Planck Institute for Meteorology and the German Weather Service have been collaborating closely through the ICON project to develop new coupled atmosphere-ocean general circulation models for climate research and numerical weather forecasting (see the poster by Giorgetta et al.). As a component of the ICON modeling system an atmospheric model has been developed that solves the primitive equations on unstructured triangular grids. This poster will provide an overview of the new hydrostatic atmospheric model by introducing the numerical methods employed in the dynamical core, the flux-form semi-Lagrangian algorithm used for large-scale tracer transport, and the parameterization schemes of sub-grid diabatic processes. Results from a series of evaluation experiments will be presented, ranging from idealized dynamical core tests to aqua-planet experiments and real-world climate simulations. These results shed light on the inherent properties of the computational mesh and numerical schemes, as well as their impact on the performance of the model in climate simulations.