

A new dynamical core for atmosphere and ocean modeling.

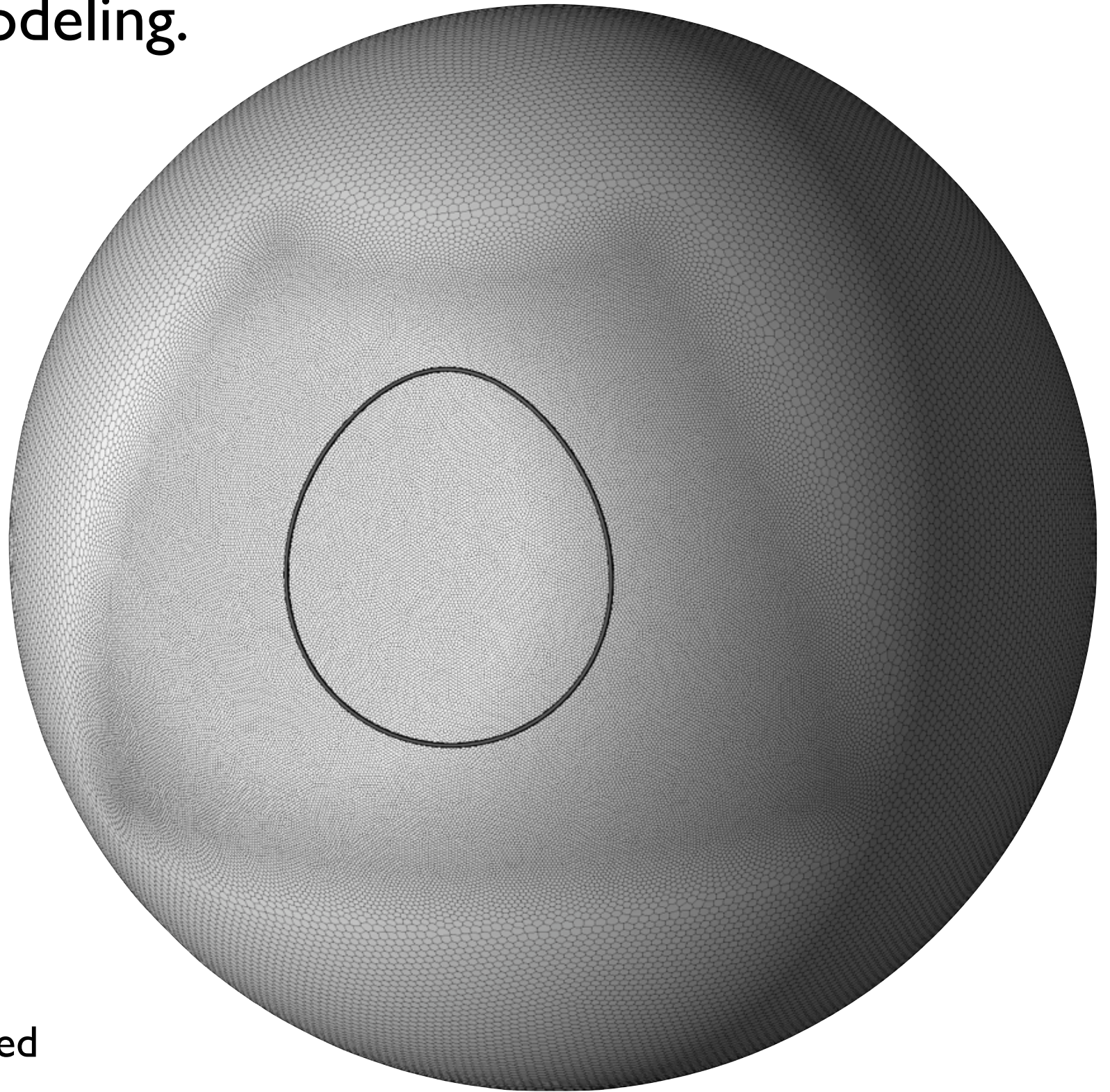
C-grid staggering

Works for a wide range of meshes
stretched POP grid
conformally-mapped cubed-sphere
Delaunay triangulations
Voronoi diagrams (our interest)

Conserves total energy to within time truncation error. Conserves PV to within round-off error. Dissipates potential enstrophy while conserving total energy.

Maintains these properties even when using variable resolution meshes.

Design based on unstructured meshes with block decomposition for distributed memory systems. Currently testing on ~1000 processors.



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Will be ported into the CCSM as an atmosphere core during FY10.

Will be tested as a global ocean solver during FY10.

Papers available at <http://public.lanl.gov/ringler/ringler.html> under publications.

Allows us to explore the idea of conducting global simulations where, say, the North Atlantic is eddy-permitting while the rest of the domain is not eddy-permitting.

Joint LANL/NCAR/LLNL/Exeter/FSU effort.

