Adaptive particle methods for barotropic vorticity dynamics on a rotating sphere[1] PETER BOSLER, University of Michigan, LEI WANG, University of Wisconsin - Milwaukee, CHRISTIANE JABLONOWSKI, ROBERT KRASNY, University of Michigan — We present an adaptive particle method for barotropic vorticity dynamics on a rotating sphere. The flow map is represented by Lagrangian particles, organized into either triangular icosahedral panels or cubed-sphere quadrilateral panels. The particles carry vorticity and the panels are used to obtain quadrature weights in the point vortex approximation of the Biot-Savart integral. Adaptive panel refinement and remeshing are applied to maintain accuracy and reduce computational cost. Examples include Rossby-Haurwitz waves, Gaussian vortices, and perturbed jet dynamics.

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