

Lagrangian particle methods for global atmospheric flow

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We present a particle method for global atmospheric flow based on the Lagrangian formulation of the fluid equations. Poisson equations for the stream function and velocity potential are solved using integral convolution with Green's function, which is approximated numerically with singular point vortices and point sources. An adaptive remeshing procedure is applied at regular time intervals to maintain spatial accuracy. We present solutions of the barotropic vorticity equation and the shallow water equations.