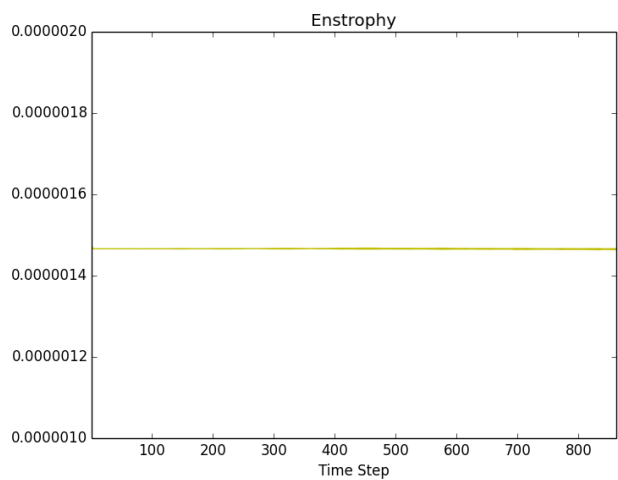
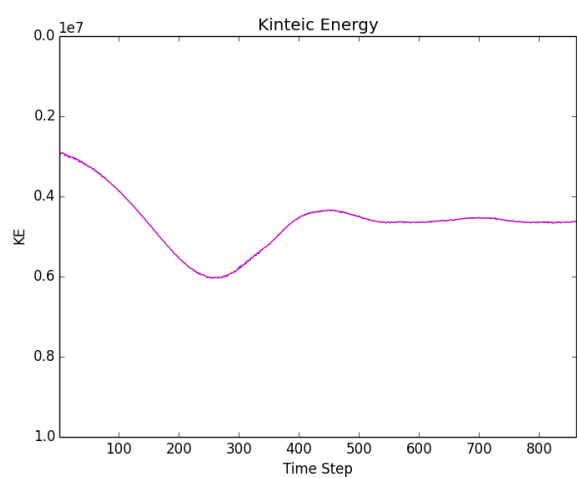
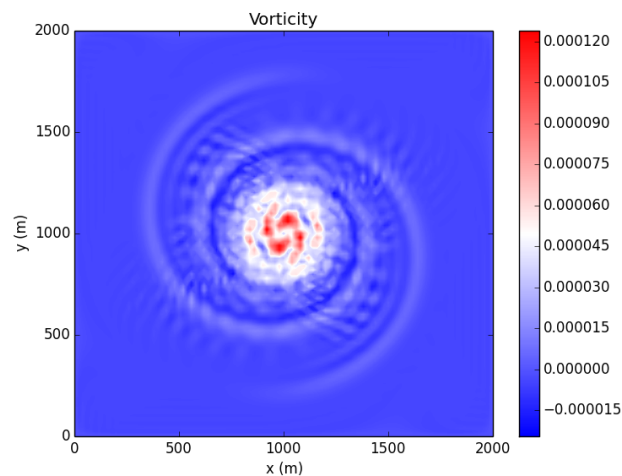
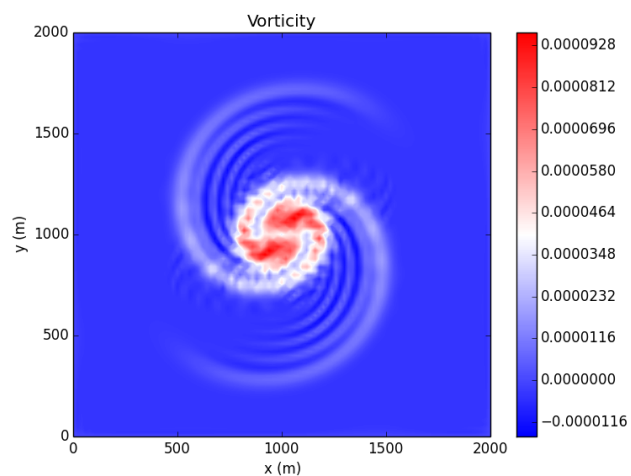
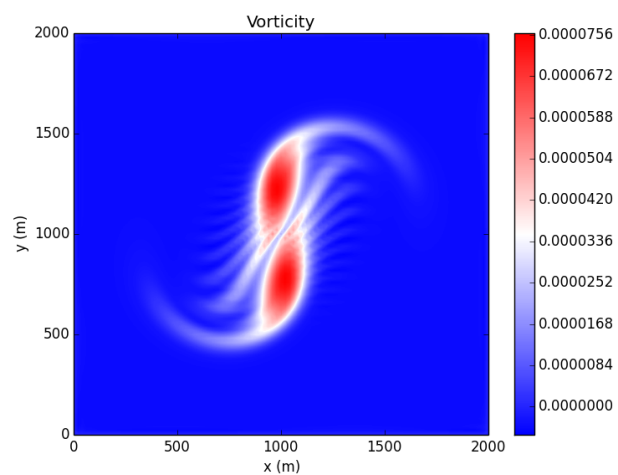
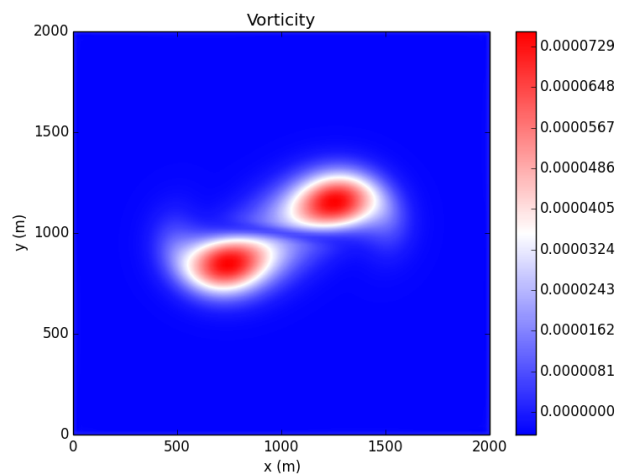


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The implementation for solution of the QG barotropic vorticity equation begins with setting the initial vorticity and setting all the grids that would be used throughout the code. Psi is found with the poisson solver from task 5. Vorticity is updated in time using only one Jacobian and an EF scheme, which is then used to find the new psi values. Then begins the main loop, which begins with solving the three Jacobians and using the average of the three and a leapfrog scheme to solve for the next vorticity. The new psi values are found along with the velocity and enstrophy. The main loop ends with the values being updated for the next loop. Boundary conditions were applied by letting the walls of psi and vorticity equal zero at all times. Noise was dampened using artificial diffusion, with a value $K=.01$, when solving for vorticity. $\Delta t = 1000$ was chosen based off values from modeling task 4, which were known to be stable under diffusivity and gave a stable courant number, but was called up to reduce number of time steps. This led to a $\Delta x/y = 5000$