

1145-86-2644

Chung-Nan Tzou* (ctzou@wisc.edu), 402 N Eau Claire Ave, Apt 115, Madison, WI 53705, and
Samuel Stechmenn. *Numerical Methods for Potential Vorticity Inversion with Phase Changes.*

The precipitating quasigeostrophic (PQG) equations have been recently derived as an asymptotic limit of midlatitude atmospheric dynamics, with the effects of clouds and phase changes of water included. One key part of the PQG equations is a nonlinear elliptic partial differential equation (PDE) with interface jumps, where the interface is the edge of a cloud, and its location is actually unknown and is discovered as part of the solution process. This interface location nonlinearity makes the discontinuous PDE even more challenging. Here we present an iterative numerical method to solve the equation and discover the corresponding interface location to complete the PV inversion that leads to obtaining all other variables. (Received September 25, 2018)