1092-35-237   **Mimi Dai*** (`mimi.dai02@gmail.com`) and **Maria E Schonbek**. *Stability of Solutions to the Dissipative Quasi-Geostrophic Equation.*

We consider the 2D steady-state Quasi-Geostrophic equation in the whole space R2 driven by a forcing function f. The class of source functions f under consideration yield the existence of at least one solution with finite Dirichlet integral ($\|\nabla\Theta\|_{L^2} < \infty$). Under the additional assumptions that f is absent of low modes and the ratio of f to viscosity is sufficiently small in a natural norm we construct solutions which have finite energy (finite L^2 norm). These solutions are unique among all solutions with finite energy and finite Dirichlet integral. The constructed solutions are also shown to be stable in the following sense: If Θ is such a solution then any viscous, incompressible flow in the whole space, driven by f and starting with finite energy, will return to Θ. (Received August 10, 2013)