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Jiahong Wu* (jiahong@math.okstate.edu), Department of Mathematics, Oklahoma State University, Stillwater, OK 74078. *The 2D surface quasi-geostrophic equation.*

This talk focuses on the global existence and uniqueness of solutions to the 2D dissipative surface quasi-geostrophic (QG) equation. We first summarize some of the recent progress made by Kiselev, Nazarov and Volberg and by Caffarelli and Vasseur for the critical case. We then detail the major results of two recent manuscripts by Constantin and Wu on the supercritical case. In particular, the Hölder continuity of weak solutions and the regularity of Hölder continuous solutions will be described. If time permits, we will also show some recent numerical results on the inviscid QG equation from a joint work with Constantin, Lai and Tseng. (Received August 19, 2007)