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Nam Q. Le* (nqle@indiana.edu), Department of Mathematics, Indiana University,
Bloomington, IN 47405. *Hölder regularity of the 2D dual semigeostrophic equations.*

The system of 2D dual semigeostrophic equations is a fully nonlinear version of the 2D incompressible Euler equations in vorticity-stream formulation where the Monge-Ampère operator replaces the Laplace operator. It arises in a meteorology model used to describe large scale atmospheric flows. In this talk, we discuss the Hölder regularity of time derivative of solutions to the 2D dual semigeostrophic equations when the initial potential density is bounded away from zero and infinity. Our main tool is an interior Hölder estimate in 2D for an inhomogeneous linearized Monge-Ampère equation when the source term is the divergence of a bounded vector field but not of high integrability. (Received July 27, 2018)