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Lizheng Tao* (1tao@math.okstate.edu), 401 MSCS O.S.U., stillwater, OK 74078. *Two Variations of the Boussinesq Equations.*

This talk will focus on the global regularity problem concerning some generalized versions of the Boussinesq system. The first generalization is an active scalar type with a logarithmically supercritical Fourier multiplier operator. The second one includes a more generalized supercritical dissipation in the velocity equation. The regularity is achieved by introducing a variation of the Besov space norm. We will show the conservation, which is global in time, of the L^q norm of both the vorticity and θ . The uniqueness of the solutions to these system is given at the end section. This is a joint work with Durga K.C., Dipendra Regmi and Jiahong Wu. (Received August 29, 2012)