We establish the global existence and uniqueness of solutions to the initial-value problem of a system of equations generalizing the two-dimensional Boussinesq equations when the velocity is “double logarithmically” more singular than the one given by the Biot-Savart law. This global regularity result go beyond the critical case. This is the joint work with D. Regmi, L. Tao and J. Wu. (Received September 15, 2013)