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**Roger M Temam\***, Indiana University, Mathematics Department, Rawles Hall, 831 E 3rd Street, Bloomington, IN 47405, and **Michele Coti Zelati**. *Change of phase for the humid atmosphere.*

In this lecture we will recall the atmospheric equations of water vapor with saturation. In their simplest form, these equations form a nonlinear system of partial differential equations with discontinuities. We will address the issues of the definition of the solutions, and some questions on the existence, uniqueness and regularity of these solutions. (Received September 10, 2013)