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Chongsheng Cao, Jinkai Li and Edriss S Titi* (titi@math.tamu.edu), Department of Mathematics, Texas A&M University, 3368 TAMU, College Station, TX 77843. *Recent advances concerning the primitive equations of oceanic and atmospheric dynamics.*

In this talk we will survey some of the recent advances concerning the global regularity of the primitive equations of oceanic and atmospheric dynamics. In particular, we will discuss the case of anisotropic viscosity and heat diffusion. Moreover, we will show that in the absence of viscosity the solutions develop a finite time singularity whenever they exist. (Received February 23, 2015)