1092-35-325 **Ning Ju*** (ning.ju@okstate.edu), 401 Mathematical Sciences, Oklahoma State University, Stillwater, OK 74078. *Long-time dynamics of large scale oceanic and atmospheric flow modeled by 3D Primitive Equations.*

The system of Primitive Equations (PEs) for 3D viscous incompressible fluid flow is one of the most fundamental mathematical models for large scale dynamics of oceanic and atmospheric flows in Geophysical Fluid Dynamics.

In the early 1990's, Lions, Temam and Wang formulated the mathematical framework of the 3D PEs for viscous fluid flows in the atmosphere and the ocean . They defined the notions of weak and strong solutions and proved existence of weak solutions. Existence of strong solutions *local in time* and their uniqueness were later obtained by several researchers. Existence of strong solutions *global in time* was recently proved independently by Cao and Titi and by Kobelkov. Similar global regularity with some different boundary conditions were later proved by Kukavica and Ziane. The existence of the global attractor for the strong solutions of 3D viscous PEs was proved by Ju.

In this talk, some very recent new progress on the long time dynamics of the solutions of the 3D viscous PEs will be reported and discussed. (Received August 13, 2013)