1142-76-116   **Animikh Biswas*** (`abiswas@umbc.edu`), **Ciprian Foias**, **Cecilia F Mondaini** and **Edriss S Titi**. *Determining Quantities for Statistical Solutions of the Navier-Stokes Equations.* Preliminary report.

In turbulent flows, physical properties are universally recognized as randomly varying and characterized by some suitable probability distribution functions. Theoretical considerations are often couched in terms of ensemble averages with respect to some probability distribution on the phase space.The evolution of these probability distributions are determined by the underlying governing equation, namely the Navier-Stokes equations. On the other hand, measurements of various aspects of turbulent flows are actually measurements of time-averaged quantities. The notion of statistical solutions, first introduced in a seminal work by Foias, provide the requisite rigorous mathematical framework connecting these two notions. In this joint work with Foias, Mondaini and Titi, we explore various notions of determining quantities for statistical solutions, which in turn is related to finite degrees of freedom for turbulent flows. One of our main tool is a recently introduced data assimilation algorithm by Azouni, Olson and Titi, applicable to a wide class of dissipative system. (Received August 31, 2018)