

1119-35-238

**Jared P Whitehead\*** ([whitehead@mathematics.byu.edu](mailto:whitehead@mathematics.byu.edu)). *Long time dynamics of a simplified Boussinesq model.*

Although weather forecasts have significantly improved in the last 65 years, it is a certainty that the accurate long-time forecast of time-specific events is impossible for such a chaotic system. Instead of predicting the exact trajectory of the earth's climate, it is believed that certain statistical quantities can be reliably estimated via modeling and numerical simulation. Exactly what these quantities are, and how the relevant statistics are to be collected, is not immediately clear.

As a first step toward understanding these issues, we consider the long-time behavior of two distinct versions of a two-dimensional Boussinesq model that incorporate the buoyancy effects of a stably stratified background density profile. In this idealistic setting we find regions of phase space in which the attractor of the system(s) must lie, using two different approaches that illustrate the effects of the stable stratification relative to the 2D Navier-Stokes equations (where the stratification is absent). (Received February 16, 2016)