1107-86-456   **Hans P Engler**, engler@georgetown.edu, and **John Kerin***, jak247@georgetown.edu. *The Lorenz '96 Model with Spatial Inhomogeneities.* Preliminary report.

The Lorenz '96 model was introduced by Edward Lorenz in 1996 to study questions of predictability in weather forecasting. It consists of a system of ordinary differential equations that model nonlinear advection, dissipation, and external forcing. Its components can be thought of as describing simplified climate states in a circular array of homogeneous identical atmospheric boxes at different longitudes. The model has received much attention as a test case for data assimilation techniques.

For moderate forcing, solutions show spatial oscillations that move "westward" at a constant speed, and for larger forcing, motions become chaotic, while a westward moving wave pattern is still present. This talk will review some basic mathematical properties (global existence and boundedness, bifurcation behavior) that help explain these phenomena. In the second part of the talk, modifications of the model will be examined that include spatially inhomogeneous advection. Such modifications change the regular wave pattern in unexpected ways, for example by damping it in regions of low advection and increasing its amplitude in the "lee" of such regions. These phenomena will be demonstrated numerically, and heuristic explanations will be given. (Received January 20, 2015)