**Robert Schunk / Utah State University**

**USU GAIM Data Assimilation Model: A Scientific Tool for the LWS Program**

The Global Assimilation of Ionospheric Measurements (GAIM) model is a physics-based data assimilation model of the ionized medium surrounding the Earth. It provides specifications and forecasts on a spatial grid that can be global, regional, or local. GAIM uses a physics-based ionosphere-plasmasphere-polar wind model and a Kalman filter as a basis for assimilating a diverse set of real-time (or archived) measurements, and it is capable of assimilating in situ and remote sensing satellite data as well as ground-based data. The resulting specifications and forecasts are in the form of 3-dimensional electron density distributions from 90 km to 30,000 km. In addition, GAIM provides global distributions for the self-consistent ionospheric drivers (neutral winds, electric fields, and particle precipitation patterns), and in its specification mode, it provides quantitative estimates for the accuracy of the reconstructed plasma densities. We propose to install the GAIM model on the CCMC computers so that the GAIM results will be available to the LWS community for scientific studies. We also propose to assimilate additional data sources and initiate a validation program.