Bill Scheftic – Atmo 558
Assignment 1 – HIRLAM summary

The High Resolution Limited Area Model (HIRLAM) is a synoptic and mesoscale modelling project between the meteorological services in Denmark, Finland, Iceland, Ireland, Netherlands, Norway, Spain and Sweden. Their goal is to provide short time-scale assimilation and modelling of mesoscale weather patterns, scales which are not well represented in the ECMWF. The HIRLAM-5 operational model can be run with 3 and 4 dimensional data assimilation, in either a spectral-method based model or a grid-point model. This current model is a hydrostatic model, however the next version will implement a non-hydrostatic version of the model. The model uses a hybrid vertical coordinate system (didn't find the specification [i.e. sigma-isentropic, sigma-pressure]???) and an Arkawa C-grid horizontal discretization system on a rotated lat-lon grid. The horizontal and vertical resolution varies depending on use as well nesting of domains of various resolution with resolutions as low as a couple of kilometers. Some of the parameterization schemes include the STRACO scheme for large-scale convection, the Kain-Fritsch convection scheme, and the Rasch-Kristjansson scheme for stratiform regime. Also interesting to note this model (version 5) uses a 4 order turbulent diffusion scheme, and there next model version proposes a 6th order scheme. Other physical parameterizations attempt to account for turbulent kinetic energy, mass-flux through condensation, radiation, and gravity wave drag.