Geophysical Research Abstracts
Vol. 12, EGU2010-4346-1, 2010
EGU General Assembly 2010

Evaluation of humidity, cloud and precipitation predicted by fourteen MAP D-PHASE mesocale models

Suraj Polade and Felix Ament
Meteorological Institute, University of Hamburg, Hamburg, Germany (suraj.polade@zmaw.de)

Precipitation is the final component of the atmospheric part of hydrological cycle. Consequently, all model errors in this complex process chain are accumulated in quantitative precipitation forecasts. Furthermore, many parts of forecasting system can cause errors: poor model formulations, inaccurate initial or boundary data, limited grid resolution etc. We will demonstrate how a multivariate verification of fourteen different mesoscale forecasting systems can be used to disentangle this multitude of effects and to identify specific model deficits.

The models forecasts were collected in summer 2007 during the forecast demonstration experiment MAP D-PHASE in the Alpine region and comprise both results from convection permitting high-resolution models as well as systems with parameterized deep convection. The observational basis to evaluate these models is obtained from the remote-sensing observations gathered during general observation period (GOP) of the German research program on quantitative precipitation forecasts. Analyses of integrated water vapour (IWV) content, cloud cover and precipitation rate are performed for the summer 2007 over the southern Germany. By analyzing which type of models show similar error structures, it is possible to decide whether the resolution, the model formulation or the initial conditions have a dominant impact on the model error. Particular attention is paid to the representation of the diurnal cycle in all considered quantities. This reveals the great impact of introducing a dry bias by the assimilation of day time radiosondes: There is a significant loss of IWV, a reduction in low and high cloud cover, also sudden decrease of precipitation at 1200 UTC. Finally, we will discuss the added value of using high resolution convection permitting models and of implementing a rapid update cycle of model initialization.