Geophysical Research Abstracts, Vol. 8, 07868, 2006
SRef-ID: 1607-7962/gra/EGU06-A-07868

A new module for the tracking of radar-derived precipitation with model-derived winds

T. Winterrath (1) and W. Rosenow (2)

(1) German Weather Service, Offenbach a. M., Germany, (2) German Weather Service, Potsdam, Germany (Tanja.Winterrath@dwd.de / Phone: +49-69-8062-4960)

The accurate prediction of precipitation is still a major task meteorologists are facing today. Forecasting modules range from extrapolation techniques to complex numerical weather prediction (NWP) systems making use of a variety of available observations. Whereas extrapolation techniques predict the trajectory of observed precipitation, NWP also forecast the onset and decay of precipitation. While the first are applicable to rather short lead times of approximately up to three hours with decreasing accuracy, the latter are more suitable for lead times larger than a few hours. Idealistically, the forecasting system combines all available methods and observational data within their most suitable lead time intervals, having in mind the need for fast processing, especially in the nowcasting regime. A new approach for the nowcasting of precipitation is developed at the German Weather Service to combine extrapolation techniques and NWP for a lead time range of several hours. The composite precipitation field is derived from the precipitation scans which are performed every five minutes at the 16 German radar stations. The data are corrected from clutter, etc., and quantified using quantification factors derived from the latest available gauge-adjustment cycle. The tracking of this radar-derived precipitation field is performed using the temporally and spatially resolved horizontal wind fields from the LokalModell-Europa (LME). An area-preserving displacement of the precipitation fields is realized by eliminating the wind field divergence and by omitting the dynamical evolution of the precipitation fields. The optimal wind field is derived from online comparison of model wind data from different pressure levels with the linear displacement vectors calculated via pattern recognition from previous radar measurements. Here, an introduction to this newly developed method is given and examples of the module's performance are presented. Results are validated against gauge-adjusted radar precipitation measurements.