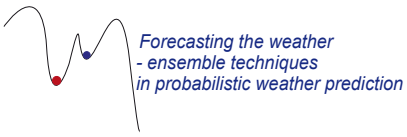
EMS Annual Meeting Abstracts
Vol. 8, EMS2011-299, 2011
11th EMS / 10th ECAM



Comparative verification of different nowcasting systems to support optimization of severe weather warnings

K. Wapler, S. Trepte, M. Goeber, and P. James
Deutscher Wetterdienst, Germany (kathrin.wapler@dwd.de)

Severe weather associated with deep convection pose a significant threat to life, property and economy. Fatalities, injuries and damages might be caused by lightning, gusts, hail, heavy precipitation or tornadoes. Therefore the provision of accurate and timely nowcast information, i.e. warnings provided by the national meteorological services, is essential for the general public as well as special users like emergency services and aviation.
Several algorithms exist which detect and nowcasting deep convection. Most of them are based on either radar reflectivity measurements, like KONRAD (CONvektion evolution in RADar products, Lang et al. 2003), CellMOS (Cell Model Output Statistics, Hoffmann 2008) and Rad-TRAM (Radar TRAcking and Monitoring, Kober and Tafferner 2009) or on satellite measurements like RDT (rapid developing thunderstorm, Morel et al. 2002) and Cb-TRAM (Cumulonimbus TRAcking and Monitoring, Zinner et al., 2008).
Due to their small horizontal extent, severe weather phenomena resulting from deep convection are rarely entirely and uniquely captured by current observation systems which hamper verification efforts. However, verification is needed to assess the quality of the algorithms, to determine their strengths and weaknesses and consequently to lead to improvements.
The use of consistent verification methods is crucial to compare the different systems. Of particular interest is the question how these algorithms can optimally be used to issue warnings of thunderstorms as well as accompanying specific phenomena like gusts or hail.
It is shown that the combination of different algorithms improve the quality of the nowcast. The thorough comparative verification enables the optimal use of the nowcasting systems, helps to improve the individual algorithms and supports the development of the most successful combination of the existing algorithms which is a basis for the provision of accurate warning information.