



Contributions of the mesoscale model COSMO-2 to the forecast demonstration experiment MAP D-PHASE

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The aim of the forecast demonstration project (FDP) MAP D-PHASE is to demonstrate the performance of today's models to forecast heavy precipitation events and floods in the Alpine region. During the demonstration phase ranging from June until November 2007, an end-to-end forecasting system will be established, which consists of numerous atmospheric models, partly coupled with hydrological models and finally a warning platform issuing alerts to end-users like e.g. forecasters. As one contribution of the Swiss Weather Service MeteoSwiss, the new high resolution, deep convection resolving version of the COSMO model (formerly known as LM) with a grid spacing of 2.2 km (COSMO-2) will be operated during DOP. This model version is still under development and is planned to become operational in 2008. However, model formulations of COSMO-2 are almost identical to those of the standard COMSO model with a resolution of 7 km. Exceptions are improved numerical schemes comprising more positive definite advection, enhanced microphysics by considering graupel and replacing the convection parameterization by a simple, shallow convection scheme.

After giving a short overview of the D-PHASE concept, we will present hindcasts for precipitation events in the Alpine region, including e.g. MAP 1999 cases and the flooding event in August 2005, in order to evaluate the forecast quality of COSMO-2. Traditional coarse scale verification against gridded rain gauges measurements reveals that both the standard 7 km version of COSMO and the high resolution version COSMO-2 yield quite similar forecasts, which agree remarkably well to observations. However, a fine scale verification based on radar data using multi-scale fuzzy methods allows to investigate the characteristics of COSMO-2 at small scales.