



High resolution simulations during extreme precipitation events in the upper Danube catchment

J.W. Schipper, M. Kunz

Institut für Meteorologie und Klimaforschung, Universität / Forschungszentrum Karlsruhe

Detailed knowledge about the spatially and temporally distribution of precipitation is necessary for effective flood management. In this framework, the European Union has set up an integrated project called PREVIEW (PREvention, Information, and Early Warning). One of the goals is improving the forecasts of flood events through a better identification of precipitation fields. Additionally, precautions are taken in close cooperation with hydrologists and end-users.

The goal is the quantitative determination of precipitation during extreme precipitation events. For this purpose, various high resolution simulations are carried out using an adapted version of the COSMO-DE model of the German Weather Service (DWD). The area of interest of this study is the upper Danube catchment. The Alpine ridge is located in the southern part of the area. During many weather situations, orographically induced precipitation enhances the chance for an extreme weather situation. Large amounts of precipitation often result in floods, which mean a potential danger in a densely populated area like the Alpine foreland.

By means of the flood-events in 2002, 2005, and 2007, the complexity as well as the fine structured precipitation distribution is shown. Due to a so-called Vb weather regime considerable precipitation amount were observed in parts of the Danube catchment. Especially, the Iller catchment was affected by floods.

First results show an improved spatial precipitation distribution in all three years. Local upslope precipitation structures in the Alpine foreland are less visible at lower resolution (7 and 2.8 km) than at high resolution (1 km). Extensive comparisons between a variety of meteorological variables and between resolutions show the circumstances

resulting into different precipitation distributions.