On the performance of ALADIN during the August 2002 floods

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Introduction

The August 2002 flooding events have caused widespread damage in Central Europe, in particular in parts of the Czech Republic, Germany, and Austria. This short report summarizes the performance of ALADIN (LACE and VIENNA) precipitation forecasts in the worst hit areas in Austria. To put the forecast skill in proper context, comparisons with ECMWF forecasts are shown.

Areal precipitation forecasts

Operationally, ZAMG produces areal precipitation forecasts for the catchment-type regions shown in Figure 1. The models used are ECMWF, ALADIN-LACE (denoted by ALA00 and ALA12), ALADIN-VIENNA (denoted by AVI00 and AVI12), and a linear statistical combination of ECMWF and ALADIN-VIENNA (COM). Raingauge observations from ZAMG's network of semi-automatic stations (TAWES) are used for verification. All precipitation values are interpolated to the same grid and averaged over the respective areas. Verification results are shown for area 9, which experienced unprecedented amounts of rainfall in the event.

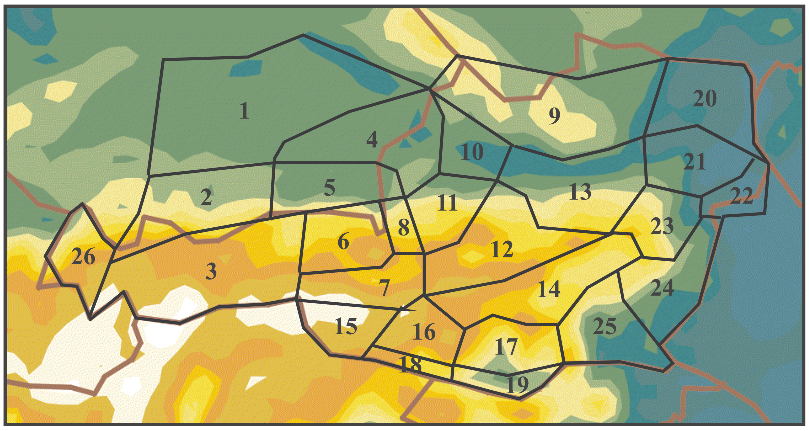

Figure 1: Catchment-type regions for which areal precipitation forecasts are issued operationally. The colour field shows the ALADIN-VIENNA model topography.

Verification results

For the first event (6-8 August 2002) the 12 UTC run of ALADIN-VIENNA correctly predicted the 6-hourly peak precipitation rate 36 hours ahead (Figure 2). No strong signal was present in the corresponding ALADIN-LACE and ECMWF forecasts. The large difference between the two ALADIN models is unusual, and would be worth further investigation. On 6 August ECMWF still gives a rather weak signal, whereas both ALADIN models now indicate a more significant event. Note that none of the models predicted the second observed peak. This unanticipated peak posed a severe problem and contributed to the unprecedented amount of flooding in the area.