



Foehn diagnosis and model comparison

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The «Alpine Research Group Foehn Rhine Valley - Lake Constance (AGF)» (Arbeitsgemeinschaft Föhnforschung Rheintal-Bodensee) is analysing meteorological parameters and investigating foehn phenomena in the Rhine valley since 1971. Their main goal is to find plausible criteria for reliable foehn forecasts and to deepen our understanding of foehn in the target area.

The presentation will focus on two main topics: (a) application of a fully automated foehn diagnosis tool; and (b) comparison of model data (COSMO-2, COSMO-7, VERA, INCA) with measurements in our target area.

With respect to (a), the foehn diagnosis tool is applied for different meteorological stations of the Swiss meteorological network (SMN). Although it always uses the same six criteria (relative humidity, wind sector, wind force, gale maximum, difference of potential temperature to SMN site Gütsch and wind sector Gütsch), empirical thresholds have to be determined for each site individually. In doing so, foehn can be objectively detected and automatically identified as such in the most cases.

In the second part, referring to (b), the foehn case of the 8th December 2006 is considered. It brought high wind velocities as well as a unusually far-reaching foehn, which was observed even north of Lake Constance. The synoptic- to local-scale dynamics of this foehn case is presented in detail, and the further developments within the framework of COSMO-2 to a high spatial resolution of 2.2 km facilitates the comparison of model forecasts with surface measurements. This comparison will be carried out with several parameters such as wind force, potential temperature and air pressure. Furthermore, the forecasted temporal evolution of foehn will be compared to the foehn's beginning and end detected by the foehn diagnosis tool.