



Excessive precipitation over parts of Germany in June 2016: Characteristics of the general weather situation and aspects of the forecast

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During the summer season 2016 parts of Germany were affected by several extreme events of excessive precipitation that led to enormous damage due to local floodings (June 2016). The ingredients-based methodology can help to determine the degree of the severity of storms as well as typical accompaniments. Púčik et al. (2015) published a climatological study based on proximity soundings in which he proposed several ingredients that are important for forecasting excessive precipitation events.

In general, numerical models often have problems to forecast such narrow bounded precipitation events. High resolution local area models as well as high resolution ensembles are able to assess the possibility and probability for excessive precipitation, but they often miss to point out the precise region of the incident. The enduring sequence of events with excessive rainfall over Central Europe in June 2016 offers sufficient data for a detailed analysis.

In the case study three different events will be analyzed: Xanten (North Rhine-Westphalia, June 1st, 2016), Ahrweiler (Rhineland-Palatinate, June 2nd, 2016) and the most catastrophic case of Simbach (Southern Bavaria, June 1st, 2016). Especially the latter was in addition a rather challenging severe weather event which was not well forecast by numerical models.

The talk will first present the synoptic and mesoscale characteristics of the general weather pattern leading to severe thunderstorms that are mainly accompanied by excessive precipitation. Thereafter a closer look will be taken at the ingredients that can help to improve forecasts of such events. These ingredients will first be analyzed based on our local area models (ICON-EU and COSMO-DE, -EPS). Afterwards surface measurements and remote sensing data will be used to achieve a detailed look into further important aspects that can overcome deficits of model predictions.

The talk should finally answer the following questions: How does a narrow line of successive storms with enormous rainfall amounts develop? What are characteristic soundings for such an event? Is it possible to predict such an excessive precipitation event like in Simbach at an early stage?

References

Púčik et al., 2015: Proximity soundings of severe and nonsevere thunderstorms in Central Europe. Bull. Amer. Meteor. Soc., 143, 4805-4821, doi:10.1175/MWR-D-15-0104.1