

Interactive comment on “What made the June 2013 flood in Germany an exceptional event? A hydro-meteorological evaluation” by K. Schröter et al.

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Received and published: 30 September 2014

General comments

The paper by Schröter et al. evaluates the June 2013 flood in Germany from a hydrometeorological perspective and compares this flood with two large flood events in the past. They build on a very nice data base of gridded daily precipitation and a compilation of large scale flood events in Germany. They point out the main driver for the exceptional flood, the high soil moisture status in the catchments prior to the event, and illustrate the importance of the antecedent soil moisture for high return periods.

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The valuable data base using different spatial indices makes this well written paper a valuable contribution to flood event and flood risk analysis. It is worth being published. However, what would even increase the strength of the conclusions are implications regarding design flood estimation. The authors address the importance of scenario definition (“unusual combinations”) for flood risk analysis, i.e. pronounced precipitation and high antecedent soil moisture, but, in the light of the large floods in recent years and the comprehensive flood data base they could try to refer their conclusions to the usual statistical measures in design flood estimation.

Specific comments

I have a few comments that should be considered before publishing.

P. 8128, line 1: “... hypothesis is contrary to ...” This is a rather strict formulation, also in the next sentence “... only secondly ...”

P. 8132, Sect. 2.4.3: What is the role of evapotranspiration (summer events) for the antecedent moisture status? Can other data sources be used to confirm API? (e.g. DWD actual soil moisture maps, remote sensing data, hydrological models in operational use).

P. 8137, Sect. 3.1: There are a lot of meteorological details given, please clarify some very specific parts (e.g. weather types), or, since it is a hydrological paper, I propose to shorten this part, also in the light of “... can not explain the extraordinary situation in 2013”, as mentioned previously in the text (p. 8130, line 10).

P. 8137, Sect. 3.2 and further pages: Please clarify the date of the event in August 2002 used in this study. On p. 8140, line 1 the 24 hour sum from 7 to 8 Aug. 2002 is given, but at the Danube and the Elbe the second flood from 12 to 17 Aug. caused the higher flood peak. Is this peak - showing high return periods with high antecedent wetness - incorporated in the study?

P. 8143, line 28: Are there other factors? To what extent could this be the effect also of

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the shape of the hydrograph, i.e. the large volume of the (single) flood wave, as illustrated e.g. by Blöschl et al. (2013) for the Danube? Furthermore, did flood protection measures, possibly installed after the 2002 flood, affect wave propagation in 2013?

Technical comments

There are not many typing errors I found in the text:

P. 8218, line 11: possibly set a comma after "Germany, ..."

P. 8218, line 15: events of Uhlemann ...

P. 8142, line 15: increased

P. 8146, line 21: Why put "antecedent" in quotes?

P. 8159 and following pages: see above: please clarify the date of the 2002 flood in the Figures (or in the text)

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 8125, 2014.