

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

Anonymous Referee #2

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General comments:

This paper is a very interesting analysis of the relevant processes and triggering factors that lead to widespread extreme floods in a large region, e.g. in Germany. Due to very detailed (in time and space) comprehensive data sets on precipitation, whether types and river flows, it was possible to analyse the initial and the actual conditions of rainfall and runoff in a homogeneous way all over the time of more than 50 years. This was done, I think, for the first time in this extensive manner. The comparison of three large flooding events (1954 2002, 2013) lead to the result, that these three cases, different main reasons were responsible for the development of wide spread

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floods over Germany and their neighbouring countries.

Specific comments:

Soil moisture/wetness: several times (among others in the abstract) the term soil moisture or wetness is used in a way that the reader thinks, there are some data on soil moisture. In the text however, it is mentioned, that API is used as a proxy for soil wetness. I think we must be careful. API is indeed a proxy, but only for the potential of initial conditions of soil moisture conditions. The quality of this proxy depends a lot on soil structure and soil depth as well as on land use. And additionally it depends on the length of the API-period. Did you perform any sensitivity analysis on this?

Initial hydraulic load: This is certainly a very important factor. But I feel it is somehow redundant/dependent to API. Did you check correlations?

Drainage basins surface and time resolution: It is mentioned, that drainage basins are used from 500 km² upwards. Unfortunately here is no overview on the distribution of drainage basins surfaces. At the other hand the authors use daily means of discharge in the analysis. In my view, flood peaks can not be detected/assessed in basins smaller than about 3-5000 km² with daily runoff resolution.

Technical corrections Chapter 2: This chapter should be reorganized. 2.1 should be “Data”, following by 2.1.1 etc, and than (as it is) 2.2 “Methods”. Now, in 2.1 and 2.3 , both are dealing with hydrological data (floods)

Page 8130, line 3 ff: which classification was finally used by the authors?

Chapter 2.4.2: How the analysis on precip was done for the 1954 event?

Page 8136, line 17: Do you have references for this statement?

Page 8136, line10: “Highest precip. . . .” Compared with what? I can not see this on fig 3a

Chapter 3.3.1: API: can we really compare API between regions or between different

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events. It might be a problem, that water storage capacity in the soil is smaller than API, so we compare high API that are no realistic and therefore not relevant.

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