

Interactive comment on “The June 2013 flood in the Upper Danube basin, and comparisons with the 2002, 1954 and 1899 floods” by G. Blöschl et al.

Anonymous Referee #3

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The paper "The June 2013 flood in the Upper Danube basin, and comparisons with the 2002, 1954 and 1899 floods" by Blöschl et al. describes the recent flooding in the Upper Danube.

I think the comparison of different floods in a given catchment is an interesting topic that can help increasing their understanding and can become an important component of flood damage prevention. This paper is also especially interesting because it comes out just after the flood, presenting therefore an analysis of a current event.

Below are some comments and suggestions.

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chapter 3: I found this chapter difficult to follow. I think some background information about the large-scale patterns would be helpful. There are many studies linking the presence of the Vb pattern to floods in Europe. It could be good to mention that and to provide some references.

figures 2 and 3: In the area of the Upper Danube the geopotential height at 1000 hPa has low values in May 30th at figure 2 and the sea level pressure for May 31st is also low in this area in figure 3. This seems contradictory to me. Is it due to the different spatial scales?

9539_L1-2: It would be interesting to know the average soil moisture at this time of the year and the values measured in this year. It would also be nice to know to which specific area this information refers to as well as some information about how the average soil moisture was estimated.

9539_L9-16: Maybe it is possible to state more explicitly what should be concluded from this paragraph? It is easy to lose the focus with so many details.

figure 5: The plots have two ticks for each label. It is not clear to which tick the labels belong.

9540_L1-17: As I understood from the text the authors studied one catchment in detail and extrapolated from it to the whole Alps (L4-5). Why was this catchment selected? Which was the overall impact of snow in this catchment? On one hand it reduced the liquid water at the beginning (May 29), but then the snow melt added to the precipitation of the second block. According to the text, the snow above 1800 m melted on the 31st, so it would have increased the liquid water during the second block. Further it is mentioned that since 25% of the catchment is above 1623 m there was less water contributing to runoff (L14-16). I think only the area above 1800 m would be involved in reducing the event runoff, since the snow at elevations between 1623 - 1800 would have melted just before the second precipitation block.

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Which is the proportion of the catchment above 1800 m?

9540_L12-14: The -5°C of the Loferer Alm station were recorded on the 25th. That was before the event.

9541_L16: Which was the overall impact of snow for this event considering the whole Danube catchment? Did it increase or decrease the discharge peak?

9548_L6: Which Bloschl et al. (2013) is meant?

section 7: It would be nice to have some overall conclusions about the benefits of carrying out an analysis of historical floods as done here. A clear statement about the relevance of snow on the flood discharge in this catchment would be useful. Especially, since this might be affected by climate change and could suggest that more extreme situations are maybe not that unlikely (9551_L19). I liked the results about the differences in flood wave travel times for the considered events. While these differences might be caused by changes in the rivers they are also affected by the rainfall patterns and could therefore indicate that flood monitoring should be carried out with a high spatial resolution.

9552_L15-17: It would be nice to have some references about the clustering of floods according to the Hurst effect. The provided reference does not address this point.

section 7.2 presents general recommendations about flood risk management which are not directly related to the study presented here. I am not sure how well they fit into this paper.

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