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Hydrology and Earth System Sciences
Discussions

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.

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The authors would like to thank the reviewer for the comments.

The reviewer suggests adding background information on large-scale patterns in chapter 3 which the authors will do in the revised manuscript.

The reviewer notes that, in the area of the Upper Danube the geopotential height at 1000 hPa has low values for May 30th in Fig. 2, and the sea level pressure for May 31st is also low in this area in Fig. 3 which he/she considers contradictory. Both the geopotential height at 1000 hPa and the mean sea level pressure refer to the synoptic

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situation at (or near) the surface. In fact, the two quantities are directly related to one another, thus exhibiting similar patterns when compared at similar levels. In particular, a low geopotential height given a pressure level close to the surface corresponds to a low pressure given a height at or close to the surface. That is, surface depressions correspond equivalently to local minima of the geopotential height at 1000 hPa and to local minima of the pressure at the mean sea level. Contrasting patterns (e.g. pressure lows vs. highs) could, however, occur if different levels of the atmosphere were compared (e.g. surface pressure with geopotential height at upper levels (e.g. 500 hPa). In fact, air masses converging at the surface (depression) diverge at some upper-atmosphere level (where pressure maxima will then occur). The authors therefore do not consider Figs. 2 and 3 contradictory.

The reviewer requests additional information on the soil moisture (9539_L1-2) which the authors will provide in the revised manuscript.

As suggested by the reviewer the authors will state more explicitly on what should be concluded from the paragraph in 9539_L9-16, i.e. heavy precipitation in large areas within the catchment.

The reviewer queries why Fig. 5 has two ticks to each label. The label is a day, so does not belong to a tick but to the space between two ticks (0h and 24h).

The reviewer requests additional information on why the Weißbach catchment was selected. The catchment was selected because of the particularly large precipitation and associated (specific) discharge. The authors will state this in the revised manuscript and will also provide additional information on the snow processes as requested by the reviewer.

As requested, the authors will provide statements on the usefulness of historical floods and the role of rainfall in flood wave travel times. Both aspects the authors consider very important. The authors will also provide additional references on clustering of floods and better link the general recommendations about flood risk management to

HESSD

10, C5086–C5088, 2013

the June 2013 flood.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 9533, 2013.