

Interactive comment on “Global warming increases the frequency of river floods in Europe” by L. Alfieri et al.

Anonymous Referee #2

Received and published: 27 February 2015

General

Alfieri et al. present a well-written manuscript, and as referee #1 has stated, it is state-of-the-art in terms of methods and data. Using Euro-CORDEX regional climate model data, a comprehensive view on flood risk in European catchments is presented assuming drastic climate change by the choice of RCP 8.5 scenario simulations. Although uncorrected climate scenarios are fed into the hydrological model, relative changes are likely represented well in this study. Projected changes are compared to previous studies and especially the analysis of flood frequencies under climate change is more convincing compared to the analysis flood peaks given the uncertainties of today's climate models. In general this paper is written very professional and straight-forward. After some minor revisions this paper can be accepted for publication in HESS.

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Major issues

Chapter 2.1 – You need to reason why you have chosen RCP8.5 and why you chose this set of climate scenario runs!!!

P 1123 line 23f – How was the model extended? What is the effect? Can you cite some description of this?

P 1128 line 1f – You produced a lot of discharge maps, but why? Isn't this produced by LISFLOOD? Why is this technical detail important here?

Figure 8 – The authors take some lines to explain the graphs and how exceedances can be extracted from this. Yet, to me this presentation of the main results of this paper is not intuitively readable. Hence, I propose to change the diagrams to show exceedance probabilities instead of cumulative distribution functions for a better communication of the main results of this paper.

Minor issues

P 1120 line 24 – Please give some citation for your statement “Yet, regional implications between ongoing global warming and future precipitation and runoff patterns are still under investigation, especially when extreme events are considered.”

P 1121 line 29 – change ‘into’ to ‘fed into’

P 1121 line 29 – Please give citation for “the quality of bias corrected output scenarios strongly depends on that of the observational dataset used for correction.”

P 1126 line 22 – “it is commonly used in flood hazard estimation” - Where? Do you have some more sources than Hall et al. 2005 and your own paper?

Figure 4 – You should reverse colours in the top row, because your colours are counter-intuitive!

Figure 5 – I am quite surprised to see such high extremes in RCM generated data.

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Maybe a word on this would be great!

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 1119, 2015.

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