

Interactive comment on “Rapid attribution of the August 2016 flood-inducing extreme precipitation in south Louisiana to climate change” by K. van der Wiel et al.

Anonymous Referee #1

Received and published: 19 October 2016

Floods are one of the biggest natural disasters in the world – nearly 50% of damage all over the world is induced by river floods. Latest records show that last several decades from region to region frequency of large floods has changed. Heavy historical floods are damaging different regions and areas – a number of areas faced tremendous floods, induced by extremely heavy rainfall, never observed before in the area. Changing flood frequency and its nature affect design flood parameters evaluation and thus have great interest for hydrological practice from region to region. Investigation of the climate change influence on such extreme events is of big interest and may describe further understanding of flood behavior. Thus presented topic holds rather high level of interest. Authors of the paper defined its objective as to perform rapid

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attribution study of extreme precipitation, which caused devastating flooding event in south Louisiana. Technique they used incorporates long-term datasets observational point and gridded data analysis, two higher resolution global climate models, statistical analysis was based on well proven before Generalized Extreme Value Distribution, and made assumptions. Technique allows computation of return time change and increase in probability of the extreme event under present conditions and in reference interval (before significant anthropogenic load). Traditional techniques of design flood calculation may result in a significant error if they don't account for changing climate conditions. In the presented paper well tested technique is proposed of how one can estimate possible likelihood of extreme precipitation, and thus design flood characteristics change under the anthropogenic climate change influence in different regions (shown on south Louisiana case study). In the final part of the paper by providing the list of assumptions authors described limitations of the approach. In the result it can be said that authors fully met the given objective of the study. Results of the study are well presented with sufficient graphical and table information, and described with good level of details, and thus provides comprehensive understanding of the presented material. Overall feeling about the paper is valuable and definitely recommended for reading of scientific community.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-448, 2016.

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