

## ***Interactive comment on “Assessment of climate change and land use development effects on dam reliability” by P. Taherei Ghazvinei et al.***

### **Anonymous Referee #1**

Received and published: 25 January 2016

The Manuscript titled “Assessment of climate change and land use development effects on dam reliability”, presents the findings on a particular case study of the effect of climate change and land use on Dam safety. The study is interesting and worth publishing. Nonetheless the title should be changed and there are several questions and remarks that I would request the Authors to address.

I have divided my review into major issues and minor comments:

#### **Major issues:**

The first issue is to do with the title of the paper. The title implies that dam reliability is assessed. (Please see Reliability index references, e.g. <http://ascelibrary.org/doi/abs/10.1061/%28ASCE%29GT.1943-5606.0000313>) However I cannot find it in the text. My suggestion is that the authors rephrase their

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title and omit the use of Reliability on their Manuscript and title.

My second issue is to do with the climate change analysis. I would request the authors to show the rainfall data of the last 30 years which was used to produce figure 3. With this data the authors should do a trend analysis tests to support their claim that intensity is indeed increasing. The comparison with MSMA is not convincing. Unless the authors could justify that Gumble distribution was also used in the MSMA study. In any case it would make a better statement if the authors could add a data trend analysis to their work.

Still related to my second issue, I would request the authors to add a discussion on the required length of a data series, to capture a climate change trend. This discussion should be added to the introduction. The Authors could than criticize if 30 years might be enough to fit their aim, i.e. of the trend for extreme events (100 return period).

My third concern, is related with the hydrological modelling. In my view, there is a section missing about calibration and validation of the hydrological model. The hydrological modelling was done based on historical rainfall recorded (line 12, page 14), however I do not see any results. The authors show add the results of their calibration/Validation strategy, and perhaps add some measure of fit to show how good the model performed.

#### **Minor comments**

Please add a small profile of the spillway, with dimensions of the spillway crest level, embankment crest level, etc, . . .

Please add some details of the Hershfield statistical method (including envelope), and the transposition method.

What is the spatial distance between the case study and the one where the storm occurred?

Introduce all acronyms in the abstract

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Besides the abstract and introduction, the manuscript needs to be re-written in many places. At some points it is difficult to understand the meaning of some sentences. Please find below a few examples, but more can be found throughout the text.

Line 4 -8,page 6:: sentence is unclear.

Line 27,page 6: introduce “RL” acronym.

Line 15,page 7: which one was used: “by a function model of response or a catchment rainfall–runo\_,”

line 22 -23, page 7, sentence is unclear.

line 1 -2, page 8, sentence is unclear.

Line 7-8, page 8, the sentence is missing a verb? maybe check?

Line 6, page 8, replace “was” with “were”

Line 13, page 8, the sentence is unclear

Line 10, page 10, replace “was” with “were”

And many others...

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2015-481, 2016.