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Hydrology and Earth System Sciences Discussions

Interactive comment on "A climate-flood link for the lower Mekong River" *by* J. M. Delgado et al.

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We thank the anonymous referee 1 for her/his valuable comments and suggestions.

Reply to general comments:

We followed your advice and reformulated the structure of the paper. The parts were moved according to your suggestion. We certainly want to avoid confusing the reader when it comes to separating what is known and what we present as being new. In that sense, we believe the main comment of referee 1 was fully addressed: the literature review is now entirely in the Introduction section and therefore distinguishable from our own results. We also went through all the results and tried to make it clear which part is our work and which is to be found in the literature.

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Interactive Discussion

Discussion Paper

We will submit a detailed account of the changes when uploading the revised version of the manuscript.

Reply to specific comments:

10126/10) why would the annual temporal resolution not logically contain most of the interannual variability?

We understand the term interannual variability as the variability of scales equal to or greater than one year, as it is common in the literature.

10126/21) Mekong River

We corrected the manuscript accordingly.

10127/26) do they evaporate or do they carry moisture

We corrected the manuscript accordingly.

10128/21) grammatical error

We corrected the manuscript accordingly.

10128/23) Pls explain how they showed that.

We added a sentence explaining how "a changing flood variability pattern could be identified along the river".

10128/24) 'in the frequency space' pls rephrase

We corrected the manuscript accordingly.

10129/7) Obviously solar radiation acts at every time scale but that is probably not what you mean.

We reformulated this paragraph.

10129/9) There are others ocean circulation patterns beyond ENSO – you invoke on

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them. Pls review the relevant ones.

We added the Pacific Decadal Oscillation to the list. And reviewed the literature relating it to ENSO and monsoon in the introduction.

10129/10-13) This strikes me as your objective. There is no explicit hypothesis so you will need to explain (in the discussion and conclusions) what significant new insight your study offers in this regard.

We reformulated the statement that includes our objective. Also the paragraph before should make it clear what we have established as an objective. We also added some more insights to the conclusion section.

10129/22-24) I admit ignorance when it comes to wavelet analysis but I am sure you can explain it better and with less jargon.

We reformulated this paragraph.

10130/21) Surely that must be a sweeping generalisation. 'Can be skewed' maybe?

We replace the "is" for a "can be".

10131/4) 'maximum' over a particular integration time (e.g. daily) or instantaneous?

Maximum is calculated from the mean daily discharge, estimated from one daily reading of discharge. The information is now in the manuscript.

10131/23-24) This does not get explained until later. Pls reorganise.

We deleted the sentence that refers to the subdecadal variance and introduce the concept later on.

10131/23-24) include period (1924-2001?)

We included the period of analysis, which is 1924-2001 as you correctly say.

10132-1) rephrase; nothing can be "normally anomalous" Also needs a reference.

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Rephrased this sentence and added a reference to Oliver, J.E. 2005. Encyclopedia of world climatology. Sciences-New York. Springer Verlag.

10134-24) which paper do you mean? The link between PDO and ENSO and between ENSO and IOD will need some discussion.

We mean the manuscript. We now reformulated and added a reference. We further discuss the link between ENSO, monsoon and IOD.

10134-27) 'large amount' pls

Corrected in the manuscript.

10138/12-13) 'to be expected' and 'increases' rather than 'grows'.

Corrected in the manuscript.

10138/13-15) Sounds like it could be a useful contribution but needs more discussion.

We added a paragraph discussing this idea.

10139-9) 'we abandon the concept of stationarity' sounds grandiose. What are you trying to say? Stationarity is never more than a working assumption, and obviously any link to PDO makes that assumption untenable at decadal time scale.

This sentence was rewritten and now we mention the "concept" as an assumption. We think the paragraph is more clear now. Knowing that variance of flood discharge is a key factor for defining the probability density function of the occurrence of a flood, a variance shift is very significant for the assumptions and methods of present and future flood risk estimation under climate change.

10139-13) 'sufficient' pls. Also, long model runs require long climate time series. Do they exist?

Corrected in the manuscript. The long model runs we are referring to are already exist and consist of several GCM experiments run in the last couple of decades. They cover

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the period between the second half of the 19th century until present. Most of these models also give 50-100 years of future projections.

10139-17) maybe 'likely' but not 'certain'.

Corrected in the manuscript.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 10125, 2011.