

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

Anonymous Referee #2

Received and published: 13 January 2012

In this article the interannual flood variability of the Mekong river is investigated and linked to the Western Pacific monsoon and the Indian monsoon. The authors conclude is that the Southern Mekong region is dominated by the Western Pacific monsoon, in particular the decadal variance of the southern Mekong delta is affected by the decadal variance of the Western Pacific monsoon. In addition they note a regime shift at 1976 in the decadal variance of the flood of the southern Mekong, which they link to the PDO shift in the North Pacific.

These are interesting conclusions, but before the paper can be accepted major revisions are necessary. In general the link between the two monsoon systems and the rainfall should be made more clear. It is said that the Indian Monsoon affects the Mekong basin, but no impact is seen on the flood discharge. So the question remains how strongly affects the Indian monsoon the Mekong basin (Major comment 2). Also

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the connection with the PDO should be made more clear and discussed more properly (Major comment 3). Finally the readability of the paper can be improved (Major comment 4).

Major comments.

1. The connection is made between the two monsoon (West Pacific and Indian) and the flood in the Mekong river. It is stated that the northern region of the Mekong basin is more affected by the Indian monsoon and the southern region more by the West Pacific monsoon. (line 15-19 page 10127). This is however not shown in the paper. A regression of the two monsoon indexes (WNPM and IM) on the rainfall in the Mekong Basin should reveal this.

2. Although it is stated that the Indian Monsoon affects the northern part of the Mekong basin no effect of the Indian monsoon on the flood discharge is detected in the paper: Correlations below 0.1 (line 25 page 10136), no relation with decadal variance (Fig. 4). So if from the analysis of the rainfall data the impact of the Indian monsoon is small (see comment 1) than the whole discussion about the Indian monsoon can be deleted. Otherwise it is interesting that it not affects the lower Mekong basin an can be kept.

3. The discussion about the impact of the PDO is incomprehensible. In the text it is stated “The influence of the PDO on the flood discharge of the Mekong can be seen in the agreement between shift in variance of discharge time series in the downstream part of the basin and the PDO shift of 1976 (Fig. 3)”. The figure caption of Fig. 3 is unclear. The figure is also not discussed. What is the conclusion concerning the different time scales? Is 1976 crucial? Can't you find other years with similar changes? Figure 6 is not discussed at all in the article. In this figure also the decadal variance of the discharge in Kratie should be included.

4. The readability of the article is hampered by sometimes unnecessary information and repeating already given information. Some examples are given below:

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- The discussion about longer time scales (The paragraph starting at line 26 page 10128) including the Milankovich time scales is not relevant in the context of this article and can be deleted.
- The same applies for most of the discussion in the paragraph starting on line 26 page 10134.
- The discussion of Fig. 1 (line 10-11 page 10128) should be included in the lines of 16 and following on page 10127
- Fig. 2 is discussed two times: page 10131 and page 10132.

Other comments:

- Figure 3 is only discussed at the end of the article is therefore wrongly located.
- Description of the axes and the lines in Fig. 4 is too small. It was for me hard to read them.

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