

Review of article entitled “Hydrometeorological drivers of the 2017 flood in the Brahmaputra basin in Bangladesh” for potential publication in HESS.

This paper conducted detailed analyses on the 2017 floods in Brahmaputra river basin, with the hope to answer questions regarding hydrometeorological drivers of such floods different from historical ones (rapid rise of water). I found the paper generally well written; the materials are interesting and overall comprehensive. I think this paper can be publishable in HESS eventually, but before it can move forward, I am providing several major and minor comments for authors to improve their manuscript. My major complaint is that the study probably focused too much on the meteorological side while the hydrological (land surface storage) side of drivers was largely ignored. For example, antecedent soil moisture could be very important in explaining the unique flood response in 2017, but it was bypassed in this paper (see my detailed comment below regarding Fig. 7). In addition, I agree with the other reviewer that this paper contains many repetitive information, which makes the presentation of this paper loose and can distract the readers’ attentions. I listed several concrete examples below, but note that not all of them have been listed. So, there is the need for the authors to carefully and thoroughly revise their English writing and story-telling flows, before this paper can move forward.

Major:

- I feel this paper spent a lot of efforts on “meteorological” drivers (which is good and comprehensive). However, to complete its “hydrometeorological drivers” claim in the title, some soil moisture analyses/discussions may be necessary. For example, looking at Fig. 7: it seems to me that the rapid rise of water level for the 2017 floods (different from 1998) may be due to the high antecedent soil moisture in 2017, which is resulted from the very wet spring (April) in 2017. This may have led to the rapid rise of water in 2017. By contrast, in 1998, July and August rainfall anomalies were higher but the prior spring seems to be dry (especially in the lower Brahmaputra), which leaves large room for soil storage and thus leading to much slower flood water rise. I suggest the authors to present some soil moisture analyses, which can help complete their story.
- Authors are suggested to reference a very similar analysis conducted in the US (<https://journals.ametsoc.org/doi/full/10.1175/JHM-D-18-0038.1>), where the researchers found the unique response of a flood was due to similar reasons as found in your study. But they also have provided more detailed analyses on antecedent soil moisture as well as flood celerity in the tributaries above the flooded location (which is also similar to this study). Authors are suggested to gather some soil moisture data (from remote sensing) to perform some analyses to improve their story-telling. Or at the very least, these important “hydro” drivers need to be carefully discussed by the paper.

Minor:

- Fig. 2: I found several arrows do not have any associated texts and were placed in wrong place maybe. Please revise the figure to make sure arrows are correctly drawn;
- Fig. 3: why choosing the rain gauge at Syedpur but not others?
- Fig. 4 caption: change to “over the Indian monsoon core zone (rectangular box)”;

- Fig. 5 caption: missing a bracket;
- Fig. 8: the starting point of the calculation starts from June. Is it possible to start from spring (e.g. April)? The reason is because the spring rainfall anomaly is important for understanding the antecedent basin wetness condition before flooding (recall my Major Comment earlier).
- P1L19: change “but” to “and”; no transition needed here;
- P1L22: the sentence “Water level and river flow time series ...” should be better placed in L28 before “The wavelet analysis”;
- P3L2: change “the river flow” to “the water level”
- P3L5: change “consider” to “analyze”
- P6L9: change to “study of Zhang et al. (2017)”
- English presentation of this paper contains several repetitive phrases. For example, (1) P6L2 and P6L3; can use “it” to replace “the Daubechies wavelet function”; (2) P6L13 and P6L24: suggest authors to ask help from native speakers to improve English presentation; here only limited examples are provided but more places need to be thoroughly revised;
- P6L32: no need to spell out “GEV” again;
- P8L1: change “shifting” to “shift”
- The English presentation of this paper can be much better simplified. For example, P8L23 can be changed to “An El Nino (La Nina) state is defined when ONI exceeds 0.5 degree C (below -0.5 degree C)”. Same apply to P7L14;
- P8L28: many of these abbreviations have been defined before, no need to define again. Please check throughout the paper, there are many such cases;
- P9L9: remove “anomalies”! It appeared again later and this use is incorrect;
- P16L9: MJO again; no need to spell out