

This manuscript takes a detailed look at the flood event in 2017 in Bangladesh. The characteristics of the flood event is analysed, the hydrometeorological drivers are investigated. Flood events in the Indian Monsoon areas always cause a large amount of economic loss every year, and even cause numbers of death in some severe cases. The focus of this research is meaningful for this dense populated region, the results revealed could provide useful information for future understanding of this natural hazard. However, still the manuscript needs to be much improved in a series of aspects before publishing in HESS. I recommend a major revision.

Major:

1. According to the Abstract the primary conclusion of this manuscript is “The study concludes that the location and magnitude of extreme rainfall are key drivers controlling on the characteristics of the Brahmaputra floods.” These sentences emphasis the location and magnitude of extreme rainfall are critical findings (have to say that the selling point is plain). However, according to the Introduction part, the major purpose of this manuscript is to find out the major hydrometeorological drivers behind the flood in 2017. Hydrometeorological drivers includes much more information than the location and magnitude of extreme rainfall only. Either specify introduction part about which drivers you are particularly look at and why, or rewrite the abstract in a more concise way.

Clarifying the major purposes are also important for the manuscript structure. So far, the structure of this manuscript is a bit loose, including too many figures and some abundant/not-well-organized information. For example, the manuscript can majorly focus on three aspects: the flood event, the flood-triggering rainfall, the rainfall-triggering synoptic systems, and arranged them in a way that each finding is highly connected, it will be a good manuscript.

2. Abstract should include the very firm findings with solid information and statement mentioned in the manuscript. For example, in the Abstract, “This heavy rainfall was associated with a northward shift of the monsoon trough, creating active monsoon conditions in the Brahmaputra basin.” This sentence is obscure. As mentioned in the manuscript, the monsoon trough has basically two positions with active and break events positions according to the historical reanalysis data. However, the “northward shifting” is compared to active or break positions? It is a very critical information for the mechanisms for the flood event in 2017. Otherwise, the climatology of the monsoon position can be shown, and then you can say there is a northward movement of the monsoon position during the 2017 flood event. Similar problem is also shown in 5.1.2 last paragraph. Meanwhile, since it is the major finding of the manuscript and highlighted in Abstract, the related information in the major body can not say in this way: in 5.1.2 last paragraph “suggesting it may have played a role in the synoptic activity leading to the 2017 Brahmaputra flooding”. It is a very weak statement, what kind of role and how it plays. Both of them should be illustrated clearly. Otherwise, remove this major finding from the abstract.

3. Flood 1998 is used for some comparison with 2017 flood, some background should be included in the Introduction/methodology part of this 1998 flood. Also, 1988 is mentioned several times, with similar characters with 2017 and 1998? It will be good to include some details on this flood 1988 too.

4. In the Introduction part, the research gap and the necessity of doing this research are not well illustrated. Since you are going to figure out at least three aspects of this flood event, the introduction should not only introduce the research gap in “synoptic system”. And why the flood in 2017 is so outstanding from the historical flood events, what we can learn from investigating this flood event?

5. Shorten the words related to climate change and future forecasting. This research investigates the flood even in 2017 July and August in detail, with some analyses on the inter-annual variability. It is hard to have strong implication for the long-term (at least 30 years) climate change. Meanwhile, it is only a case study comparing with another historical flood case; it is hard to improve future forecasting that mostly uses statistical or modelling methods based on clear mechanisms, fine spatial and temporal resolution. Thus, all the implications for climate change and future forecast should be written carefully, and should be based on solid and related findings, otherwise, just remove them to make the manuscript short, concise and focused.

Minor:

1. “2. Characteristics of the Brahmaputra basin”

Keep the decimal places consistent in the latitude and longitude number.

2. remove the full name of GEV in line 32 at page 6 because it has been mentioned in the upper paragraph

3. Fig. 3b why choose the rain gauge at Syedpur as a representative rain gauge station (there are around 9 stations within the basin according to Fig. 2)?

4. Fig. 4e, f, are they also come from the 1951-2007 years?

5. Figure 11a, the DL means danger level should be included in the caption.

6. 3.2.2 The time period of used TRMM data should be included here; 3.2.3 The time and spatial resolution of NCEP reanalysis data should be included here.

7. Figure 4 included the purple line indicating the basin boundary of the Brahmaputra river; The purple line should be shown in Figure 1 as well to highlight the river basin you are going to look at. Figure 2 can be merged into Figure 1 as 1b with a box zooming in/out to show the location relationships with Figure 1. Also, the foothills of the Himalaya and the Assam region are mentioned many times in the manuscript and should be marked in these figures.

8. Figure 5a, b: the legend of wind vectors should be included.