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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Spatial and seasonal responses of precipitation in the Ganges and Brahmaputra river basins to ENSO and Indian Ocean dipole modes: implications for flooding and drought" *by* M. S. Pervez and G. M. Henebry

Anonymous Referee #3

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Major comments:

This interesting MS investigates the effect of certain combinations of ENSO and DMI anomalies in rainfall and runoff anomalies in the Brahmaputra and Ganges basins. However, the definition and description of the two DMI indexes are not given, which makes the MS at parts difficult to follow. The absence of negative DMIns in the dataset should be explained in terms of the general circulation of ocean and atmosphere. One further criticism is the indiscriminate use of statistical significance. Statistical signifi-

cance is not shown in tables nor figures and the reader will believe that all results are significant, when in the text it is made clear that only part of them are. To what degree is the variation in rainfall an apparent consequence of these indexes or pure chance? Some kind of quantification of the covariation of these indexes should also be used: I suggest determining the covariance matrix in order to provide the reader (and the reviewer) with better tools of evaluating the results. In my opinion, this valuable MS should only be accepted after the DMI indexes are described and discussed (e.g. by summarizing the main findings in the literature) and after the statistical significance of the results is clearly shown in all tables and figures. Furthermore, the covariance matrix of the indexes should be determined and discussed.

Minor Comments:

page 1673 line 16: I strongly suggest that you dedicate at least a paragraph in Methods to explain how to derive the DMI indexes page 1678 lines 16 to 20: It is not clear whether these changes are statistically significant. The same applies to Table 1 and 2, where the percentage of baseline is given, but not to what degree that difference is significant or not. page 1680 line 11: "below average precipitation was expected", why?

table 1 and 2: add a column on the left with "El Nino", "none" and "La Nina". Add a row with "negative", "neutral" and "positive" DMI

table 3: "neutral" is not correct. A better word would be "average" table 3: according to table 3 there is no year of negative DMIns in all time domain. Is this related to the way the index is calculated or does it have a physical meaning that should be explored?

figure 3: I suggest improving the labeling of the charts. It should be clearer that columns correspond to neg., neutral and pos. DMI and rows to El Nino, none and La Nina.

figure 4: same as in figure 3