

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

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D. Quattrochi dale.quattrochi@nasa.gov Received and published: 20 June 2014 I have reviewed this paper and I find it to be an overall very good piece of work. The objectives stated for the paper are scientifically useful from a hazards research perspective, that of 1) analyzing where Ganges and Brahmaputra river basins and at what time of year precipitation is affected by the ENSO and Indian Ocean dipole modes; and 2) to assess how the spatio-temporal variations in precipitation link to the flooding and drought

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occurrences in each basin as a result of climate mode forcings. The methods used in obtaining daily precipitation data at 43 meteorological stations located within these river basins, and then using the IDW method to create a continuous field of daily basin-wide precipitation appears rigorous for producing the stated results and conclusions of the paper. The authors produced daily values based on these daily precipitation data to summarize rainfall estimates for analysis within a monthly and seasonal time series. An analysis of ENSO and IO DMI phases at neutral and positive states was conducted which is useful in assessing variability of precipitation across the study area as influenced by these forcings. The paper's conclusions are quite interesting in that the occurrence of El Nino along and in co-occurrence with La Nina and a positive IO DMI phase produces extremely dry precipitation regimes in respect to each other. Additionally, the authors' findings that 46% of the time during the study periods examined, precipitation below average may be present in Jharkhand, Bihar, and eastern regions of Nepal in the Ganges and in northern Bangladesh, eastern West Bengal, and Assam in the Brahmaputra basin in concert with below average to average rainfall that may prevail in agricultural areas of Haryana and Uttar Pradesh. This provides considerable insight into what can be expected in the future with variability in El Nino, La Nina, and IO DMI and its impact on agricultural productivity in the two river basins. Their analysis has also evaluated the occurrences of major flooding and drought within the overall perspective of the El Nino and IM DMI dipoles.

The paper is well written and uses good English grammar and sentence structure. The illustrations are useful and necessary in conveying the content and results of the paper, as are the tables. Overall, this is a very good paper that is of publishable quality and should be a definite contribution to the scientific literature on precipitation variation and its potential effects on agricultural production and hazard assessment in the Ganges and Brahmaputra river basins.

Response: Thank you for reviewing the manuscript.

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