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## A Geostatistical Approach to the Seasonal Precipitation Effect on Boro Rice Production in Bangladesh

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### Author(s)

Avit Kumar Bhowmik, Ana Cristina Costa

### ABSTRACT

Geographical assessments on the relationship between climate variability and crop production are important for planning adaptation programs to climate change impacts on Asian rice production. This paper analyses the seasonal precipitation consequences to irrigated crop yields, in opposition to the idea that irrigated crop yields are not affected by precipitation changes. Geostatistical methods are applied to assess changes in the patterns of seasonal precipitation and corresponding changes in the Boro crop production in Bangladesh. Surfaces depicting changes in the monsoon, non-monsoon and total precipitation from 2006 to 2007, and changes in three varieties of Boro crop yield and Total Boro yield from 2006-2007 to 2007-2008 crop year are generated through Splines, Inverse Distance Weighting and Ordinary Kriging methods. Performance evaluation of these models is also performed. The relationships between the surfaces of different precipitation seasons and the surfaces of different Boro yield seasons are then assessed. The results show that there is a significant correlation between seasonal precipitation changes and Boro yield changes with notable correlation coefficients and similarity in the patterns. A significant conformity of the high precipitation zones to the high Boro yielding zones is also depicted.

### KEYWORDS

Climate; Crop Production; Interpolation; Kriging; Monsoon

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