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Intraseasonal to interannual variability of summer monsoon rainfall and its influence on the Agricultural corps in mountainous Kashmir

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By using high resolution APHRODITE precipitation and meteorological station data (1961-2007) the present study examines the intraseasonal to interannual variability of the monsoon rainfall over mountainous Kashmir and its influence on the agricultural crops such as Maiz and Wheat. It is found that an intraseasonal to interannual variability of the monsoon rainfall can severely affect the crop production in the hilly areas of Kashmir. We found an increasing trend in the extreme precipitation events over Kashmir and adjacent areas in the recent years. The associated crop production shows significant decreasing trend especially over the hilly areas in Kashmir. The enhanced rainfall can result in the soil erosion that impose a major threat to sustainable agriculture in the mountainous areas of Kashmir. The heavy rainfall associated with the orographic uplifitng removes the uppermost fertile layer of soil, depleting fertility and leaving the soil in poor physical condition. This further causes severe deficiency of most important nutrients required for plant growth and crop yield.

We further analysed the IPCC AR4 ECHAM5/MPIOM climate model simulations to examine the future interannual variability of monsoon rainfall over Kashmir and adjoining areas. In the following we analysed the transient run with a 1% per year increase in CO_2 until reaching double concentrations and held constant thereafter. We found enhanced interannual variability of the summer monsoon rainfall (July-August) with increasing drought like conditions over Kashmir and adjoining northern parts of Pakistan in future climate. The enhanced interannual variability of precipitation in future could further affect severely growth of various agricultural crops in mountainous parts of Kashmir.