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USE OF EARTH OBSERVATION FOR GEOSPATIAL CROP WATER ACCOUNTING OF RAIN-FED AGRO-ECOSYSTEM IN INDIA

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Abstract. Use of earth observation by means of remote sensing and in-situ meteorological network in integrated manner have improved ability to track water availability and associated yield reduction in rain-fed crops as potential indicators of early warning and food security. the present study aims at monitoring of WRSI and production potential of rain-fed agro-ecosystems in eastern Rajasthan. The study was carried out during the kharif season using remote sensing, meteorology and soil information from year 1998 to 2004. Important datasets used in the study are Dekadal Normalized Difference Vegetation Index (NDVI) from SPOT-VEGETATION, gridded rainfall based on 300 rain-gauge stations, reference ET (ETo), and gridded soil water holding capacity (WHC). In addition, crop statistics and crop calendar information were also used in this study. The phenological metrices from time-series of SPOT-VGT NDVI were derived on inter-annual scales by applying Gaussian fit within TIMESAT procedure. WRSI was found promising in capturing inter-annual and spatial variability in water availability to rain-fed crops. The WRSI has also showed significant relationship with reported yield particularly in drone-prone areas. Water limited-yield stays on higher side but it has showed strong response to large scale drought.

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