

[Volume XXXVIII-8/W20](#)

Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XXXVIII-8/W20, 50-55, 2011  
www.int-arch-photogramm-remote-sens-spatial-inf-sci.net/XXXVIII-8-W20/50/2011/  
doi: 10.5194/isprsarchives-XXXVIII-8-W20-50-2011  
© Author(s) 2011. This work is distributed  
under the Creative Commons Attribution 3.0 License.

## ASSESSMENT OF EARLY SEASON AGRICULTURAL DROUGHT THROUGH LAND SURFACE WATER INDEX (LSWI) AND SOIL WATER BALANCE MODEL

K. Chandrasekar, M. V. R. Sessa Sai, and G. Behera  
RS&GIS Applications Group, National Remote Sensing Centre, ISRO, Hyderabad, India

Keywords: LSWI, NDVI, Soil Water Balance, Area Conducive for Sowing

**Abstract.** An attempt was made to address the early season agriculture drought, by monitoring the surface soil wetness during 2010 cropping seasons in the states of Andhra Pradesh and Tamil Nadu. Short Wave Infrared (SWIR) based Land Surface Water Index (LSWI) and Soil Water Balance (SWB) model using inputs from remote sensing and ancillary data were used to monitor early season agriculture drought. During the crop season, investigation was made on LSWI characteristics and its response to the rainfall. It was observed that the Rate of Increase (RoI) of LSWI was the highest during the fortnights when the onset of monsoon occurred. The study showed that LSWI is sensitive to the onset of monsoon and initiation of cropping season. The second part of this study attempted to develop a simple book keeping – bucket type – water tight soil water balance model to derive the top 30cm profile soil moisture using climatic, soil and crop parameters as the basic inputs. Soil moisture derived from the model was used to compute the Area Conducive for Sowing (ACS) during the sowing window of the cropping season. The soil moisture was validated spatially and temporally with the ground observed soil moisture values. The ACS was compared with the RoI of LSWI. The results showed that the RoI was high during the sowing window whenever the ACS was greater than 50% of the district area. The observation was consistent in all the districts of the two states. Thus the analysis revealed the potential of LSWI for early season agricultural drought management.

[Conference Paper](#) (PDF, 1905 KB)

Citation: Chandrasekar, K., Sessa Sai, M. V. R., and Behera, G.: ASSESSMENT OF EARLY SEASON AGRICULTURAL DROUGHT THROUGH LAND SURFACE WATER INDEX (LSWI) AND SOIL WATER BALANCE MODEL, Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XXXVIII-8/W20, 50-55, doi: 10.5194/isprsarchives-XXXVIII-8-W20-50-2011, 2011.

[Bibtex](#) [EndNote](#) [Reference Manager](#) [XML](#)

