Geophysical Research Abstracts
Vol. 18, EGU2016-10556, 2016
EGU General Assembly 2016

Evaluating the Potential Use of Remotely-Sensed and Model-Simulated Soil Moisture for Agricultural Drought Risk Monitoring

Hongxiang Yan (1) and Hamid Moradkhani (2)

(1) Portland State University, Portland, U.S. (yan2@pdx.edu), (2) Portland State University, Portland, U.S. (hamidm@pdx.edu)

Current two datasets provide spatial and temporal resolution of soil moisture at large-scale: the remotely-sensed soil moisture retrievals and the model-simulated soil moisture products. Drought monitoring using remotely-sensed soil moisture is emerging, and the soil moisture simulated using land surface models (LSMs) have been used operationally to monitor agriculture drought in United States. Although these two datasets yield important drought information, their drought monitoring skill still needs further quantification. This study provides a comprehensive assessment of the potential of remotely-sensed and model-simulated soil moisture data in monitoring agricultural drought over the Columbia River Basin (CRB), Pacific Northwest. Two satellite soil moisture datasets were evaluated, the LPRM-AMSR-E (unscaled, 2002-2011) and ESA-CCI (scaled, 1979-2013). The USGS Precipitation Runoff Modeling System (PRMS) is used to simulate the soil moisture from 1979-2011. The drought monitoring skill is quantified with two indices: drought area coverage (the ability of drought detection) and drought severity (according to USDM categories). The effects of satellite sensors (active, passive), multi-satellite combined, length of climatology, climate change effect, and statistical methods are also examined in this study.