



Hydrocentric view of Agro-ecosystem Resiliency to Extreme Hydrometeorological and Climate Events in the High Plains, US.

Francisco Munoz-Arriola (1), Ashutosh Sharma (2), Katherine Werner (1), Juan-Carlos Chacon (3), Gerald Corzo (3), and Manish-Kumar Goyal (2)

(1) University of Nebraska-Lincoln, United States (fmunoz@unl.edu), (2) Indian Institute of Technology-Guwahati, (3) Institute of Water Education

An increasing incidence of Hydrometeorological and Climate Extreme Events (EHCEs) is challenging food, water, and ecosystem services security at local to global contexts. This study aims to understand how a large-scale representation of agroecosystems and ecosystems respond to EHCE in the Northern Highplains, US. To track such responses the Variable Infiltration Capacity model (VIC) Land Surface Hydrology model was used and two experiments were implemented. The first experiment uses the LAI MODIS15A2 product to capture dynamic responses of vegetation with a time span from 2000 to 2013. The second experiment used a climatological fixed seasonal cycle calculated as the average from the 2000-2013 dynamic MODIS15A2 product to isolate vegetation from soil physical responses. Based on the analyses of multiple hydrological variables and state variables and high-level organization of agroecosystems and ecosystems, we evidence how the influence of droughts and anomalously wet conditions affect hydrological resilience at large scale.