Geophysical Research Abstracts
Vol. 17, EGU2015-13385-1, 2015
EGU General Assembly 2015

A Remote Sensing-Based Land Surface Phenology Application for Cropland Monitoring in the Volta River Basin of West Africa

Mohamed Abd Salam EL VILALY, Audra EL VILALY, and Ousmane Badiane
International Food Policy Research Institute (IFPRI), Dakar, Senegal (abdsalam.vilaly@gmail.com)

Understanding the complex feedbacks between climate, environmental change, and human activities is essential to the development of sustainable agricultural systems. A key aspect of crop production that shows immediate response to climate change is crop phenology, which defines the shape and progress of the growing season and is an integrator of all environmental factors controlling crop production. This research aims to characterize remote sensing-based land surface phenology of cropped areas and compare them to the actual crop growing seasons recorded by farmers: planting, emergences, flowering, fruiting, and harvest date. We use the 2000-2013 MODIS Terra 16-day record of vegetation index to extract 4 phenometrics (Start and Length of Growing Season, Date of Growing Season Peak, and the Growing Season Cumulative Signal). Most of these metrics are simple time-related phenometrics. A spatiotemporal phenological characterization of cropped/managed lands in the basin already shows distinct response patterns and trajectories along climate gradients. This permits us to monitor cropped lands and their responses to disturbances, such as drought, fire, flooding, and human activities. In turn, interviewing farmers in the basin and consulting their phenological records. This study will allow for robust validation of remote sensing LSP algorithms, and more crucially, will help characterize any remote sensing-based metrics that contrast with the actual biological phenophases of monitored crops. In terms of its larger significance, this study demonstrates the fundamental role that remote sensing plays in global agriculture in informing conservation and management practices.