

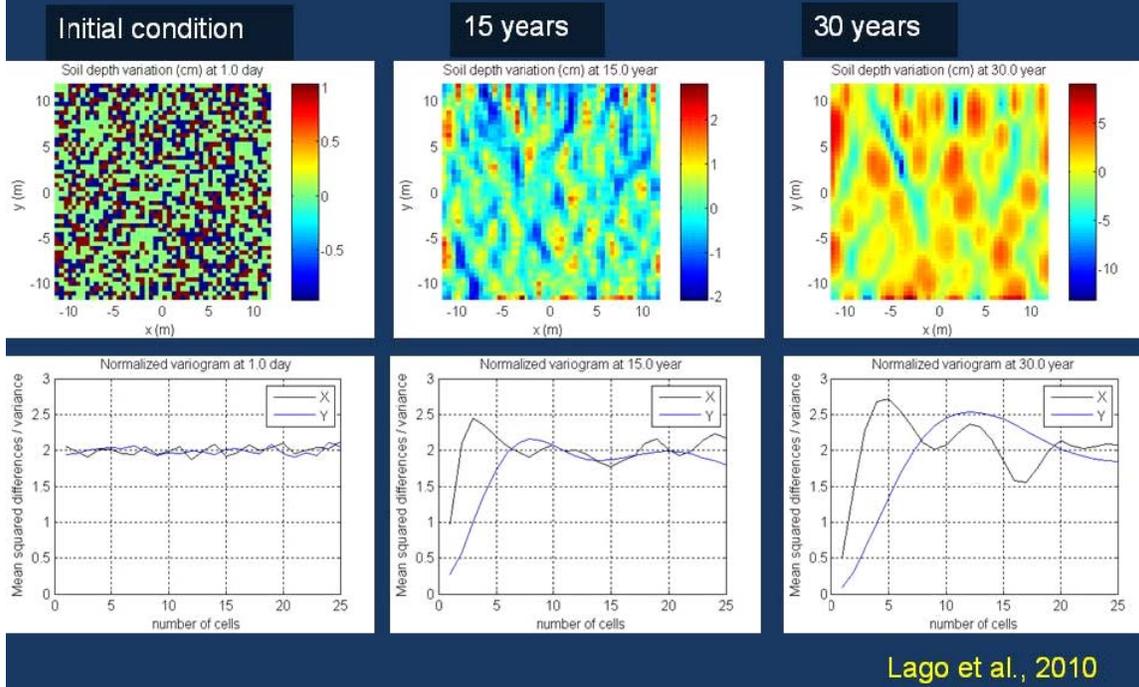
Spring 2010 Seminar Series

Presents the following seminar:

**Picking up Signatures in Coupled Hydrology -
Vegetation Dynamics in Ecosystems:
What Nature is Trying to Tell Us about Living
with Stress and on a Budget**

**Dr. Fernando Miralles-Wilhelm
Civil and Environmental Engineering
Florida International University**

Simulation Results



When? Friday, February 26, 2010, 3:00 pm – 4:00 pm
Where? PC-431, FIU Main Campus

Abstract

The vulnerability and resilience of water-controlled ecosystems are dependent on phenomena that link the cycling of water, nutrients and other biogeochemically active elements. Understanding the disturbances in these cycles that trigger impacts on ecosystem spatiotemporal characteristics is a challenge that generally transcends disciplinary and geographical boundaries, and is key to sustaining the diversity of life on Earth.

The overarching scientific objective of this research is to develop a quantitative understanding of how hydrologically-controlled ecosystems are changing over time and space. The research questions posed seek the quantification of stocks and fluxes of water, nutrients and biomass as they couple and aggregate into the spatial and temporal organization and adaptation mechanisms of vegetation at the ecosystems level.

The research agenda has a focus on the development of a spatiotemporal quantitative framework to study the interactions between coexisting vegetation species and the hydrologic cycle, and how these interactions aggregate from smaller scales, e.g., temporal: rainfall event; spatial: individual plants, to larger scales, e.g., temporal: seasonal/multiseasonal; spatial: ecosystem wide.

The research methodology is based on a systems-level framework that combines high capability remote sensing satellite data reception and analysis with stochastic modeling techniques and field ecophysiological experiments, which aggregate physical, chemical and biological processes occurring at several spatial and temporal scales, quantifying biogeochemical stocks and fluxes as well as providing estimates of their uncertainty. The understanding gained from this research is expected to improve management, protection and restoration efforts in complex ecosystems.