Great Western Woodland Supersite

Affiliated projects summary

Date: 12 June 2013

Project title: Phenology Validation

Abstract:

Phenology is the study of the timing of recurring climate or weather-driven biological events, the causes of their periodicity, their relationship with biotic (e.g. fruit availability) and abiotic (e.g. rain) drivers and the interrelations between the seasonal cycle of the same or different species. Regional and continental scale phenology are often characterised with the use of different Remote Sensing (RS) products (e.g. vegetation indices) obtained from coarse resolution, but higher temporal frequency, satellites, such as the Moderate Resolution Imaging Spectroradiometers (MODIS). However, Australian vegetation dynamics are complex, with savannas characterized as a convolved array of understory and overstory components and a rain-event driven system, sclerophyll forests dominated by Eucalyptus whose leaves angle distribution is generally erectophile and differences in their adaxial and abaxial spectral properties offer thermal protection to the trees, but may complicate any spectral analysis, and tropical sites as dominated by evergreen and semi-evergreen tree species leafing at different times of the year. Our goal is to use tower mounted phenocam imagery of whole-canopy and tree and understory layer vegetation to trace and evaluate the satellite phenology profile (MODIS phenologic metrics). Our hypothesis is that both measures (satellite and in-situ camera) should provide a similar start of green-up, peak and end of growing season. Moreover, phenocams have the potential to assess and partition seasonality of the tree layer, grass layer, shrubs, biogenic soil crusts, species specific and the ecosystem as a whole, contributing to the understanding of water and carbon flux seasonal cycles, as well as interpretation of satellite phenology.

Expected project timeframe: Continuous.

Contacts

Name: Profesor Alfredo Huete

Organisation: University Technology of Sydney (UTS)

Plant Functional Biology and Climate Change Cluster (C3)

Address: University of Technology, Sydney

PO Box 123, Broadway

Phone: +61 2 9514 4084

Email: Alfredo.Huete@uts.edu.au

Associated parties/collaborators (others involved in the project)

Name: Natalia Restrepo-Coupe

Organisation: University Technology of Sydney (UTS)

Plant Functional Biology and Climate Change Cluster (C3)

Address: University of Technology, Sydney

PO Box 123, Broadway

Phone: +61 2 9514 4308

Email: Natalia.RestrepoCoupe@uts.edu.au

Research Project (if part of a larger umbrella research project)

Title: AusCover- Sydney Node, Validation of Phenology Products.

Funding sources:
Australian Research Council Discovery Grant ARC DP110105479: Integrating remote sensing, landscape flux measurements, and phenology to understand the impacts of climate change on Australian landscapes (A. Huete CI)

AusCover and the Australian Government's Terrestrial Ecosystems Research Network (www.tern.gov.au).

Datasets being used or collected:
Hourly camera images of ecosystem canopy and understory.

Geographic coverage of study:
Credo Flux tower

Other notes:
This is study is conducted in collaboration with Dr Craig Macfarlane Credo flux tower PI