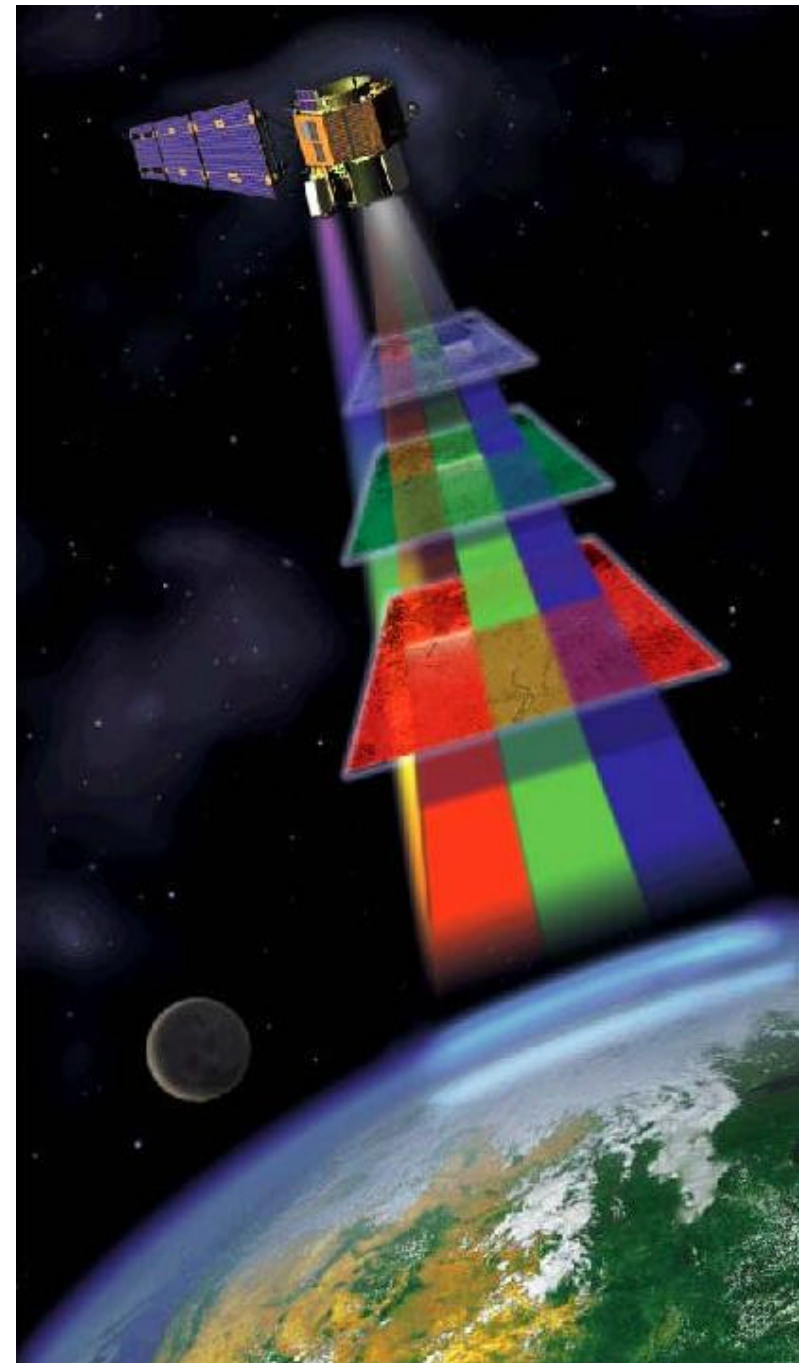


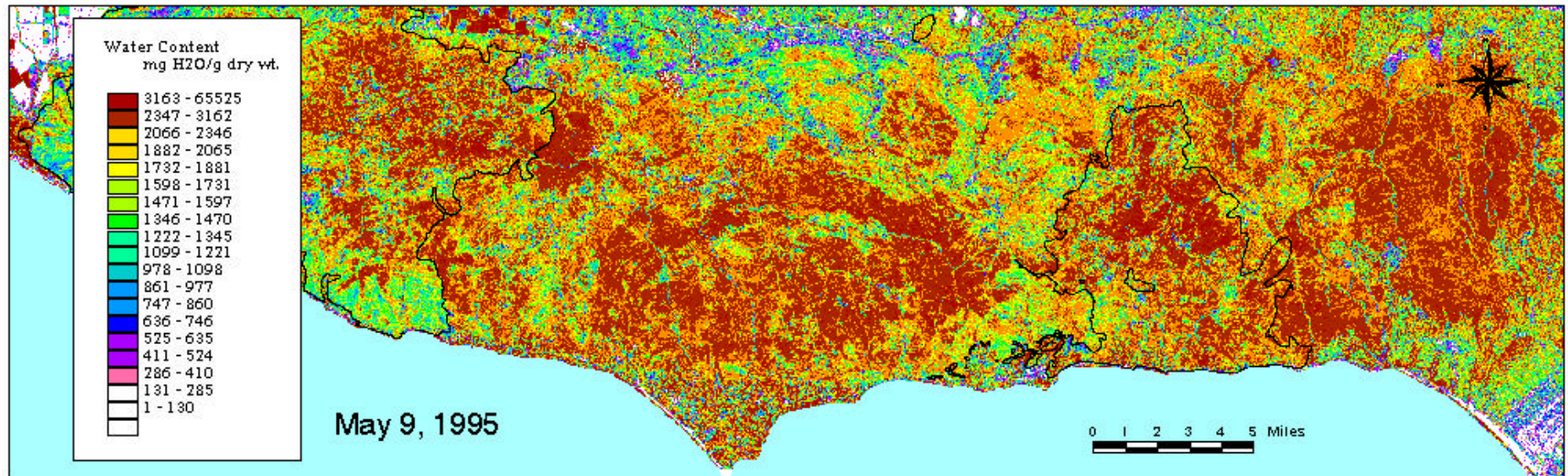
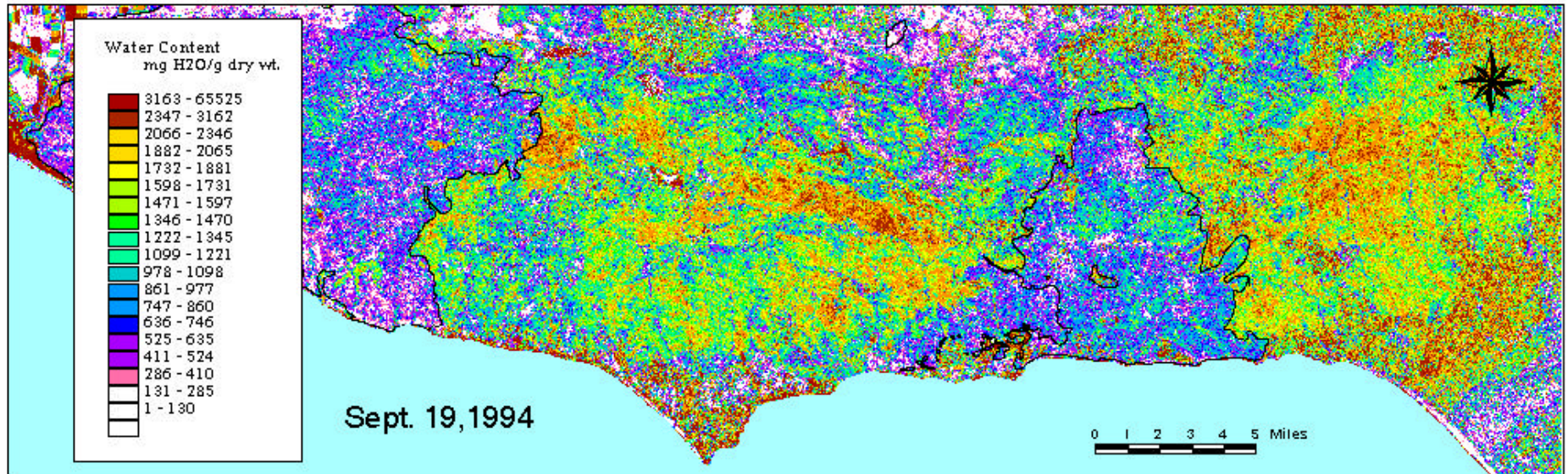
MODIS
Estimate of
Canopy Water Content

Susan L. Ustin
University of California Davis

July 14, 2004



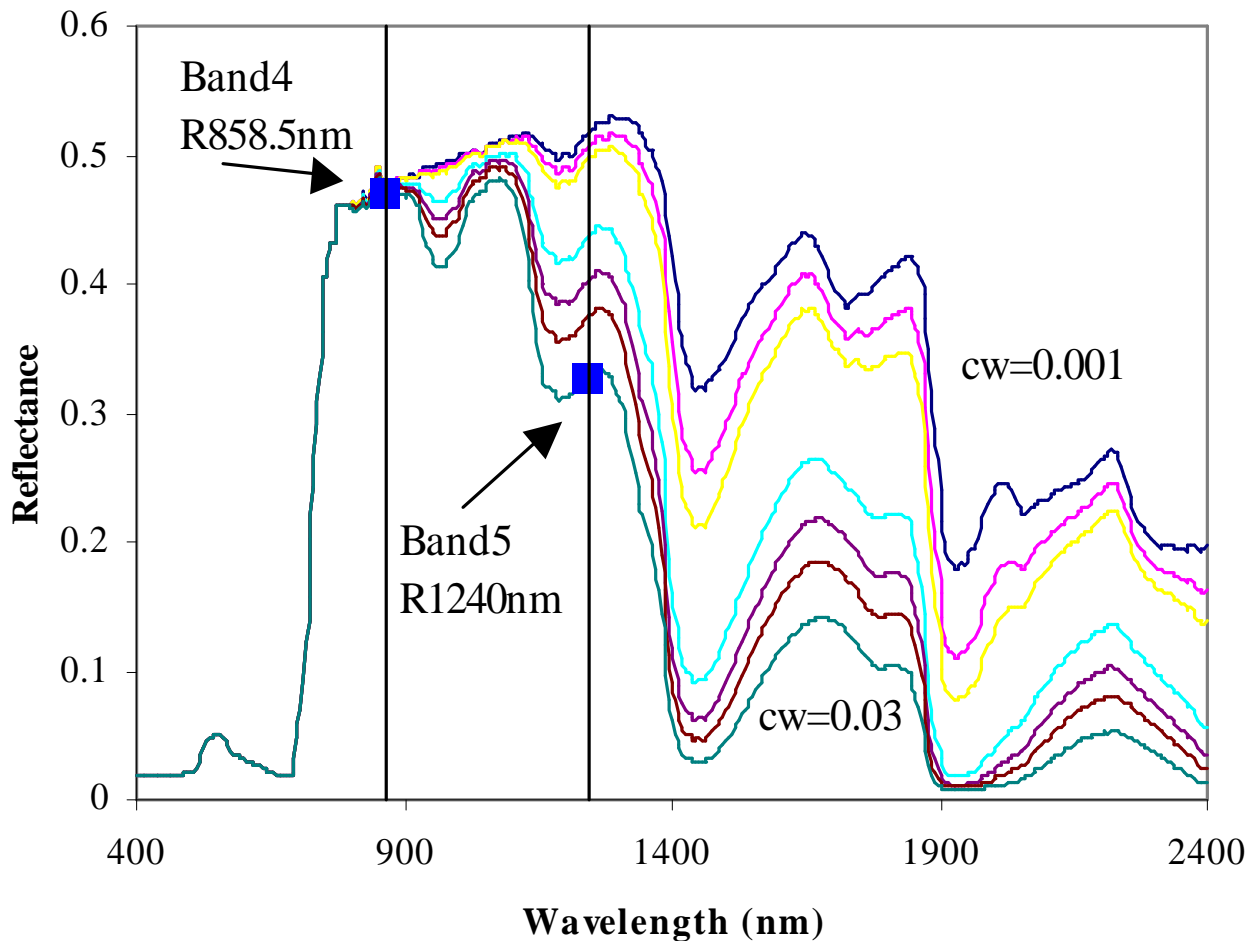
Santa Monica Mtns: Canopy Water Content



AVIRIS Composite 980 nm Water Absorption

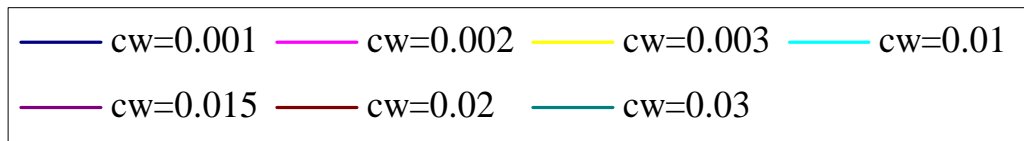
(Ustin et al., 1999)

Cw/LAI Estimation from MODIS



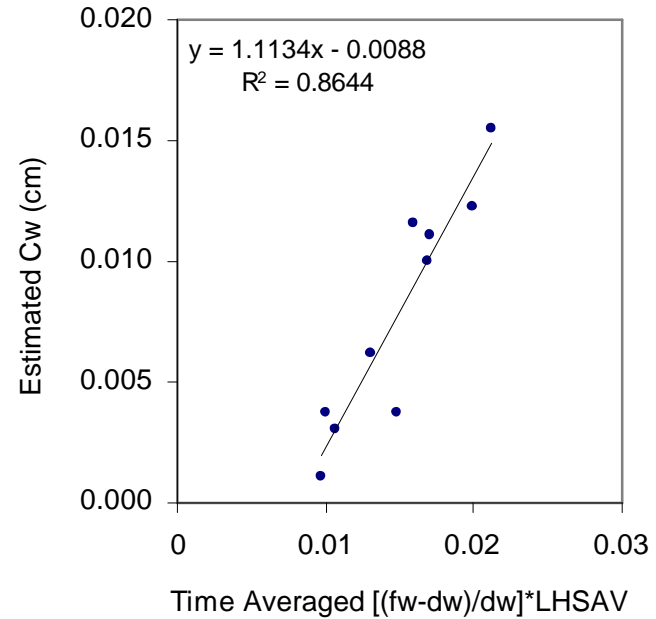
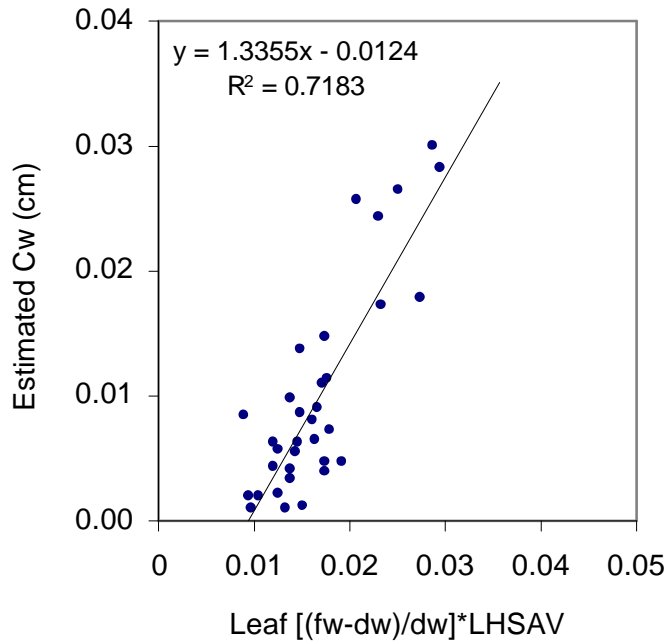
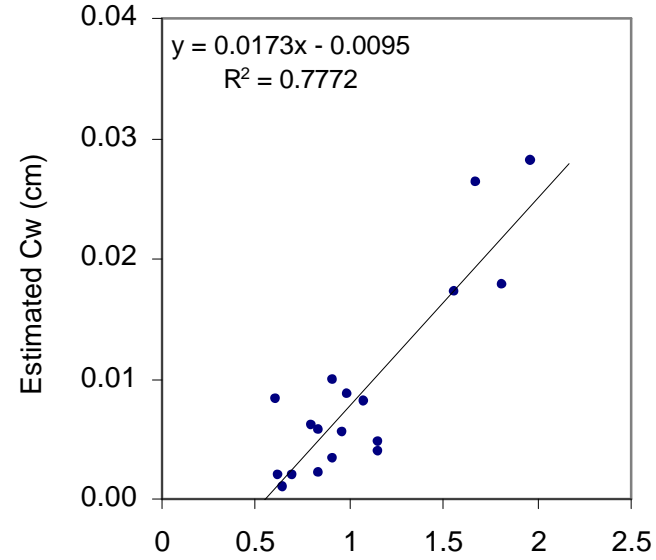
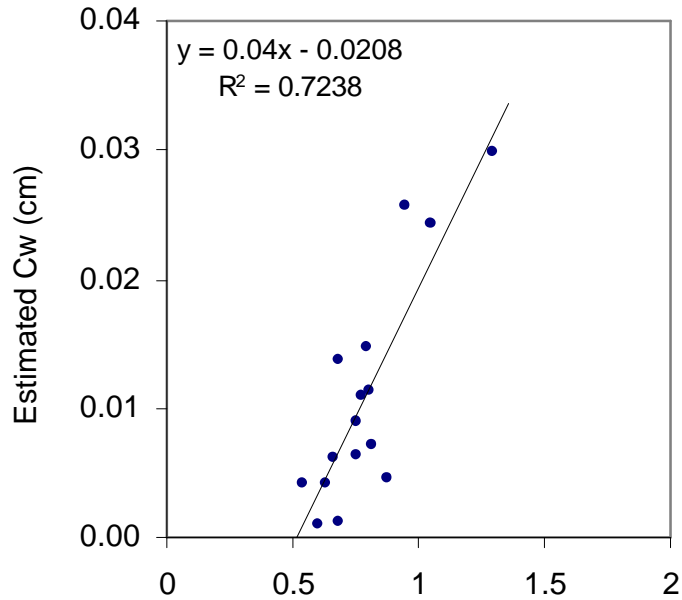
MODIS Water Index (SRWI):

$$SRWI = \frac{R_{858}}{R_{1240}}$$

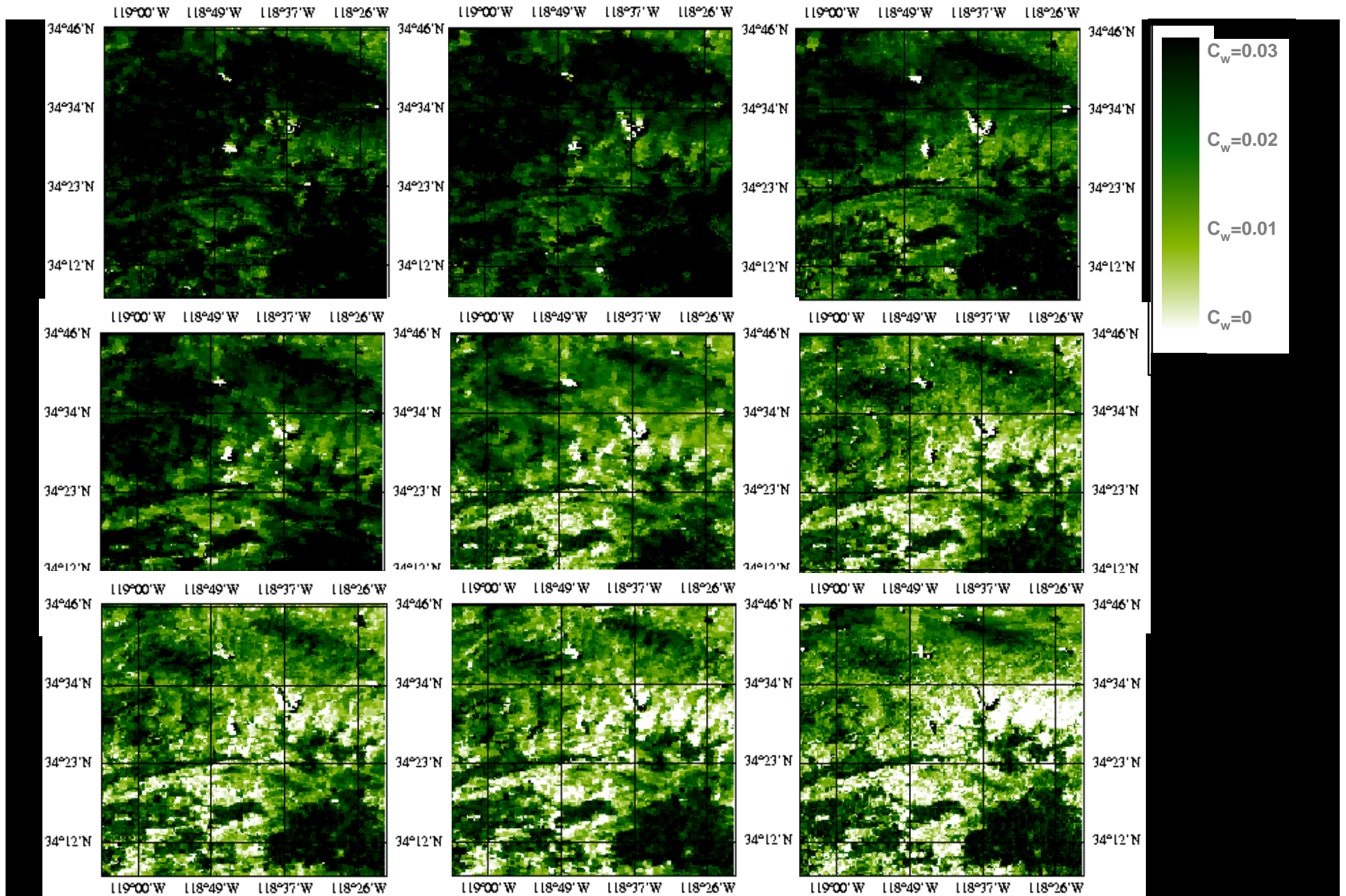


(Pablo Zarco-Tejada *et al.*, 2001 IEEE; Rem. Sens. Env. 2003)

Comparison between Field Measured Water Content VS. MODIS Prediction

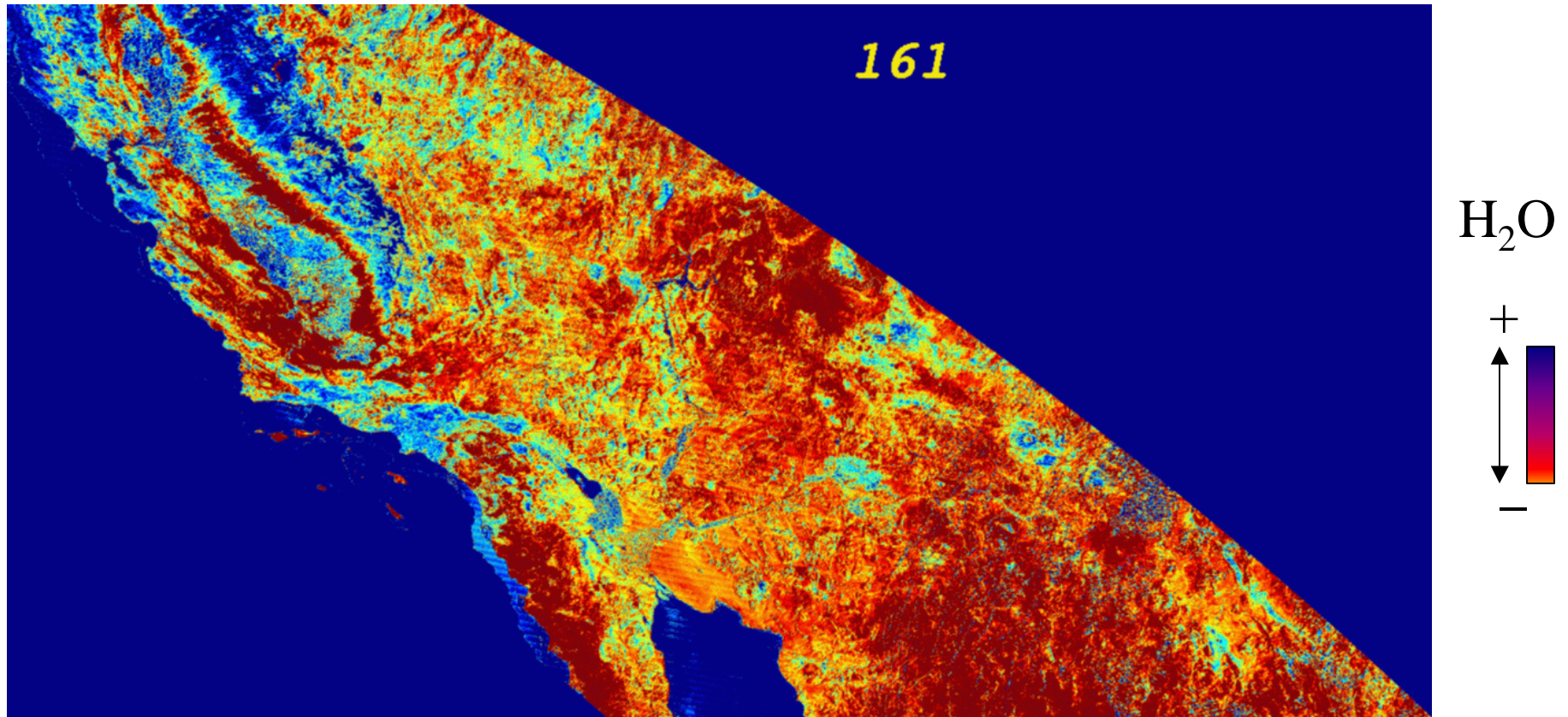


Water Content estimation from MOD09A1: seasonal variation



(Zarco-Tejada *et al.*, 2003 Rem. Sens. Env.)

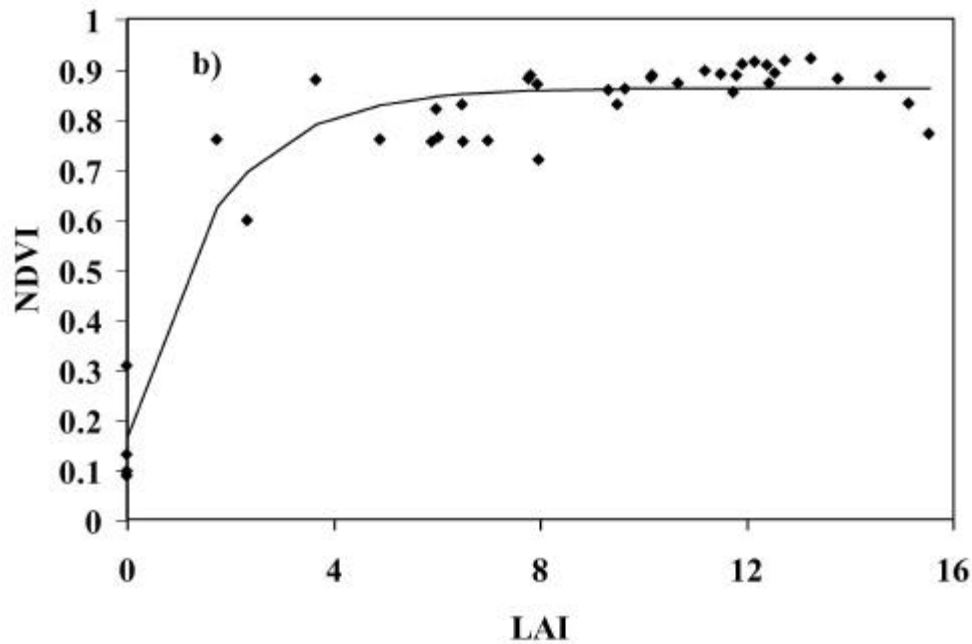
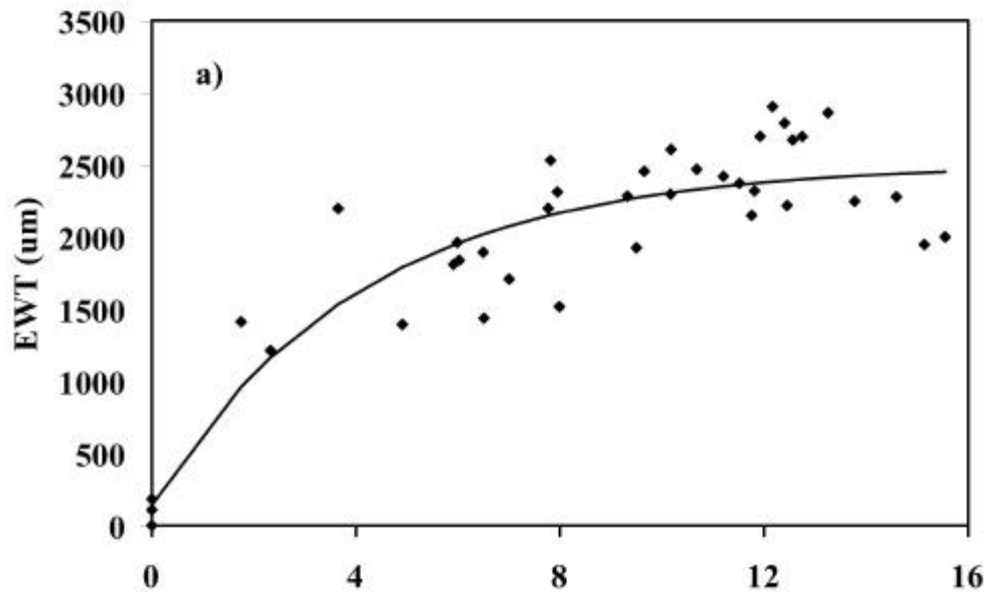
Seasonal Drought and Wildfire Potential



Canopy water content in Southern California Vegetation
Measured by MODIS Satellite

Canopy Water Content

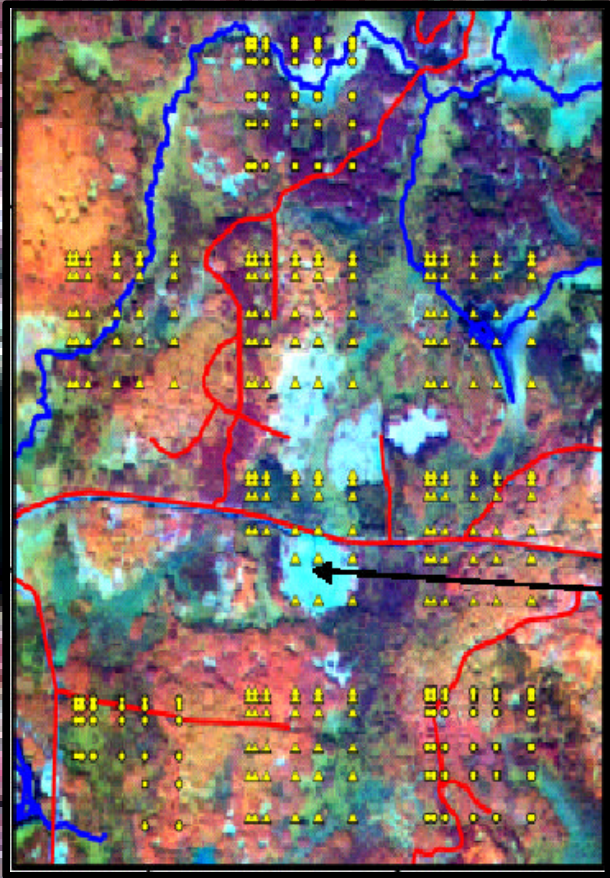
- Estimates of LAI
- Estimates of Plant Water Stress
- Estimates of Wildfire Fuel Moisture Content



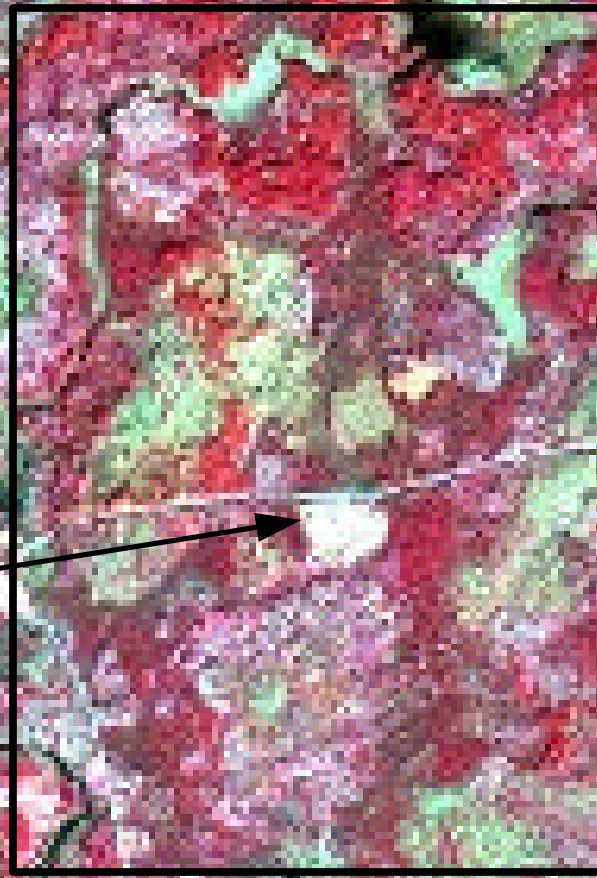
LAI
Estimated by
NDVI VS EWT

Wind River
Ameriflux Site

Wisconsin Tall Tower Flux Site

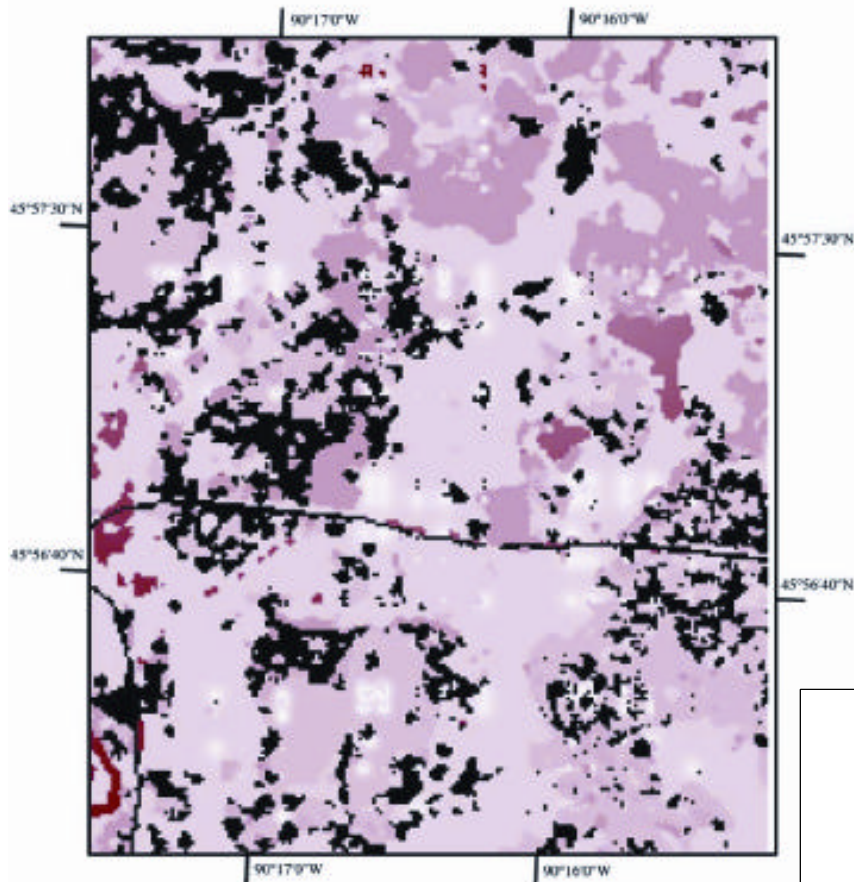


S.N. Burrows et al.
Ecosystems 2002

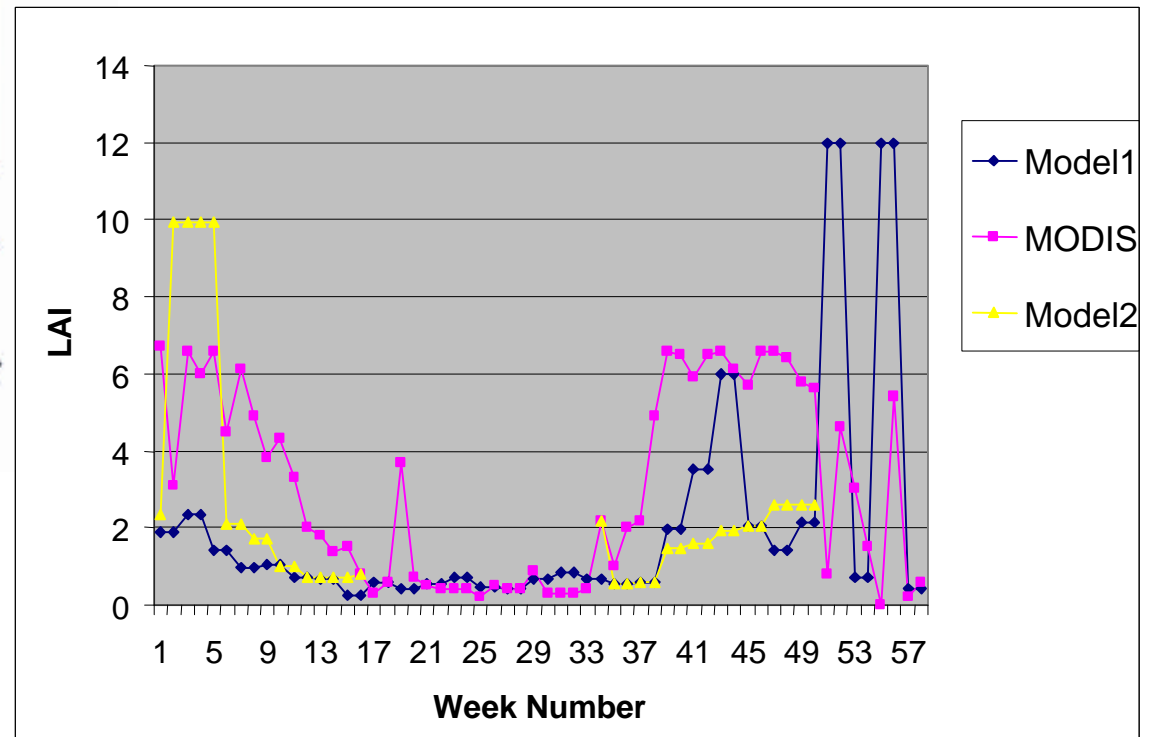


MODIS Data 2000-2001

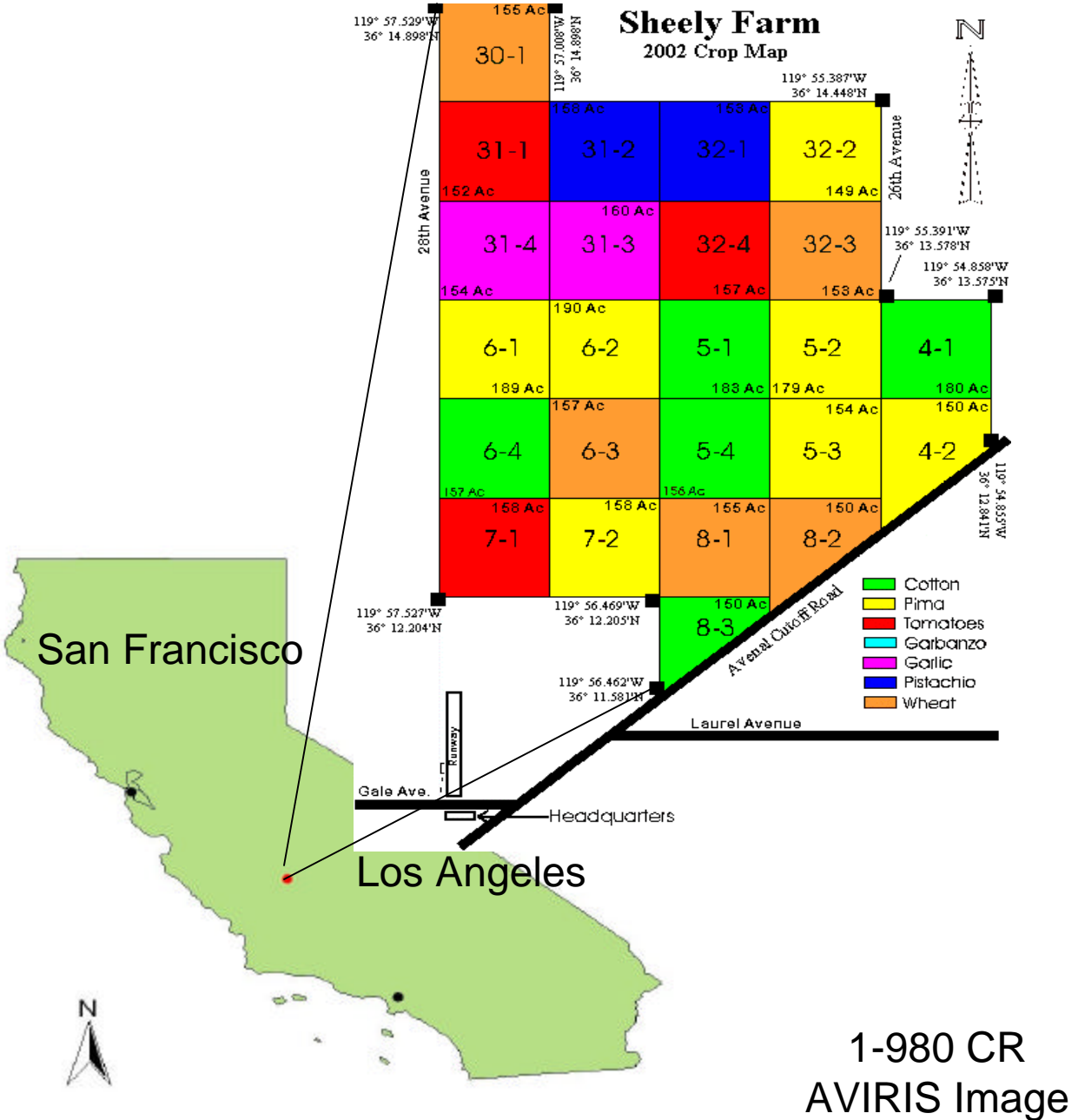
Estimate of LAI from MODIS Water Content vs. MOD09A1



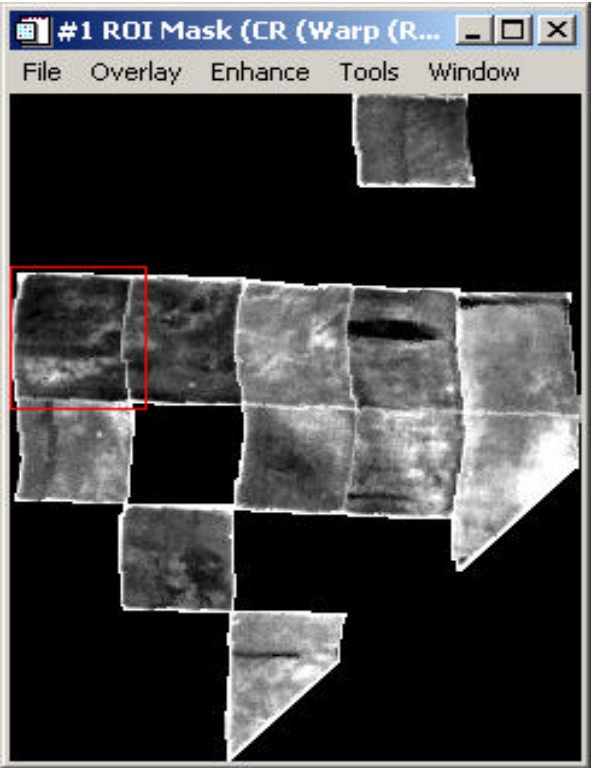
LAI Standard Error of Prediction



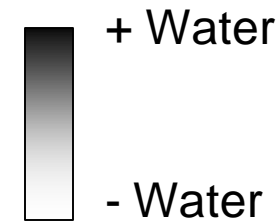
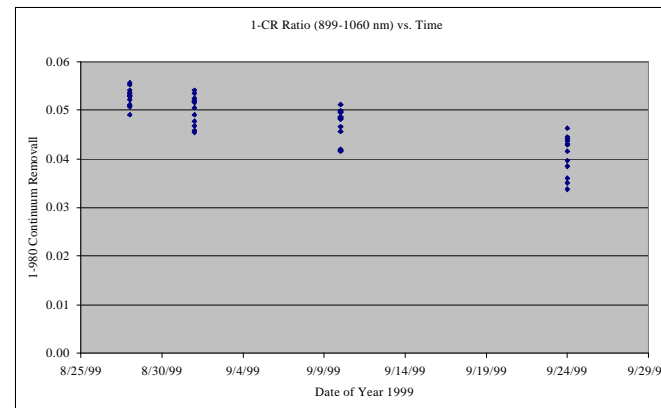
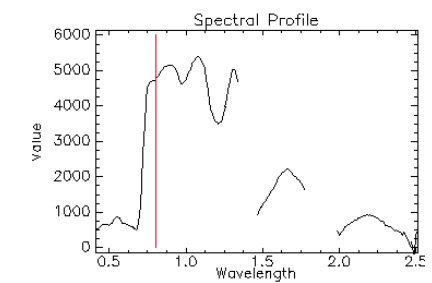
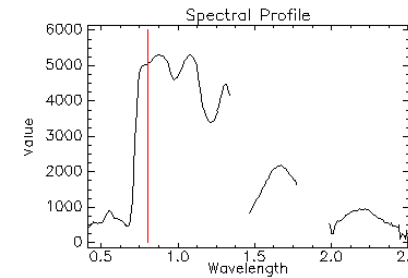
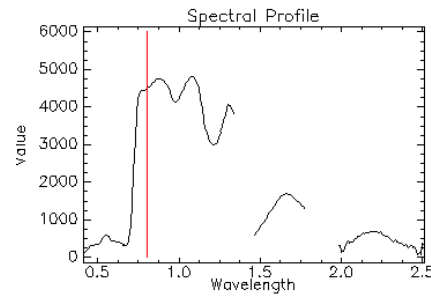
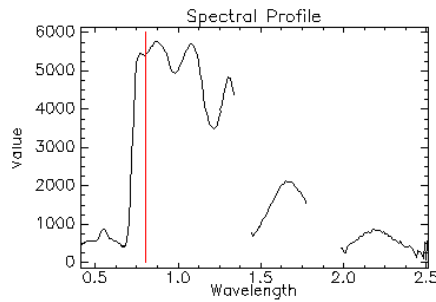
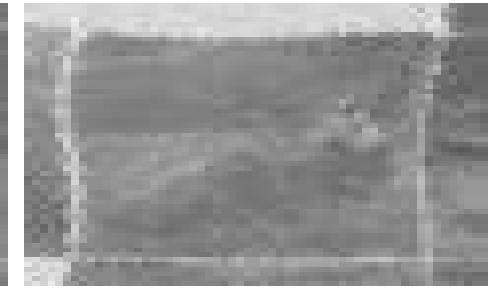
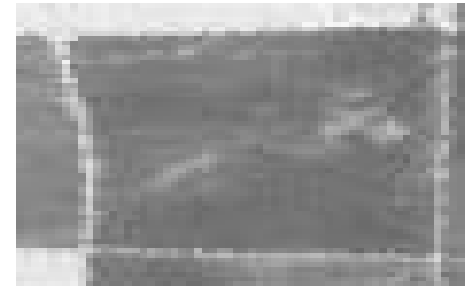
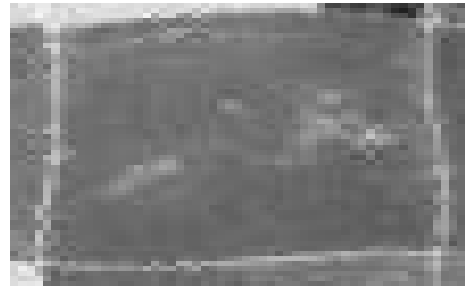
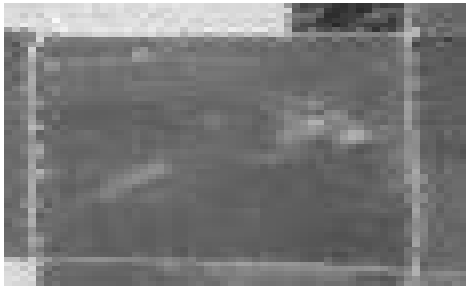
Estimating Water Stress From Water Content



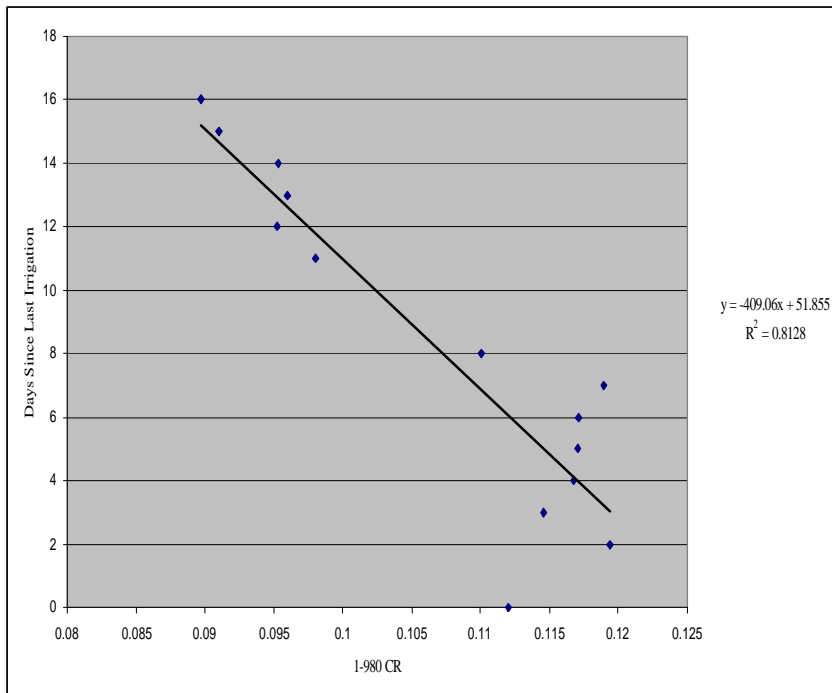
1-980 CR
AVIRIS Image



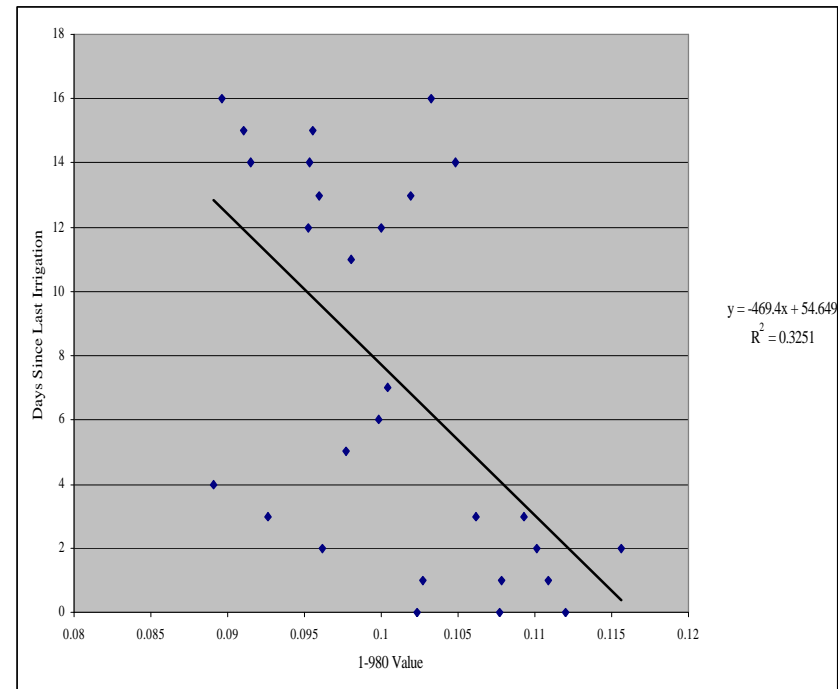
Changes in Canopy Water Content after Irrigation Cutoff



Within Field Water Content vs. Days Since Last Irrigation



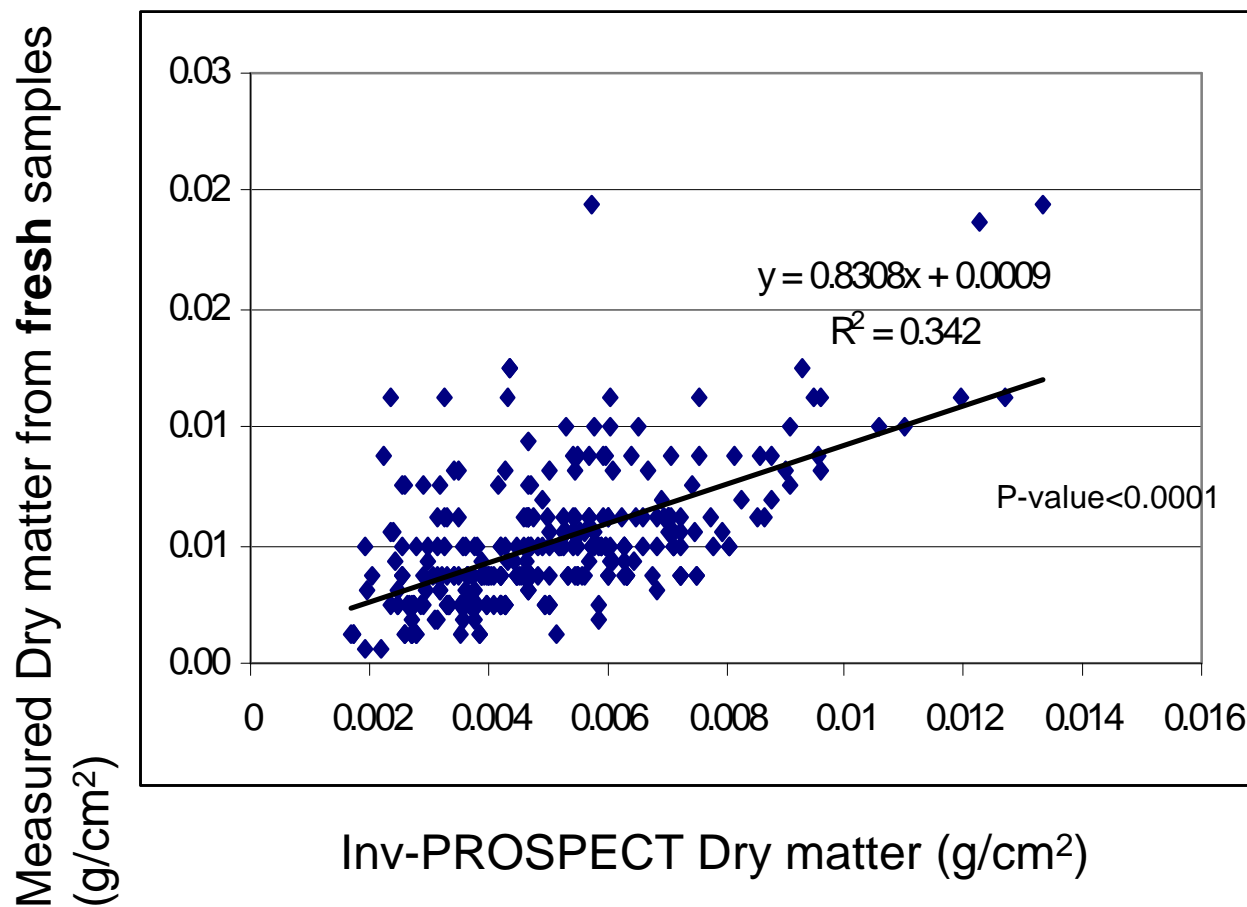
Pima Fields Only



Acala Fields Only

Estimating Fuel Moisture Content

I Dry Matter in Fresh Samples



Estimates of Fuel Moisture Content

- ! dry matter estimated seasonally
- ! water content from Water Index

