MOISST Flux Tower, PhenoCam, and MODIS VIs

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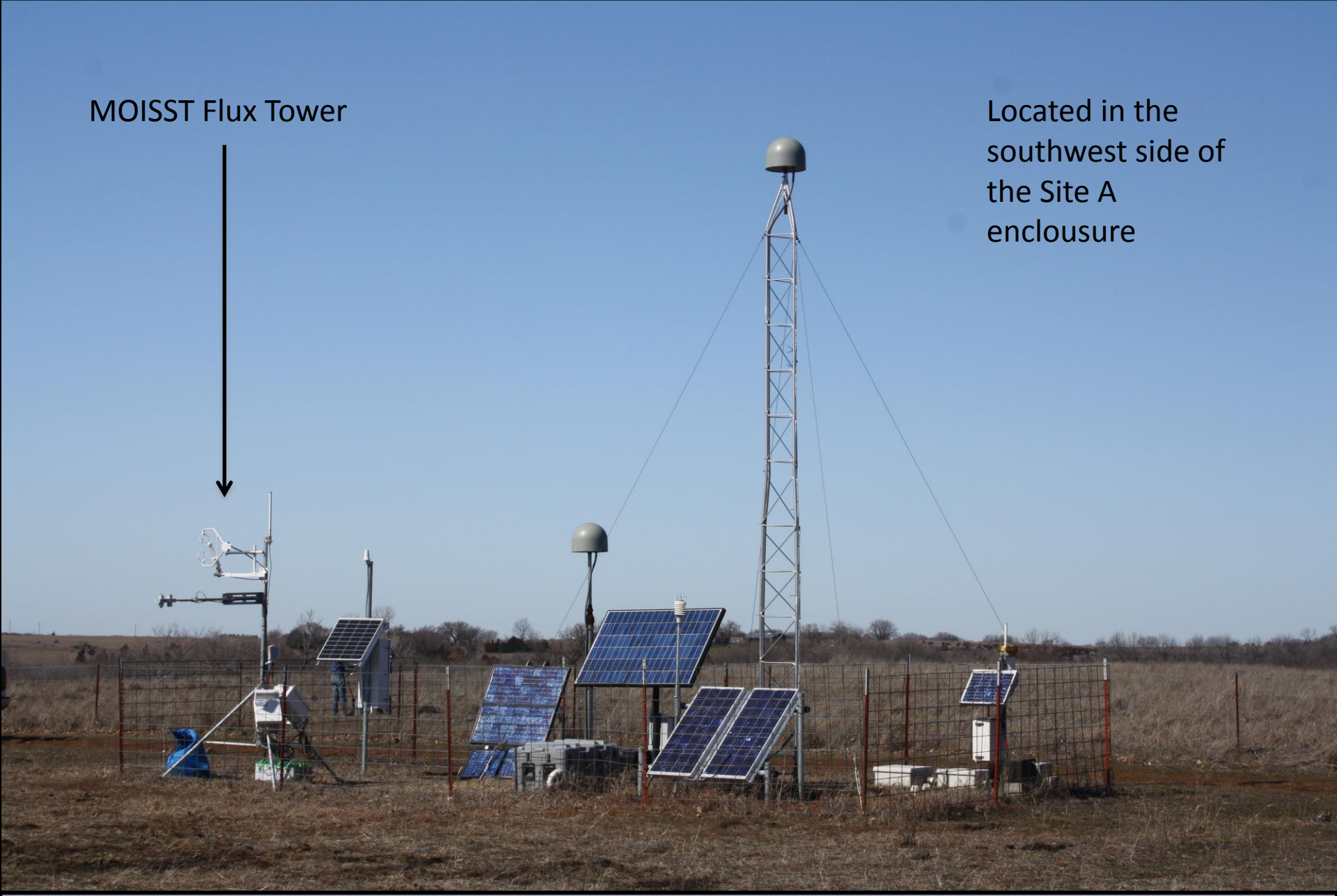


Jeffrey B. Basara, University of Oklahoma, Norman, OK
Lynn McKee, USDA, Beltsville, MD
John Prueger, USDA, Ames, IA

Deployed 7 November 2012

MOISST Flux Tower Looking Northwest

Campbell Scientific CSAT 3 3-D sonic anemometer

Licor 7500 CO_2 and H_2O Open Path System

CNR1 4-component net radiometer

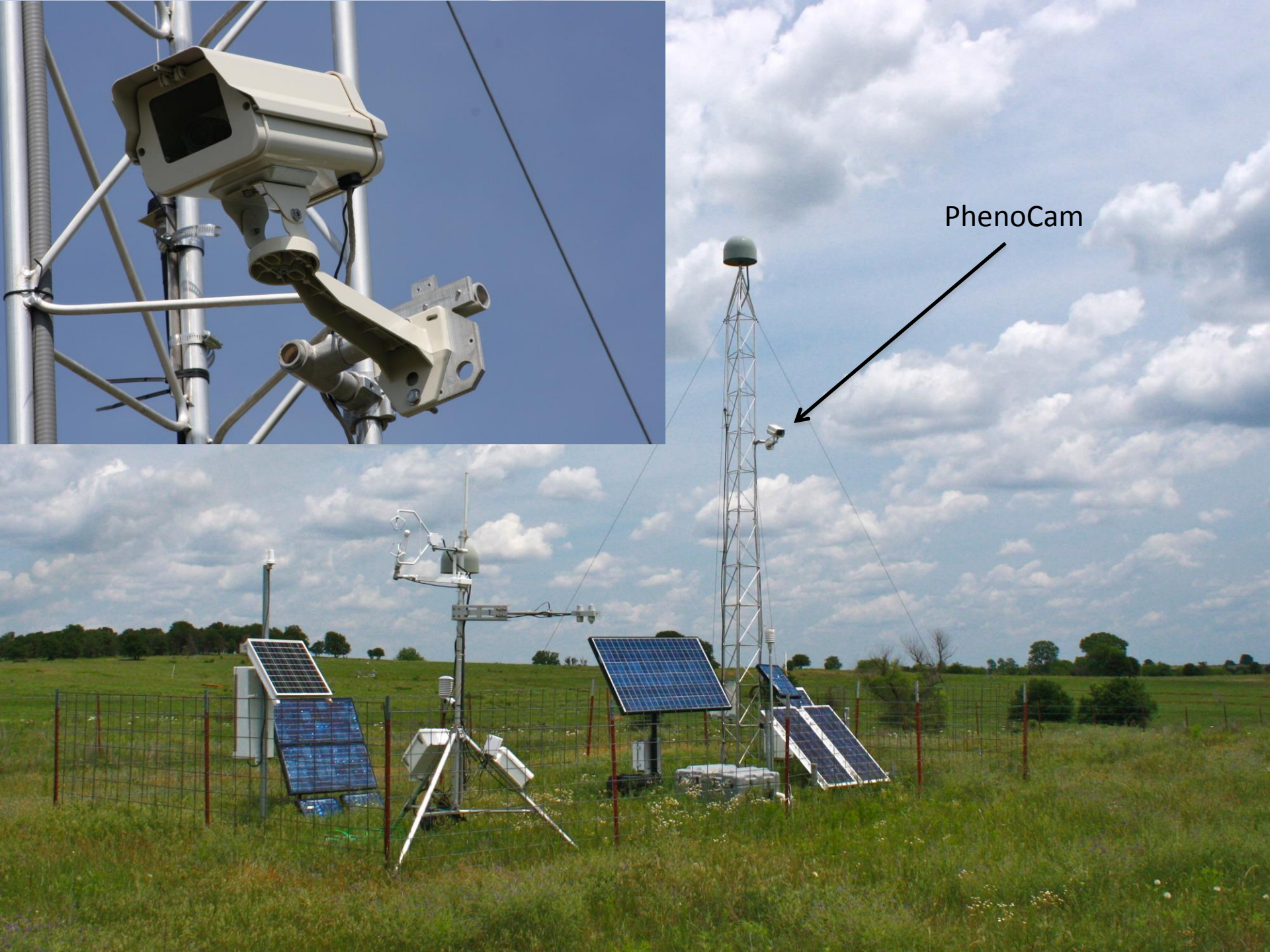
Apogee Infrared Temperature Sensor

Vaisala HMP45C air temperature/humidity sensor

Hydra Probe soil moisture sensor.

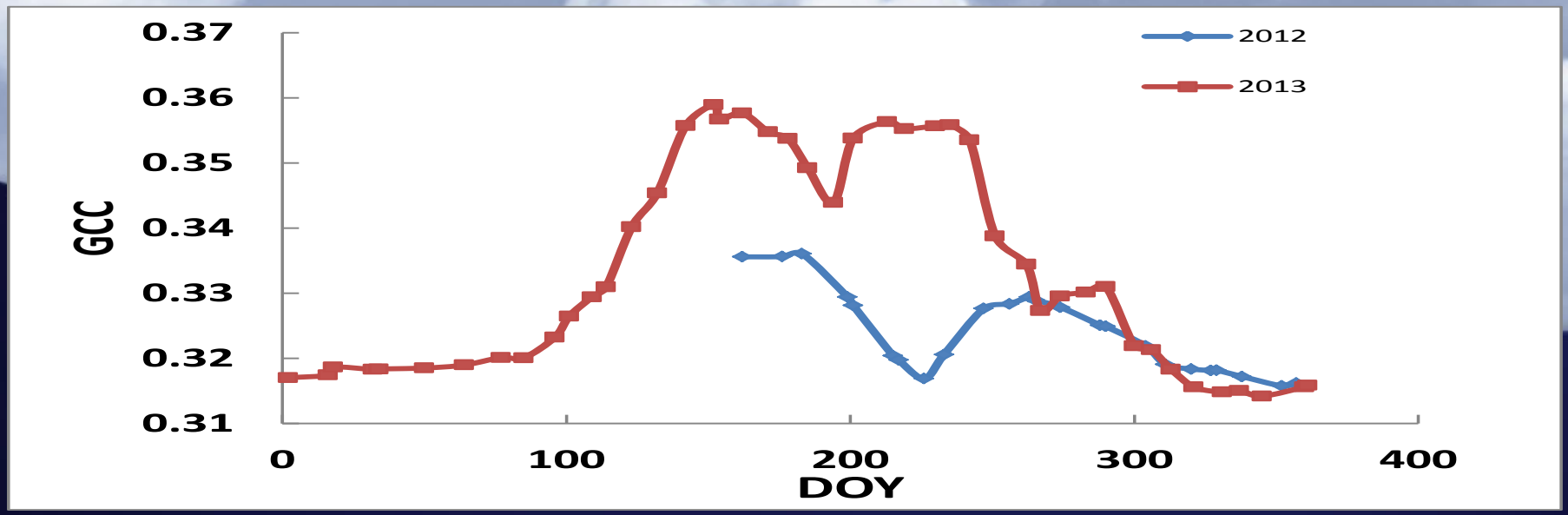
REBS soil heat flux plates (3)

iCOS and iGOS sites
at El Reno, OK

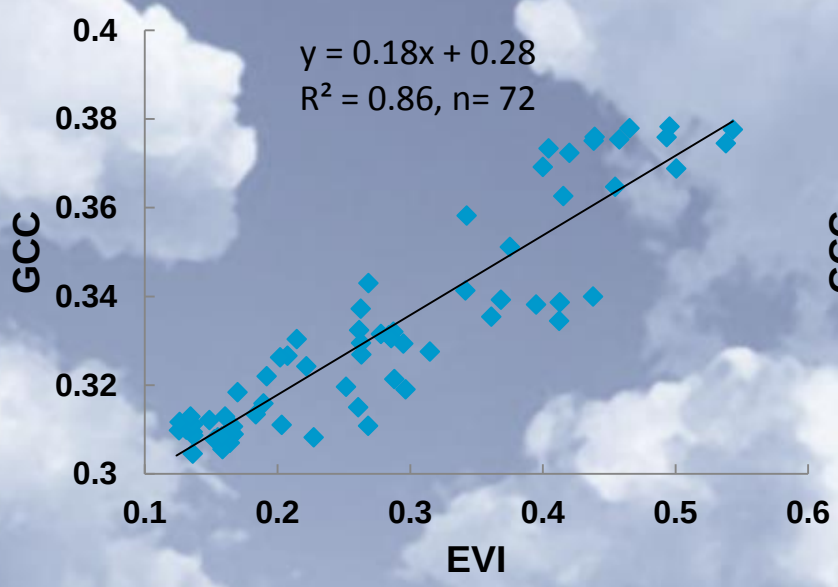

PhenoCam

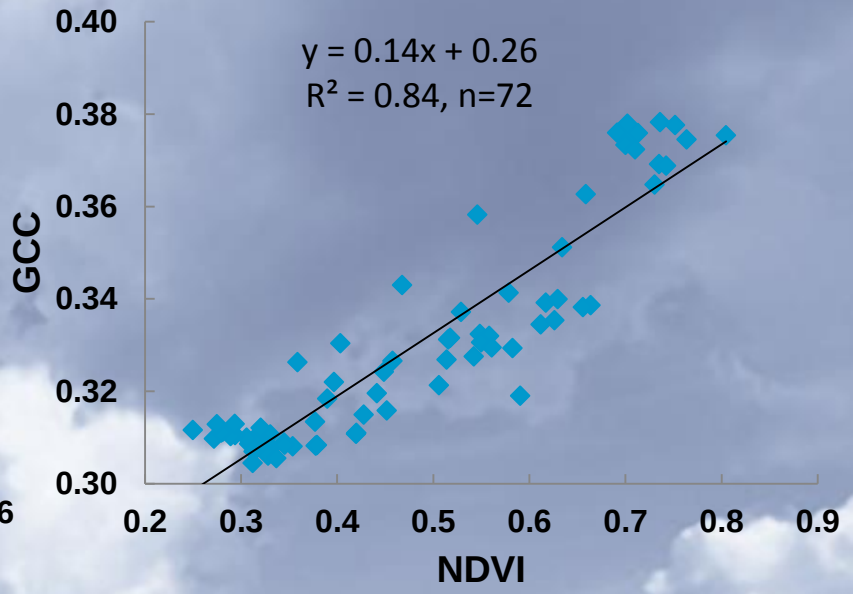
PhenoCam Observations

Seasonality of Green Chromatic Coordinate [GCC= G/(R+G+B)]



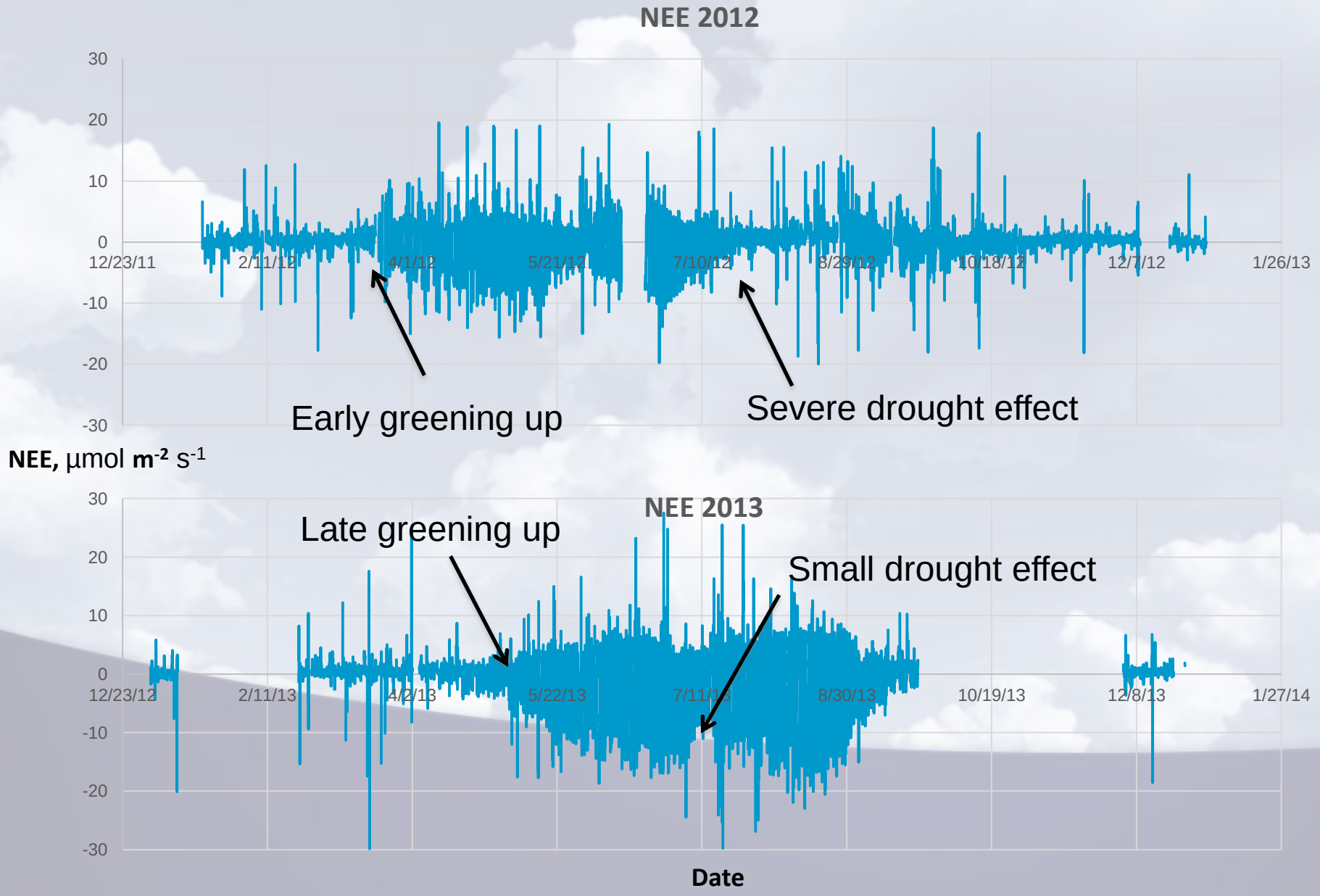
Relationship between PhenoCam GCC and MODIS EVI



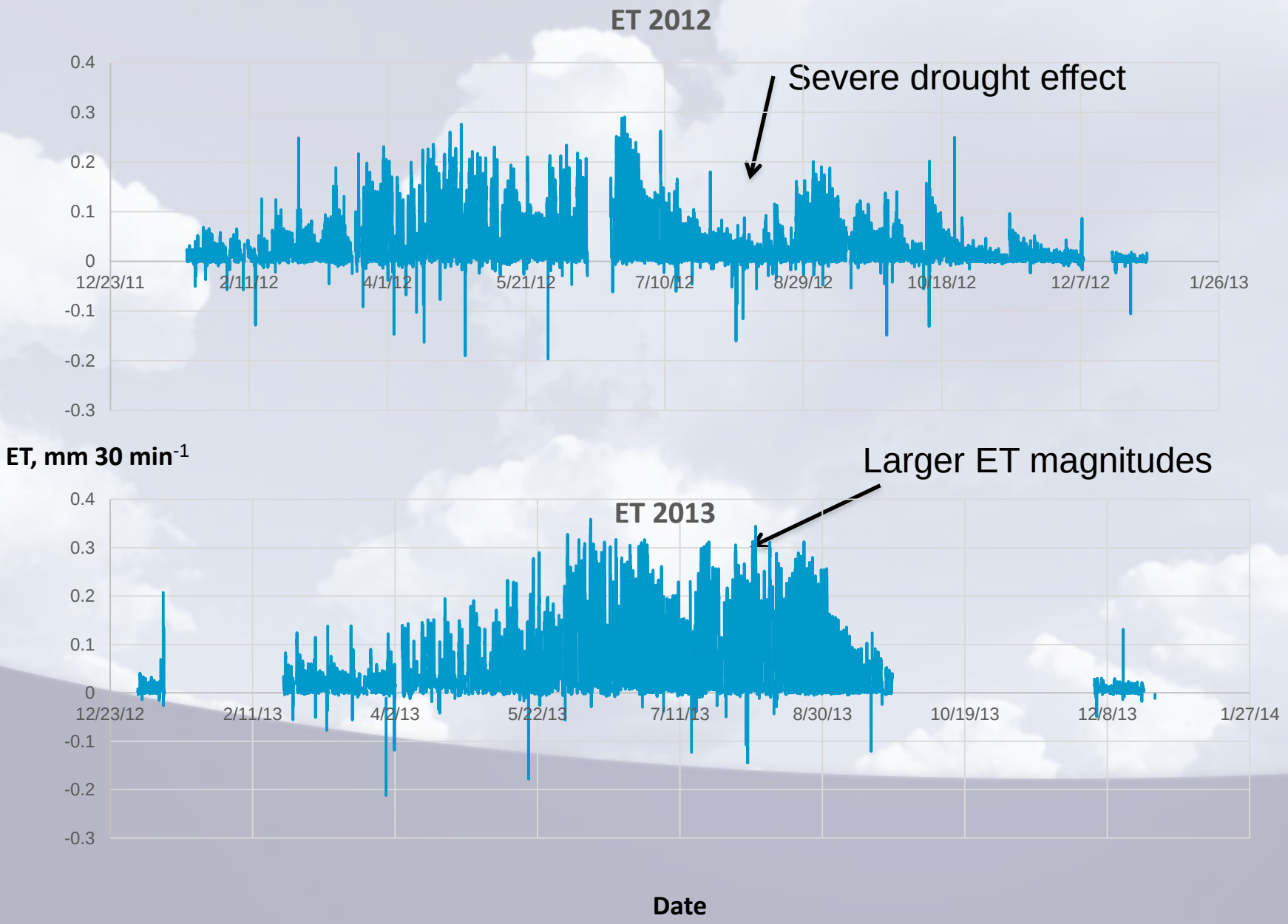


Near-surface remote sensing observation showed strong correspondence with MODIS-derived VIs.

Annual NEE Patterns 2012 and 2013 (MOISST)

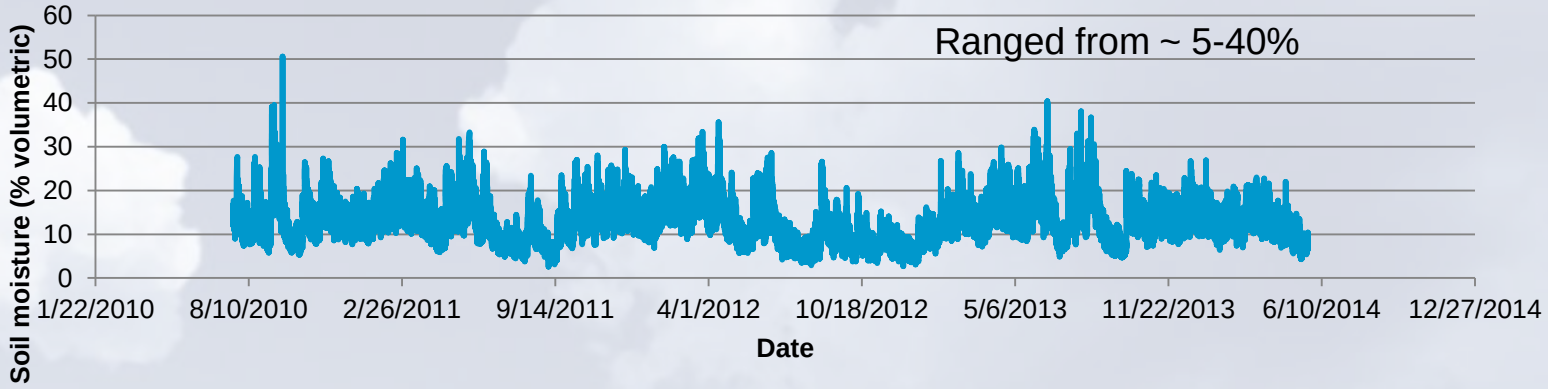


Annual ET Patterns 2012 and 2013 (MOISST)

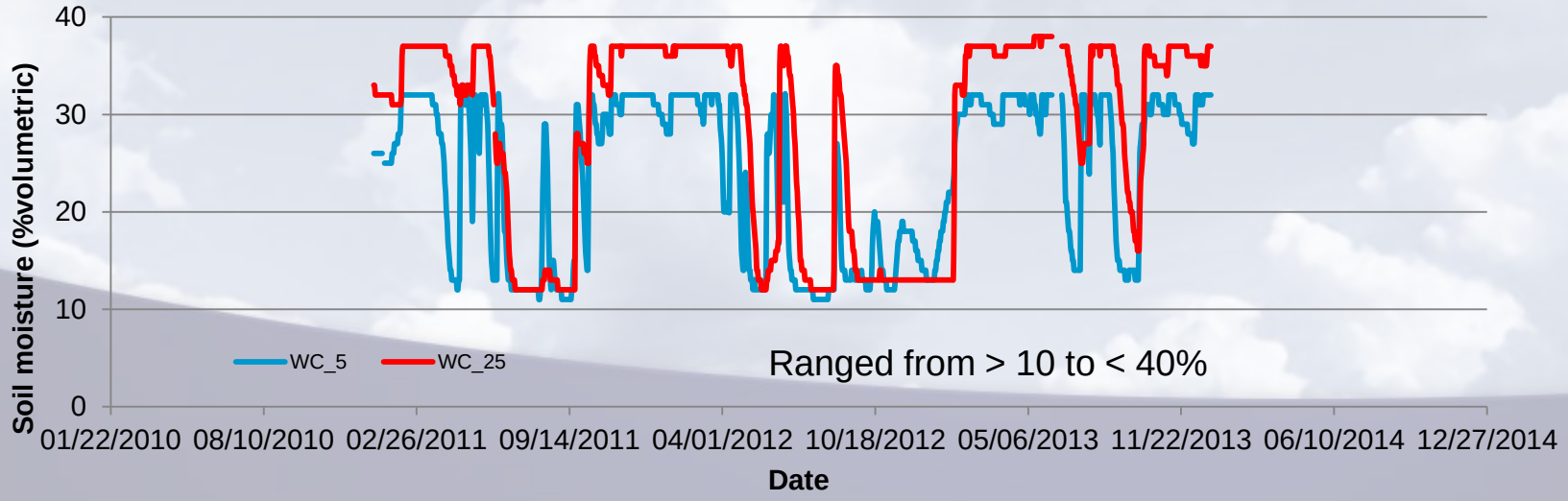


Soil Moisture Dynamics: 2011 - 2013

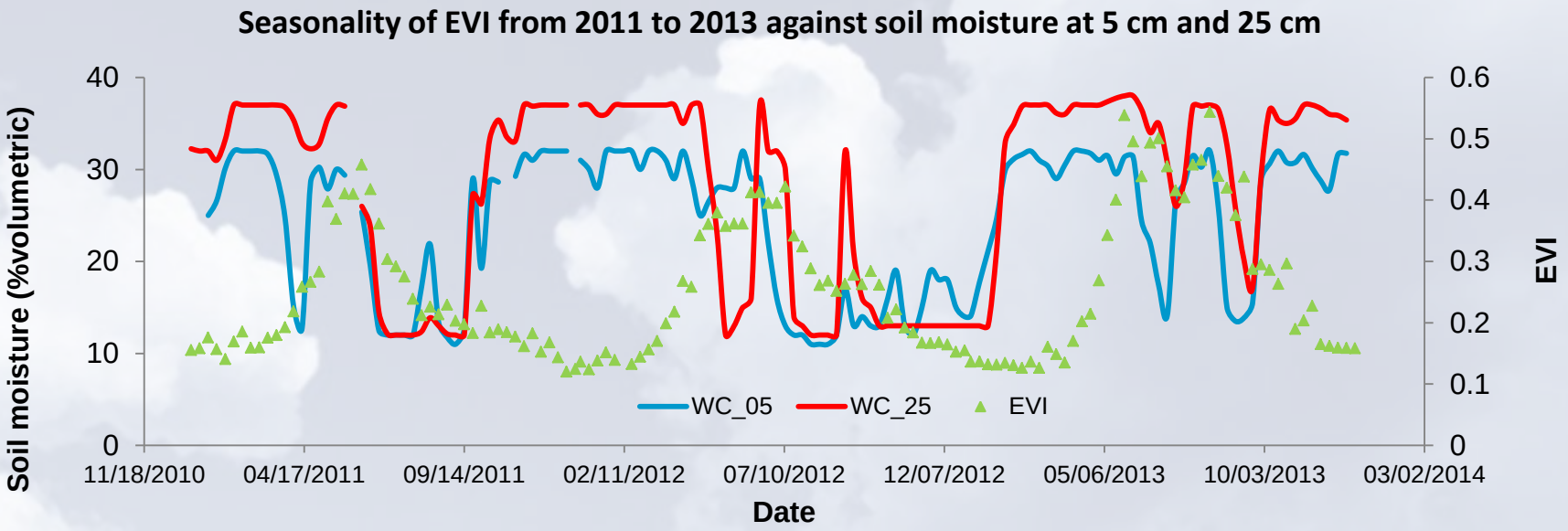
COSMOS measurements
(http://cosmos.hwr.arizona.edu)

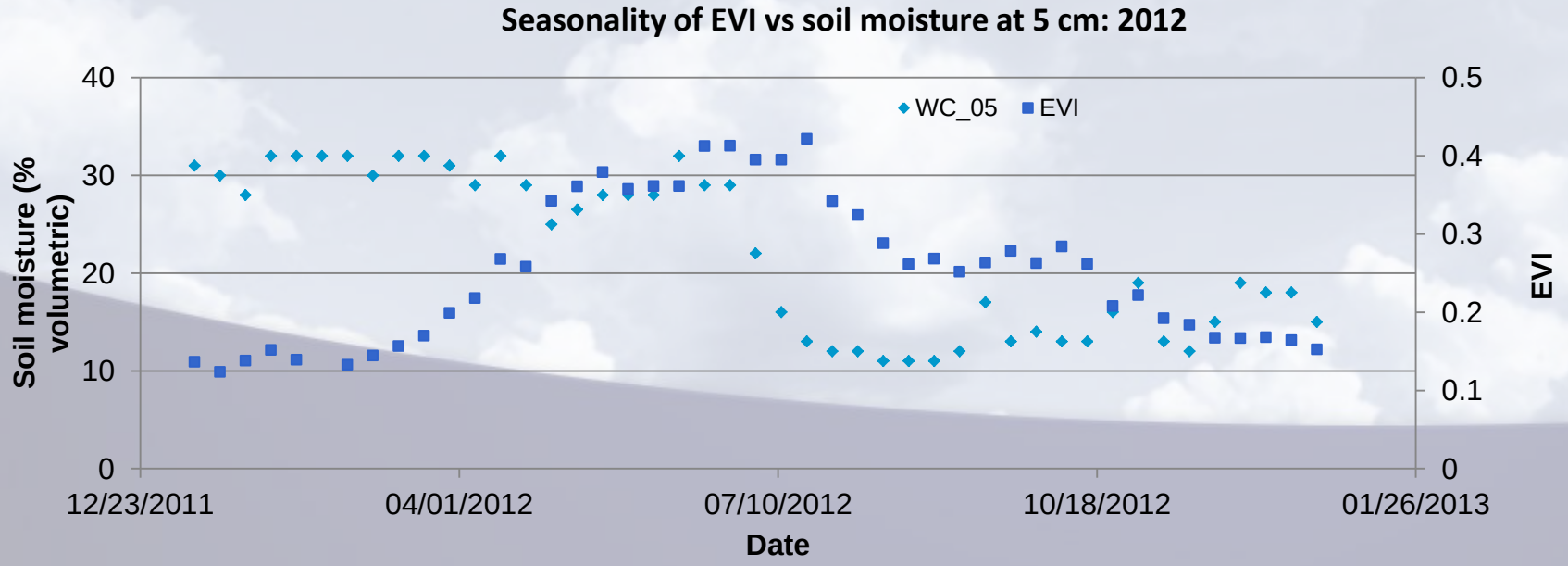


Mesonet soil moisture at 5 and 25 cm depths



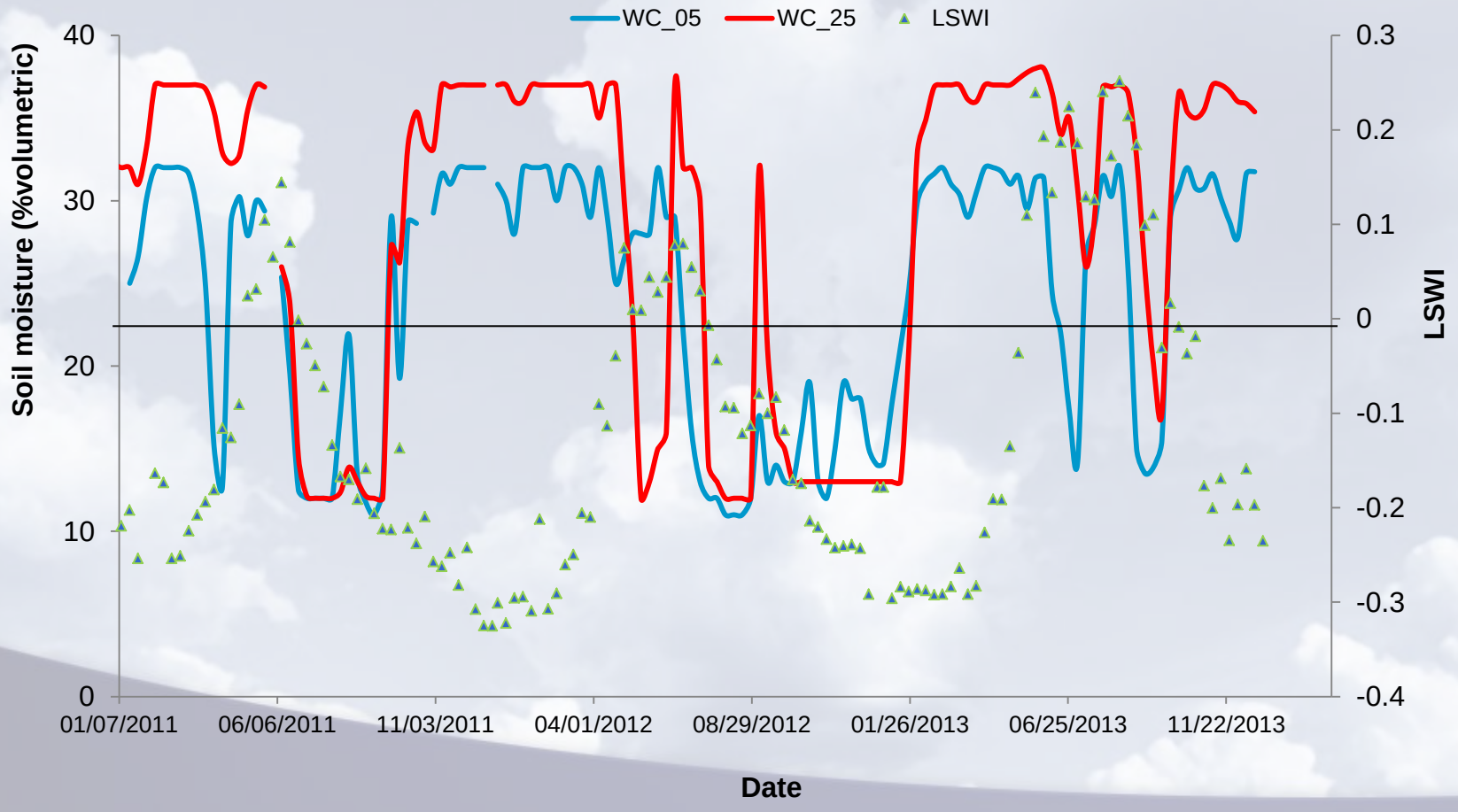
MODIS VIs: 2011 - 2013





EVI declined sharply – soil moisture < 15%

Seasonality of LSWI from 2011 to 2013 against soil moisture at 5 cm and 25 cm



Future Work

1) Hiring a GRA to specifically work on flux tower data at MOISST (research and requests) and similar sites.

2) Similar flux towers (and a COSMOS system) are also being deployed at the Grazinglands Research Laboratory near El Reno, OK.

3) Expand work related to the Mesonet Evapotranspiration Model (MEMo) using MOISST Flux data.

4) Expand work on the 2012 flash drought analysis and compare it with 2013 flash recovery observations.

5) Integrate/link the flux tower data with the other existing datasets and collaborative projects.

Questions?