

In-situ sampling and flux
measurements at Harvard Forest to
support the SMAP Cal/Val program
In coordination with AirMOSS and
COSMOS

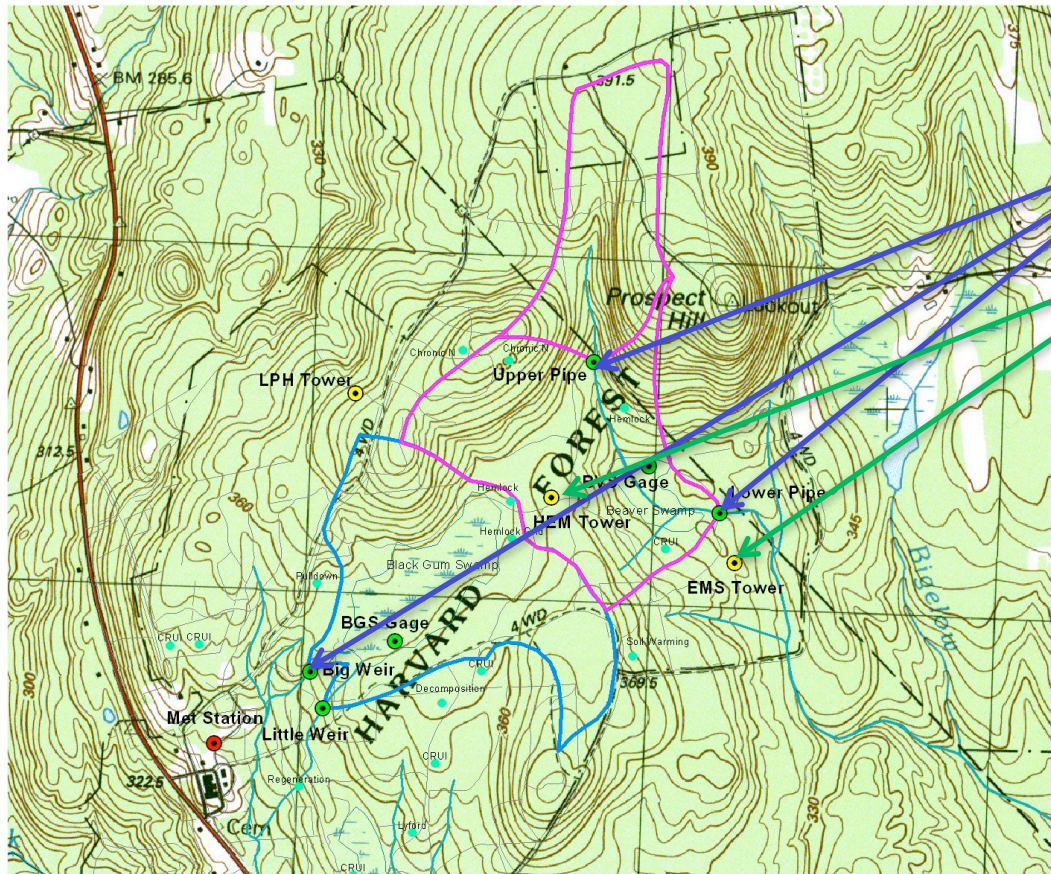
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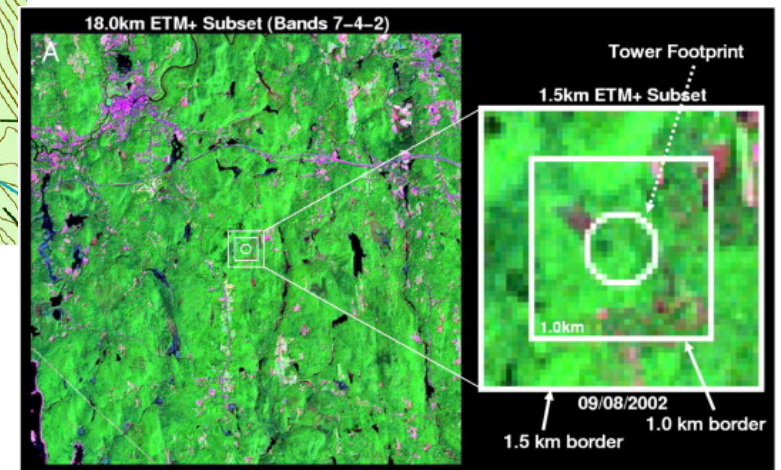
S. C. Wofsy, Emery Boose, Andrew Richardson,
AirMOSS project, COSMOS

Site Description



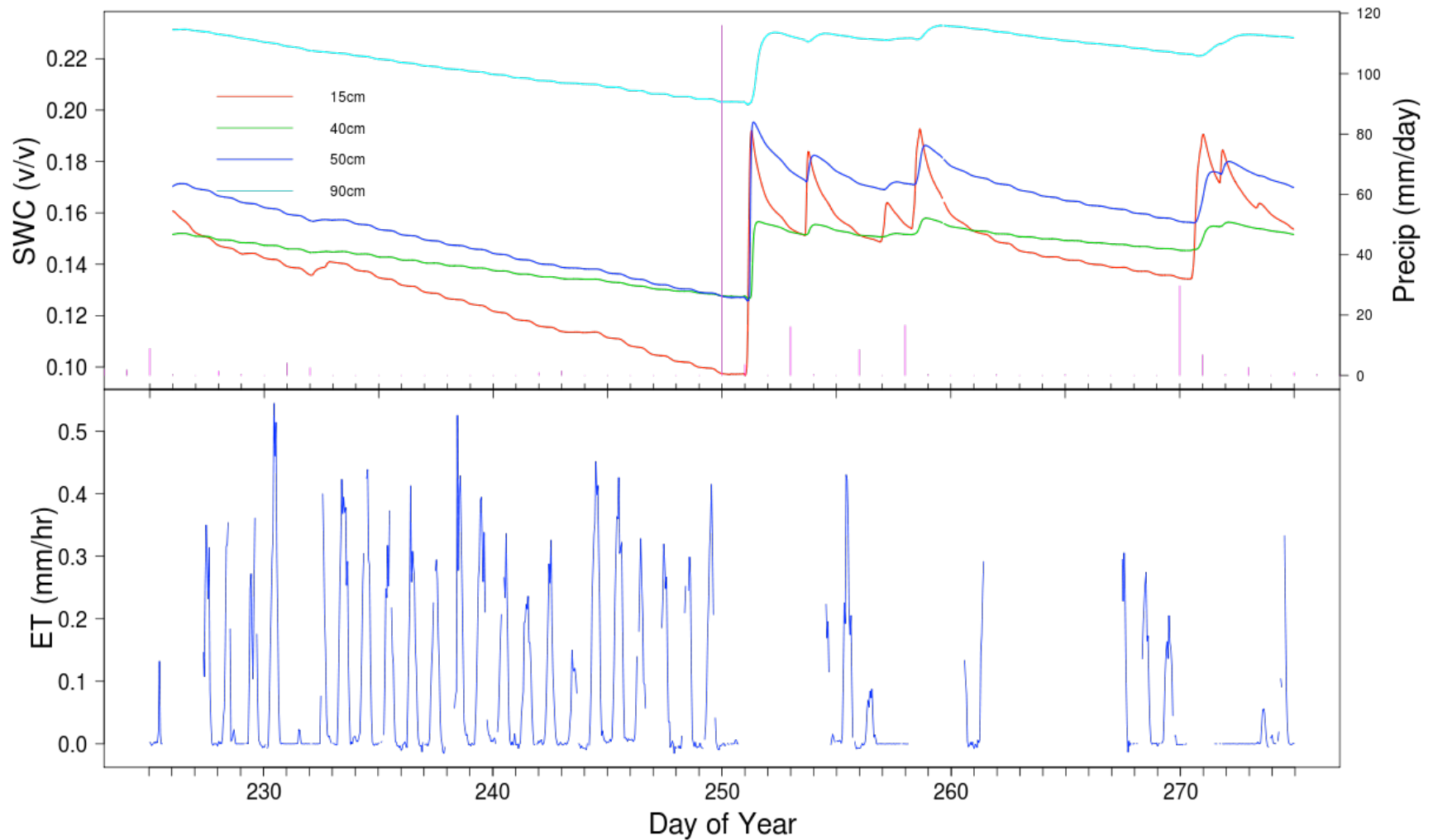
Stream gauge

Flux Tower



Harvard Forest is an LTER site and AmeriFlux Flux tower since 1989

- There are continuous CO₂ and H₂O flux observations from the EMS tower since early 1990's, supplemented by soil temperature and moisture measurements that have become more spatially extensive and enhanced temporal resolution over the last 5 years, +meteorology&streamflows
- Additionally there are extensive records of land use, soils, vegetation on the main Harvard Forest holdings.
- Co-location of in-situ soil measurements, multiple remote sensing approaches (and scales), ET from flux towers, and streamflow in headwater catchments.



Data example showing soil moisture drawdown and recharge by precipitation
ET fluxes decline with canopy senescence in late Autumn
Flux gaps due to precipitation affecting sensors

Issues?

- Flux towers and soil-moisture pits are existing
- COSMOS probe is being installed May 2011
- Flux data is delayed up to a week for processing, soil pit data can be processed daily.
- Near Real time images of canopy and ground for quantifying leaf presence and snow depth/extent + snow pillow.
- Near Real time meteorology
- SMAP products will provide new constraints for understanding controls on ecosystem carbon budgets, and quantifying watershed scale hydrology.
- Contributes to overall goal of understanding forest/atmosphere interaction at landscape scale
- Models as linkage between different types and scale of observations