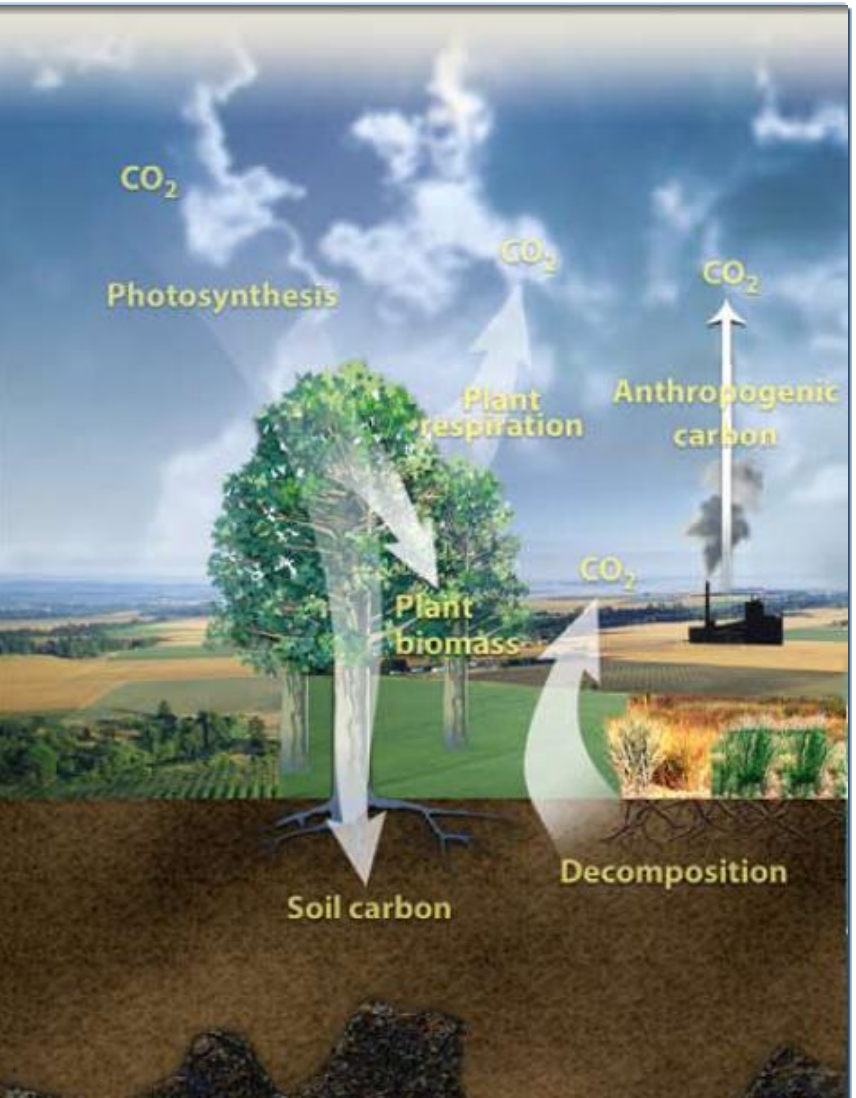
AmeriFlux Annual Meeting



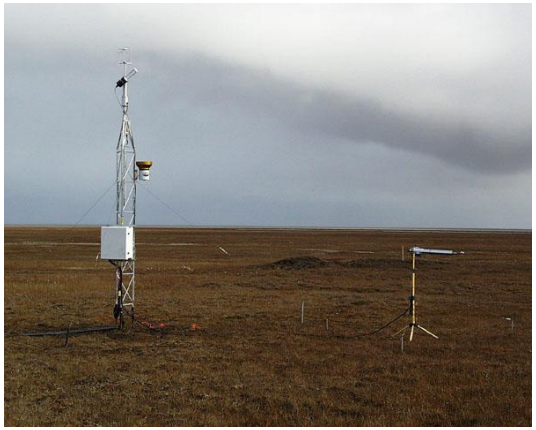
AmeriFlux Role in NACP

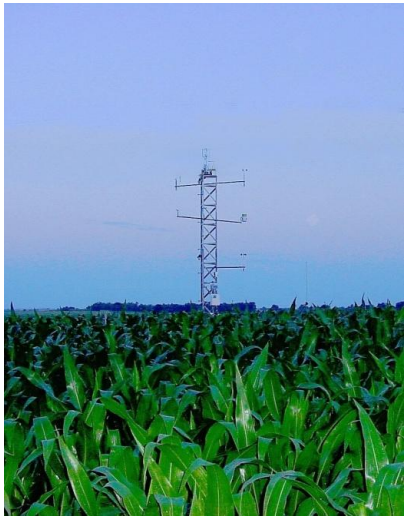
Bev Law
Prof. Global Change Forest Science
Oregon State University

New Orleans, LA Jan 31-Feb 1, 2011

AmeriFlux Objectives

- Quantify magnitude and variation in C storage and exchanges of carbon, water and energy across a range of vegetation types, disturbance histories, climatic conditions
- Understand influence of climate, land cover, natural disturbance, land use on terrestrial C processes and linkages with water, nitrogen, energy
- Produce a high-quality data base, synthesize results, participate in NACP model evaluation/synthesis

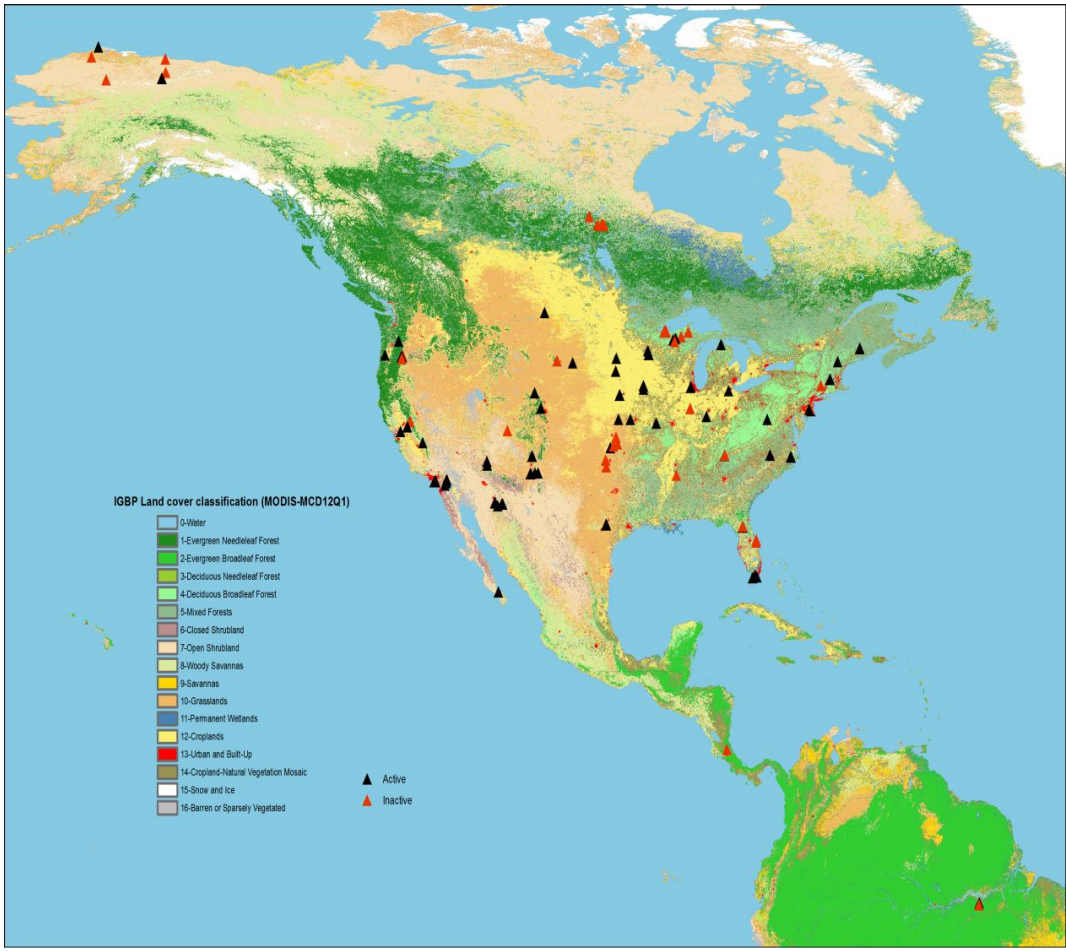




AmeriFlux Network

http://public.ornl.gov/ameriflux

- Operational since 1996
- ~93 active sites as of Jan ‘11. Most major ecoregions covered
- ~21 sites running > 10 years
- 45 sites funded by DOE, 21 NSF, 15 USDA, 8 NOAA, 3 universities, and 1 NASA



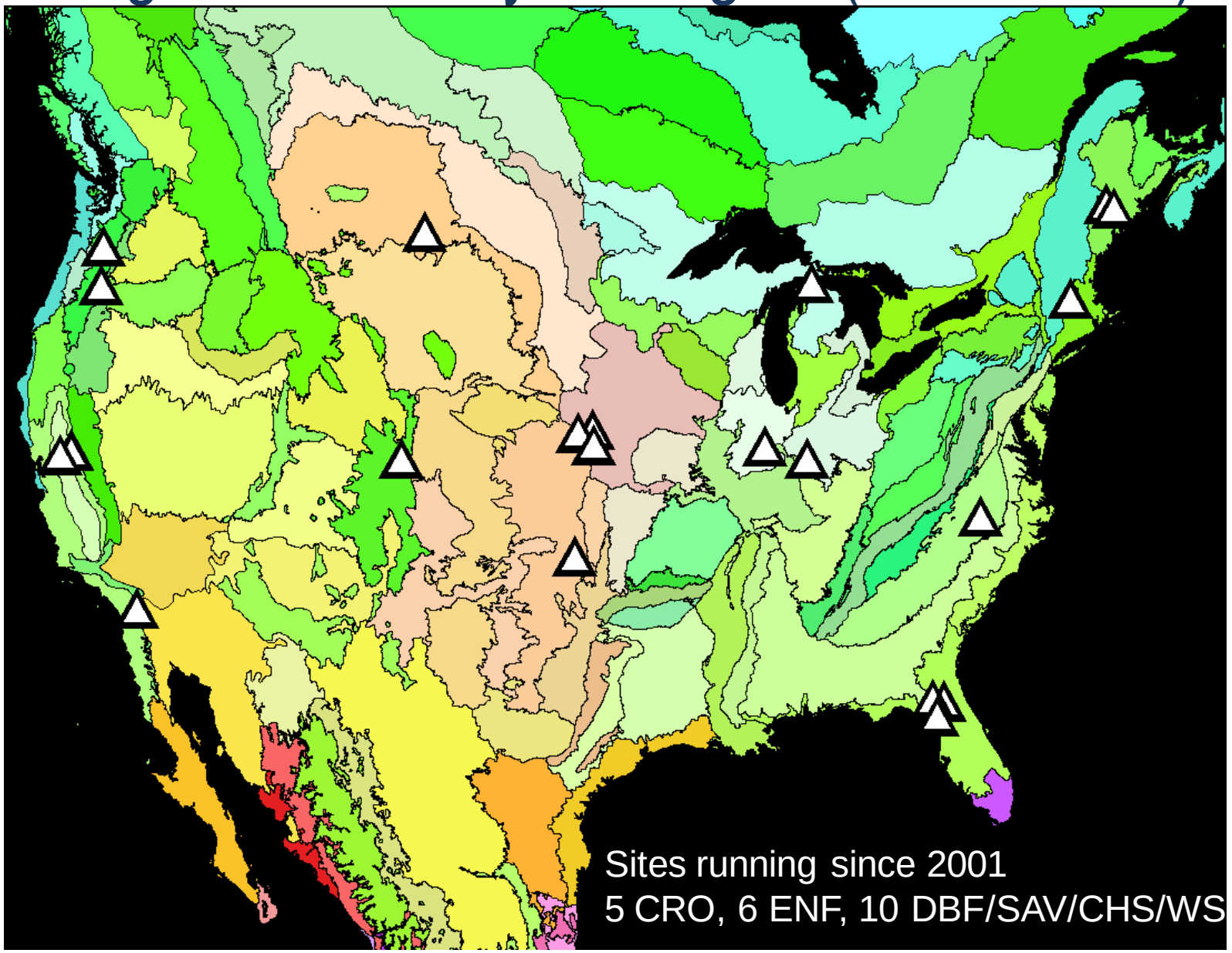
(black = active)

AmeriFlux Role in NACP

Observation-driven analyses that combine in situ with satellite observations and models to understand terrestrial carbon processes

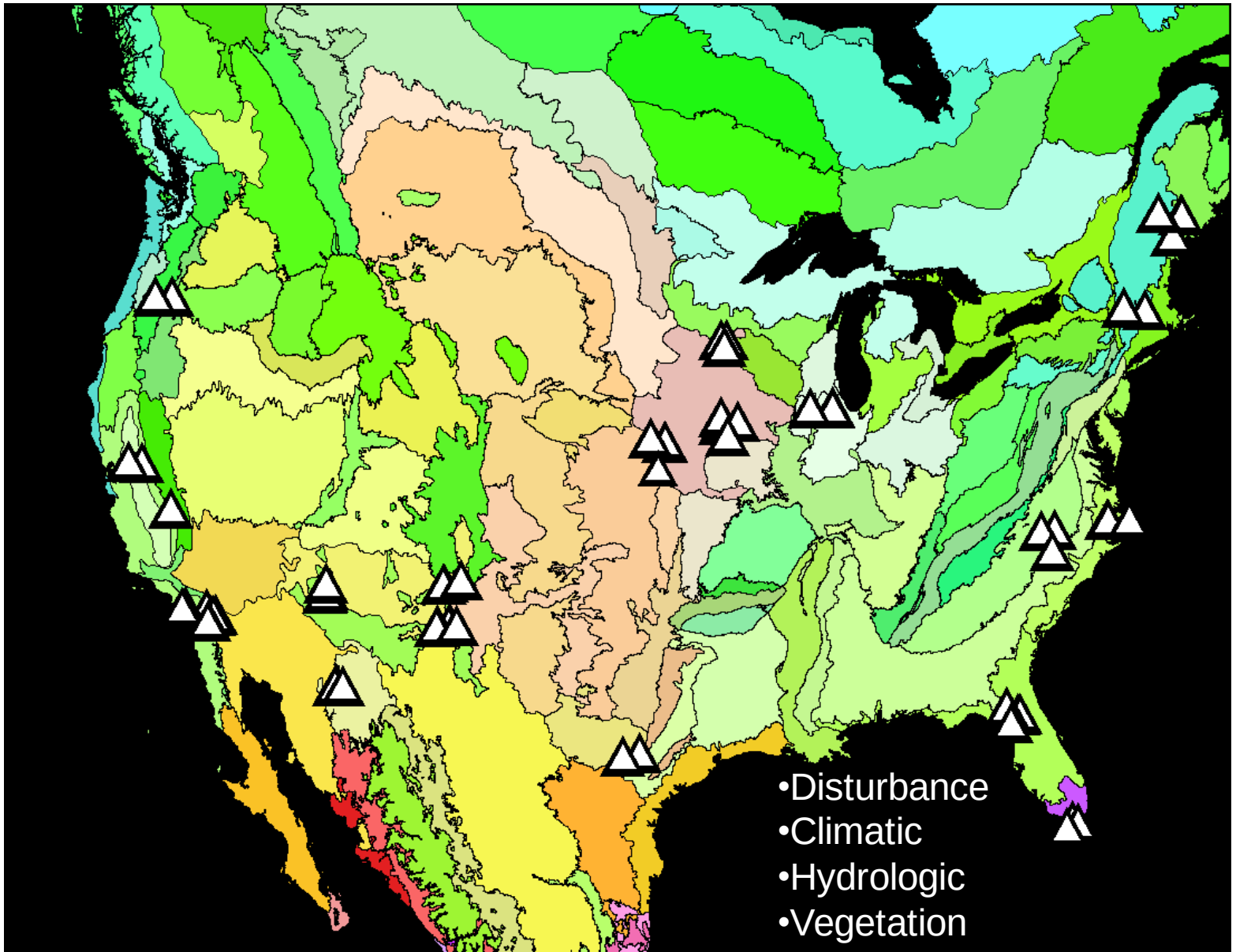
- Mechanistic understanding of processes influencing C cycling
- Tools for scaling fluxes with satellite data
- Process model evaluation, calibration, parameters
- Inverse modeling priors
- Satellite data evaluation (e.g. ET, GPP, albedo, disturbance)

Long-term Sites by Ecoregion (Omernik L3)

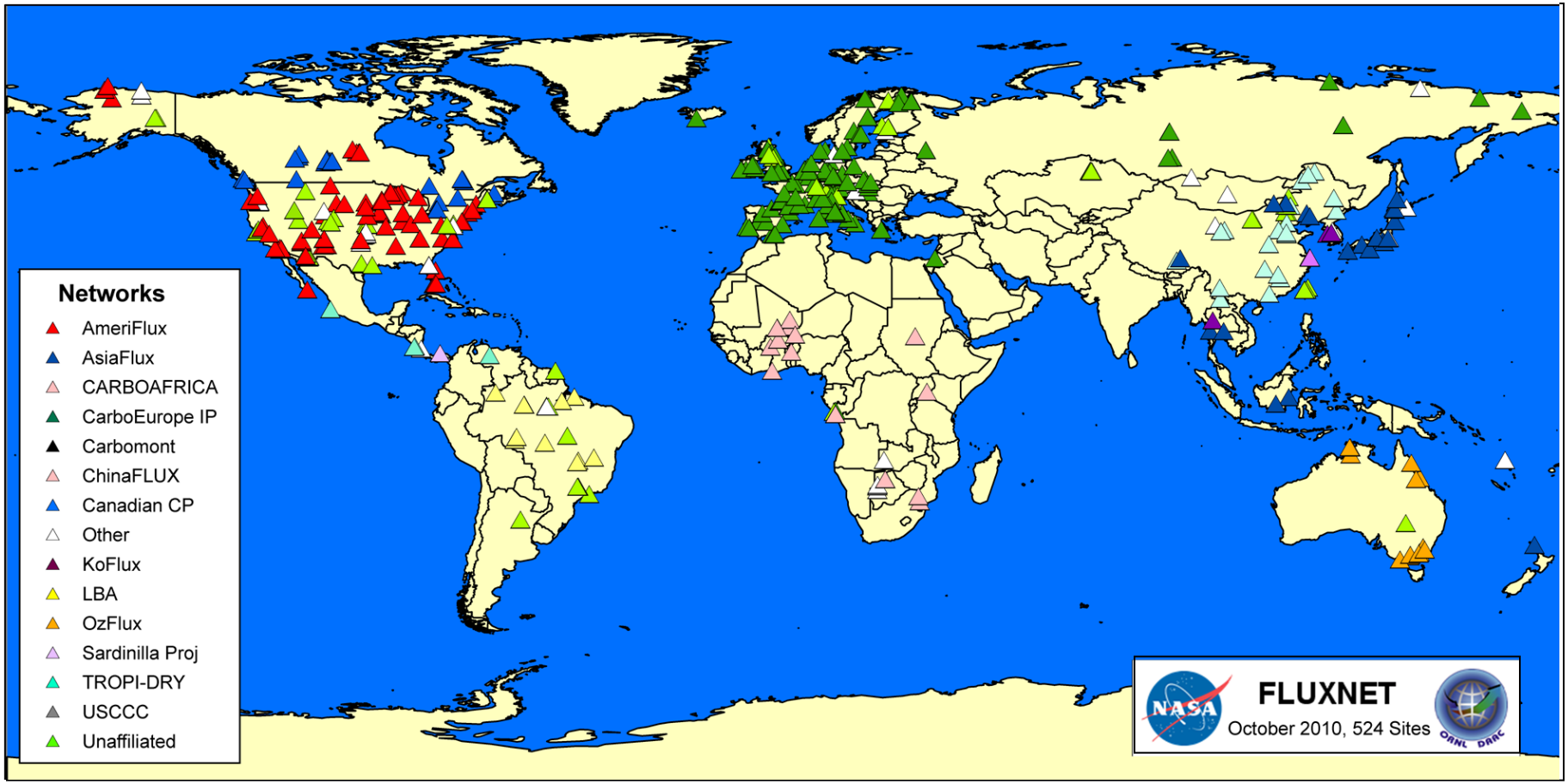


~16 Clusters of Sites Along Gradients

1 in NW, 5 in SW, 4 in NC, 1 in SC, 2 in NE, 3 in SE



FLUXNET: A Global Network of Observation Sites
500+ Sites, 13 Regional Networks, 45 Countries

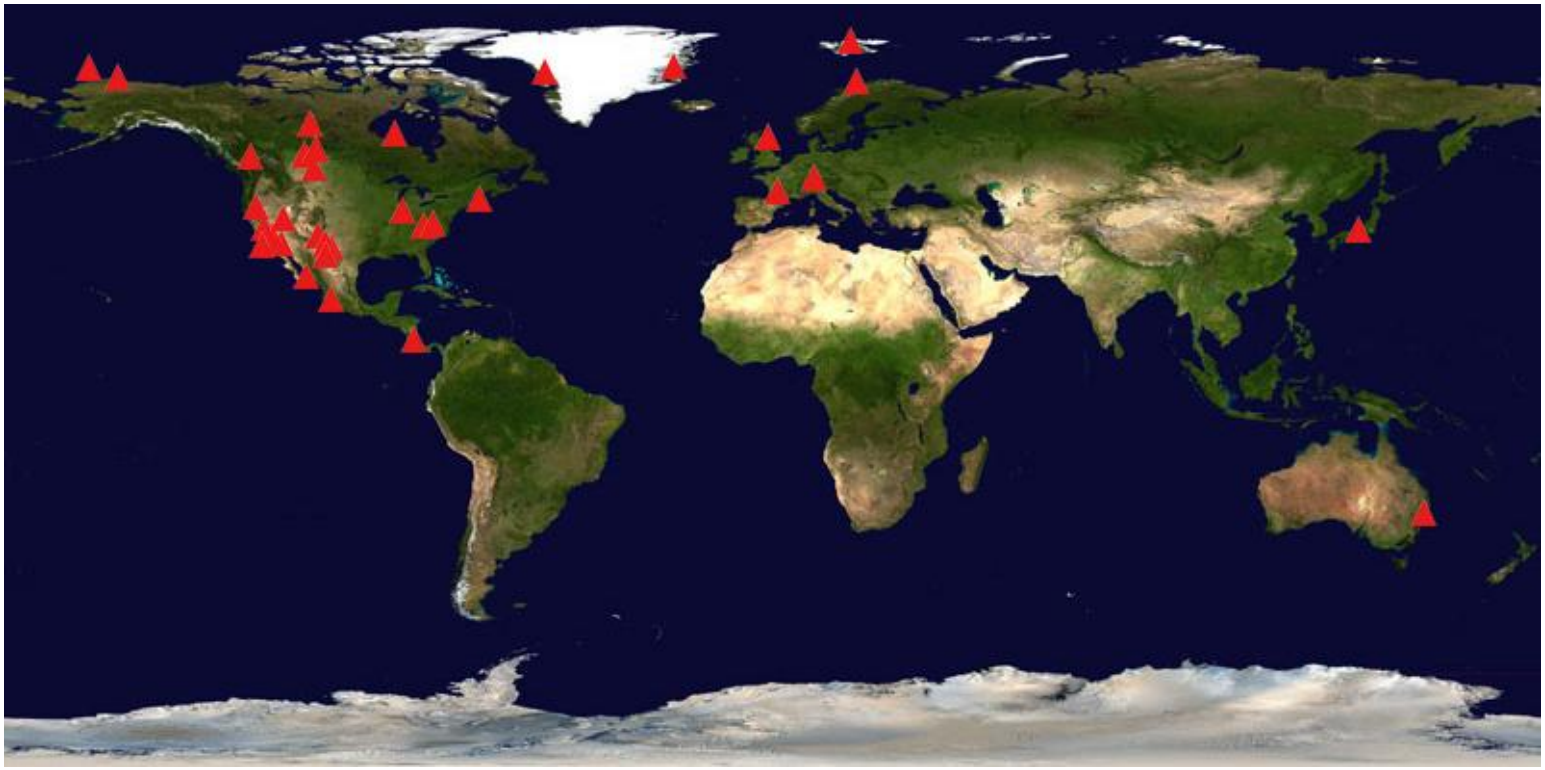


FLUXNET dataset refresh underway (release in 2011)

www.fluxdata.org

Phenology Canopy Cams

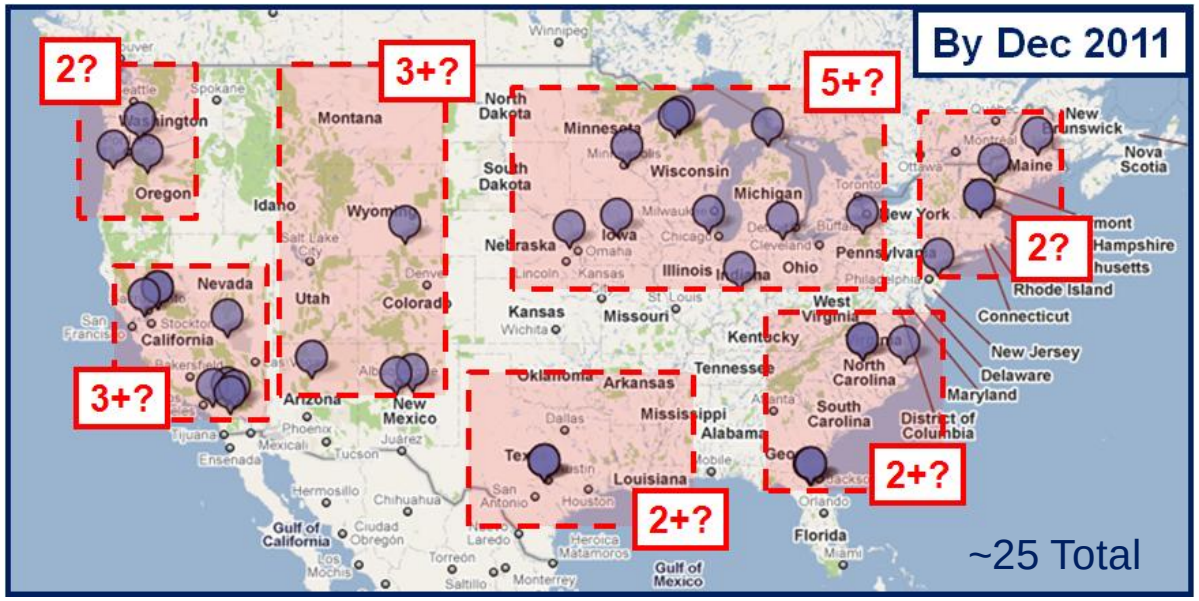
SpecNet



Spectral data to aid understanding of factors controlling terrestrial carbon flux, provide information for modeling and evaluation of satellite data products

COSMOS-AMERIFLUX Collaborative Research

- The COSMOS Probes:
  - measure area-avg soil moisture at ~700m horizontal scale, 15 -70 cm depths (depending on soil moisture) from above-ground cosmic-ray neutron count
  - self powered, no maintenance demand on local operators, remote data capture
- Rafael Rosolem < rosolem@email.arizona.edu >



Draft Carbon Cycle Science Plan
Science Questions
AmeriFlux observations important component

- How do natural processes and human actions affect the C cycle on land, atm, oceans?
- How do policy and management decisions affect levels of CO_2, CH_4 in the atm?
- How are ecosystems, species, and natural resources impacted by increasing GHGs, associated changes in climate, and by C mgt decisions?

Future: Informing Predictions

- Adaptation: How are terrestrial ecosystems responding to changing climate and can they adapt?
- Mitigation: Impacts? Feedbacks to climate?
- Policy decisions are being made – do we have the science to inform those decisions?

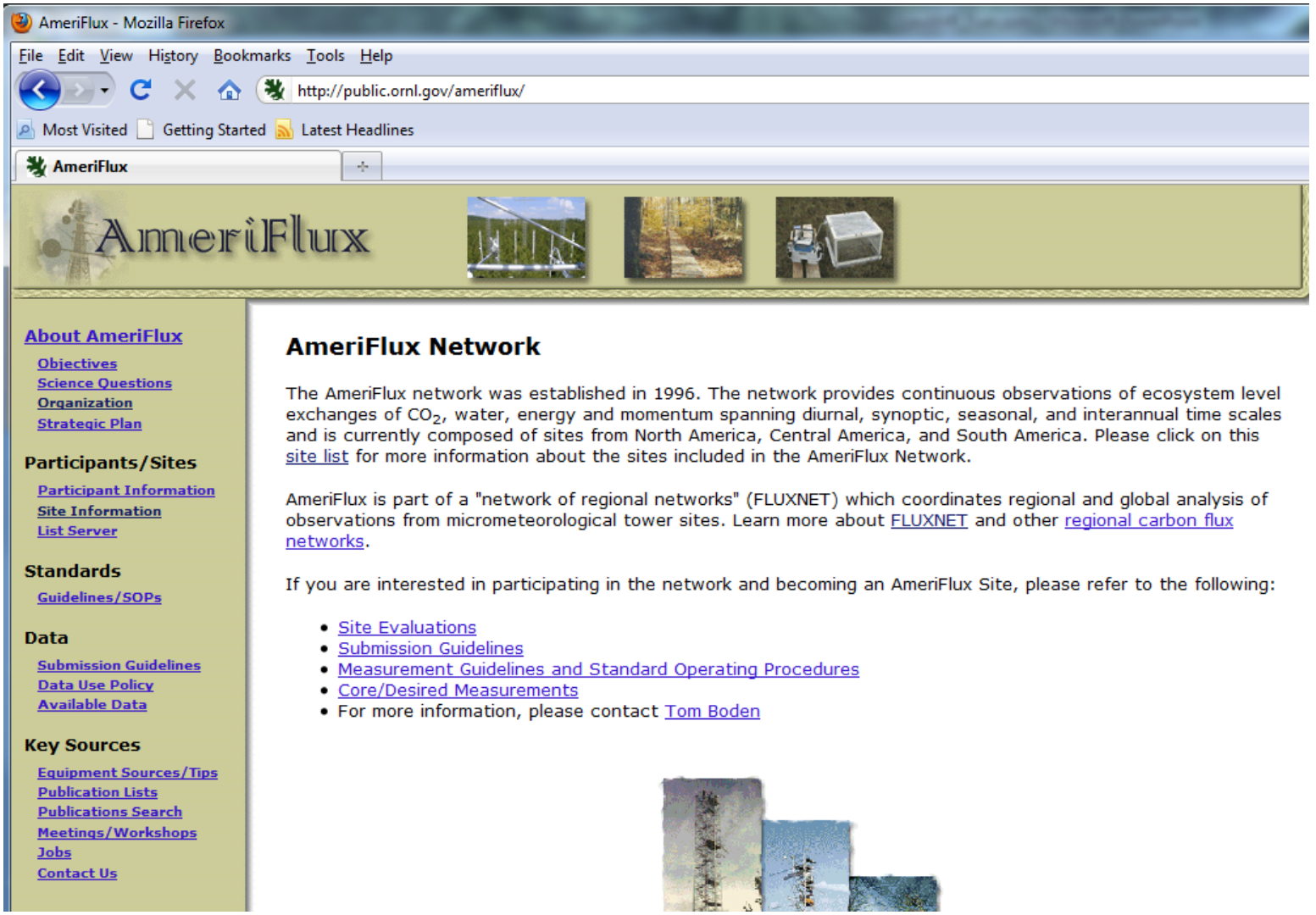
Verifying Greenhouse Gas Emissions: Methods to Support International Climate Agreements

- Strengthen national greenhouse gas inventories
- Improve independent estimates of fossil-fuel CO_2 emissions
- Improve independent estimates of fluxes from land sources and sinks
  - Design a research program to improve and, where appropriate, implement methods for estimating agriculture, forestry, and other land-use emissions of CO_2, N_2O, and CH_4 (i.e. integration of observations and models)
  - Establish a standing group to produce a global map of land-use and land cover change at least every 2 yrs

(National Research Council. 2010. National Academies Press http://www.nap.edu/)

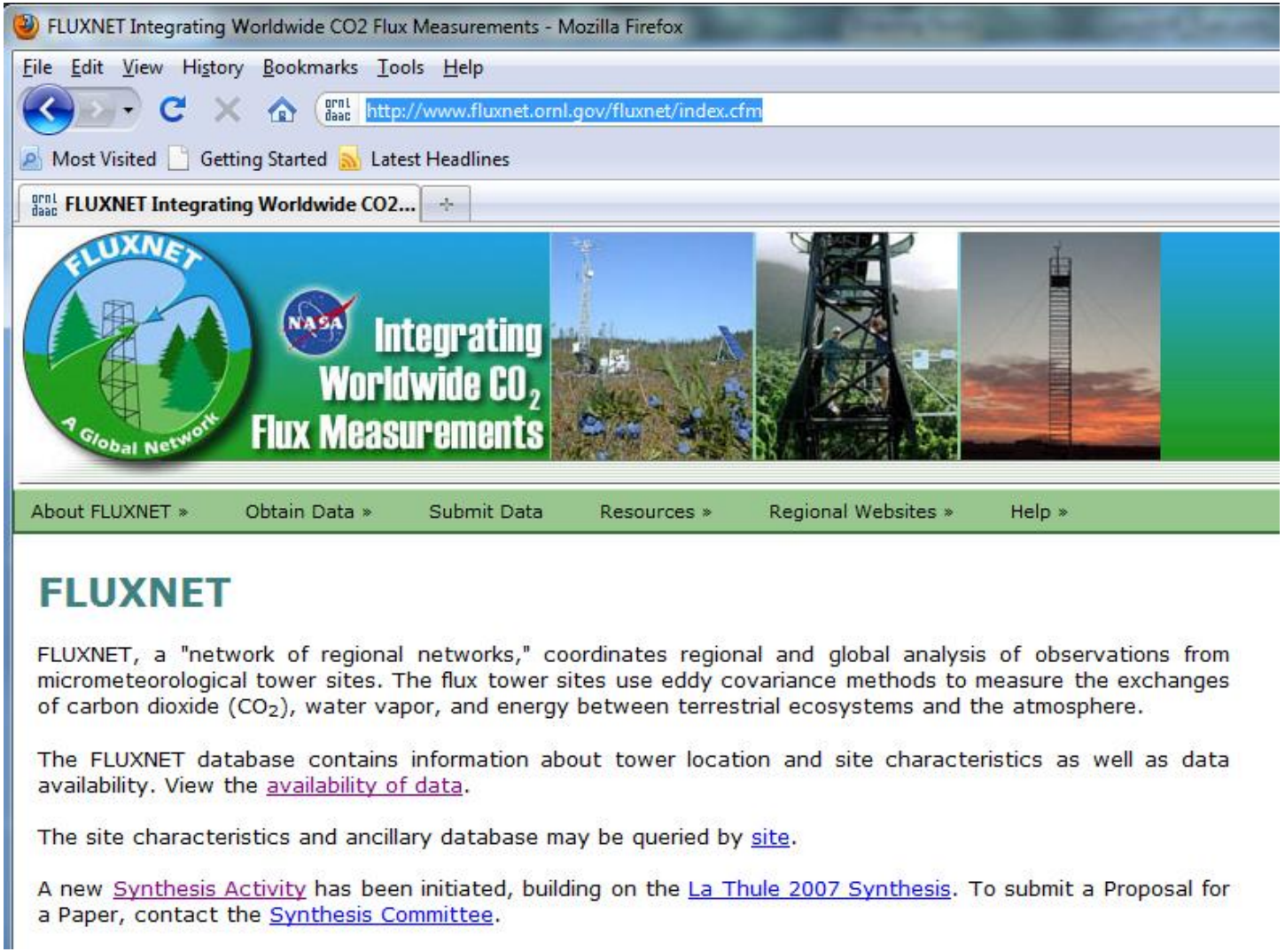
Collaboration with AmeriFlux Investigators

http://public.ornl.gov/ameriflux/



Collaboration with AmeriFlux Investigators

http://www.fluxnet.ornl.gov/fluxnet/



Results from Recent Synthesis Studies

- Presentations, publication list: http://public.ornl.gov/ameriflux/
- Video on nacarbon.org
- Posters!