



AmeriFlux Annual Meeting

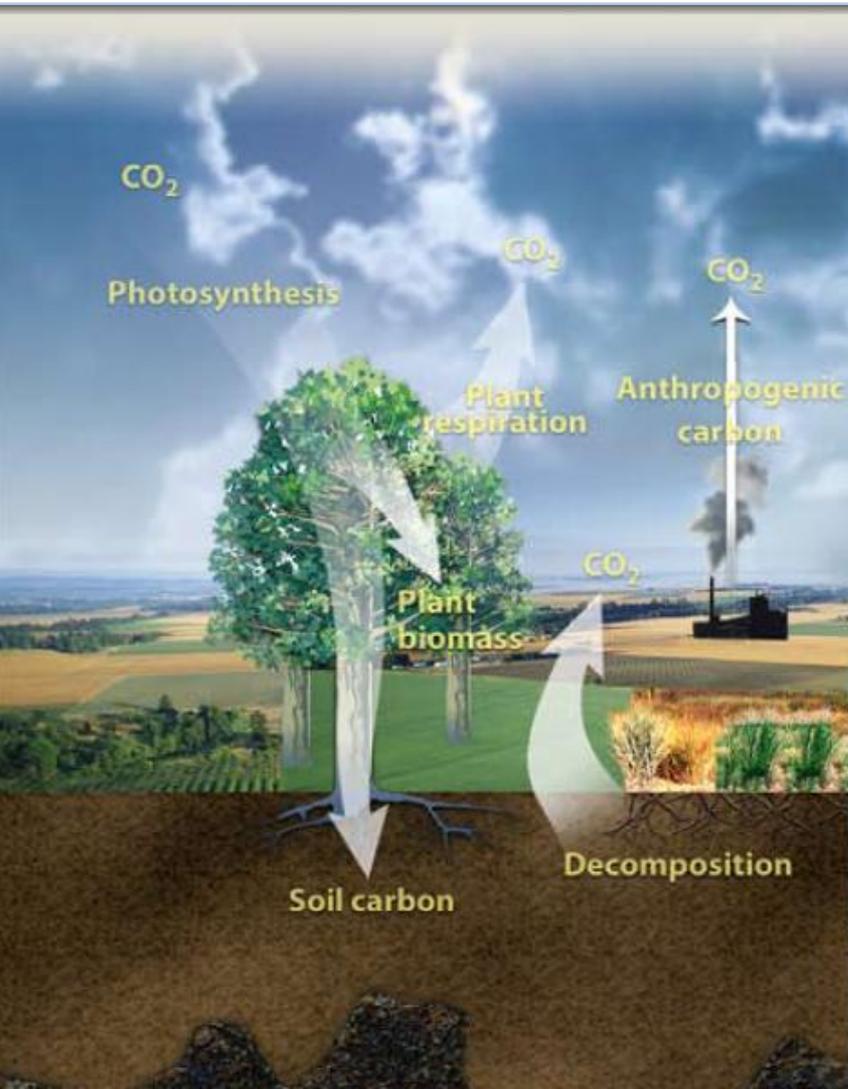


AmeriFlux Role in NACP

Bev Law

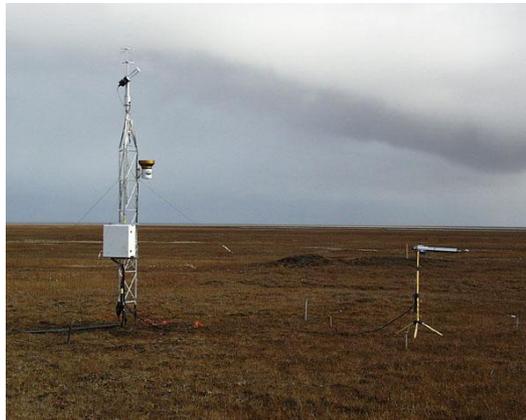
Prof. Global Change Forest Science
Oregon State University

New Orleans, LA Jan 31-Feb 1, 2011



AmeriFlux Objectives

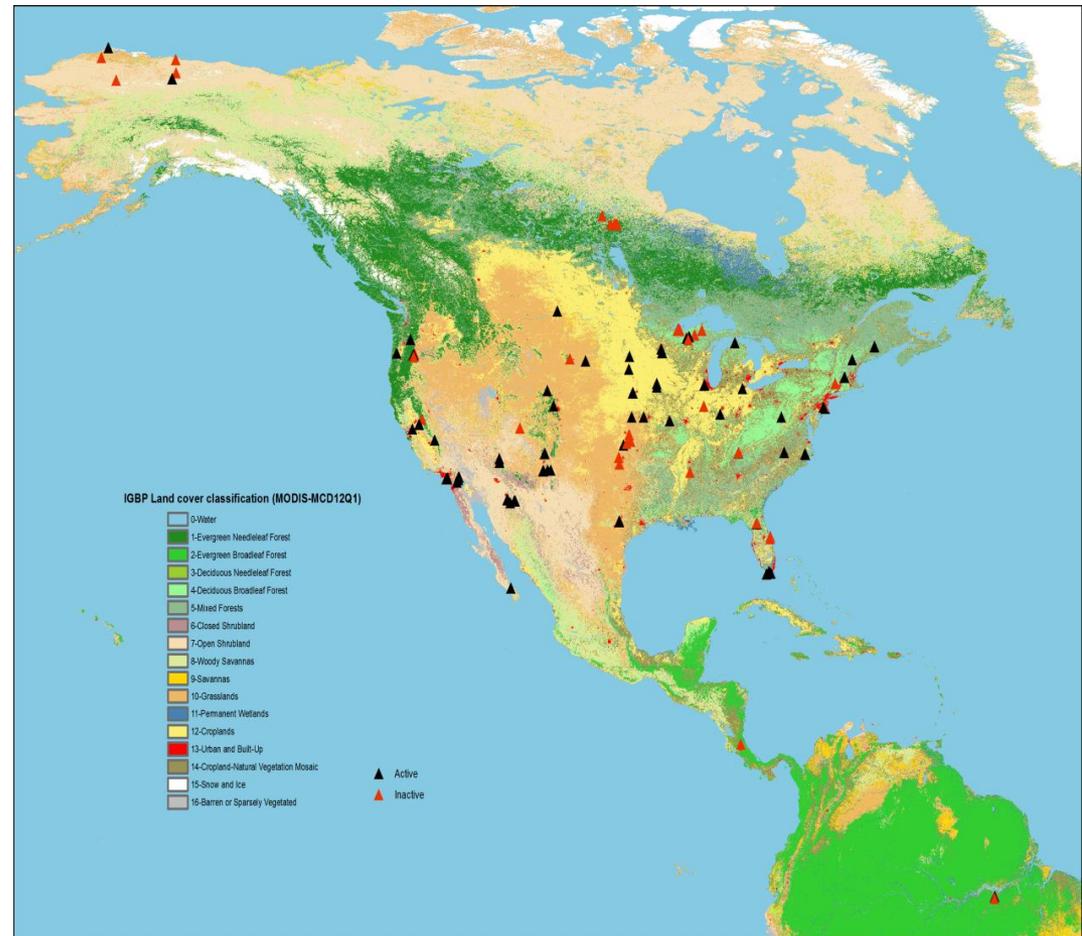
- **Quantify** magnitude and variation in C storage and exchanges of carbon, water and energy across a range of vegetation types, disturbance histories, climatic conditions
- **Understand** influence of climate, land cover, natural disturbance, land use on terrestrial C processes and linkages with water, 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



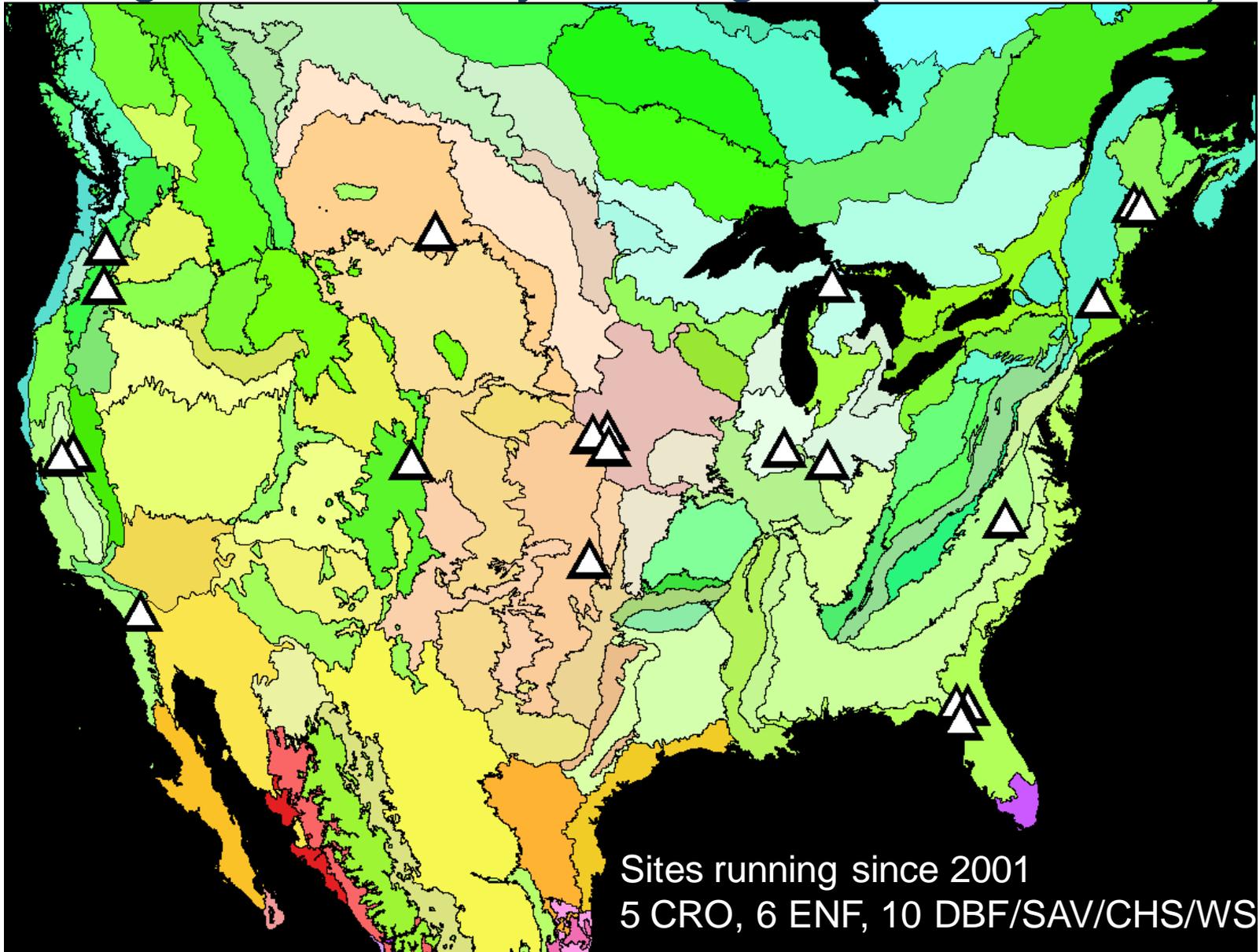
(black = active)

AmeriFlux Role in NACP

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

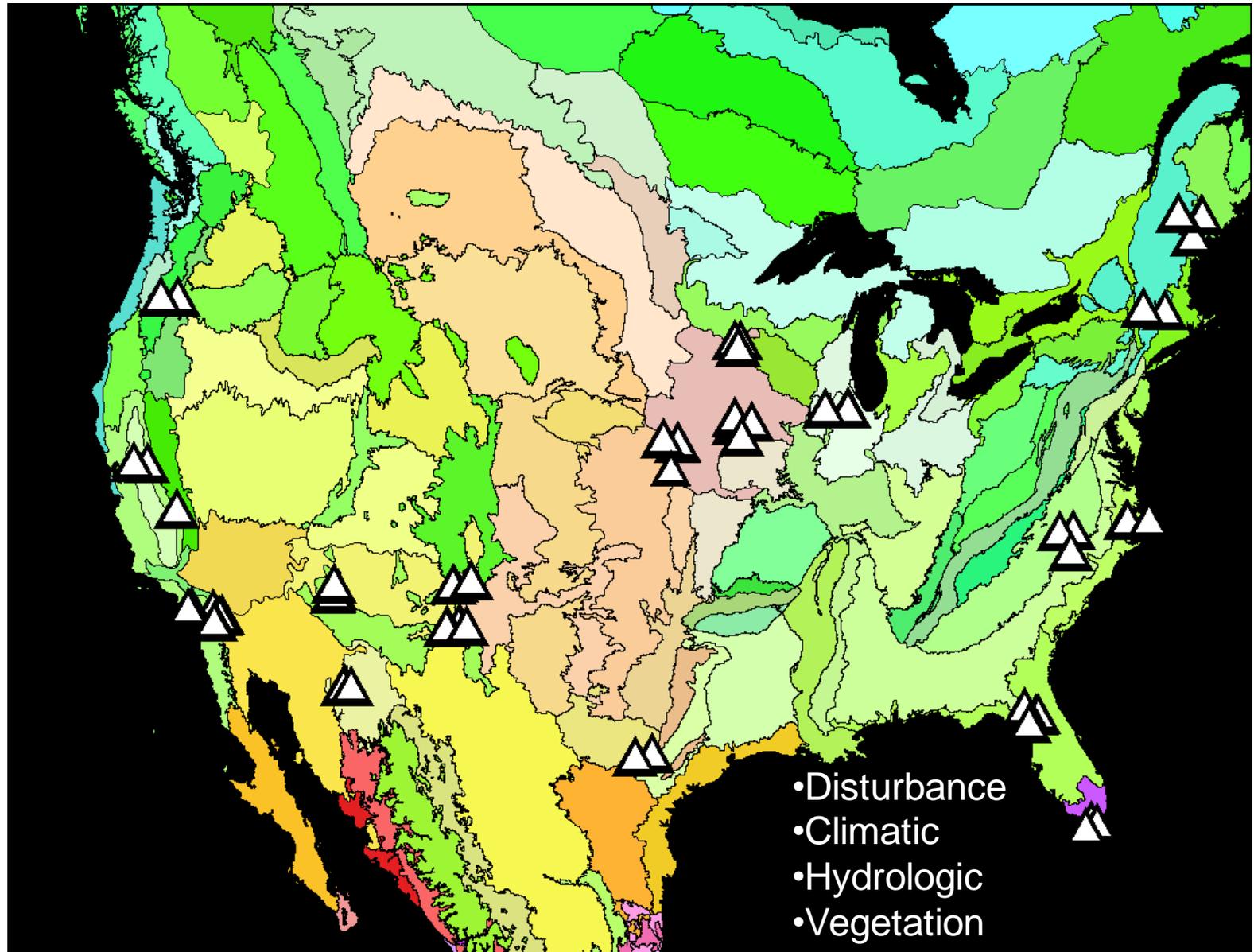
- Mechanistic understanding of processes influencing C cycling
- Tools for scaling fluxes with satellite data
- Process model evaluation, calibration, parameters
- Inverse modeling priors
- Satellite data evaluation (e.g. ET, GPP, albedo, disturbance)

Long-term Sites by Ecoregion (Omernik L3)



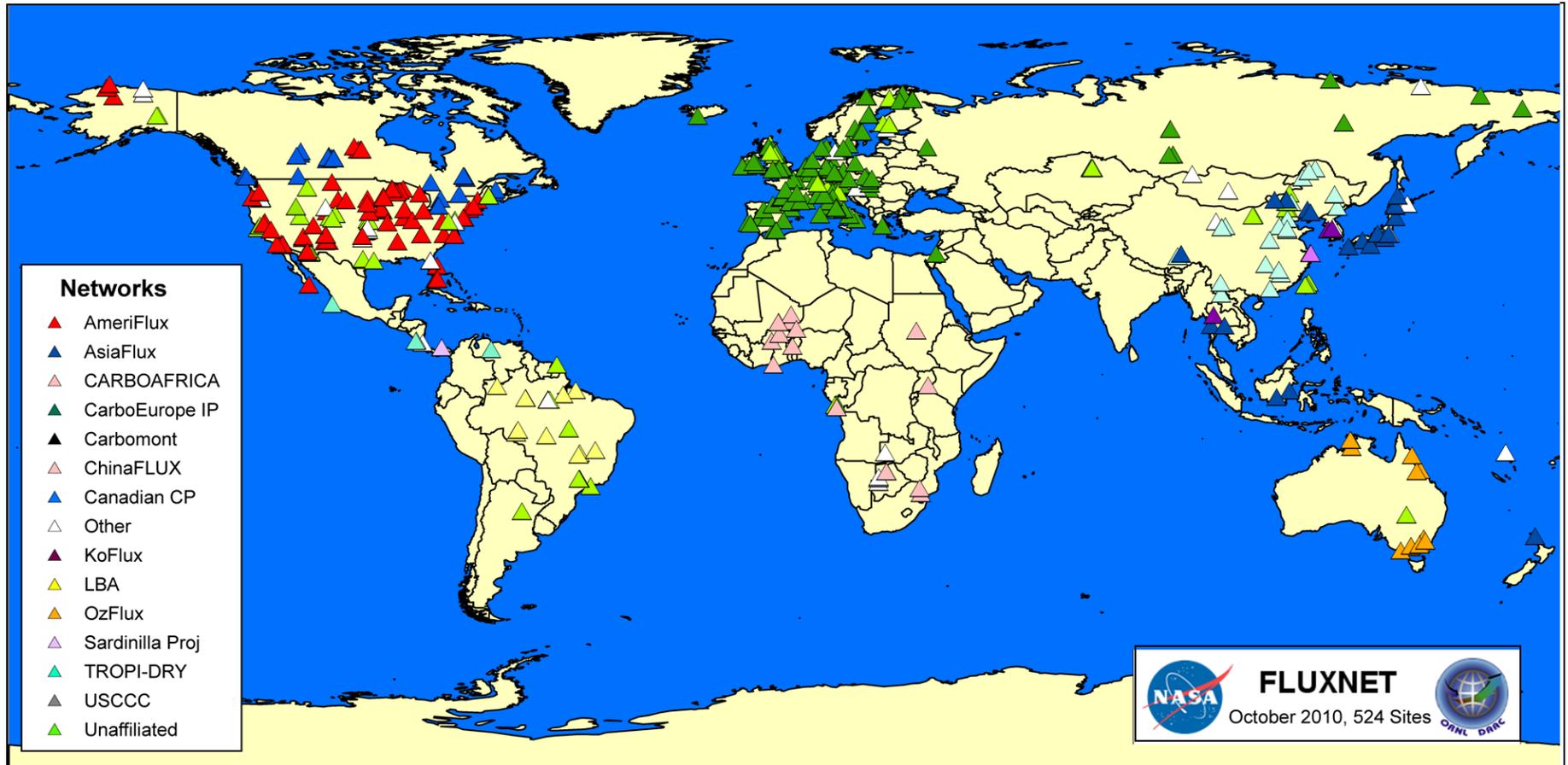
~16 Clusters of Sites Along Gradients

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



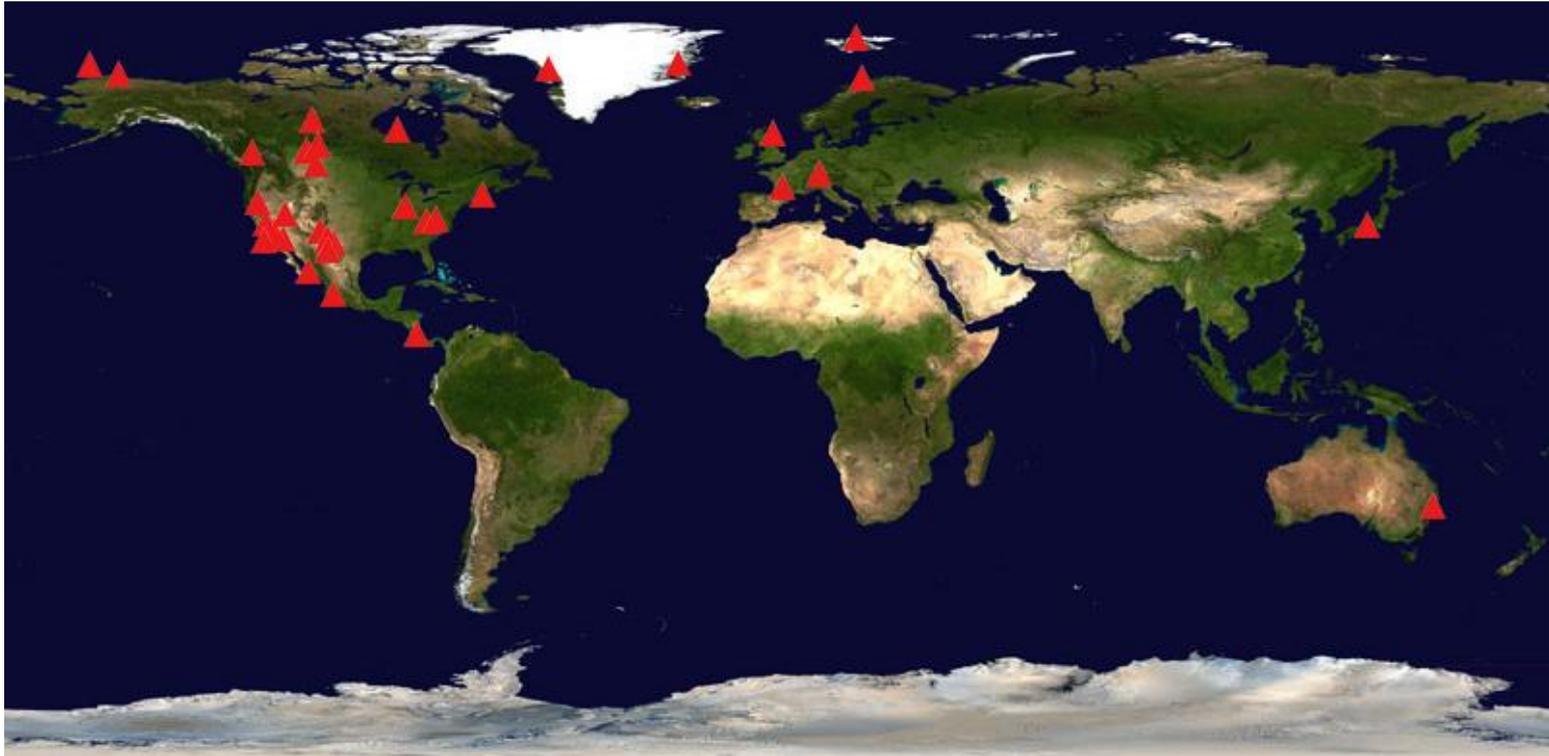
FLUXNET dataset refresh underway (release in 2011)

www.fluxdata.org

Phenology Canopy Cams



SpecNet



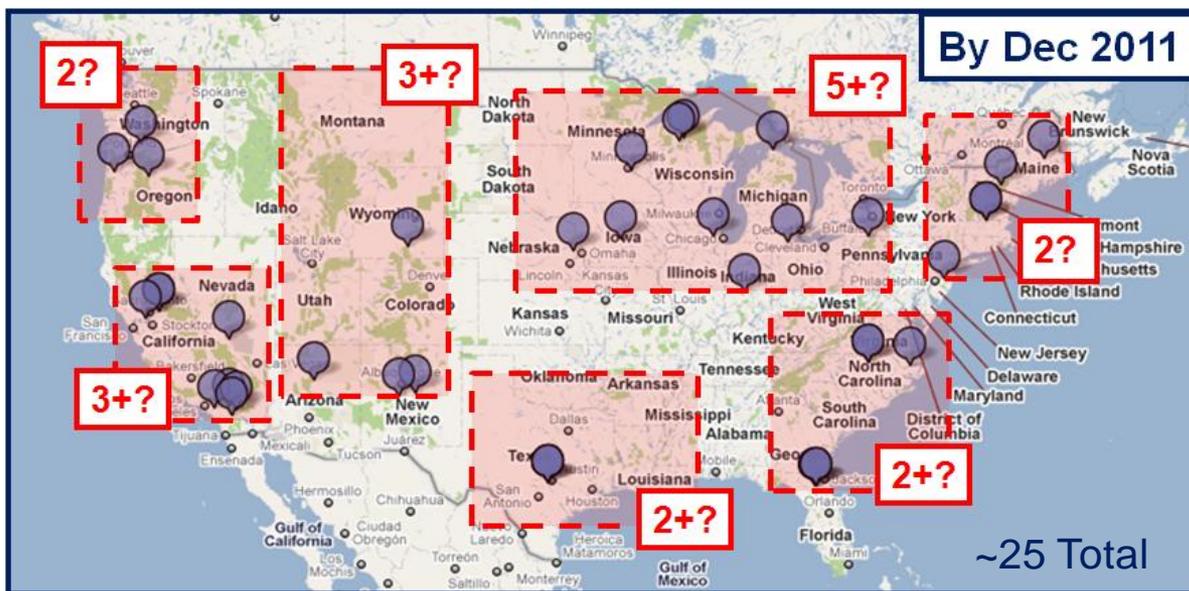
Spectral data to aid understanding of factors controlling terrestrial carbon flux, provide information for modeling and evaluation of satellite data products

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 CO₂, CH₄ 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

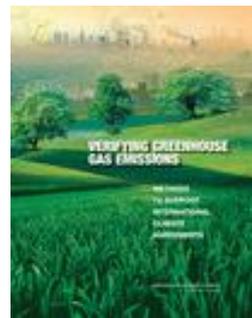
- Adaptation: How are terrestrial ecosystems responding to changing climate and can they adapt?
- Mitigation: Impacts? Feedbacks to climate?
- Policy decisions are being made – do we have the science to inform those decisions?



Verifying Greenhouse Gas Emissions: Methods to Support International Climate Agreements

- Strengthen national greenhouse gas inventories
- Improve independent estimates of fossil-fuel CO₂ 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 CO₂, N₂O, and CH₄ (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/>



The screenshot shows a Mozilla Firefox browser window displaying the AmeriFlux website. The browser's address bar shows the URL <http://public.ornl.gov/ameriflux/>. The website header features the AmeriFlux logo and three small images: a meteorological tower, a forest path, and a field with a measurement device. The main content area is titled "AmeriFlux Network" and contains the following text:

The AmeriFlux network was established in 1996. The network provides continuous observations of ecosystem level exchanges of CO₂, water, energy and momentum spanning diurnal, synoptic, seasonal, and interannual time scales and is currently composed of sites from North America, Central America, and South America. Please click on this [site list](#) for more information about the sites included in the AmeriFlux Network.

AmeriFlux is part of a "network of regional networks" (FLUXNET) which coordinates regional and global analysis of observations from micrometeorological tower sites. Learn more about [FLUXNET](#) and other [regional carbon flux networks](#).

If you are interested in participating in the network and becoming an AmeriFlux Site, please refer to the following:

- [Site Evaluations](#)
- [Submission Guidelines](#)
- [Measurement Guidelines and Standard Operating Procedures](#)
- [Core/Desired Measurements](#)
- For more information, please contact [Tom Boden](#)

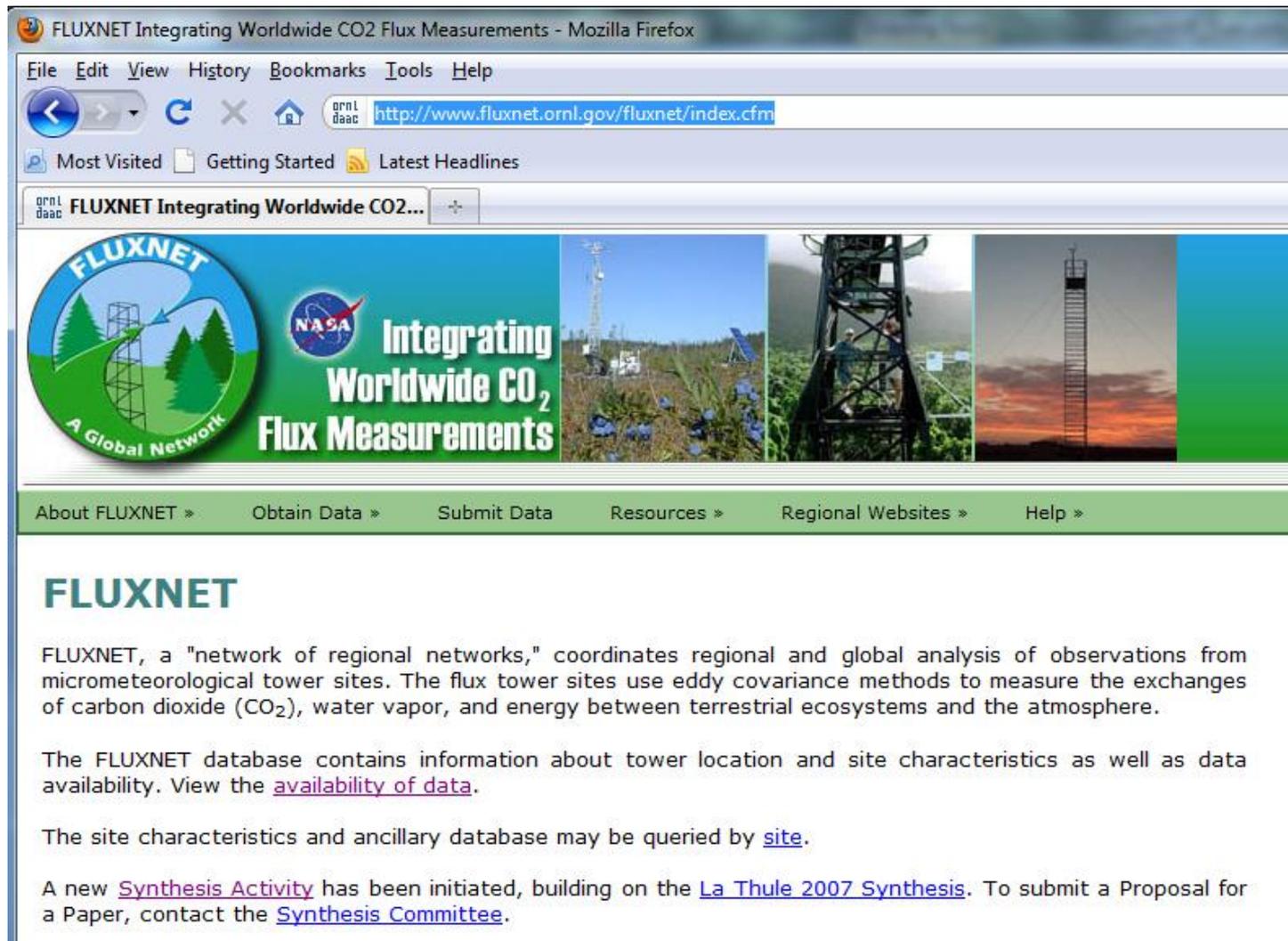
The left sidebar of the website contains a navigation menu with the following sections and links:

- About AmeriFlux**
 - [Objectives](#)
 - [Science Questions](#)
 - [Organization](#)
 - [Strategic Plan](#)
- Participants/Sites**
 - [Participant Information](#)
 - [Site Information](#)
 - [List Server](#)
- Standards**
 - [Guidelines/SOPs](#)
- Data**
 - [Submission Guidelines](#)
 - [Data Use Policy](#)
 - [Available Data](#)
- Key Sources**
 - [Equipment Sources/Tips](#)
 - [Publication Lists](#)
 - [Publications Search](#)
 - [Meetings/Workshops](#)
 - [Jobs](#)
 - [Contact Us](#)

At the bottom right of the page, there is a small image showing a meteorological tower in a field.

Collaboration with AmeriFlux Investigators

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



FLUXNET Integrating Worldwide CO₂ Flux Measurements - Mozilla Firefox

File Edit View History Bookmarks Tools Help

ORNL Daac <http://www.fluxnet.ornl.gov/fluxnet/index.cfm>

Most Visited Getting Started Latest Headlines

ORNL Daac FLUXNET Integrating Worldwide CO₂ Flux Measurements



About FLUXNET » Obtain Data » Submit Data Resources » Regional Websites » Help »

FLUXNET

FLUXNET, a "network of regional networks," coordinates regional and global analysis of observations from micrometeorological tower sites. The flux tower sites use eddy covariance methods to measure the exchanges of carbon dioxide (CO₂), water vapor, and energy between terrestrial ecosystems and the atmosphere.

The FLUXNET database contains information about tower location and site characteristics as well as data availability. View the [availability of data](#).

The site characteristics and ancillary database may be queried by [site](#).

A new [Synthesis Activity](#) has been initiated, building on the [La Thule 2007 Synthesis](#). To submit a Proposal for a Paper, contact the [Synthesis Committee](#).

Results from Recent Synthesis Studies

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