Mid-Continent Intensive Campaign: Data Management Plans and Needs

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And many collaborators

Mid-Continent Intensive Investigators Workshop

Boulder, CO

Topics

- Recommendations from the NACP Data Systems Task Force
- MCI / NACP data management activities at ORNL

Background: Summary from *NACP Data Workshop Report* (January 2005)

NACP needs to:

- Establish central Web site with an index for data products and services, with links to data sets
- Establish a data center that performs quality assurance and quality control of data
- Build on existing data management infrastructure

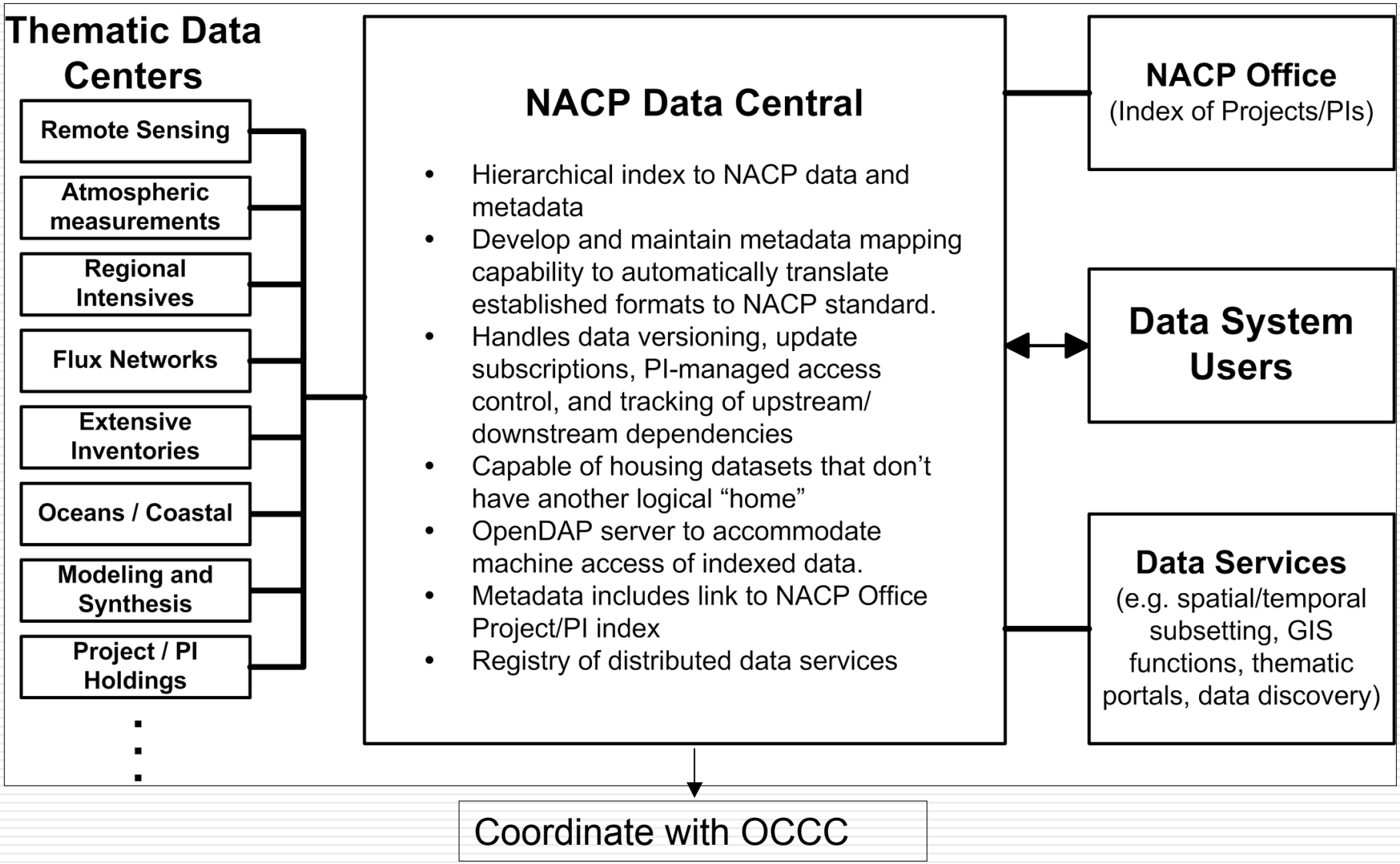
http://www.nacarbon.org/nacp/dm.html

NACP Data Systems Task Force

- Steve Aulenbach, NCAR
- Alan Barr, Met Service, Canada
- Tom Boden, ORNL–CDIAC
- Bob Cook, ORNL–DAAC (Co-Chair)*
- Scott Doney, Woods Hole Oceanographic Institute
- John Dwyer, USGS, LP–DAAC
- Dave Hollinger, USDA-FS
- Jeff Morisette, NASA GSFC*
- Dennis Ojima, Colorado State University
- Elizabeth Pattey, Agriculture and Agrifoods, Canada
- Mac Post, ORNL*
- Mohan Ramamurthy, UNIDATA / UCAR
- Greg Reams, USDA-FS*
- Pieter Tans, NOAA-CMDL*
- Peter Thornton, NCAR (Co-Chair)*
- Sharon Waltman, USDA - NRCS
- Thomas White, Pacific Forestry Centre, Canada

Top-Level System Architecture (6/2005)

http://www.nacarbon.org/nacp/documents/NACP_Datasystems_recommendations.pdf



Thematic Data Centers: To be Established

- Modeling and Synthesis Thematic Data Centers
  - input and output data sets for both forward and inverse modeling and supporting documentation, served in a central location and with consistent formats
  - Proposals solicited by NASA in December 2005; estimated to begin in Summer 2006
- Fossil Emission by Source Process
  - Improved carbon emission inventories
    - adequately represent the spatial and temporal aspects of various industrial processes

NACP Data Systems: Next Steps

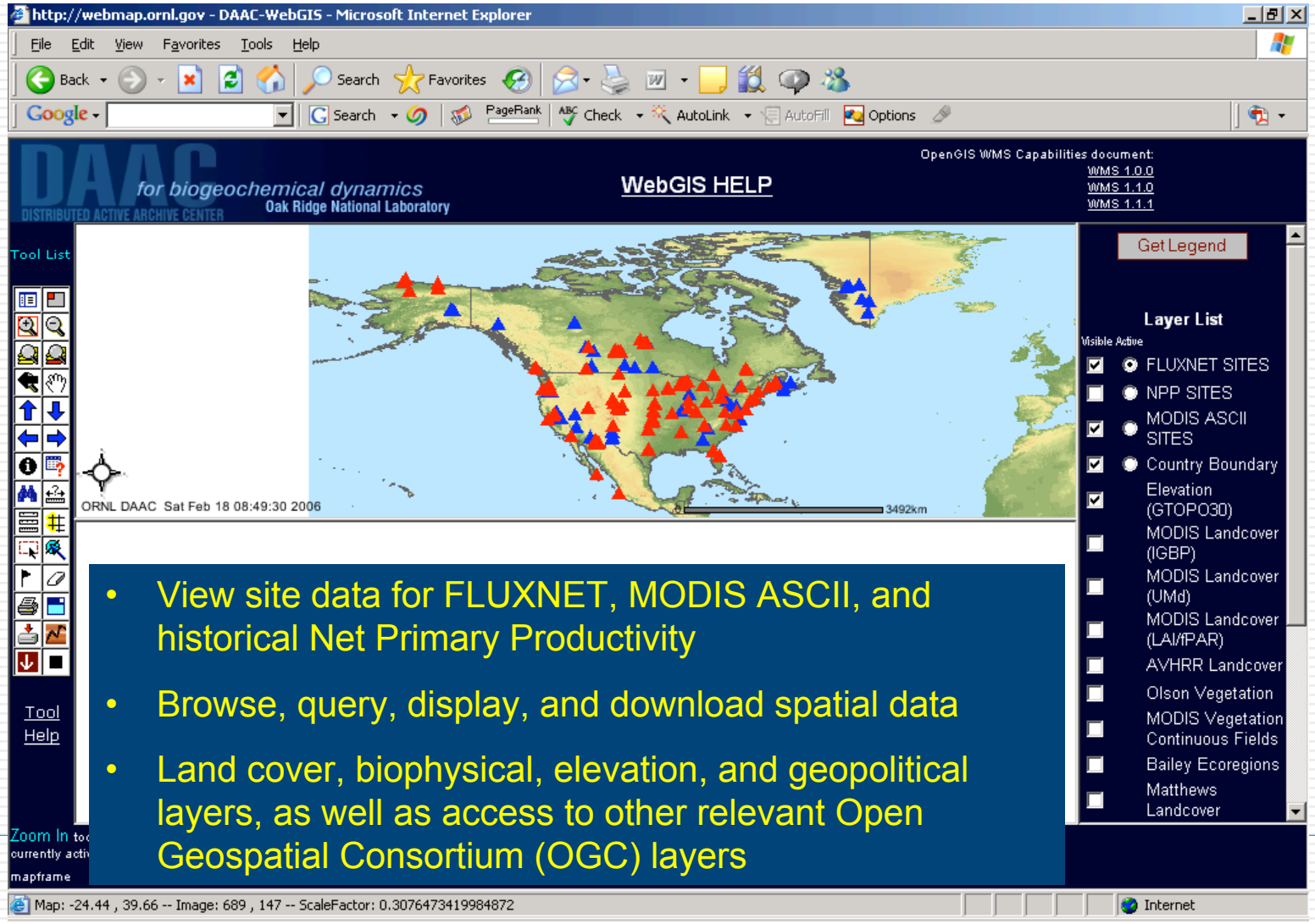
- CCIWG is evaluating implementation plans for the data system within the agencies' current budgets
  - NACP Data Central
  - Dedicated NACP support from existing thematic data centers

MCI / NACP data management activities at ORNL

- ORNL DAAC (Distributed Active Archive Center) (NASA-funded)
  - WebGIS for North America
  - Two Tools for creating Subsets of MODIS Land Products
- AmeriFlux (DOE-funded)

WebGIS for North America

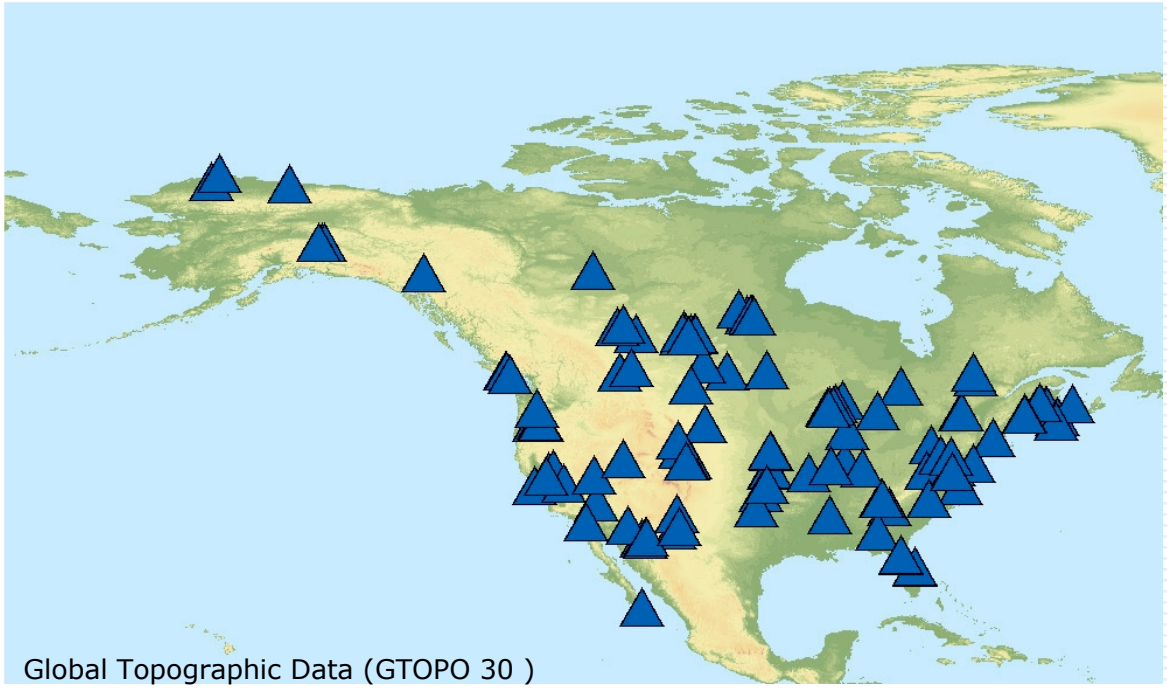
http://webmap.ornl.gov/daacnm/viewer.htm?SOURCE=ALL



- View site data for FLUXNET, MODIS ASCII, and historical Net Primary Productivity
- Browse, query, display, and download spatial data
- Land cover, biophysical, elevation, and geopolitical layers, as well as access to other relevant Open Geospatial Consortium (OGC) layers

First Tool: MODIS ASCII Subsets

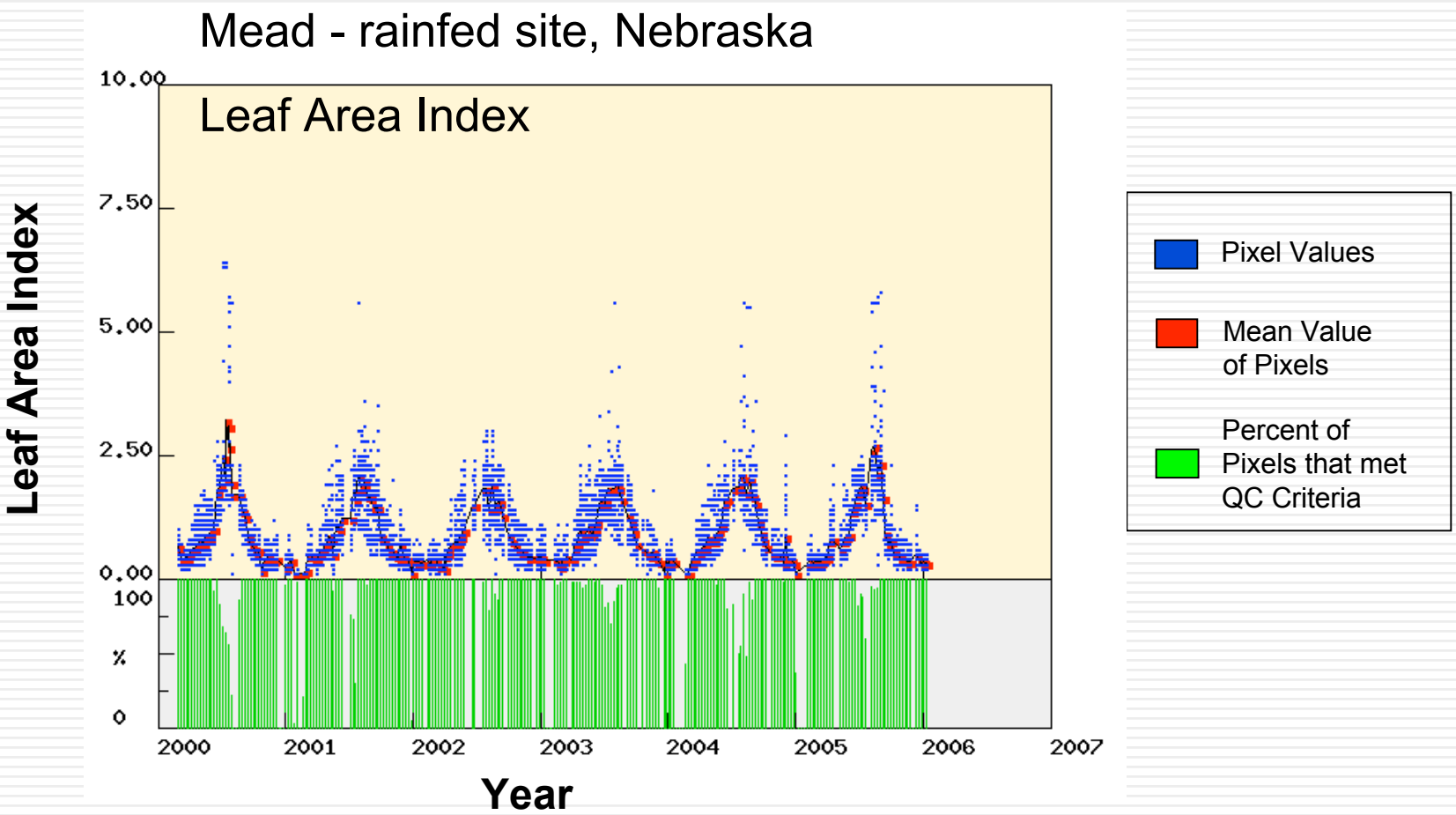
- Subsets of Terra and Aqua MODIS Land Products for 121 existing sites in North America (field sites or flux towers)
  - 8-day, 16-day, and annual products
  - 7 km x 7 km centered on flux tower or field sites
  - 0.5 - 1.0 km resolution
- Provide data in ASCII format and provide visualization tools
  - Adding GIS-compatible (GeoTIFF) files
- In 2006, we will expand subsetting to ~800 sites globally



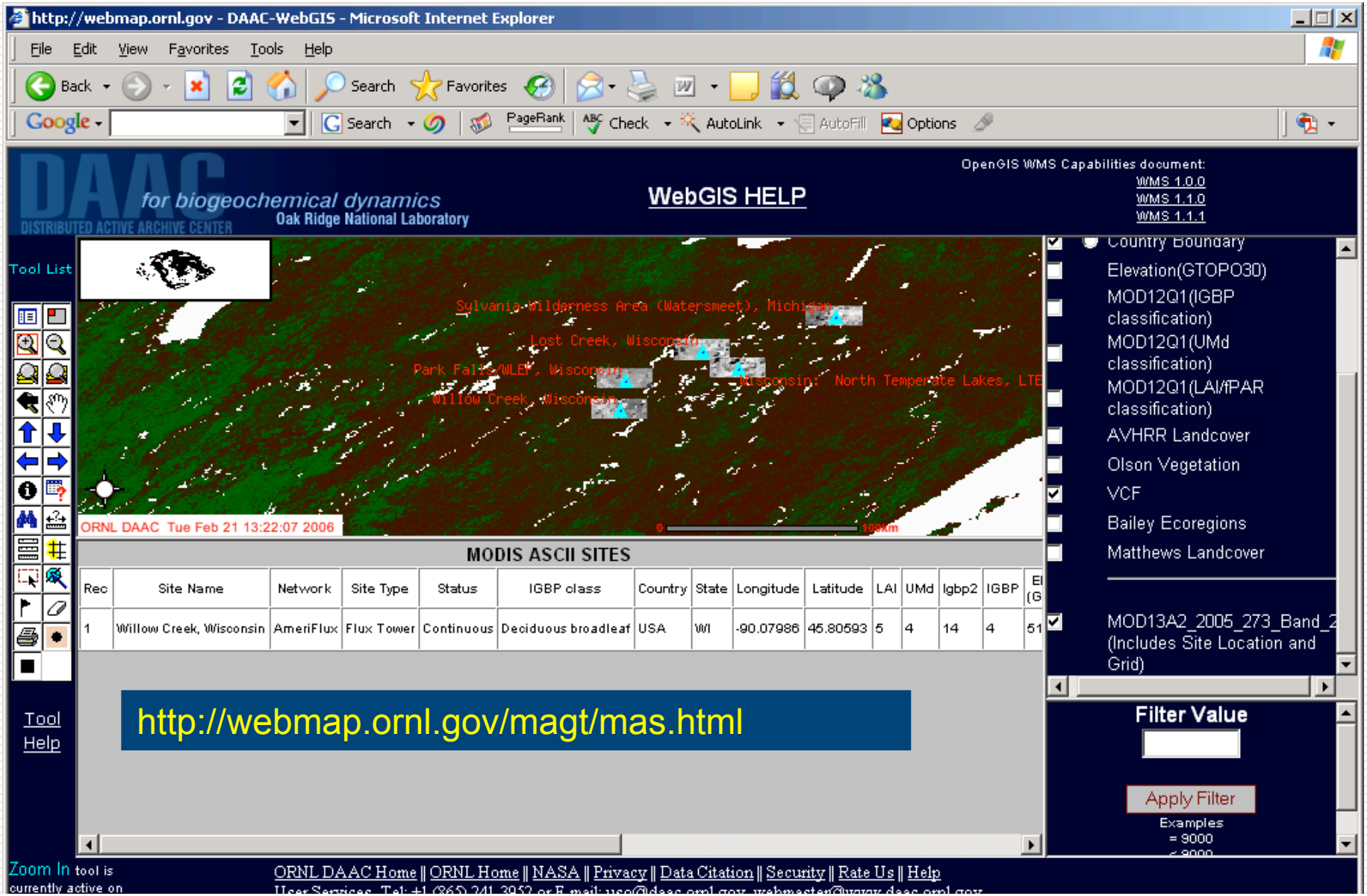
MODIS Products
Surface Reflectance
Surface Temperature
Land Cover
NDVI / EVI
LAI / fPAR
Net Photosynthesis
Annual NPP
Albedo
Reflectance – BRDF Adjusted

MODIS ASCII Subsets

Web-Based Data Visualization: Time Series



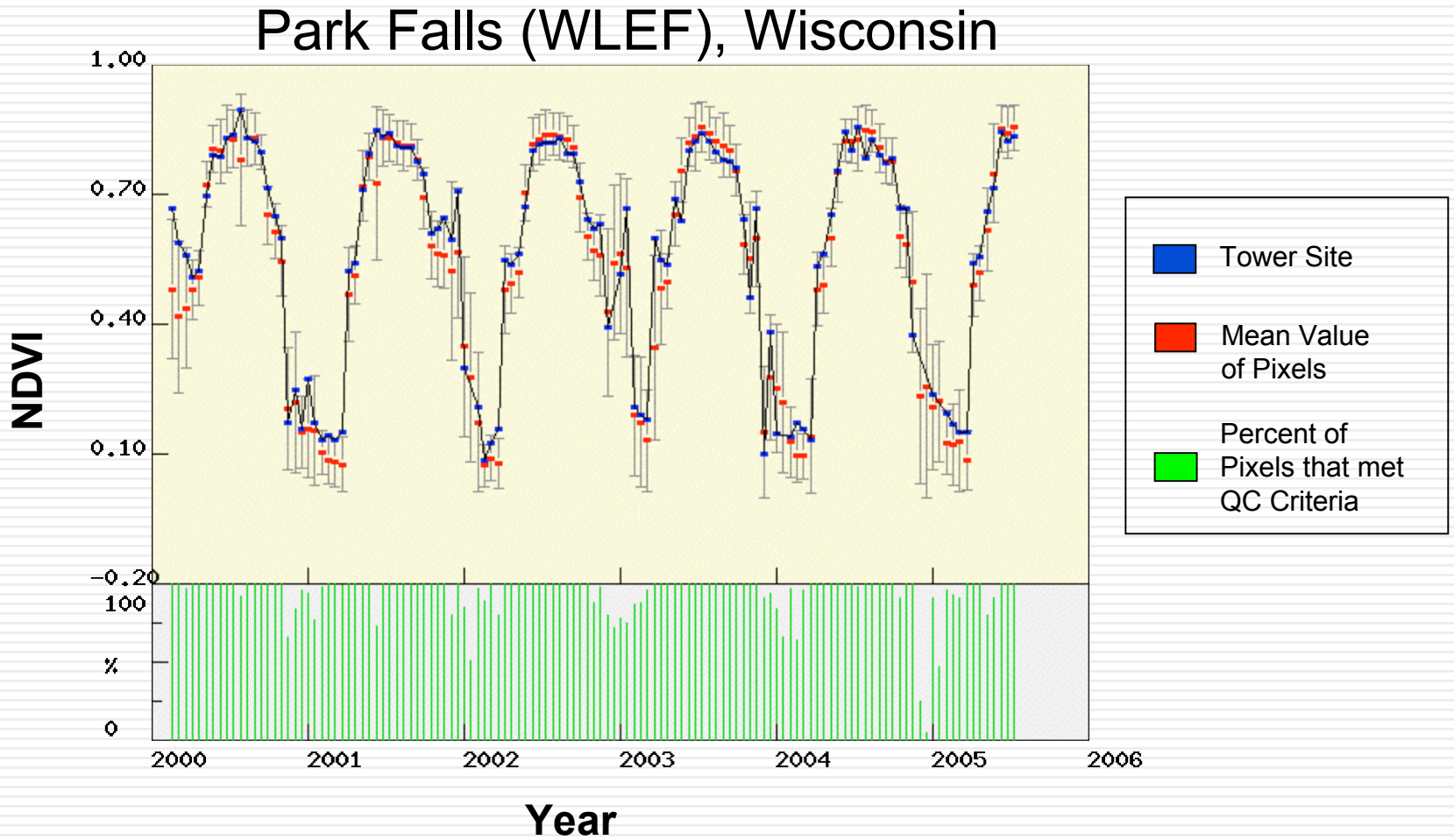
MODIS Subsets (GeoTIFF): Enhanced Vegetation Index (Day 273 (2005))



Second Tool: MODIS Subsets for North America

- Any user selected area in North America from 1 x 1 km up to 201 x 201 km

http://www.daac.ornl.gov/modispilot/



NACP Data Support from AmeriFlux

(courtesy of Tom Boden)

- Flux data standardization (for US towers only)
  - With FLUXNET and CarboEurope, developed a standardized file format
  - Gap filled using a suite of methods with tools developed by CarboEurope (partitions flux into components) and new method (ANN) developed by AmeriFlux
- Providing spatial data for the Mid-continent intensive area
  - Soil, land cover, resource areas, etc.

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

Next Steps: Actions from MCI Workshop

- What types of data support are needed for the MCI Campaign?
- Some activities / field sites have on-line data resources: are these resources all that is needed?