



DAAC
for biogeochemical dynamics
DISTRIBUTED ACTIVE ARCHIVE CENTER Oak Ridge National Laboratory



ORNL DAAC News

WINTER 2006

The ORNL Distributed Active Archive Center (DAAC) is a NASA-sponsored source for biogeochemical and ecological data and services useful in environmental research. The ORNL DAAC currently archives and distributes more than 760 data sets categorized as Field Campaign, Land Validation, or Regional and Global Data.

Please visit us online at <http://daac.ornl.gov/> for a comprehensive description of data, services, and tools available from the ORNL DAAC. Archived news can be found at <http://daac.ornl.gov/news.shtml>.

New Data

During the past six months the ORNL DAAC has archived and begun distributing the following new data sets: 9 SAFARI 2000 (S2K) data sets, 4 net primary productivity (NPP) data sets, 2 vegetation data sets, 2 Climate data sets, 1 Hydroclimatology data set, and 1 FLUXNET data set.

The SAFARI 2000 Project was an international science initiative to study the linkages between land and atmosphere processes in the southern African region. The 9 data sets released in the past 6 months include four products from NASA's Moderate Resolution



The old growth study stand, Humboldt Redwoods State Park, California, U.S.A. 2001.

Imaging Spectroradiometer (MODIS) from southern Africa for the years 2000-2002, data sets containing tropospheric ozone data and aerosol index data for the time period August-September 2000, land surface temperature data derived from Advanced Very High Resolution Radiometer (AVHRR) Global Area Coverage (GAC), AVHRR daily site and 15-day regional imagery provided by the Global Inventory Mapping and Modeling (GIMMS) group at NASA/GSFC, and Advanced Land Imager (ALI) and Landsat Enhanced Thematic Mapper Plus (ETM+) scenes covering South Africa's Kruger National Park and Skukuza tower site for May 2001.

The additional NPP data sets now being offered are as follows:

- 3 data sets for temperate forest biomes in the Walker Branch Watershed in Oak Ridge, Tennessee, the Great Smoky Mountains in Tennessee, and the Redwoods State Park in California, and
- a data set for a tropical forest in Maui, Hawaii.

The ORNL DAAC also now distributes

- a vegetation data set containing leaf area measurements for selected sites in Canada and
- the Global Fire Emissions Database (GFED), which contains gridded monthly fire emissions of carbon, CO₂, CO, and CH₄ for 1997-2001.

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New Data (continued)

The Climate data sets contain

- data for wet and dry nitrogen-species deposition for the United States and Western Europe and
- data on changes to the global nitrogen cycle resulting from human activity.

The Hydroclimatology data set contains a time series of monthly minimum and maximum temperature, precipitation, and potential evapotranspiration derived for 1337 watersheds in the conterminous United States for sites in the national streamflow database, termed the Hydro-Climatic Data Network (HCDN), developed by Slack et al.

In addition, we now offer the FLUXNET data set from the 2000 Marconi Conference. This data set contains measurements of fluxes of carbon dioxide, water vapor, and energy

exchange for 38 forest, grassland, and crop sites as part of the EUROFLUX and AmeriFlux projects. A total of 97 site-years of data was compiled, primarily between 1996 and 1998 but also for 1992-1995 and 1999-2000.

Please visit the following project web pages to access these data:

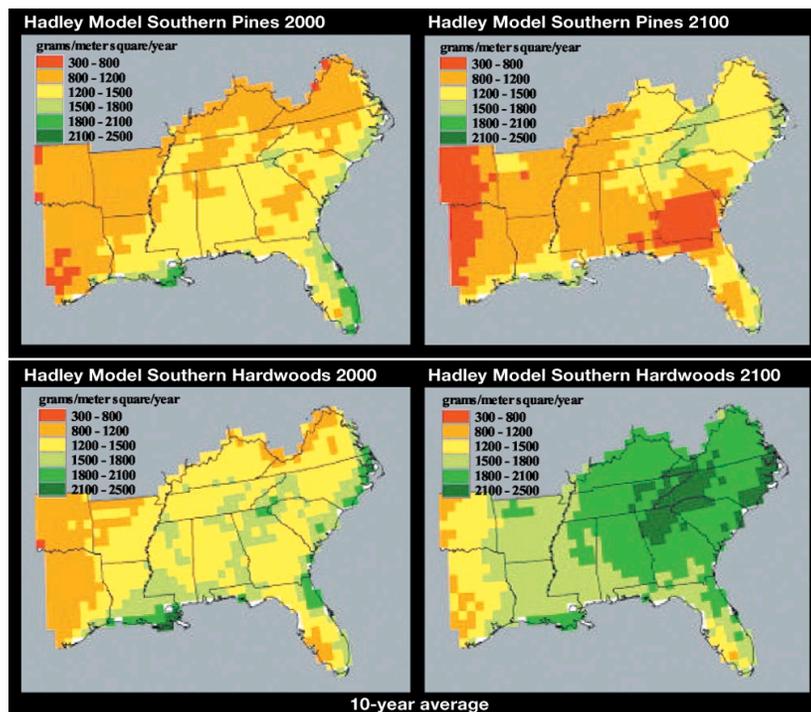
- <http://daac.ornl.gov/S2K/safari.html>
- http://daac.ornl.gov/NPP/npp_home.html
- http://daac.ornl.gov/VEGETATION/vegetation_collections.html
- http://daac.ornl.gov/CLIMATE/climate_collections.html
- <http://daac.ornl.gov/FLUXNET/fluxnet.html>

Archived Models

The ORNL DAAC is also pleased to announce that we have recently begun archiving and distributing numerical models of biogeochemical dynamics.

Archived models will provide the methodological detail of numerical modeling studies to recreate published modeling results, enabling the synthesis of results across modeling studies and the investigation of new hypotheses. In addition, archived models will allow determination of uncertainties for comparison with results from other models in assessment/policy studies. The model source code will also allow others to see how models treat individual processes.

The model archive contains comprehensive model documentation, input files, source code,



Potential net primary productivity (NPP) of loblolly pine and southern hardwoods simulated by the PnET model with the Hadley climate scenario.

code version, output files, and output analysis approaches or software used to produce tables and figures for a particular publication.

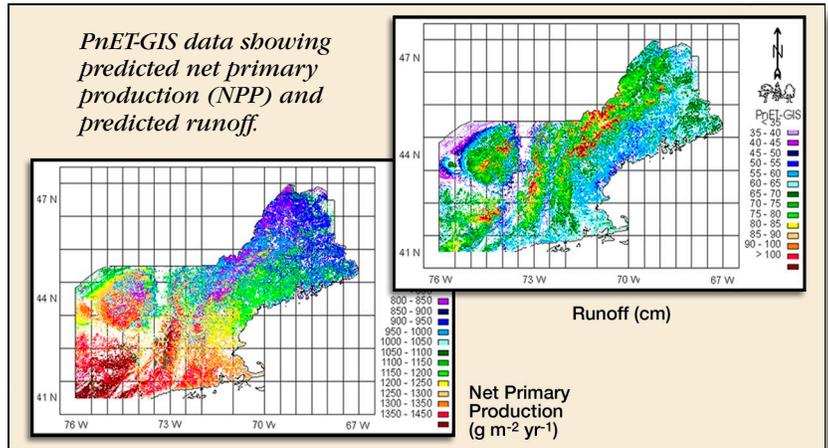
The ORNL currently archives and distributes the following model products:

- 3 benchmark model versions: BIOME-BGC, Integrated Biosphere Simulator (IBIS), and Land Surface Model (LSM),
- CENTURY, Version 4 (VEMAP),

Archived Models (continued)

- 2 PnET model products, and
- 2 models used in published research results associated with specific model implementations: BIOME-BGC (Law et al.) and BIOME-BGC. See Thornton, P. E., et al. 2005. Archiving numerical models of biogeochemical dynamics. *Eos* 86(44): 431-432.

Please visit our Model Archive web page at http://daac.ornl.gov/model_intro.shtml.



Pilot Study

In the Summer 2005 issue of our newsletter, we provide information on our new visualization tool for the Moderate Resolution Imaging Spectrometer (MODIS) ASCII Subsets. The goal of the MODIS ASCII Subsets activity is to prepare summaries of selected MODIS land products for the community to use for validation in conjunction with the FLUXNET and other field data.

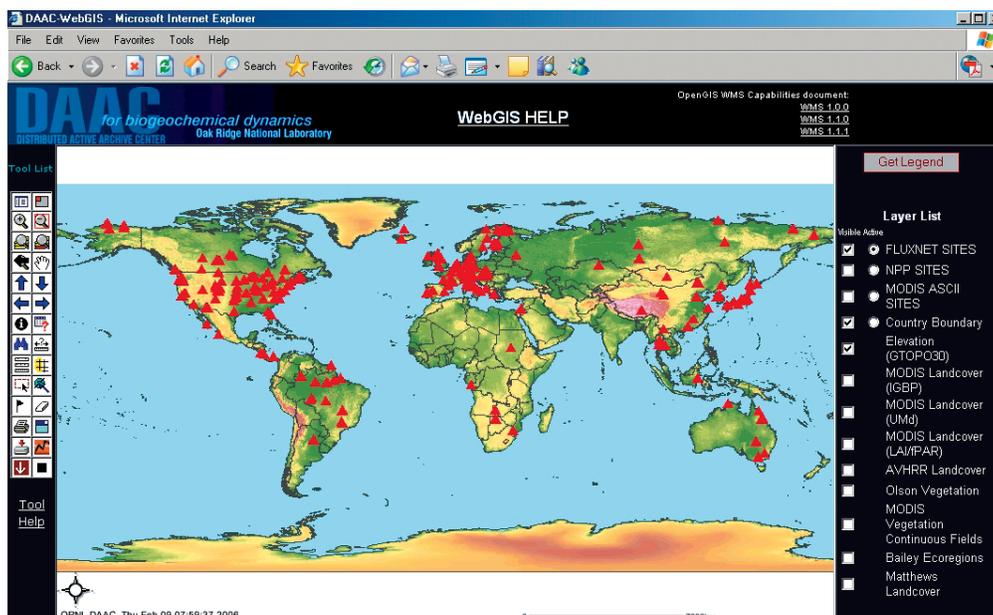
Recently the ORNL DAAC has begun developing a tool to provide ASCII Subsets of selected MODIS Land Products for any land area, not just for the 280 fixed sites currently

offered by the visualization tool. In addition, we want to expand the subsets to areas larger than 7 x 7 km, up to 201 x 201 km.

The current plan for this endeavor, called the Pilot Study, is to develop a system for customized subsetting for any site/area in North America, up to 201 x 201 km.

The new tool generates a time series in less than 60 minutes. Then the tool sends the user an email with a URL containing the time series plus the data in plain ASCII format.

A beta version is available on the Internet at <http://www.daac.ornl.gov/modispilot/>.



Web Map Servers

The ORNL DAAC now also offers several enhanced map servers for the convenience of our users.

WebGIS is an Internet-based technology that enables users to browse, query, and display spatial data using a standard web browser.

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Map server for FLUXNET sites worldwide.



Web Map Servers (continued)

The ORNL DAAC WebGIS includes a number of land cover, biophysical, elevation, and geopolitical layers, as well as access to other relevant Open Geospatial Consortium (OGC) layers. Users can interrogate map features and extract and download selected map features including map layers (shape files).

The ORNL DAAC WebGIS is based on ESRI ArcIMS and Minnesota Mapserver technology. The user interface was built with ArcIMS while some of the tools were implemented using Minnesota Mapserver. The ORNL DAAC WebGIS supports Web Map Service (WMS) and Web Coverage Service (WCS) OpenGIS protocols.

Please see <http://daac.ornl.gov/mapservers.shtml> for map servers for the following:

- FLUXNET sites,
- MODIS ASCII Subset Sites,
- net primary productivity (NPP) sites, and
- all of the above sites.

We also offer a WebGIS for North America.

ACCESSING ORNL DAAC DATA

Web-based interface:

<http://daac.ornl.gov/>

Advanced data search:

<http://mercury.ornl.gov>

Anonymous FTP browsing:

<ftp://daac.ornl.gov/data/>

EOSDIS Data Gateway: search all DAACs at

<http://eos.nasa.gov/imswelcome>

User Services Office: ornldaac@ornl.gov

All data from the DAAC are free and are available electronically or on CD-ROM or DVD.

National Aeronautics and Space Administration:

<http://www.nasa.gov>

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