



Data Basin Climate Center sharing and manipulating spatial information on the web

Dominique Bachelet, Tosha Comendant and Jim Strittholt



**Conservation Biology Institute
Ecological Society of America Annual Meeting
August 5, 2010**



Outline

1. Data Basin *databasin.org*

- * raison d'être

2. Climate Center

- * advisory group
- * find and/or contribute datasets
- * analyze and map on the web
- * publish galleries
- * connect and collaborate

The issue

Best available science is often not used

WHY?

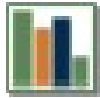
- Data and information are scattered and often unavailable
- Valuable time and resources are wasted searching for datasets, information, and experts

A solution...

Data Basin seeks to advance **science-driven decision making** by providing:

- open access to datasets
- visualization, analysis and sharing tools
- links to people

Building blocks



Datasets: Spatially explicit files (ArcShape and ArcGrid)



Maps: Spatial overlays created in Data Basin by users



Galleries: Collections of datasets & maps



People: Directory of Data Basin users



Groups: Subsets of users collaborating around topics



Data Basin Centers: Gateways



The Climate Center

centralizes critical climate change datasets and tools about past climate variability, current climate trends, or predicted future scenarios, and their impacts at local, regional or global scales.



The Boreal Information Centre

contains geospatial datasets to help manage the North American boreal forest biome.



The Aquatic Conservation Center

contains data, tools, and experts working to increase the resilience of freshwater and marine biodiversity.



The Protected Area Center

centralizes critical global data on protected areas, including full access to the PAD-US v1.1 (CBI Edition).



Climate Center

- **Goal:** deliver credible (robust science) and usable (well documented) conservation-relevant data and tools about climate change
- **Objectives:** document past changes and presumed causes, monitor current trends, present future projections with uncertainties

Nature Previews : 10.1038/npre.2010.5256.1 : Posted 15 Nov 2010



Climate Center Advisory Group



Phil Duffy, Dir. of Institute for Research on Climate Change and Societal Impacts, UC Merced and Climate Central.

Mike Furniss, USDA Forest Service Climate Change Resource Center Lead Scientist.

Healy Hamilton, Dir. of Center of Biodiversity Research, California Academy of Sciences.

Lara Hansen, Chief scientist and Exec. director, EcoAdapt.

Lisa Graumlich, Dean of College of the Environment, UW, Seattle.

Neal Lott, Chief Data Access Branch, National Climatic Data Center, NOAA.

Rebecca Shaw, Dir. Conservation Science, The Nature Conservancy of California.

Data Basin Climate Center Lead scientist:
Dominique Bachelet, Conservation Biology Institute.

Climate Center: Gateway to CC spatial data



Explore • Create • Share • Learn

HOME | ABOUT | BLOG | CREATE ACCOUNT | LOGIN

 Search

Connect with
Data Basin:

My Workspace

Datasets

Maps

Galleries

People

Groups

Centers

The Climate Center



- About Climate Center
- Features
- Sponsors & Partners
- Climate Center Home
- Data Basin Blog
- Data Basin Home

Sponsored By
THE KRESGE FOUNDATION



Current News

Honoring Dr. Stephen Schneider

As **Dr. Ben Santer** said, "We honor the memory of **Steve Schneider** by continuing to fight for the things he fought for – by continuing to seek clear understanding of the causes and impacts of climate change. We honor Steve by recognizing that communication is a vital part of our job. We honor Steve by taking the time to explain our research findings in plain English."

About the Climate Center

The Data Basin Climate Center centralizes critical climate change-related datasets and findings. Tools are provided to visualize, analyze, and communicate vulnerabilities, trends or predicted future scenarios at local and regional scales. The Climate Center is working to increase the resistance and resilience of biodiversity in a climate-altered future by building collective understanding of the potential biological, physical, and cultural impacts. [Read more.](#)



The Data Basin Climate Center was built in collaboration with the Climate Adaptation Knowledge Exchange (CAKE). CAKE

“Features” allow quick access

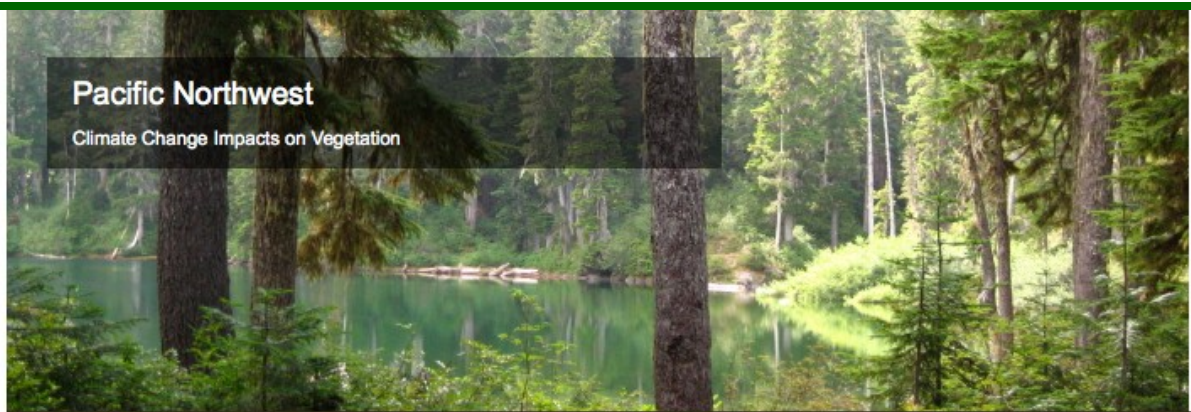
The Climate Center



About Climate Center
Features
Sponsors & Partners
Climate Center Home
Data Basin Blog
Data Basin Home

Sponsored By

THE KRESGE FOUNDATION



Pacific Northwest

Climate Change Impacts on Vegetation

Climate Center Features

Pacific Northwest

Canada Lynx

Redwood Range Shifts

Yosemite

Watershed Resilience

Minnesota Forest Modeling

Pacific Northwest

Climate Change Impacts on Vegetation

A new assessment of the potential impact of climate change on vegetation in the Pacific Northwest of the USA shows a mosaic of vulnerable and resilient areas. Researchers found that coastal forests are vulnerable to large increases in fires, subsequent losses in carbon stocks, and encroachment from more southerly and/or easterly forest types. The dry, fire-adapted forests east of the Cascades are projected to be more resilient to climate change. With projected increases in precipitation, vast expanses of shrublands in the Columbia Plateau and Northern Basin could convert to grasslands or woodlands.

Due to a limited number of field experiments (FACE or free-air CO₂ enrichment), we don't know how every plant species might respond to changes. As a result, models cannot be calibrated precisely for current vegetation cover. To try to alleviate some of the problems associated with the diversity of species-specific responses, climate scientists use dynamic global vegetation models where plant functional types (such as maritime evergreen forests) rather than species are used to simulate vegetation assemblages and the associated ecosystem processes.

The dynamic global vegetation model MC1 was used to simulate vegetation dynamics, associated carbon and nitrogen cycles, water budget and wild fire impacts across the western 2/3 of the states of Oregon and Washington. The model used historical climate data from the PRISM group (Chris Daly, OSU) at a 30arc second (~800m) spatial grain and anomalies from 9 future climate projections. The vegetation model only simulates potential natural vegetation and does not simulate the impacts of urbanization, agriculture, or industrial development.

The model was run on a



Featured Pacific Northwest Content



Datasets

- Total soil residual water simulated under MIROC 3.2 medres A2 in cm for December for the Pacific Northwest, USA (2070-2099 average)
- Total soil residual water simulated under Hadley CM3 A2 in cm for November for the Pacific Northwest, USA (2070-2099 average)



Maps

- US Pacific Northwest ecosystem carbon simulation - current and future
- Projections of climate change impacts on hydrology in the Pacific Northwest region of the USA



People

- Brendan Rodgers, Graduate Student



Galleries

- Climate change impacts for the Pacific Northwest (USA)

Find and/or contribute datasets



- Search and gain access to spatial datasets

The screenshot displays the DATA BASIN website interface. At the top, the logo and navigation links (HOME | ABOUT | FAQ | BLOG | HELP | LOG OUT) are visible. Below the logo, there are tabs for 'My Workspace', 'Datasets', 'Maps', 'Galleries', 'People', and 'Groups'. A search bar is located in the top right corner, with a dropdown menu open showing options: 'Search datasets', 'Search maps', 'Search galleries', 'Search people', and 'Search groups'. The user's name, 'Dominique Bachelet', is displayed next to the search bar.

On the left side, there is a sidebar with navigation options: 'Browse Datasets', 'Browse Maps', 'Browse Galleries', 'Browse People', and 'Browse Groups'. Below this sidebar is a profile card for 'Dominique Bachelet' with a 'View My Profile' link.

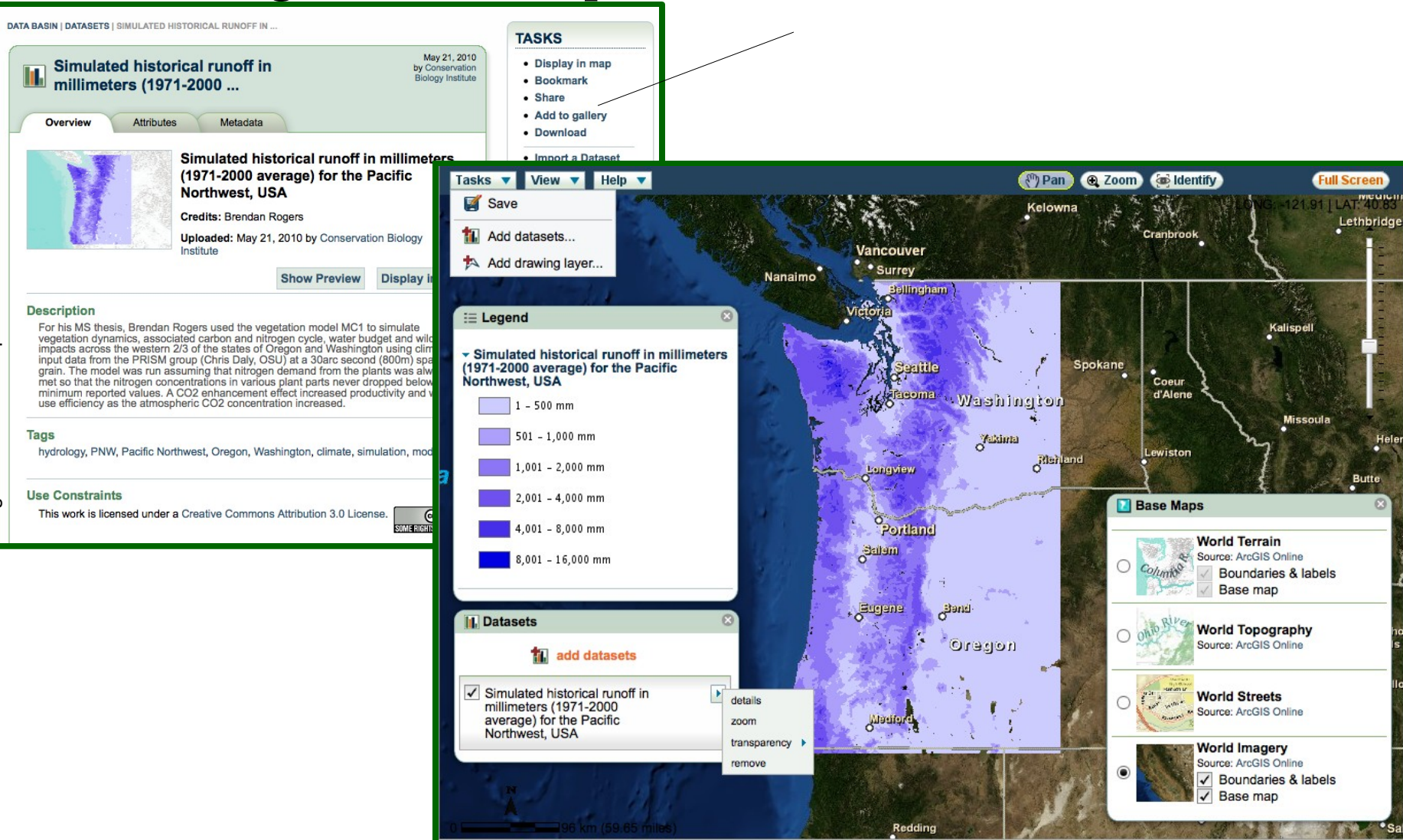
The main content area is titled 'SEARCH DATA BASIN' and shows a search input field containing 'climate change' and a 'Search' button. Below the search bar, there are tabs for 'Datasets', 'Maps', 'Galleries', 'People', and 'Groups'. The search results are displayed as follows:

Results 11-15 of 357 (0.1 seconds)

- Projected (2070-2099) Percentage Change in Mean Annual Total Ecosystem Carbon for California under the PCM IS92a future climate scenario**
Description: This product is one of a set of mapped model simulation results generated for a project called "Global Climate Change and California: Potential Implications for Ecosystems, Health, and the Economy". The project was conducted by the Electrical Power Research Institute (EPRI) and funded ...
Tags: carbon, California, climate change, dynamic general vegetation model
- Projected (2070-2099) Percentage Change in Mean Annual Total Ecosystem Carbon for California under the HAD IS92a future climate scenario**
Description: This product is one of a set of mapped model simulation results generated for a project called "Global Climate Change and California: Potential Implications for Ecosystems, Health, and the Economy". The project was conducted by the Electrical Power Research Institute (EPRI) and funded ...
Tags: carbon, California, climate change, dynamic general vegetation model
- Projected (2070-2099) Percentage Change in Mean**

Find and/or contribute datasets

• Search and gain access to spatial datasets



The screenshot displays the Data Basin interface, divided into two main sections: a dataset information page and a map view.

Dataset Information Page (Left):

- Title:** Simulated historical runoff in millimeters (1971-2000 ...)
- Metadata:** May 21, 2010 by Conservation Biology Institute
- Tasks:** Display in map, Bookmark, Share, Add to gallery, Download, Import a Dataset
- Description:** For his MS thesis, Brendan Rogers used the vegetation model MC1 to simulate vegetation dynamics, associated carbon and nitrogen cycle, water budget and wild impacts across the western 2/3 of the states of Oregon and Washington using climate input data from the PRISM group (Chris Daly, OSU) at a 30arc second (800m) spatial grain. The model was run assuming that nitrogen demand from the plants was always met so that the nitrogen concentrations in various plant parts never dropped below minimum reported values. A CO2 enhancement effect increased productivity and use efficiency as the atmospheric CO2 concentration increased.
- Tags:** hydrology, PNW, Pacific Northwest, Oregon, Washington, climate, simulation, model
- Use Constraints:** This work is licensed under a Creative Commons Attribution 3.0 License.

Map View (Right):

- Map:** A map of the Pacific Northwest region showing simulated historical runoff in millimeters (1971-2000 average). The map is color-coded according to the legend, with higher runoff values (darker colors) concentrated in the coastal and mountain regions.
- Legend:** Simulated historical runoff in millimeters (1971-2000 average) for the Pacific Northwest, USA. Legend categories: 1 - 500 mm (lightest purple), 501 - 1,000 mm, 1,001 - 2,000 mm, 2,001 - 4,000 mm, 4,001 - 8,000 mm, 8,001 - 16,000 mm (darkest purple).
- Base Maps:** A panel on the right side of the map showing various base map options: World Terrain, World Topography, World Streets, and World Imagery. The World Imagery option is selected.
- Tasks Panel:** A panel on the left side of the map showing tasks: Save, Add datasets..., and Add drawing layer...
- Dataset Panel:** A panel at the bottom left of the map showing the dataset "Simulated historical runoff in millimeters (1971-2000 average) for the Pacific Northwest, USA" with options for details, zoom, transparency, and remove.

Find and/or contribute datasets



Nature Precedings : doi:10.1038/npre.2010.5256.1 : Posted 15 Nov 2010

• Search and gain direct access to spatial datasets

• Upload your own data (up to 2 GB free & control privacy)

HOME | ABOUT | FAQ | BLOG | HELP | LOG OUT

DATA BASIN Explore • Create • Share • Learn

My Workspace Datasets Maps Galleries People Groups Centers

Welcome Dominique Bachelet

IMPORT A DATASET TO DATA BASIN...

Select Data Source

To contribute your dataset to Data Basin, your dataset must be an ArcGIS layer package (other formats to be supported soon).

[Learn more about the requirements for uploading datasets to Data Basin here...](#)

* Required

* I agree to the [Data Basin Terms of Use](#) (required)

The dataset is:

On my computer A map service

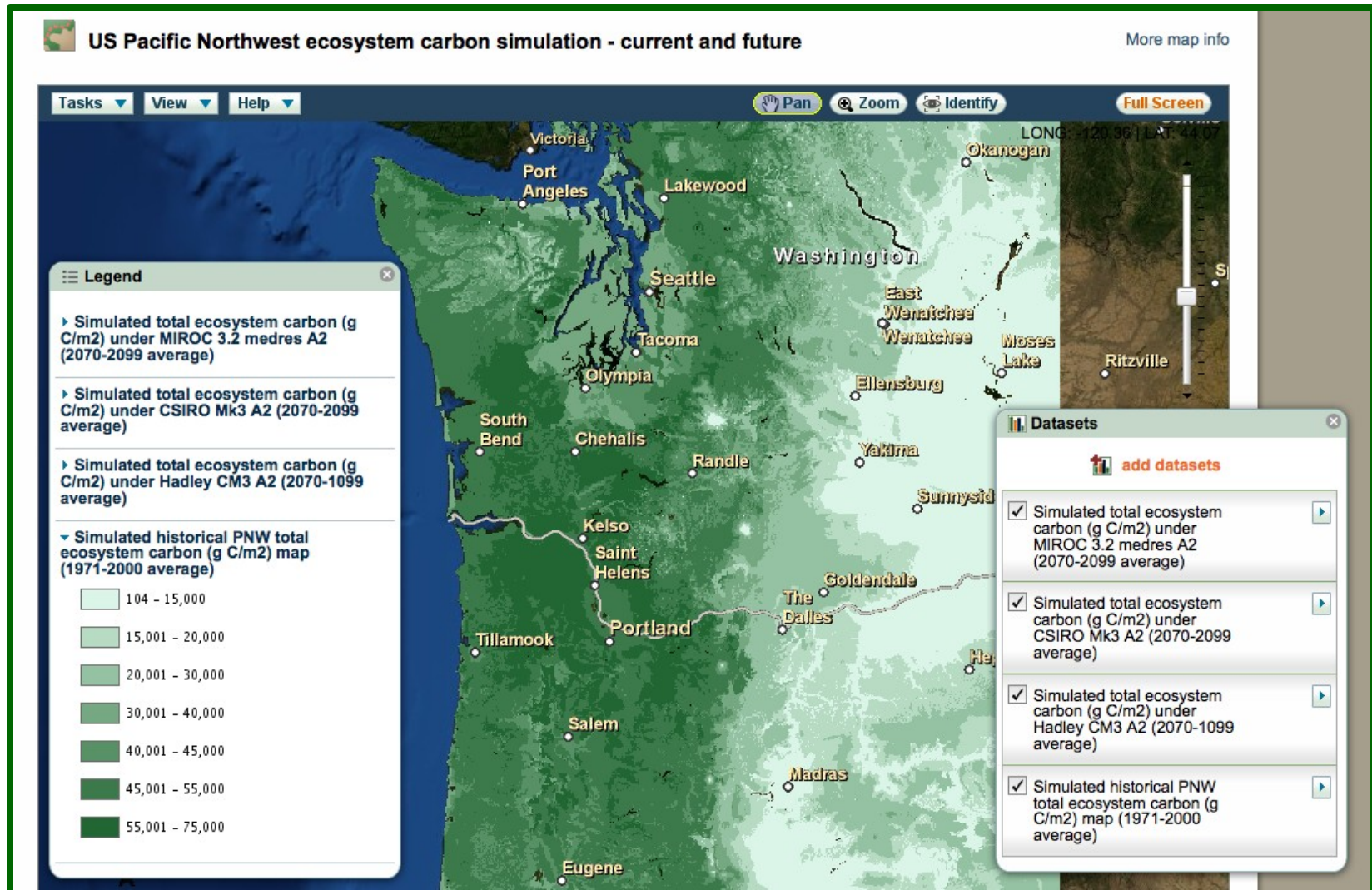
Tips:

- ▶ Datasets must be ESRI Shapefile or ArcGRID formats inside a layer package file (.lpx), created using ArcGIS 9.3.1 or later.
- ▶ Datasets must be in standard projection based on the following Datums: WGS84, NAD83, South American 1969, European 1950
- ▶ If a valid FGDC metadata file is found with the upload, it will be used to help populate the next several steps.

Analyze and map on the web



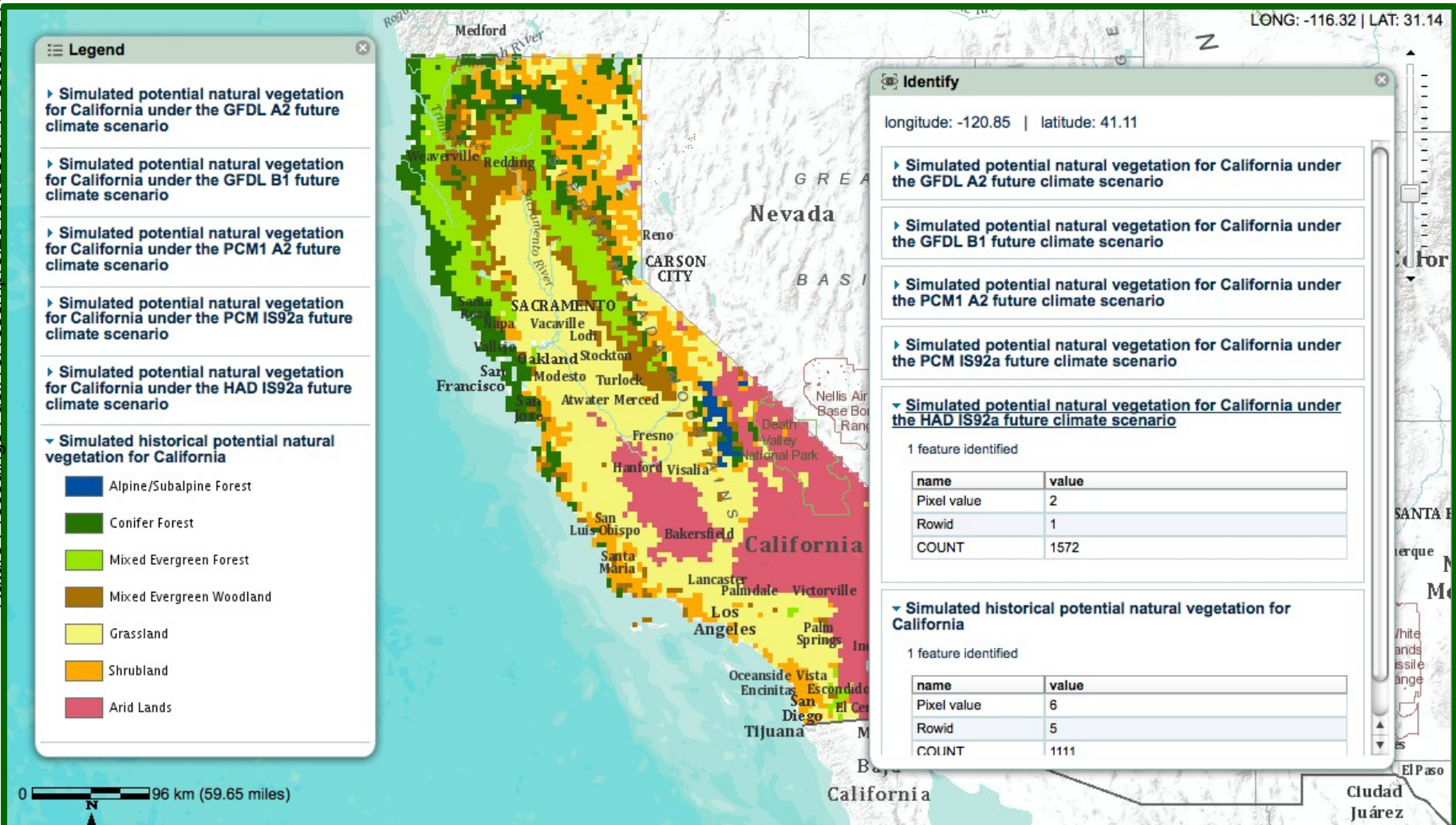
- Create, save, and share customized web maps



Analyze and map on the web

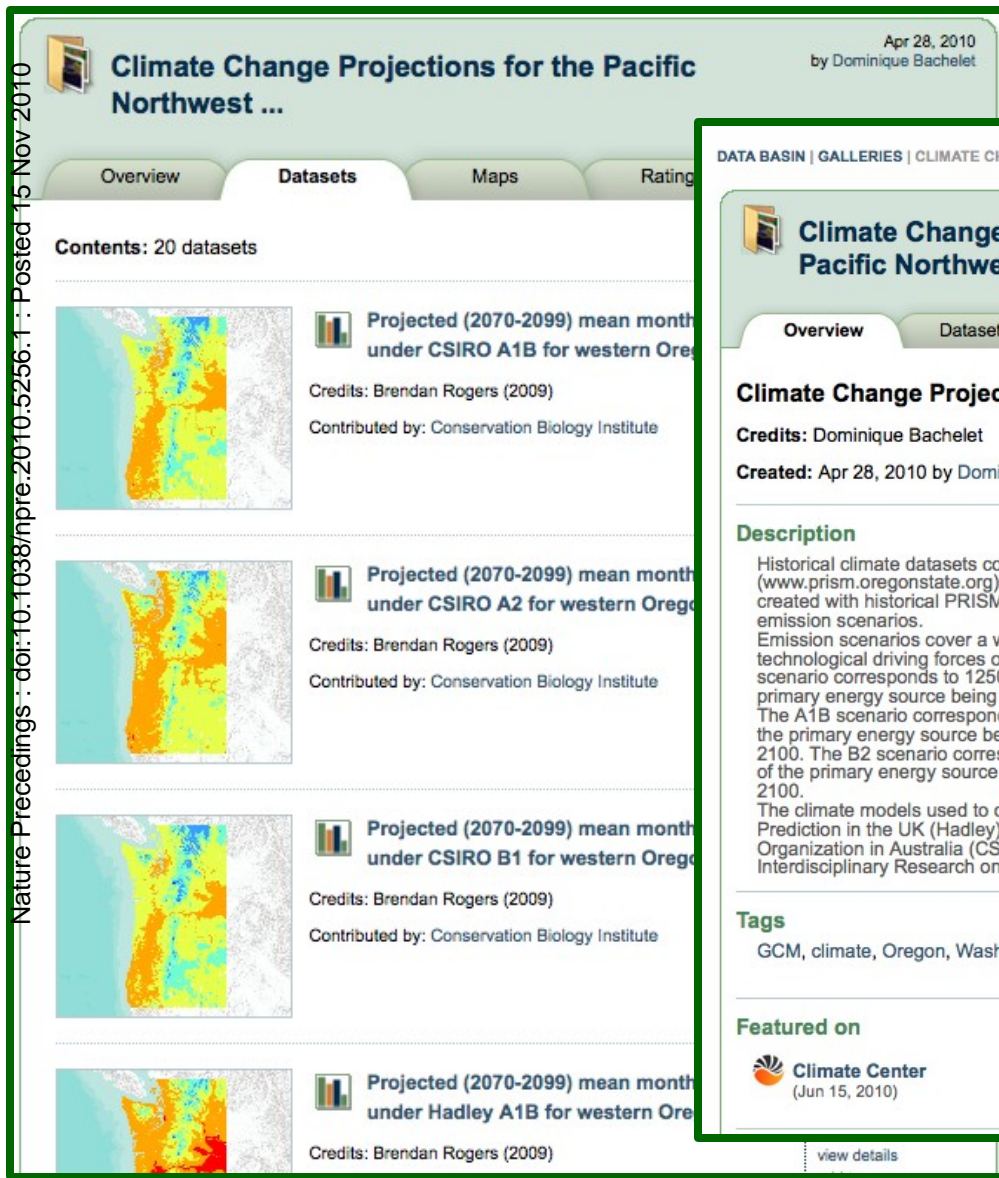
- Create, save, and share customized web maps
- Analysis tools (simple for now)

Nature Precedings : doi:10.1038/npre.2010.5256.1 : Posted 15 Nov 2010



Publish "galleries"

Nature Precedings : doi:10.1038/npre.2010.5256.1 : Posted 15 Nov 2010



Apr 28, 2010
by Dominique Bachelet

Overview Datasets Maps Rating

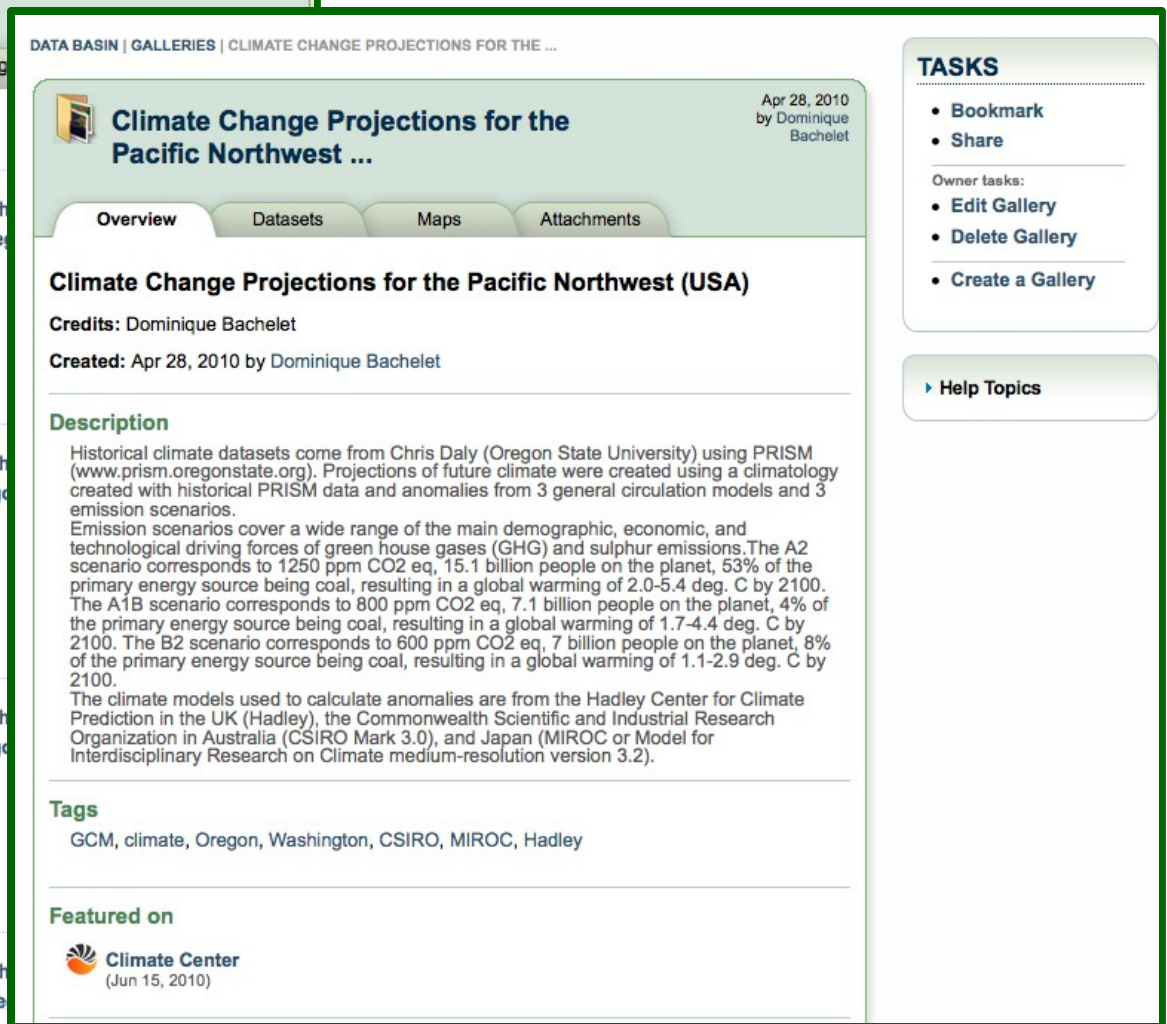
Contents: 20 datasets

Projected (2070-2099) mean month under CSIRO A1B for western Ore
Credits: Brendan Rogers (2009)
Contributed by: Conservation Biology Institute

Projected (2070-2099) mean month under CSIRO A2 for western Ore
Credits: Brendan Rogers (2009)
Contributed by: Conservation Biology Institute

Projected (2070-2099) mean month under CSIRO B1 for western Ore
Credits: Brendan Rogers (2009)
Contributed by: Conservation Biology Institute

Projected (2070-2099) mean month under Hadley A1B for western Ore
Credits: Brendan Rogers (2009)



DATA BASIN | GALLERIES | CLIMATE CHANGE PROJECTIONS FOR THE ...

Apr 28, 2010
by Dominique Bachelet

Overview Datasets Maps Attachments

Climate Change Projections for the Pacific Northwest (USA)

Credits: Dominique Bachelet
Created: Apr 28, 2010 by Dominique Bachelet

Description

Historical climate datasets come from Chris Daly (Oregon State University) using PRISM (www.prism.oregonstate.org). Projections of future climate were created using a climatology created with historical PRISM data and anomalies from 3 general circulation models and 3 emission scenarios.


Emission scenarios cover a wide range of the main demographic, economic, and technological driving forces of green house gases (GHG) and sulphur emissions. The A2 scenario corresponds to 1250 ppm CO2 eq, 15.1 billion people on the planet, 53% of the primary energy source being coal, resulting in a global warming of 2.0-5.4 deg. C by 2100. The A1B scenario corresponds to 800 ppm CO2 eq, 7.1 billion people on the planet, 4% of the primary energy source being coal, resulting in a global warming of 1.7-4.4 deg. C by 2100. The B2 scenario corresponds to 600 ppm CO2 eq, 7 billion people on the planet, 8% of the primary energy source being coal, resulting in a global warming of 1.1-2.9 deg. C by 2100.

The climate models used to calculate anomalies are from the Hadley Center for Climate Prediction in the UK (Hadley), the Commonwealth Scientific and Industrial Research Organization in Australia (CSIRO Mark 3.0), and Japan (MIROC or Model for Interdisciplinary Research on Climate medium-resolution version 3.2).

Tags

GCM, climate, Oregon, Washington, CSIRO, MIROC, Hadley

Featured on

 **Climate Center**
(Jun 15, 2010)

[view details](#)

TASKS

- [Bookmark](#)
- [Share](#)

Owner tasks:

- [Edit Gallery](#)
- [Delete Gallery](#)
- [Create a Gallery](#)

[▶ Help Topics](#)

Connect and collaborate




Nature Precedings : doi:10.1038/npre.2010.5256.1 : Posted 15 Nov 2010

- Find and connect with experts and potential **collaborators**

DATA BASIN | PEOPLE | DOMINIQUE BACHELET

Dominique Bachelet

Profile | Datasets | Maps | Galleries



Dominique Bachelet
Member since: Jan 27, 2010 (last logged in Jun 9, 2010)
Email address: dominique@consbio.org

About Me:

Dominique joined CBI in June 2009 as senior climate change scientist. She worked the Climate Change Science Team for The Nature Conservancy from January 2007 to 2008. She received her Master's degree in 1978 in Lille (France) and her Ph.D. in 1982 from Colorado State University working on biogeochemical cycles in the shortgrass prairie. In 1983 she went to U.C. Riverside as a postdoc simulating nitrogen fixing shrubs in the Sonoran Desert. She then went two years later to New Mexico State University to simulate Chihuahuan Desert ecosystem processes. She was hired in 1988 as a contractor for the US EPA in Corvallis, Oregon to work on climate change impacts on paddy rice ecosystems in Asia. In the Fall of 1999 she started working with a team of USFS PNW researchers simulating climate change impacts on global terrestrial systems until the summer of 2006. In Corvallis, she taught at Oregon State University (OSU) as faculty in the Biological and Ecological Engineering Department. In 2007 she moved to Olympia (WA), telecommuting for her work.

SEARCH DATA BASIN

climate change Search

Datasets | Maps | Galleries | **People** | Groups

Results 1-5 of 59 (0.1 seconds)


- Evie Witten**
Description: I oversee climate change work for The Nature Conservancy in Alaska and Canada.
Tags: climate change, boreal, arctic
- Jennie Hoffman**
Description: My focus is threefold: building the field of climate change adaptation, building the capacity of natural resource conservation and management professionals to reduce their vulnerability to climate change, and helping organizations reduce the vulnerability of their work to climate change if they ...
Tags: climate change;adaptation;management
- Kristen Schmitt**
Description: We work to provide easily-accessible information to public and private land managers on managing ecosystems under climate change.
Tags: climate change, carbon, tools
- Jessica Halofsky**
Description: I am a research ecologist with a focus in vegetation dynamics, fire ecology, and climate change.
Tags: ecology, fire, climate change
- Steve Adams**
Description: Steve Adams manages the Climate Leadership Initiative's National Climate Change Preparedness Program at the University of Oregon where he provides assistance to climate change adaptation practitioners and policy makers in federal, state, and local government agencies ...
Tags: Climate Change Adaptation

Connect and collaborate

Nature Precedings : doi:10.1038/npre.2010.5256.1 : Posted 15 Nov 2010


- Connect with experts and potential collaborators
- Create and manage **groups** for collaboration, reviews, classes, workshops

DATA BASIN | GROUPS | ESRI PRESS CONSERVATION PLANNING BOOK

 **ESRI Press Conservation Planning Book** Feb 18, 2010
by Frank "Lance" L. Craighead

Profile

ESRI Press Conservation Planning Book



Group Leader: Frank "Lance" L. Craighead
Membership: closed

Description:
ESRI Press Conservation Planning Book

Shaping the Future: Conservation Planning from the bottom up - a practical guide for the century.

Chapters:


1. Introduction. *Shaping the Future*. Lance Craighead and Charles Convis
2. Modeling the ecology and behavior of wildlife: how to responsibly map the biology of a species to the algorithm.. Kevin Johnston.

TASKS

- Go To Group Home
- Create a Group

► How Do I...

DATA BASIN | GROUPS | ILAP - VEGETATION AND CLIMATE CHANGE | HOME

 **ILAP - Vegetation and Climate Change**

Welcome Dominique Bachelet

TASKS

- View Public Profile
- Leave Group

Admin tasks:

- Edit Group Home
- Edit Group Profile
- Manage Members

► Help Topics

Welcome.
Welcome to the Integrated Landscape Assessment Project group page for the CBI team.
Here, you'll find information relating to the vegetation and climate change portion (module) of the project.

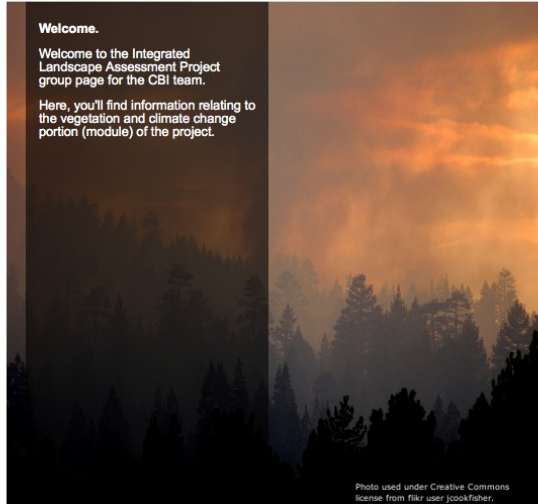



Photo used under Creative Commons license from flickr user 'pookfisher'.

ILAP - Vegetation and Climate Change

- Group Home
- Group Profile
- Group Bookmarks
- Group Members
- Group Files

 **Dominique Bachelet**
View My Profile

Manage your own private workspace DATA BASIN



Nature Precedings : doi:10.1038/npre.2010.5256.1 : Posted 15 Nov 2010

The screenshot shows the 'My Workspace' page on the Data Basin website. At the top, there is a navigation bar with links for HOME, ABOUT, FAQ, BLOG, HELP, and LOG OUT. The main header includes the Data Basin logo and the tagline 'Explore • Create • Share • Learn'. A search bar is located on the right. Below the header is a horizontal menu with tabs for My Workspace, Datasets, Maps, Galleries, People, Groups, and Centers. The user is identified as Dominique Bachelet. A left sidebar contains navigation options: My Workspace Home, My Bookmarks, My Datasets, My Imports, My Maps, My Galleries, and My Groups. The main content area is titled 'MY WORKSPACE' and is divided into four sections: Datasets, Maps, Groups, and Galleries. Each section provides a brief description and a list of recent items. A 'TASKS' panel on the right lists actions like 'Create a Map', 'Import a Dataset', 'Create a Group', and 'Create a Gallery'. A 'Help Topics' button is also present.

HOME | ABOUT | FAQ | BLOG | HELP | LOG OUT

DATA BASIN Explore • Create • Share • Learn

My Workspace Datasets Maps Galleries People Groups Centers

Welcome Dominique Bachelet

DATA BASIN | MY WORKSPACE

MY WORKSPACE

Datasets
A dataset is a spatially explicit file, currently ESRI shapefile and ArcGRID files.
Recent datasets:

- Land Systems of Indonesia ...
- 30 arc second DEM of ...
- 30 arc-second DEM of South ...

[→ View more](#)
[→ Import a Dataset](#)

Maps
Maps are visualized datasets created with easy-to-use tools in Data Basin.
Recent maps:

- Deepwater Horizon Gulf of ...
- Deepwater Horizon Gulf of ...
- Cuenca del Lerma?

[→ View more](#)
[→ Create a Map](#)

Groups
Groups are a user-defined subset of Data Basin users collaborating around topics.
Recent groups:

- Ecokronoscope group
- OSI - Southern Appalachian ...
- Wild Connections

[→ View more](#)

Galleries
Galleries are meaningful collections of datasets and/or maps created by users.
Recent galleries:

- Conservation Planning - ...
- PAD Aviation
- Galería de México

TASKS

- Create a Map
- Import a Dataset
- Create a Group
- Create a Gallery

[▶ Help Topics](#)

Now try it yourself!



databasin.or

g

Questions/feedback:

databasin@consbio.org

Sponsors



THE KRESGE FOUNDATION