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

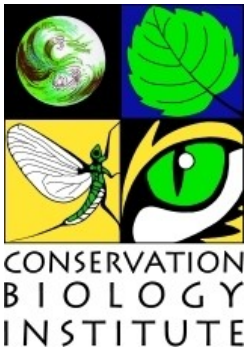
Data Basin Climate Center sharing and manipulating spatial information on the web

Dominique Bachelet, Tosha Comendant and Jim Strittholt

Conservation Biology Institute

Ecological Society of America Annual Meeting

August 5, 2010



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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

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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

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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

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Building blocks

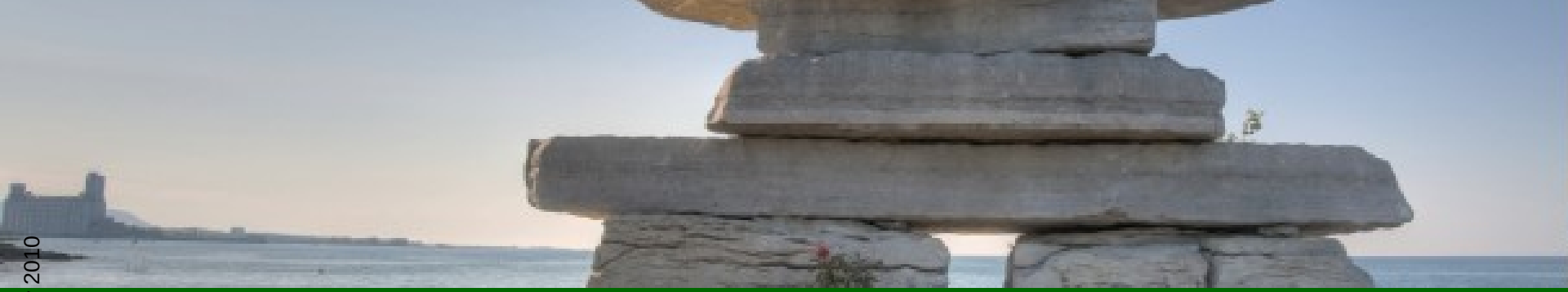
Datasets: Spatially explicit files (ArcShape and ArcGrid)

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



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Data Basin Centers: Gateways

DATA BASIN

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).

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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

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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

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“Features” allow quick access

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The Climate Center

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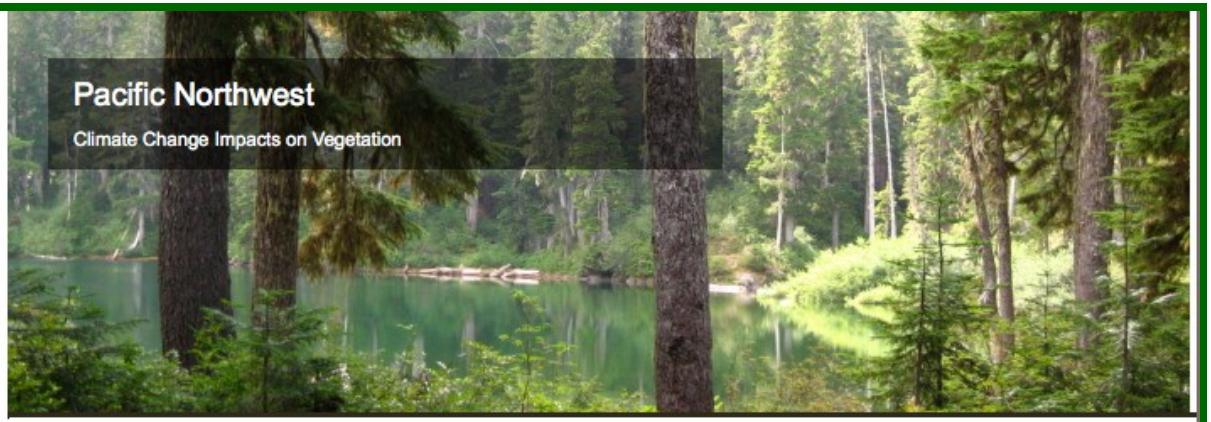


Climate Center Features

- 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

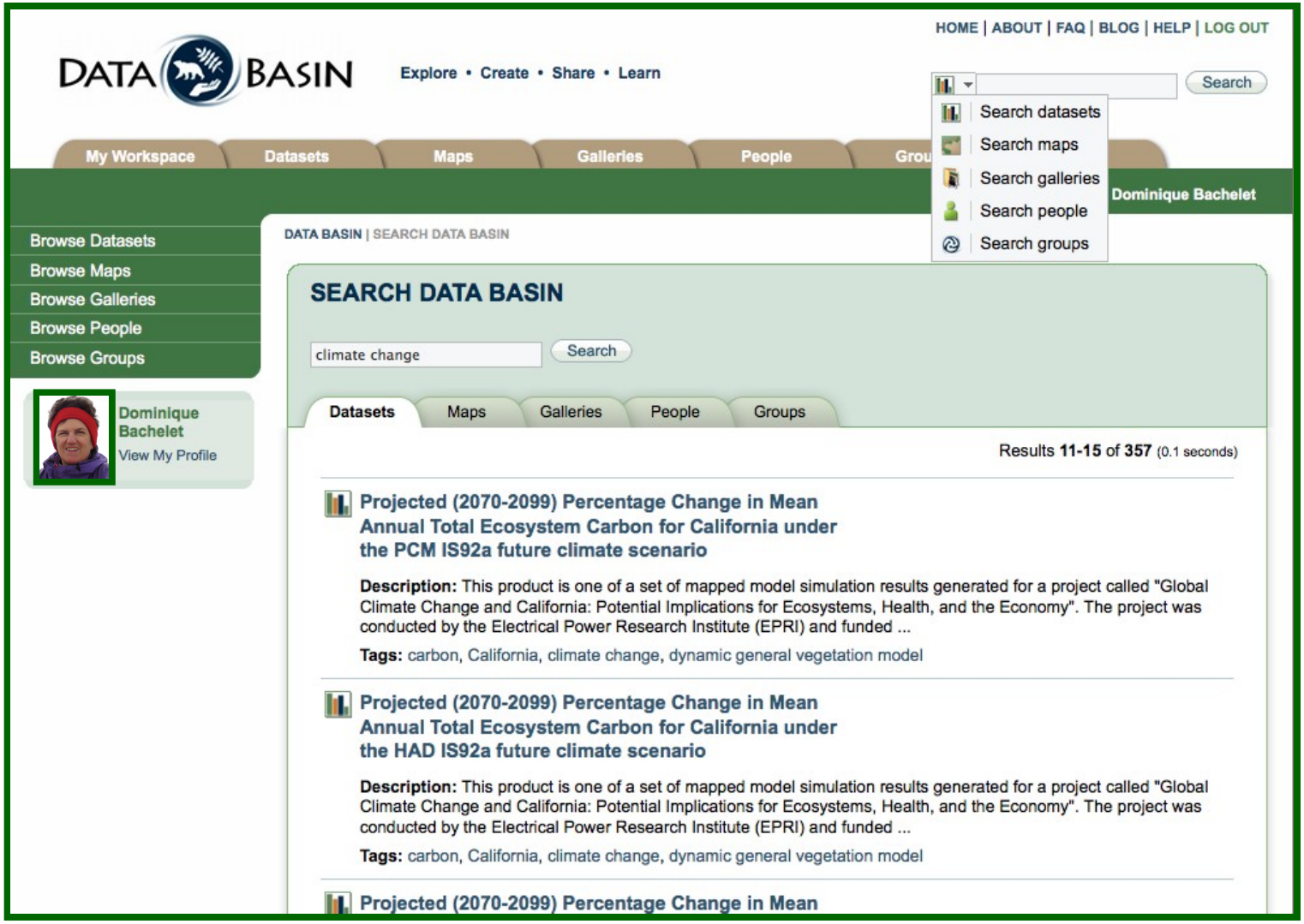
- Brendan Rodgers, Graduate Student

Galleries

- Climate change impacts for the Pacific Northwest (USA)

Find and/or contribute datasets

- **Search and gain access to spatial datasets**



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Find and/or contribute datasets

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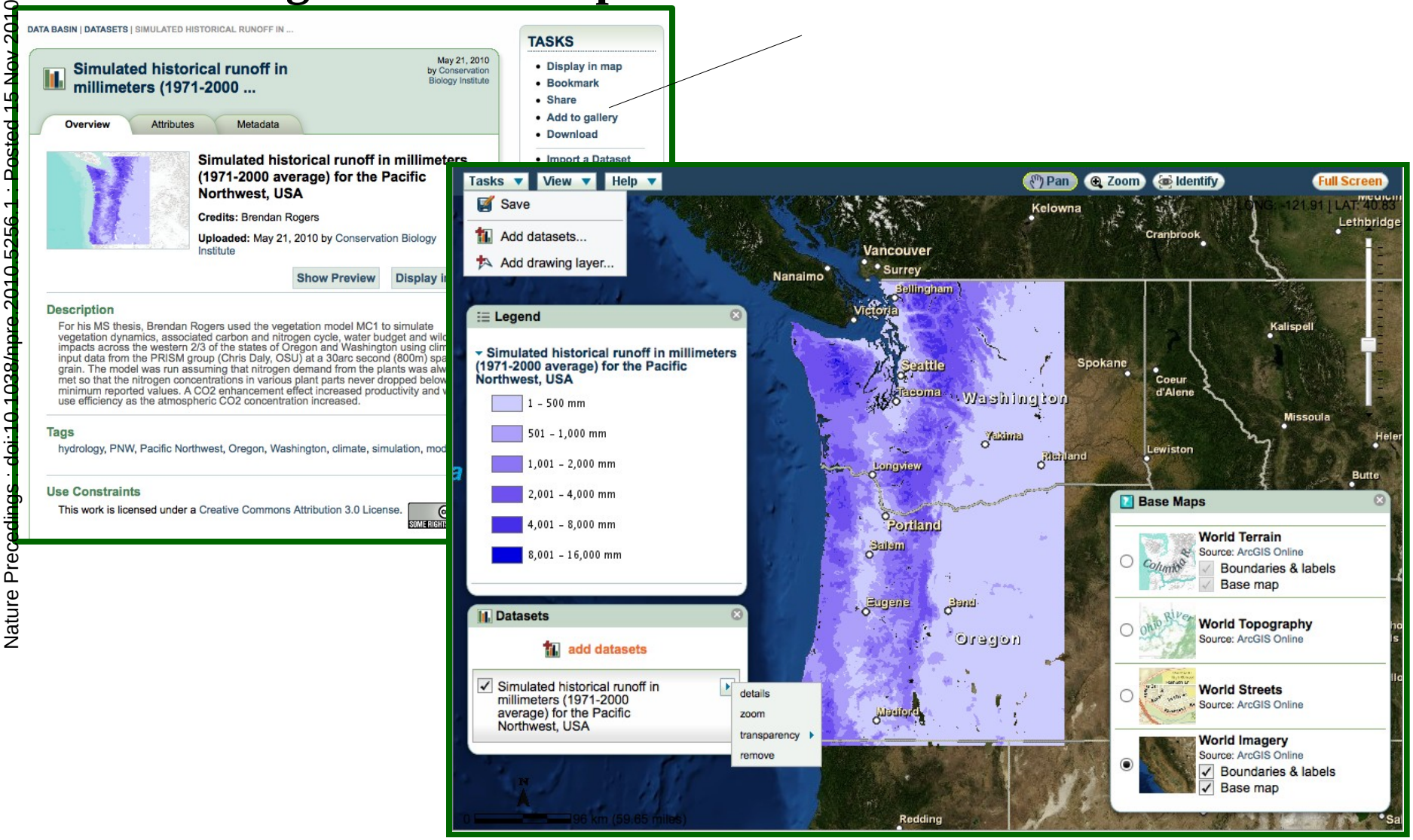

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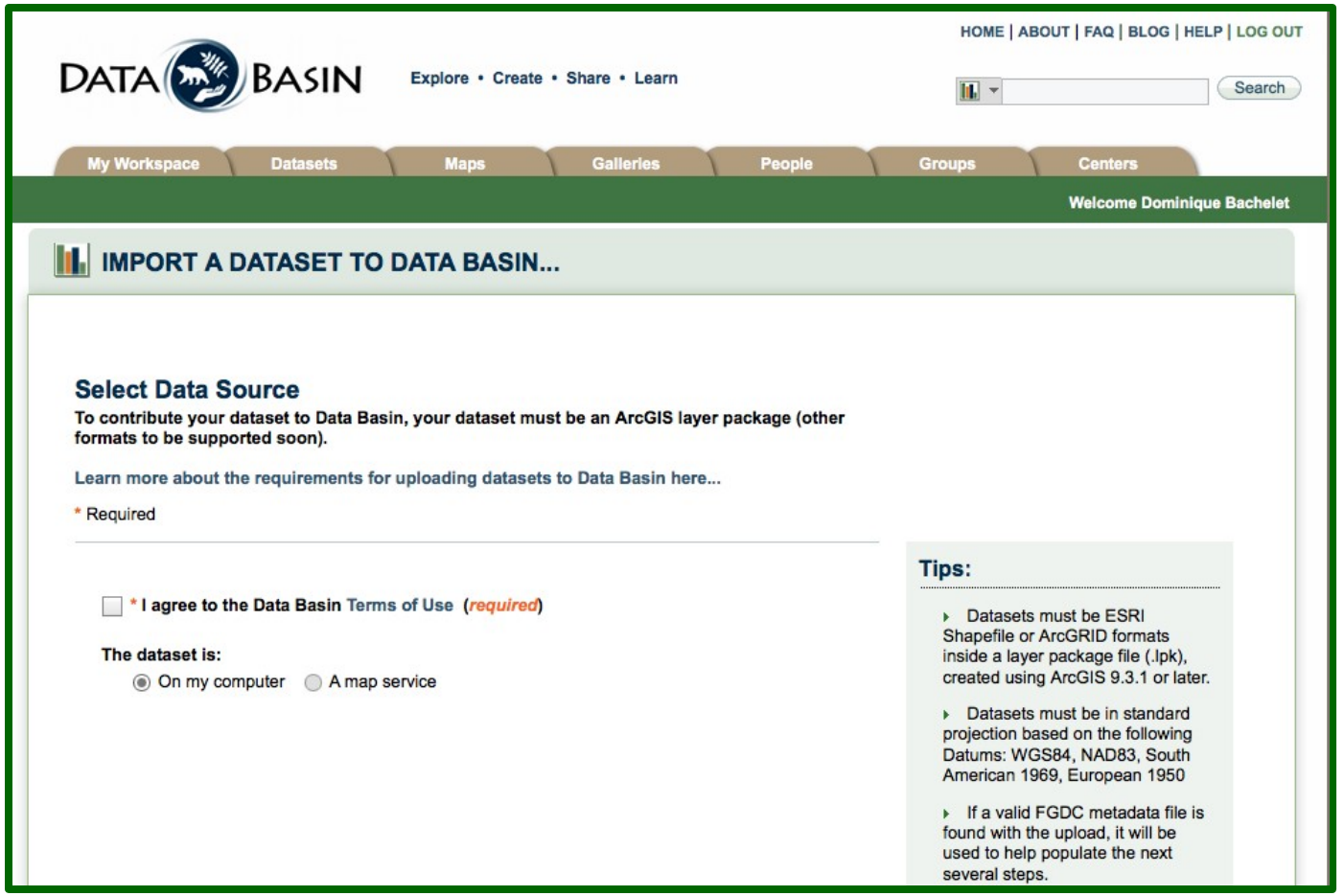
Find and/or contribute datasets

- Search and gain direct access to spatial datasets
- **Upload your own data (up to 2 GB free & control privacy)**



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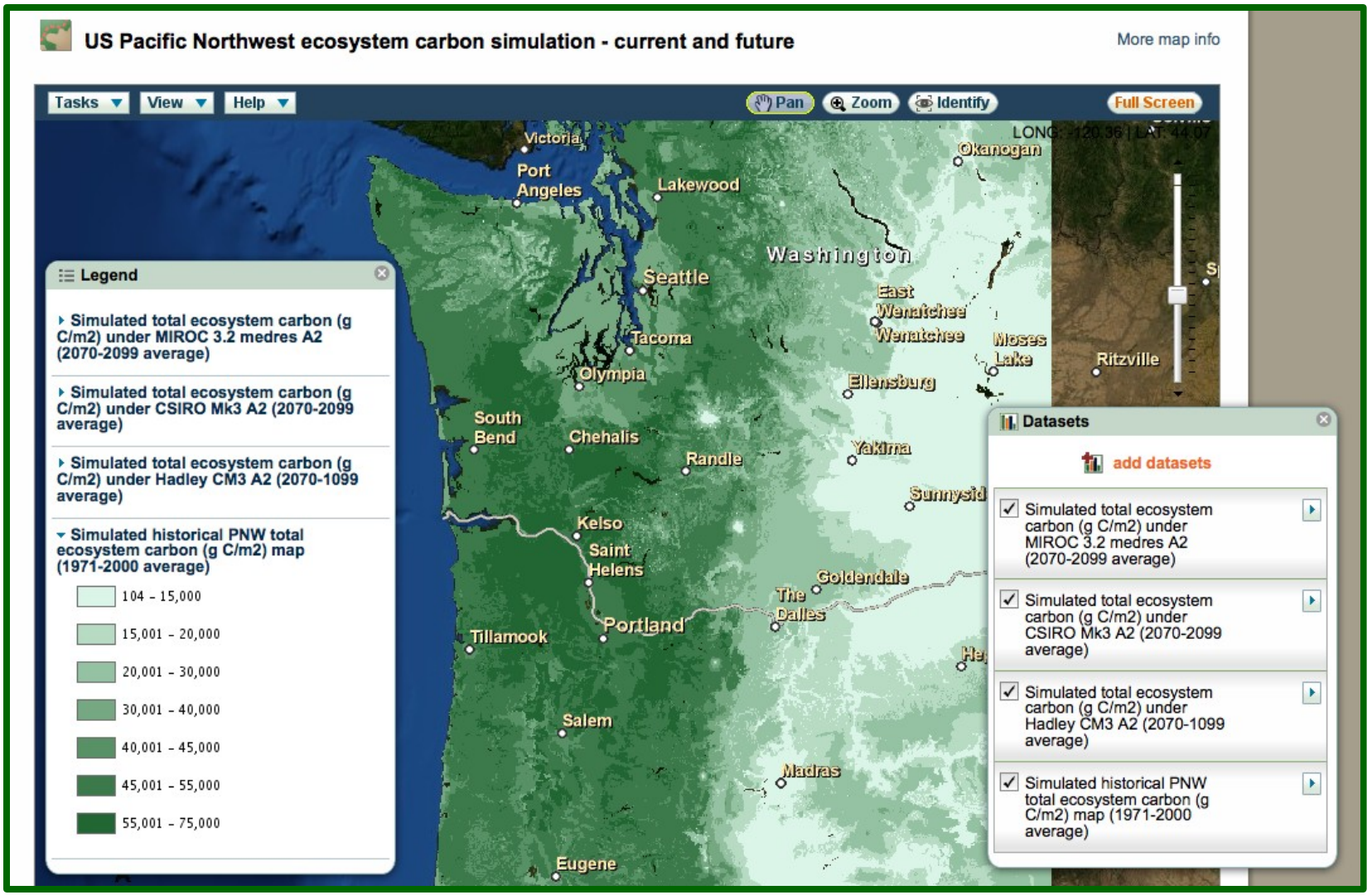
Analyze and map on the web

- **Create, save, and share customized web maps**



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Analyze and map on the web

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

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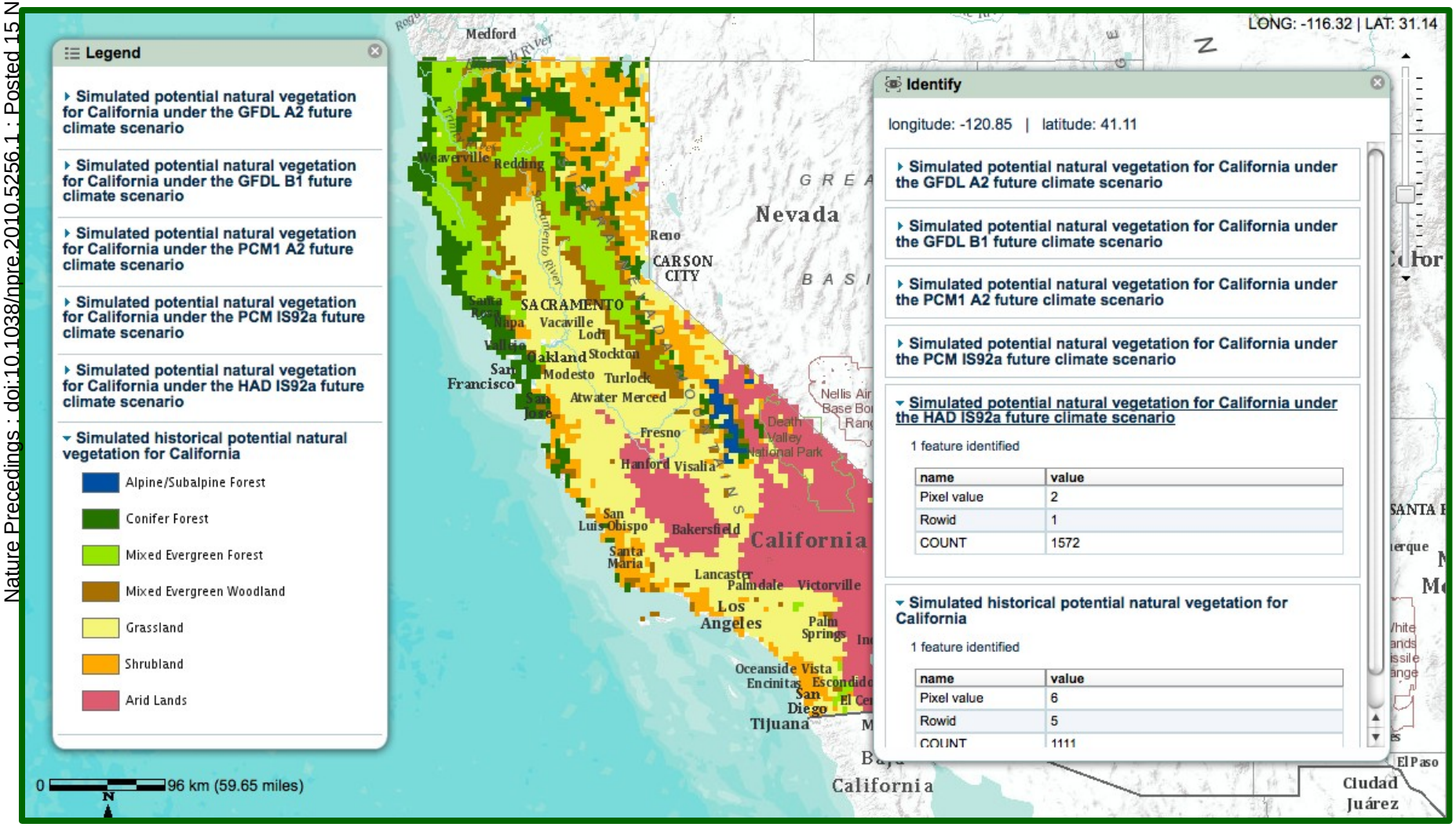

Publish “galleries”

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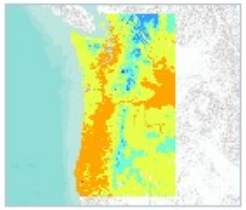
Climate Change Projections for the Pacific Northwest ...

Apr 28, 2010
by Dominique Bachelet

Overview | Datasets | Maps | Rating

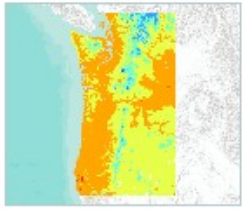
Contents: 20 datasets



Projected (2070-2099) mean month... under CSIRO A1B for western Ore...

Credits: Brendan Rogers (2009)

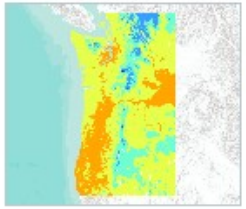
Contributed by: Conservation Biology Institute



Projected (2070-2099) mean month... under CSIRO A2 for western Orego...

Credits: Brendan Rogers (2009)

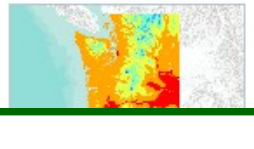
Contributed by: Conservation Biology Institute



Projected (2070-2099) mean month... under CSIRO B1 for western Orego...

Credits: Brendan Rogers (2009)

Contributed by: Conservation Biology Institute



Projected (2070-2099) mean month... under Hadley A1B for western Ore...

Credits: Brendan Rogers (2009)

view details

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

Climate Change Projections for the Pacific Northwest ...

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)

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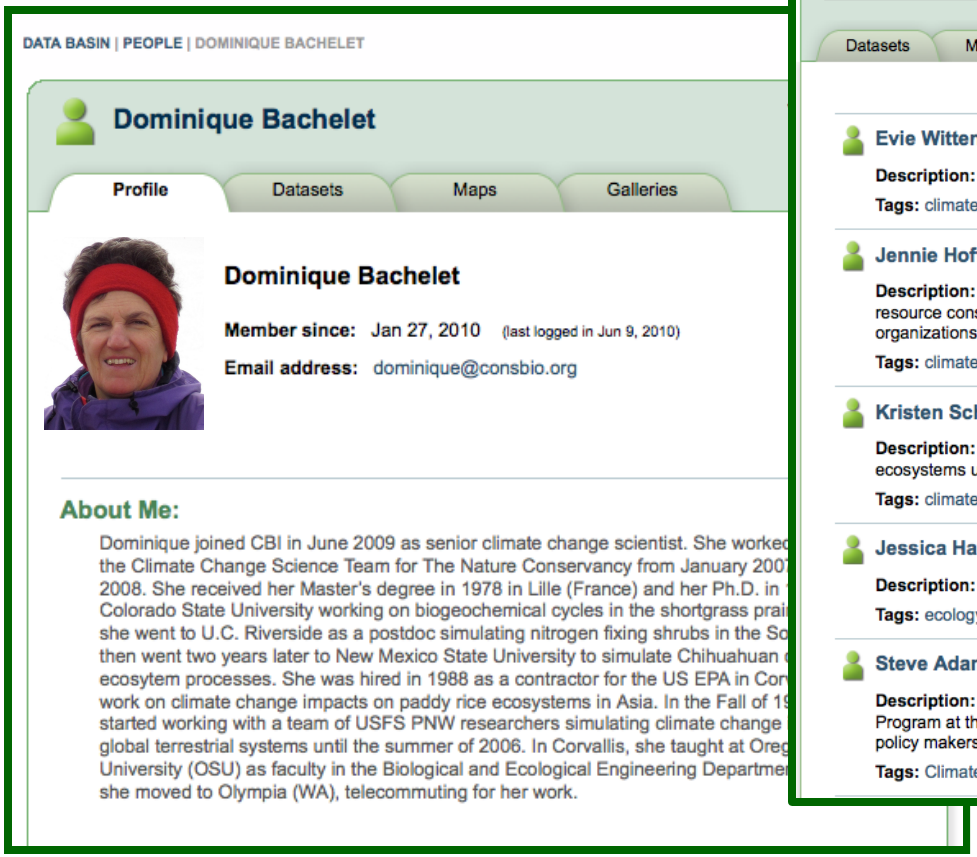
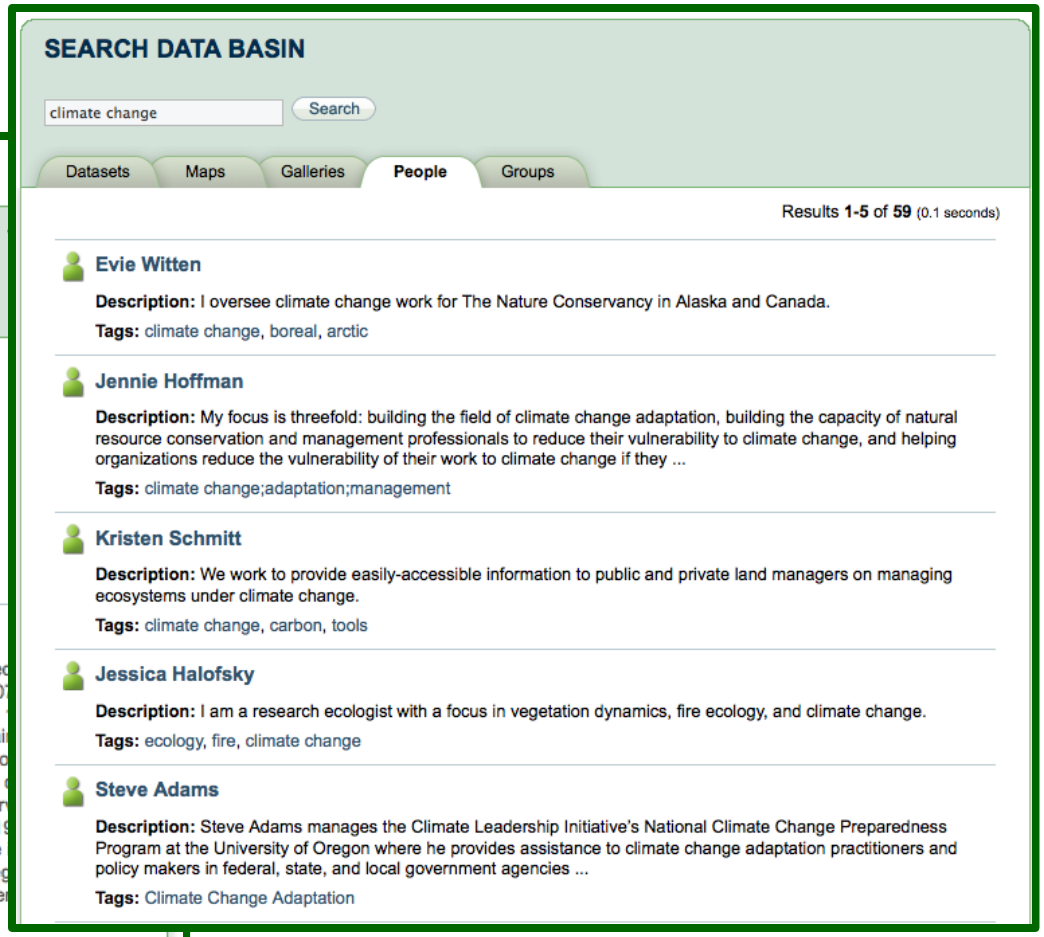
Help Topics

Connect and collaborate

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

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

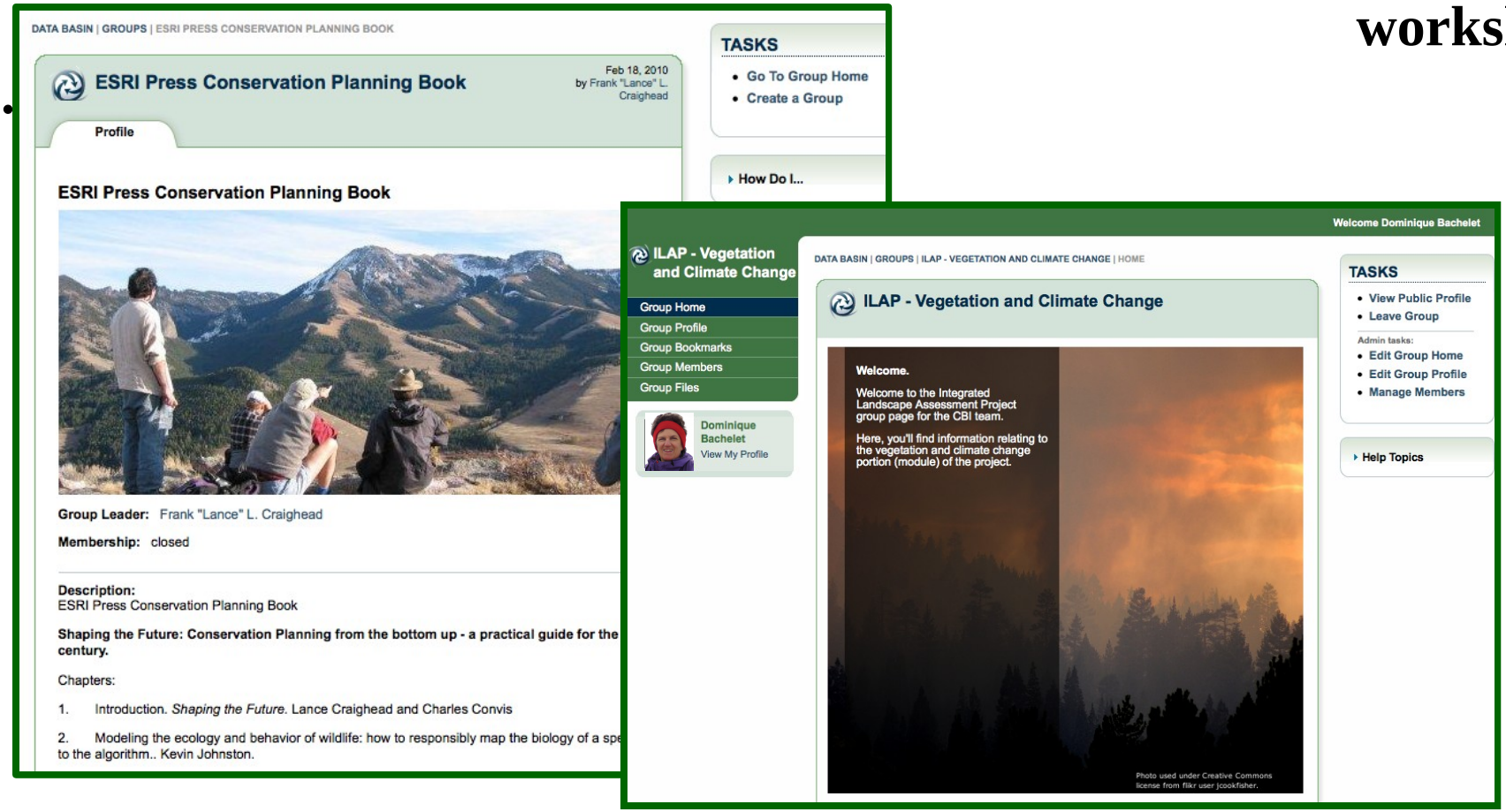




Connect and collaborate

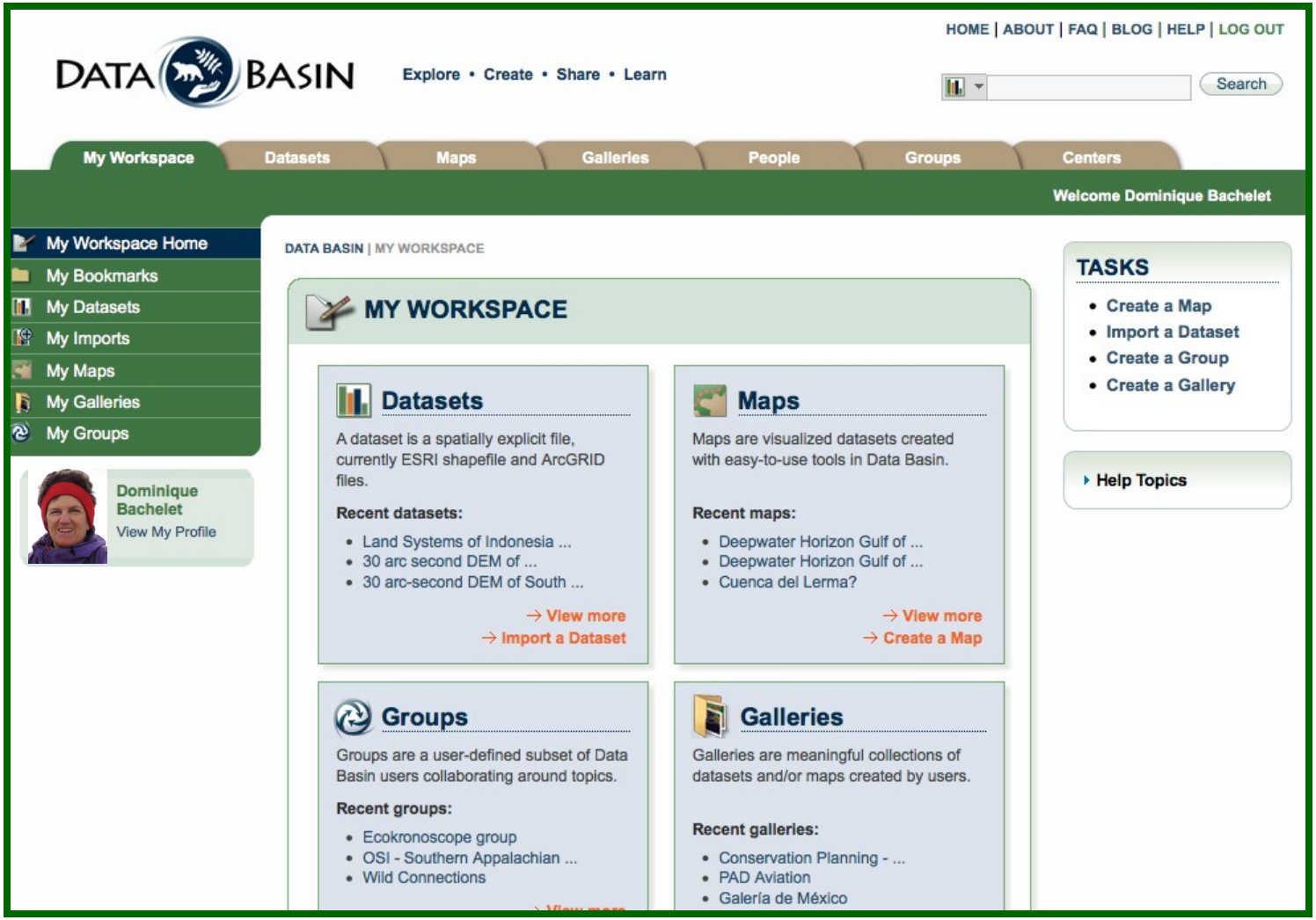
Nature Precedings : doi:10.1038/npre.2010.5256.1 : Posted 15 Nov 2010

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



Manage your own private workspace

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



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Now try it yourself!

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Questions/feedback:

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