

# Tools Café 2 (part 2 & 3): ClimateWizard and Climate Adaptation Collaboratory

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Credits: IPCC 2007, Photos – Photography Plus, Julie Craves



Technologies for Climate Change Planning Webinar Series – OSU/MSU



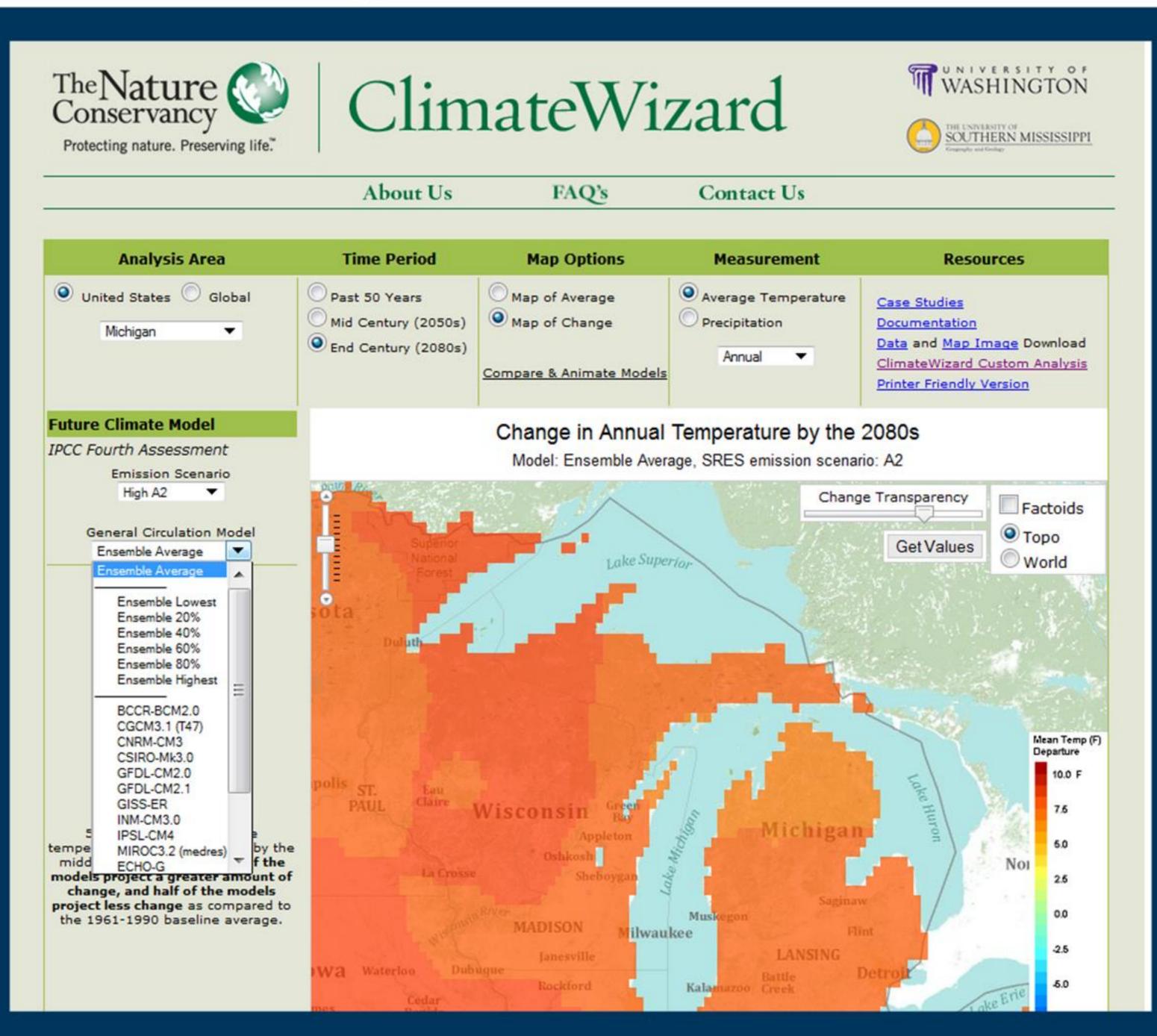
Now there are two ClimateWizard options...

ClimateWizard
 http:/climatewizard.org
 Exploring! Observed change (4 km resolution for US), projections from 16 models (12 km for US), monthly, seasonal, or annual data.
 Flexible dates for custom requests.

2. New! "Powered by Climatewizard" component of the World Bank's Climate Knowledge Portal http://climateknowledgeportal.climatewizard.org Projected change, 9 models (some with multiple runs), daily data with many derived variables, 50 km resolution, two end dates.



## ClimateWizard – visualizing change



See observed changes View, compare, & animate projections

Explore variability:
over time
by season or month
across models
emissions scenarios

Download "standard" data

DELAYED REWARDS...
Create custom datasets

climatewizard.org

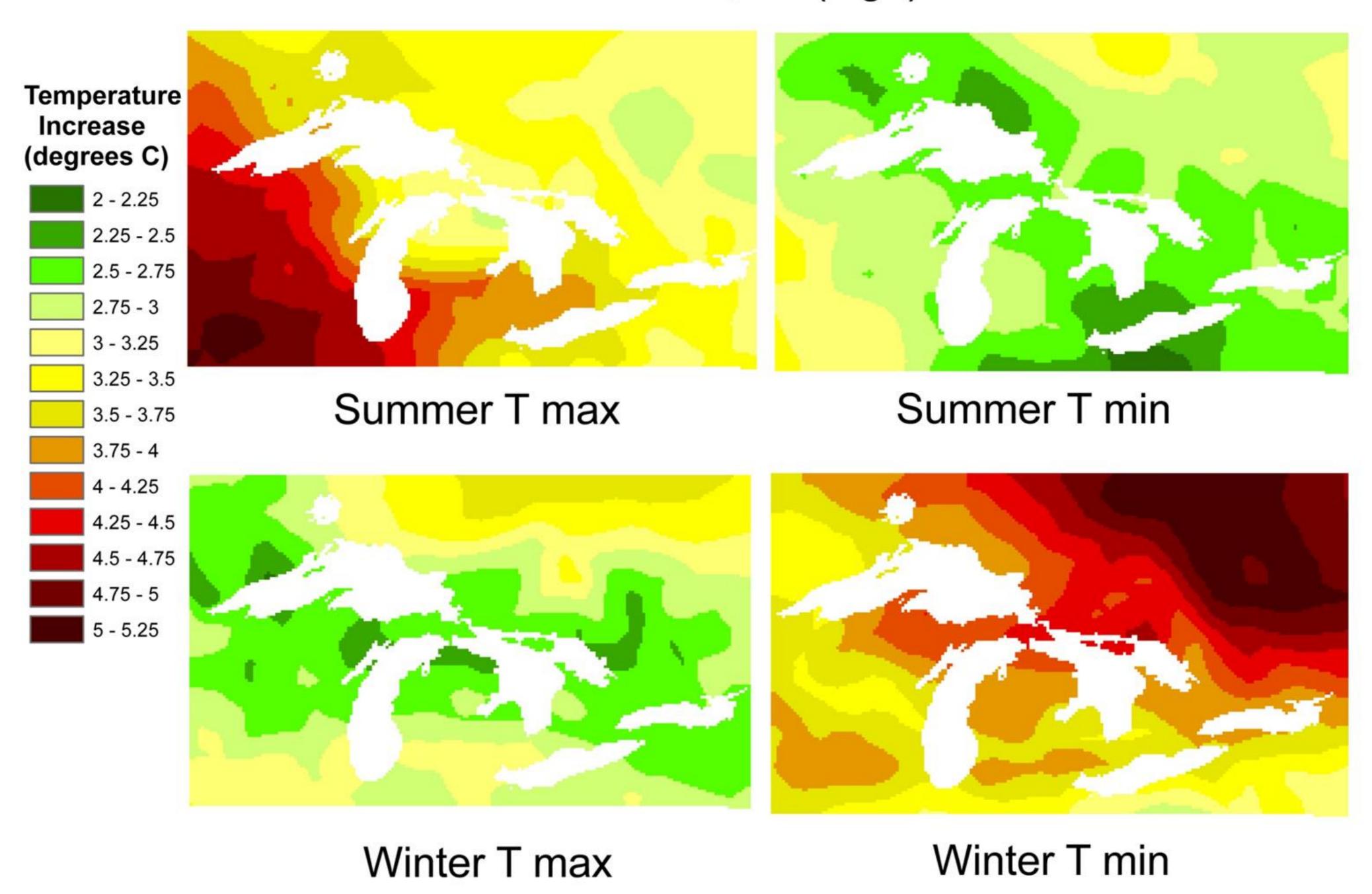
## Climate Wizard Custom

WASHINGTON The Nature Conservancy (0) Santa Clara University SOUTHERN MISSISSIPPL Protecting nature. Presenting 10s." To use this tool, draw polygons on the map below, or select a pre-defined area from the drop down boxes. Then select the input parameters you wish to use. When you submit this form, processing will take place on the server. You will receive an email with a link to the results. Toggle Mop & Feature Count 0 Americ: Australi Add Area to Map Add Pre-Defined Areas Select one or more region from any of the region types below and click "add regions". Pre-Defined Area Your choices will then be added to the map display. Region Types (Select One) Countries Upload Shapefile **Custom Areas** Aruba Antigua and Barbuda Countries US Counties Alphanistan TNC Ecoregions Algeria US States Azerbaljan CI Horspots Albania WWF Ecoregions Armenia add selected regions Climate Model Options
(To download model documentation, click the model labels) Choose Climatology Climate Variables (Chacse one or more) Current (Past Data) Climatology General Circulation Model: Precipitation (Absolute Change) DIPCC 2007; WG 1-ARA Future Modeled Climate (Chacse one or more) Precipitation (Percent Change) BOOR-BOM2 0 OGCM3 1 T47 CNRM-CM3 Mean Monthly Temperature Region and Scale Options CSIRO-MK3 0 GFDL-CM2 0 Moisture Deficit GFDL-CM2 1 United States (Contiguous US) GISS-ER 4 km Current - 12 km Future Moisture Surplus Greenhouse Gas Concentration (CO<sub>2</sub>) Global (50 km resolution) DIPCC 2007; WG1-AR4 AET (Actual Evapotranspiration) (Chasse one or more) PET (Potential Evapotranspiration) **Analysis Options** (LOW) AET/PET (ratio) Departure Analysis (from 1961-1990)

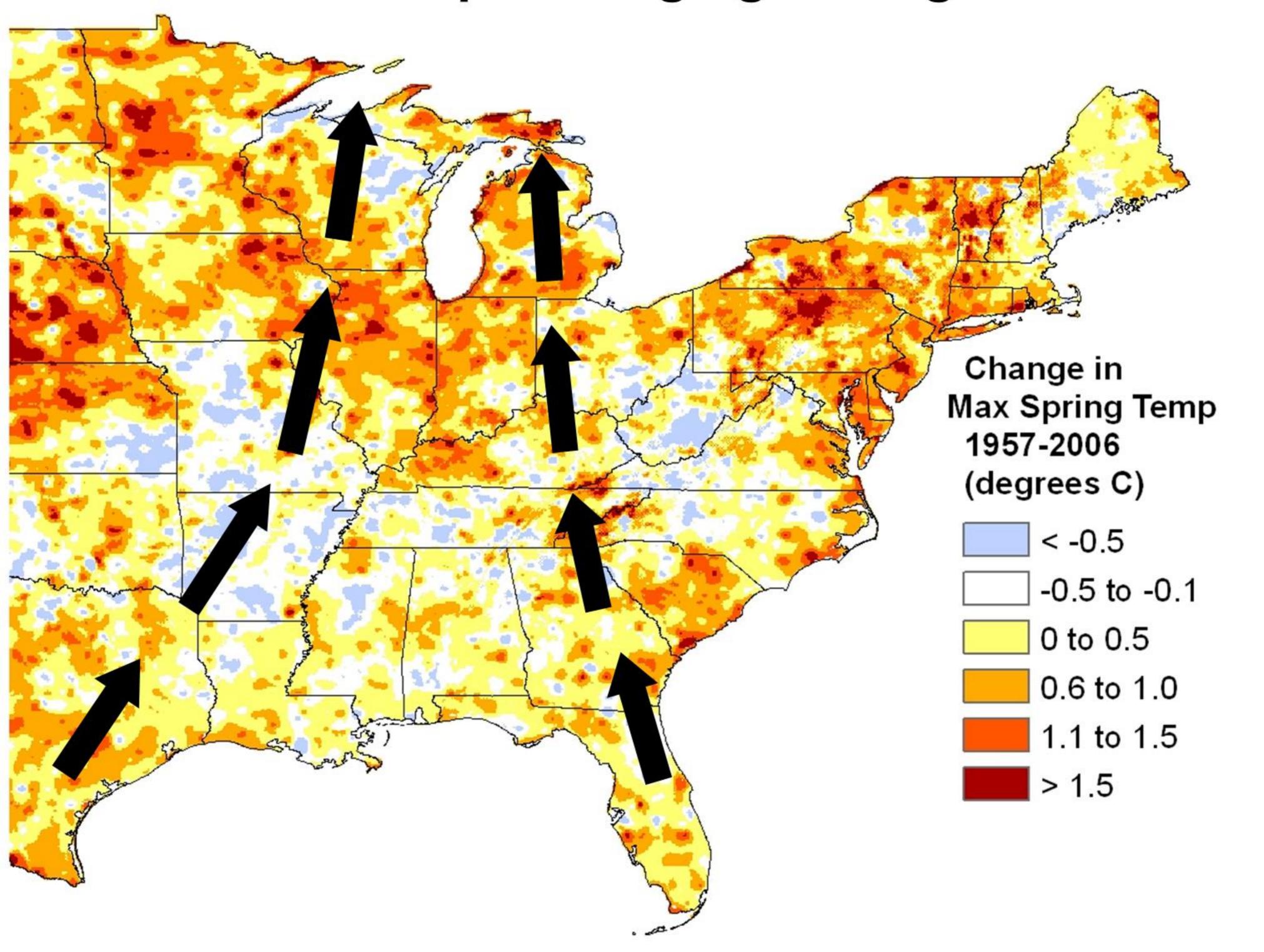
Results:

### A few examples of what to do with downloaded data...

Projected increase in temperature: current averages to 2080 Ensemble of three IPCC models, A2 (high) emissions scenario

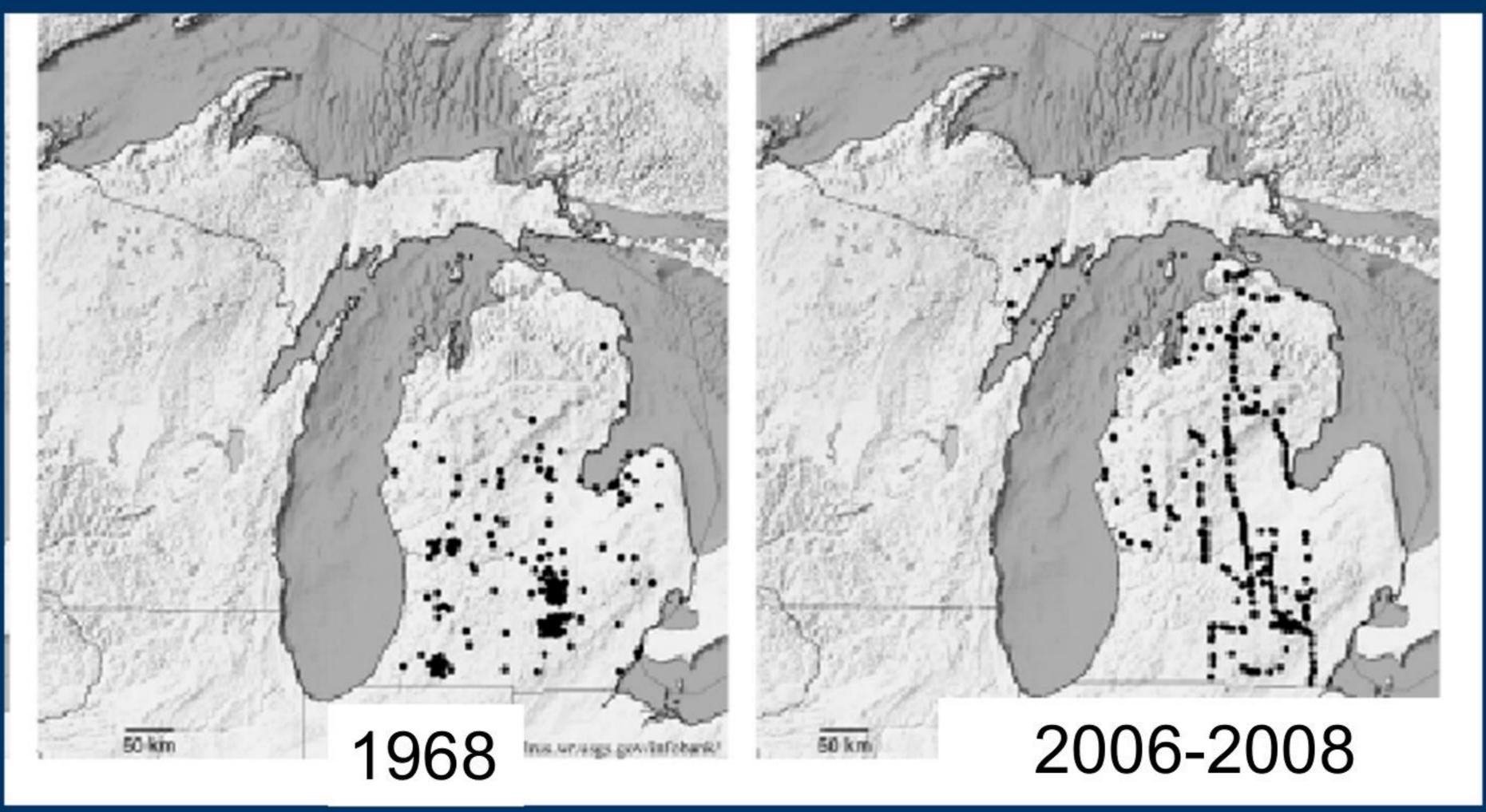


# Use of recent past data— How are temps changing on migration routes?





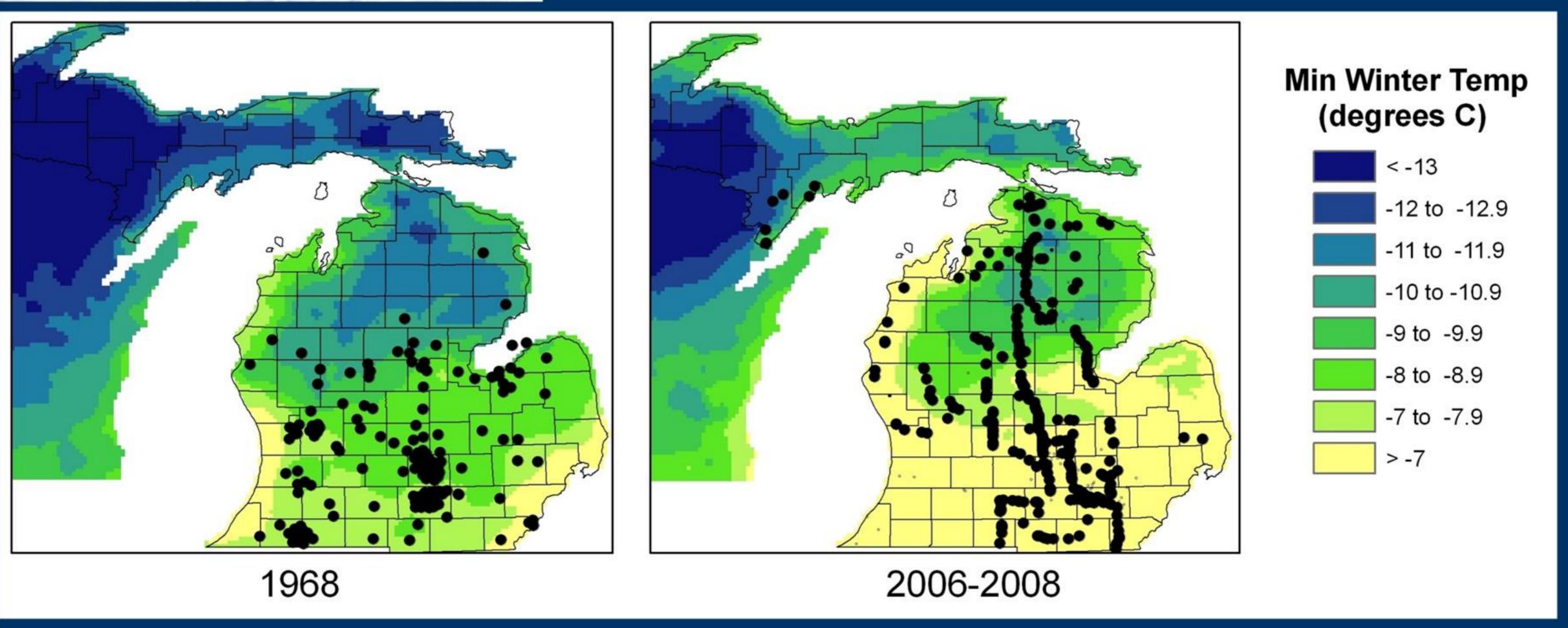
## Communicate what we observe



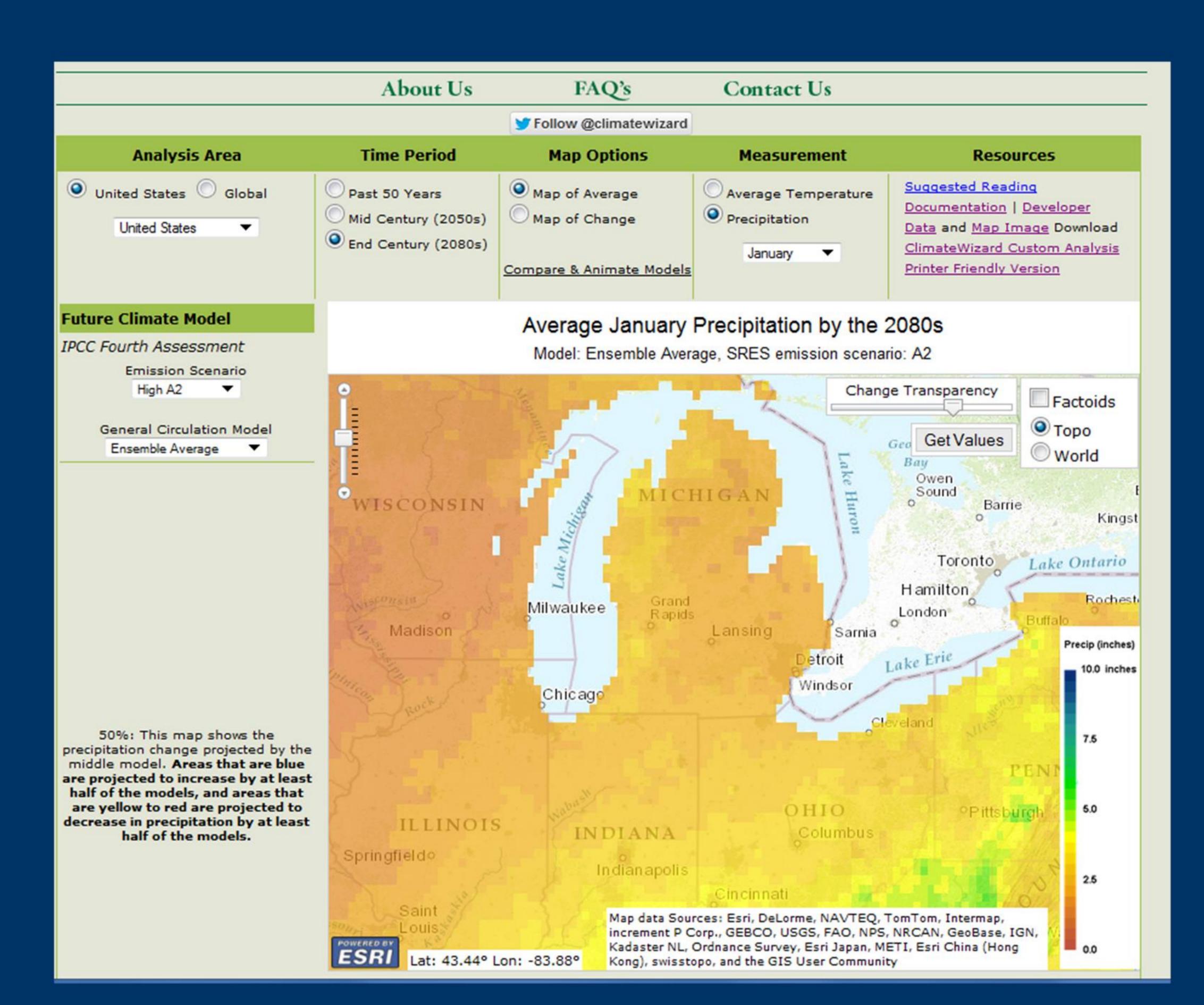
Common opossum distribution (Myers et al. 2009)

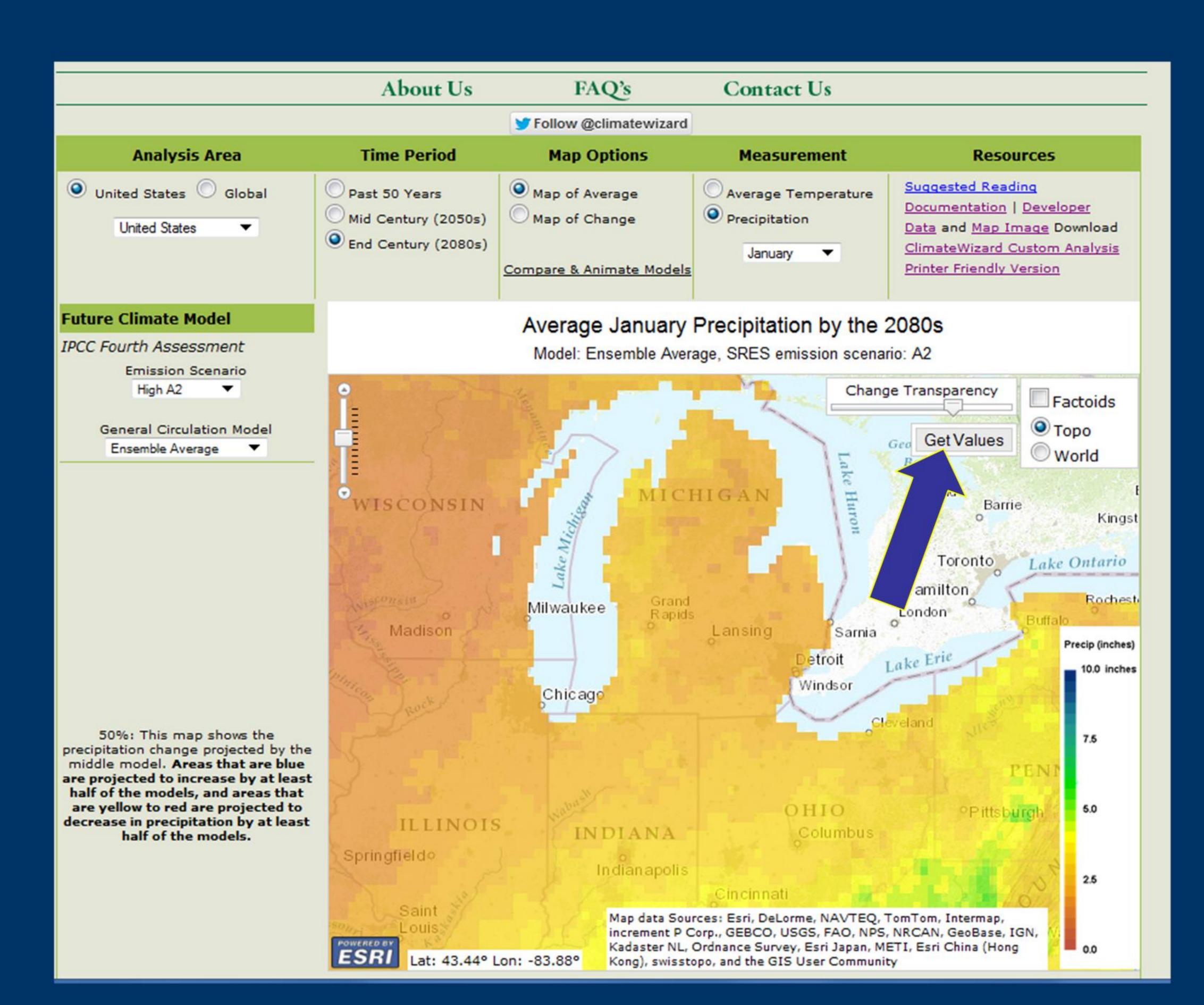


### Communicate what we observe



Common opossum distribution (Myers et al. 2009), linked with ClimateWizard temperature data (averages for winter of the 20 years prior to each survey)

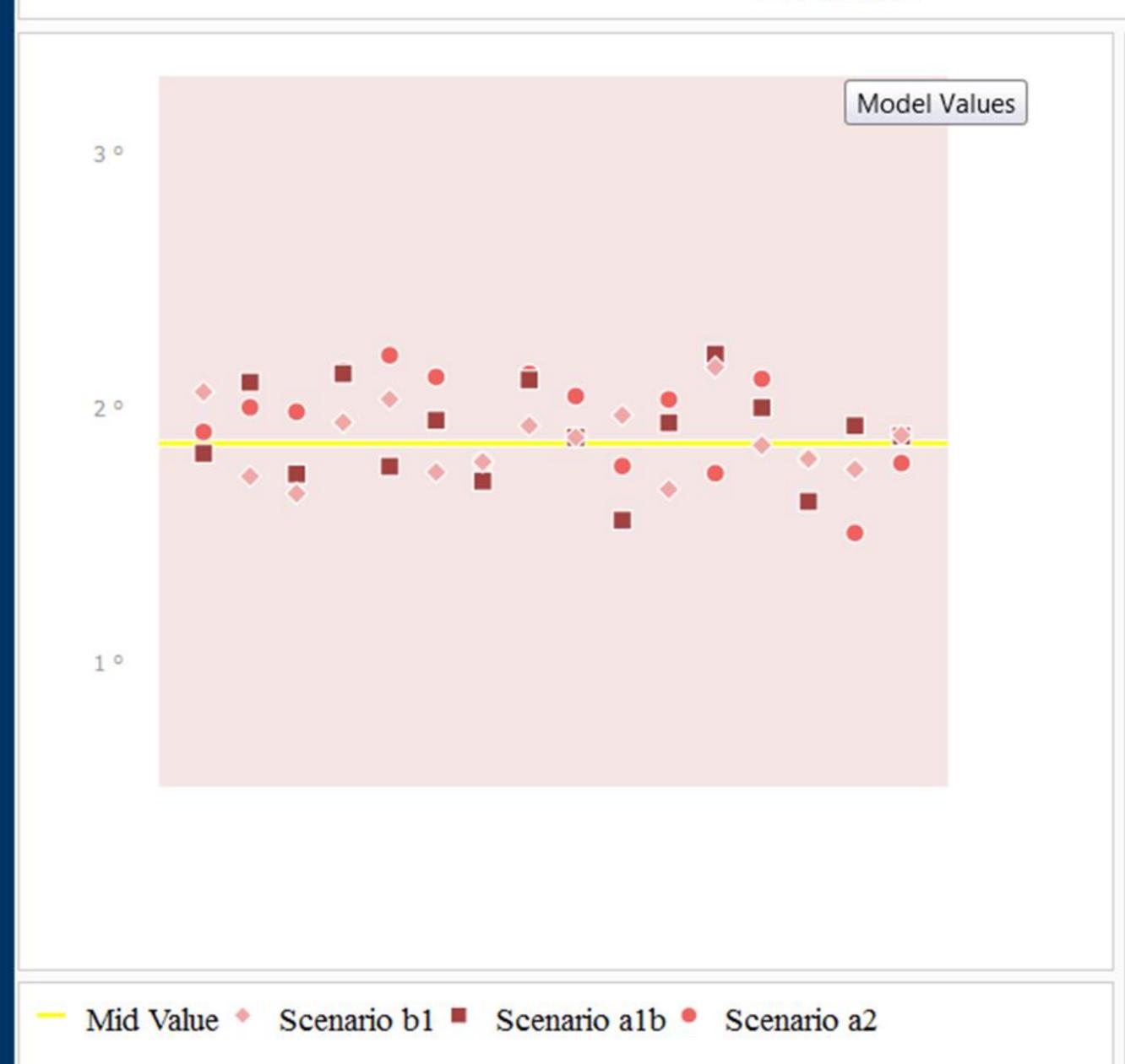




# Variation in projections – Precipitation for Saginaw Bay region, January in 2080s

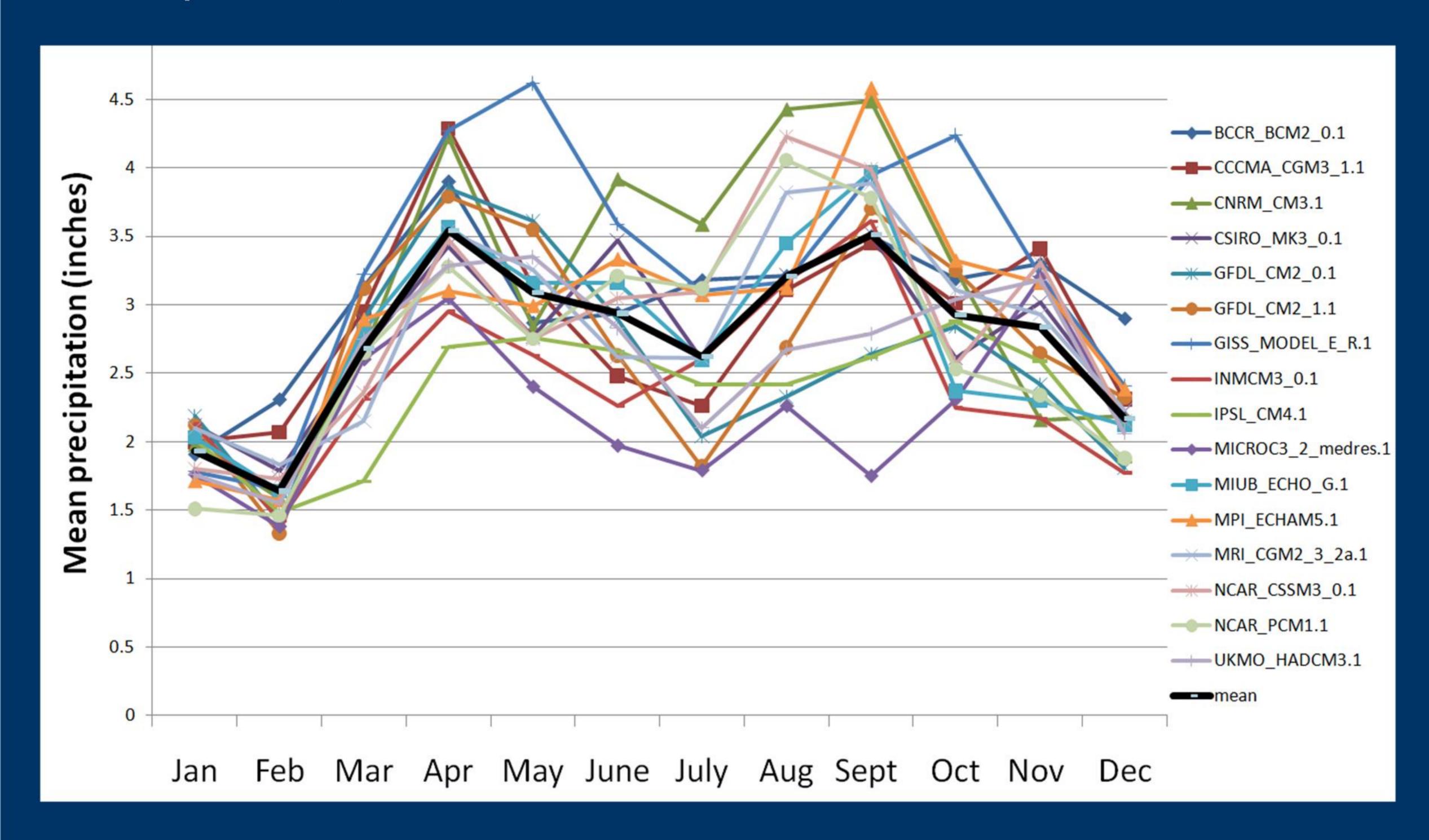
#### GET ALL MODEL AND SCENARIO VALUES AT INPUT LOCATION

Lon: -84.4415 Lat: 43.7019



Model	B1	AlB	A2
bccr_bcm2_0.1	2.06	1.82	1.90
cccma_cgcm3_1.1	1.73	2.10	2.00
cnrm_cm3.1	1.66	1.74	1.98
csiro_mk3_0.1	1.94	2.13	2.14
gfdl_cm2_0.1	2.03	1.77	2.20
gfdl_cm2_1.1	1.75	1.95	2.12
giss_model_e_r.l	1.79	1.71	1.78
inmcm3_0.1	1.93	2.11	2.13
ipsl_cm4.1	1.88	1.88	2.04
miroc3_2_medres.1	1.97	1.56	1.77
miub_echo_g.l	1.68	1.94	2.03
mpi_echam5.1	2.16	2.21	1.74
mri_cgcm2_3_2a.1	1.85	2.00	2.11
ncar_ccsm3_0.1	1.80	1.63	1.80
ncar_pcml.l	1.76	1.93	1.51
ukmo_hadcm3.1	1.89	1.89	1.78

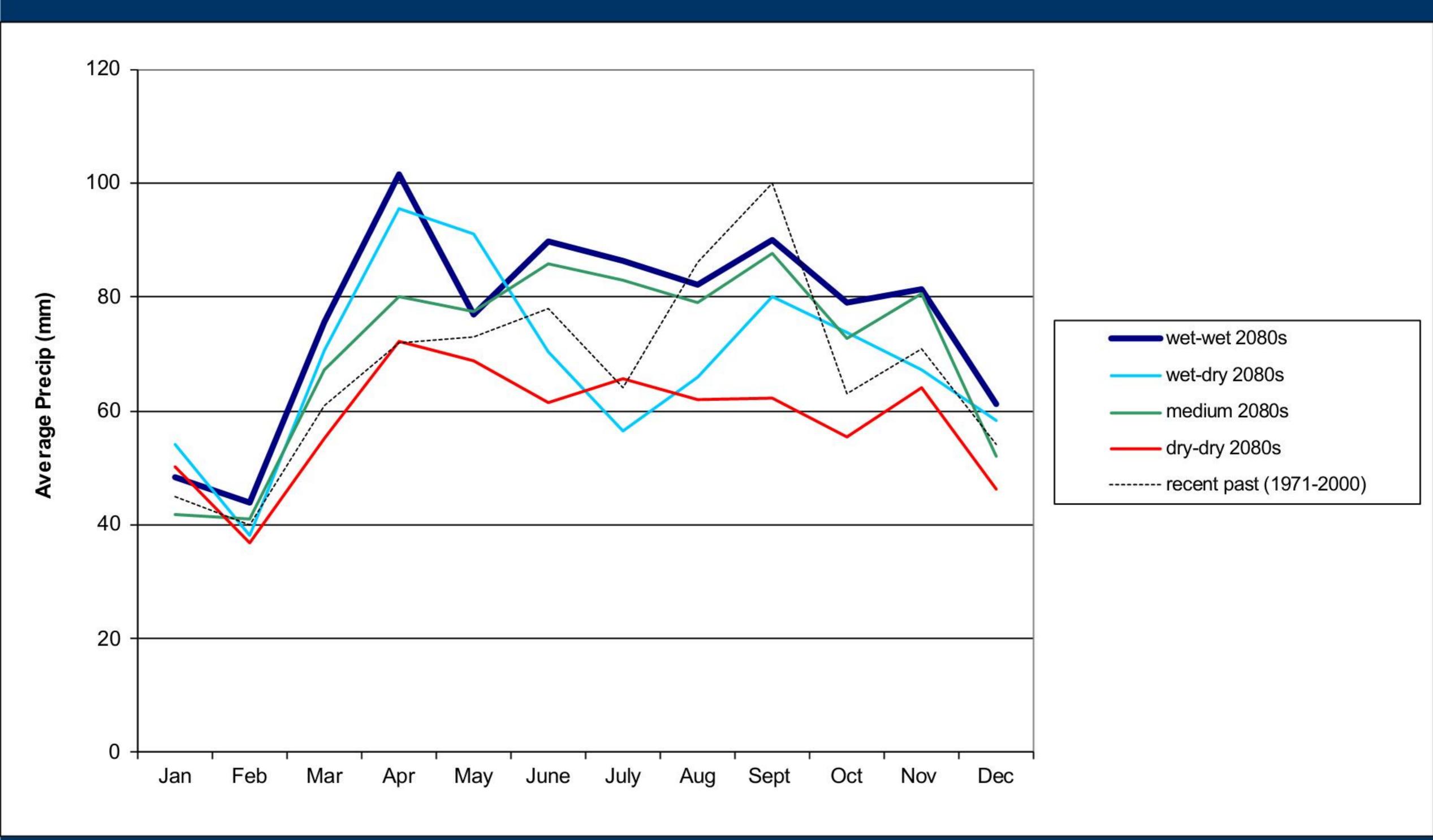
# Create custom ensembles for modeling Saginaw Bay project area – Precipitation, 2080s A2 scenario





Create your own "ensemble" by highlighting specific models to include in outputs

# Custom climate scenarios from subsets of models, informed by knowledge of the threat & fish ecology



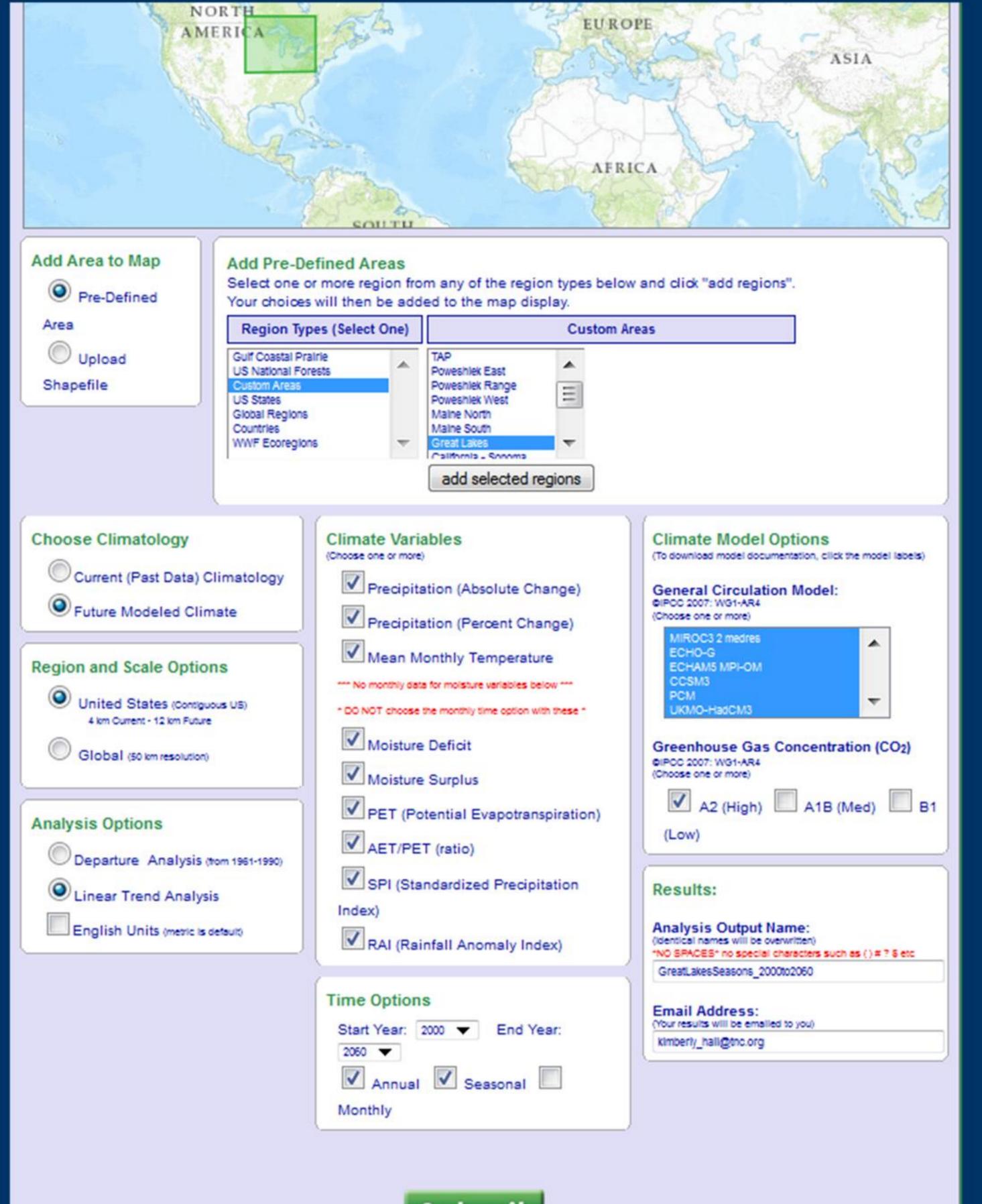


## Derived variables – example:

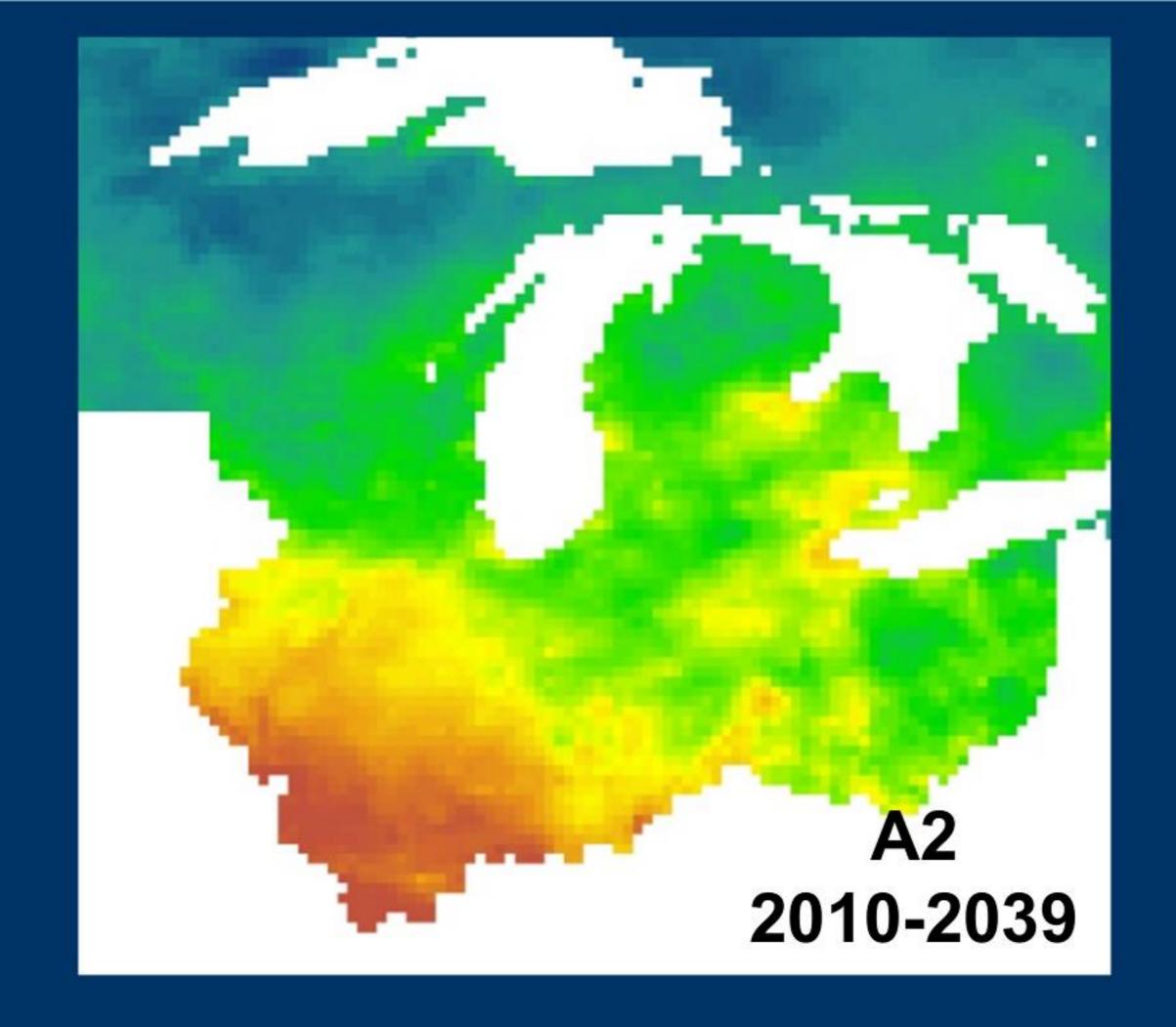
Moisture deficit: PET – AET

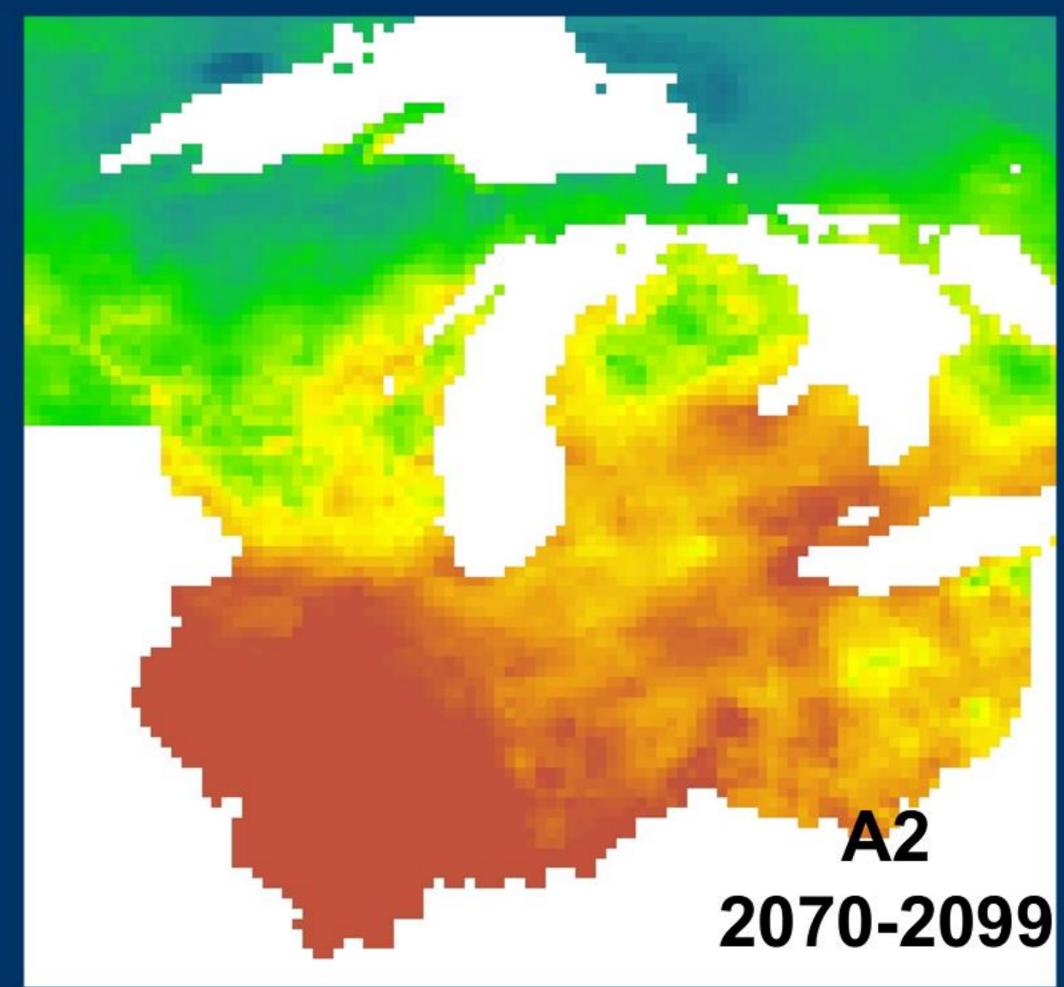
PET = Potential evapotranspiration. Max amount of water that could be transpired by continuous plant cover.

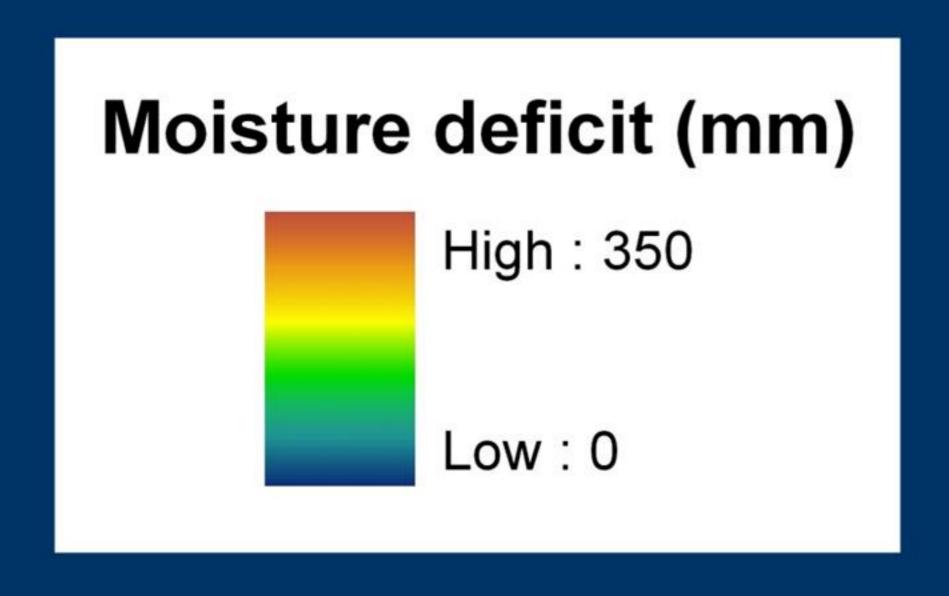
AET = Actual evapotranspiration; function of PET & water availability (can't transpire what is not there).



Submit



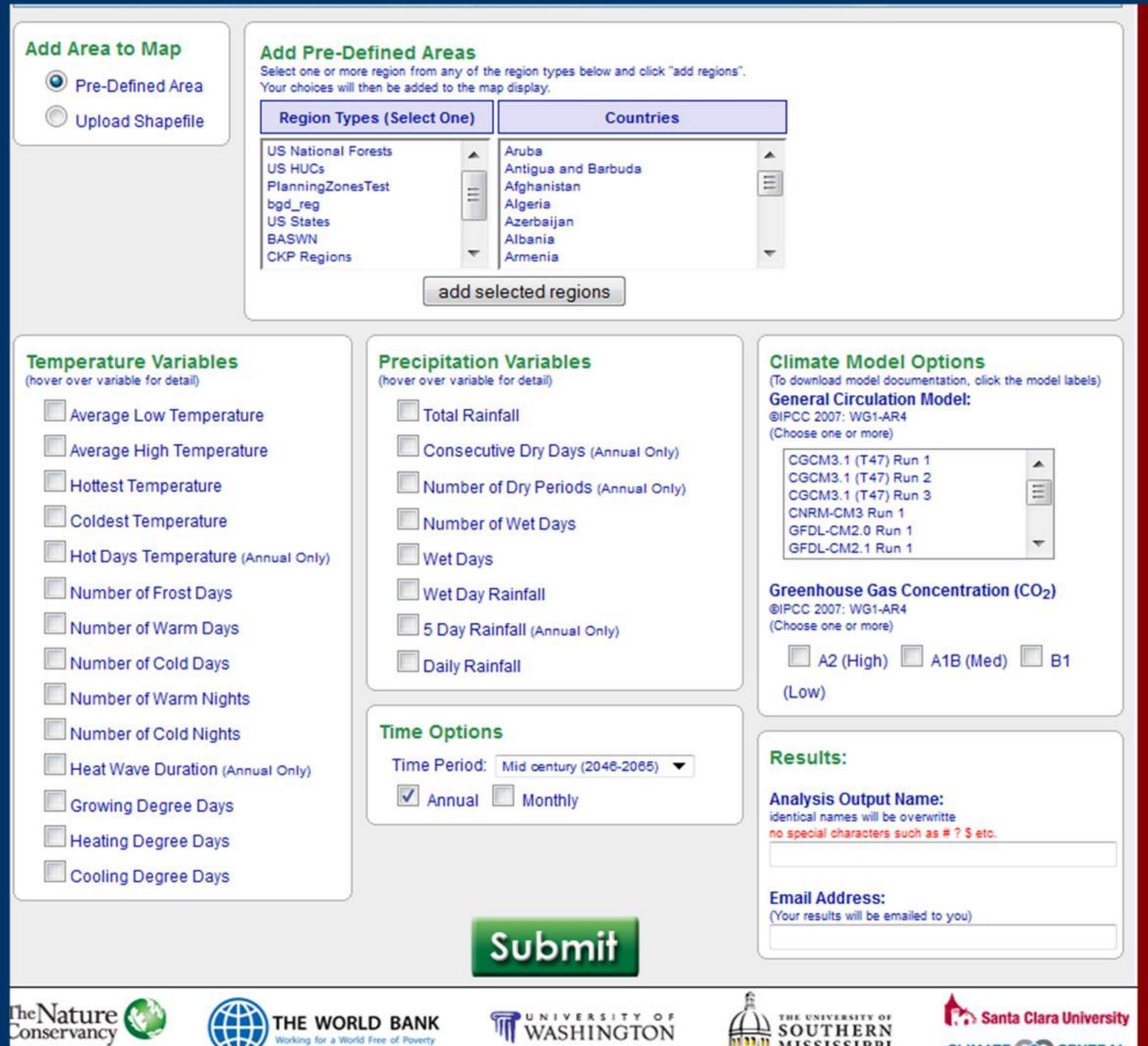




Ensemble of 16 models



## Variable options on the World Bank's Climate Knowledge Portal version of Climate Wizard









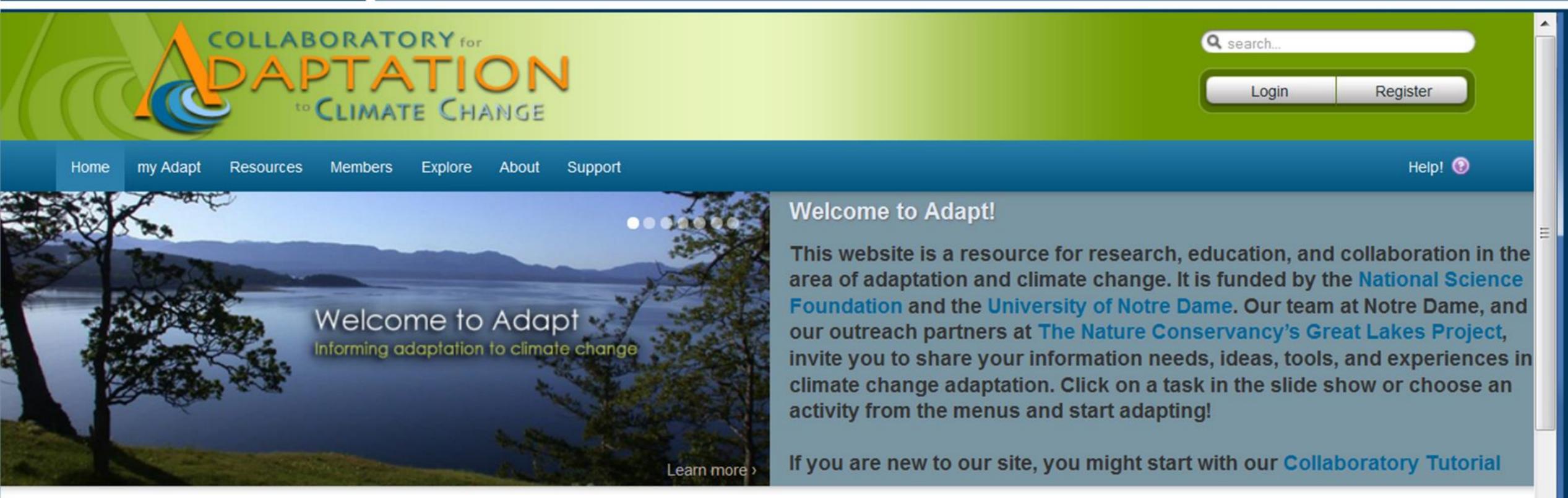


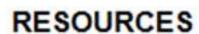






# adapt.nd.edu





Search Keyword or phrase: Popular Tags: adaptation climate change Policy government Federal Government chicago Biodiversity International CCVI vulnerability assessment collaboratory The Nature Conservancy Adaptive Management vulnerability great lakes water resources Pew Center on Global Climate Change Interagency Climate Change Adaptation Task Force

#### WHAT'S NEW IN RESOURCES

Vulnerability of At-risk Species to Climate Change in New York in Publications, Apr 23, 2012

Collaboratory Adaptation Tutorial

in Educational Materials, Apr 23, 2012

Climate Change in the Windy City and the World

in Educational Materials, Apr 09, 2012

Northwoods Adaptation pre-conference (March 2012) webinar: Overview of climate change impacts in the Northwoods in Other Online Resources, Mar 28, 2012

Northwoods Adaptation pre-conference (March 2012) webinar: Introduction to the Collaboratory

#### **GET INVOLVED**

Upload Content

Publish your own materials

Form working groups

Share things privately with colleagues

Take a Poll

Who are you?

Give us Feedback

Success story? Suggestions?

Contact Us

How to reach us



# Climate Adaptation "Collaboratory"



# Mission Statement:

"The research mission of the Collaboratory is to improve the **dissemination** and **integration** of knowledge that will **inform** the development of prescient **adaptation strategies** and **policies**.

Opportunity: Use the power of computer networks to harness the "wisdom of crowds."

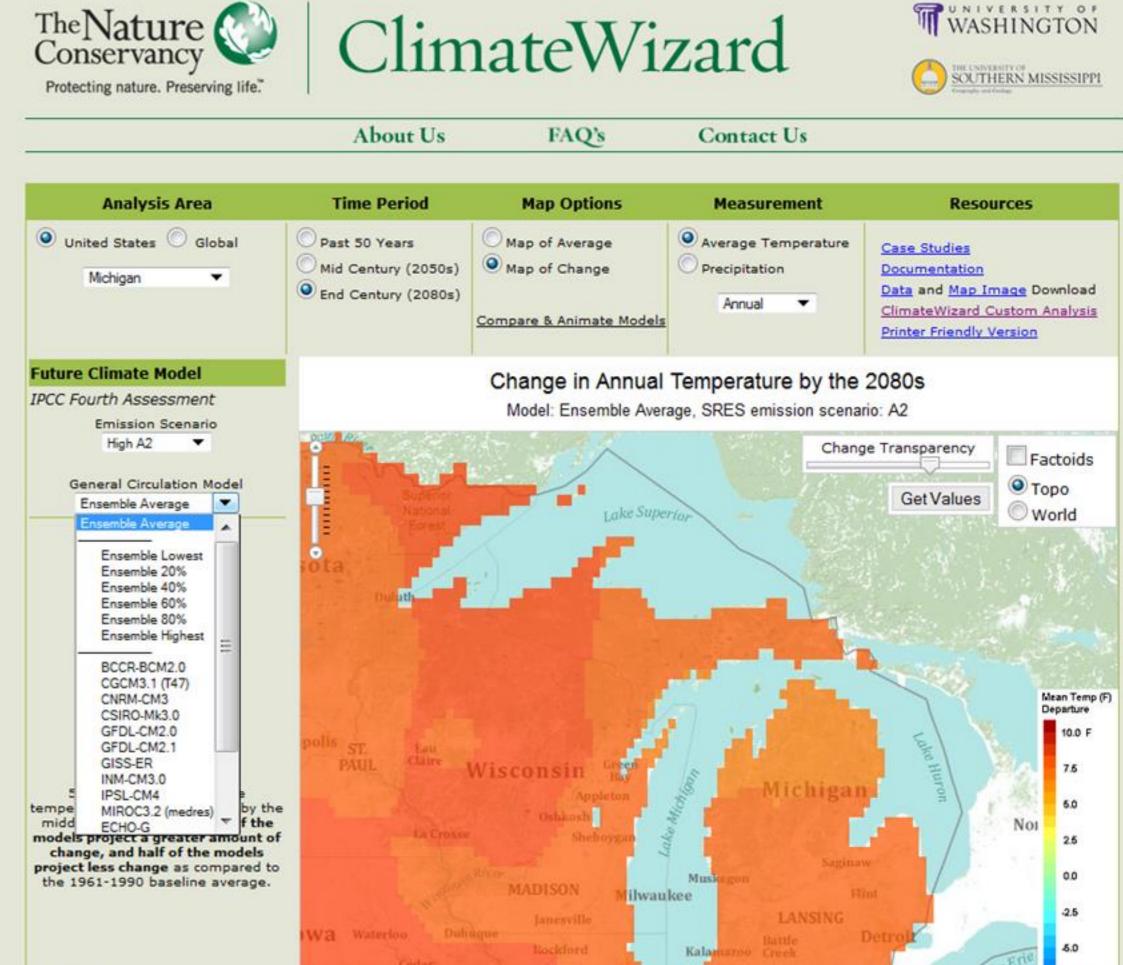




# Collaborate, not duplicate....







Welcome to the Digital Coast. If you have questions or comments, please take a video tour or contact us.

#### Data

Learn more about the kinds of data available and download data.

professionals. Read more...

#### **Approaches**

Coastal Inundation Toolkit
Understand the basics and get the tools

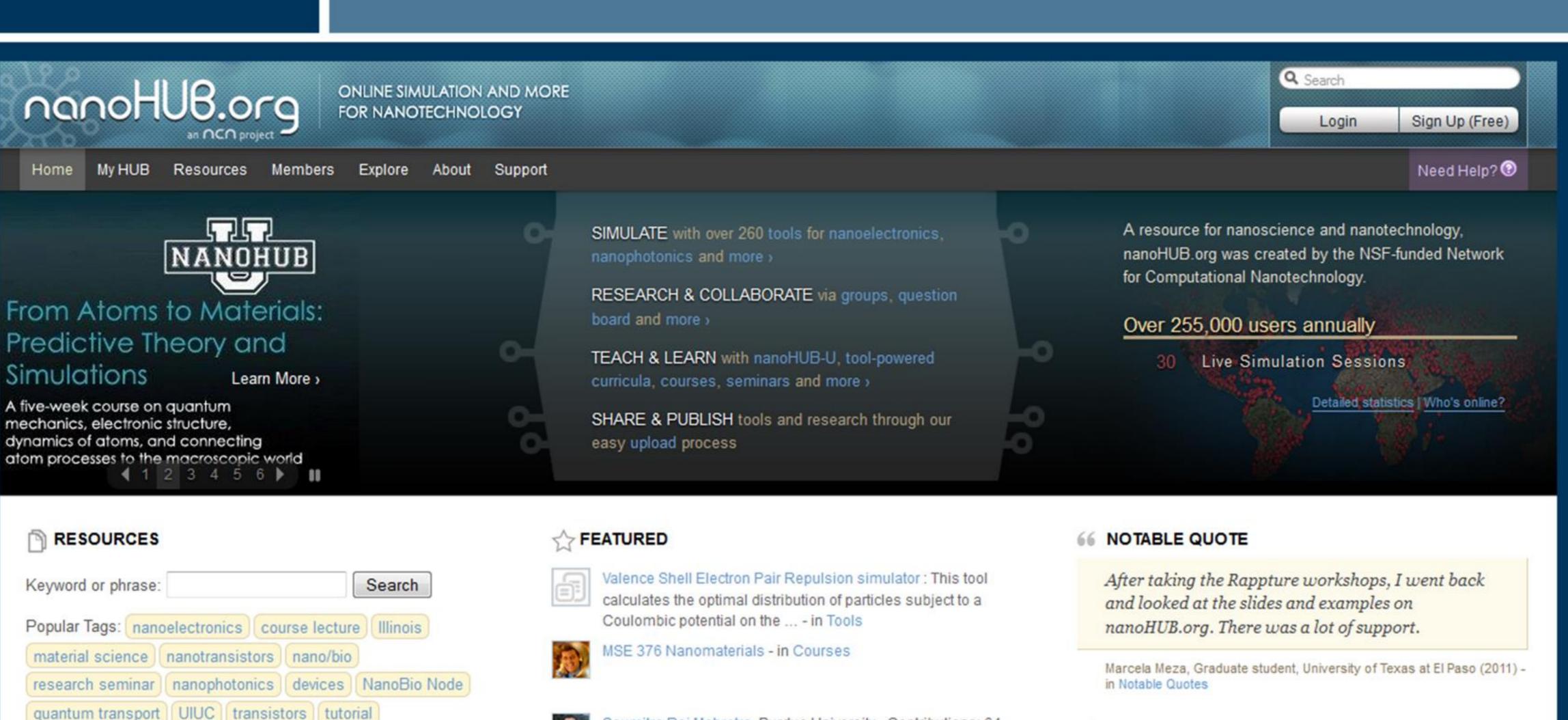
#### **Featured Resources**

Sea Level Rise and Coastal Flooding Impacts Viewer

Proptor many of notantial impacts of co



# Technology: HUBzero platform



quantum transport UIUC transistors tutorial
nano electro-mechanical systems molecular electronics
carbon nanotubes NEGF nanomedicine Simulation
education/outreach band structure MOSFET ABACUS
atomic force microscopy More tags >

Animations, Courses, Databases, Downloads, Learning

Modules, Notes, Online Presentations, Publications, Series,
Teaching Materials, Tools, Workshops... All Categories

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Saumitra Raj Mehrotra, Purdue University - Contributions: 64



Designing a Small Planar Antenna for Agricultural Sensor Network - in Notes



ECE 495N Lecture 22: Density of States I - featured on iTunes U



How useful can ring shaped nano and micro crystals be in materials science? - asked by Madhanagopal B, in Answers

#### NEW IN RESOURCES

ECE 695A Lecture 39-1: Radiation and Devices I in Online Presentations, May 01, 2013

ECE 695A Lecture 39-1R: Review Questions in Online Presentations, May 01, 2013

From Lilienfeld to Landauer: Understanding the nanoscale transistor

in Online Presentations, Apr 30, 2013

ECE 595E Lecture 36: MEEP Tutorial II in Online Presentations, Apr 30, 2013

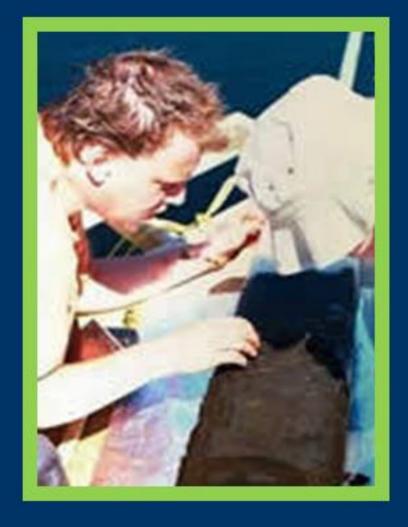


## How do you use it?



- Run videos & on-line presentations (e.g., tutorials)
- Run interactive simulation tools collaboratively
- Users upload resources & tools, build or contribute new tools
- Content is tagged and rated by users
- Create user groups: Groups have their own wikis, calendars, blog space, prioritized wishlist, and more
- Learn about how visitors use info so we can develop methods and tools that help us get better at virtual collaboration & dealing with "wicked" problems

## The Collaboratory Team









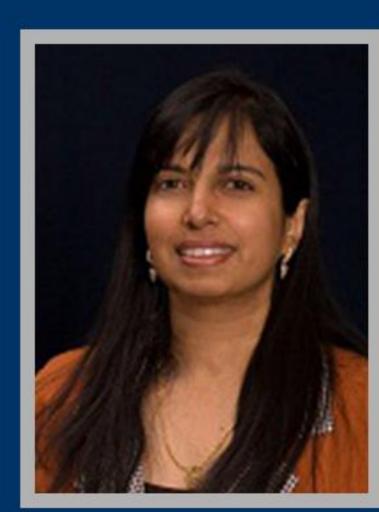




How do we improve use of and learning in online environments?









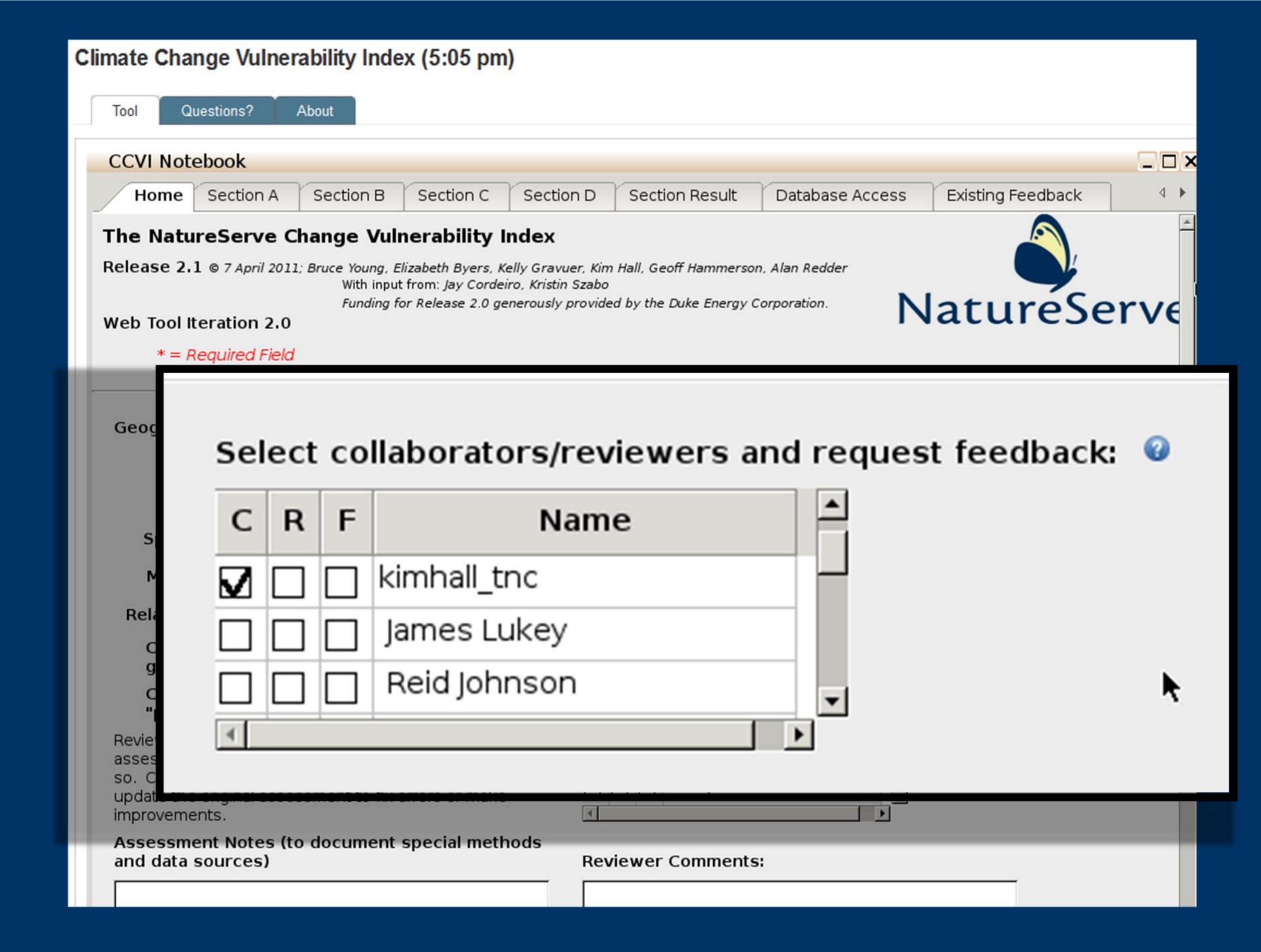


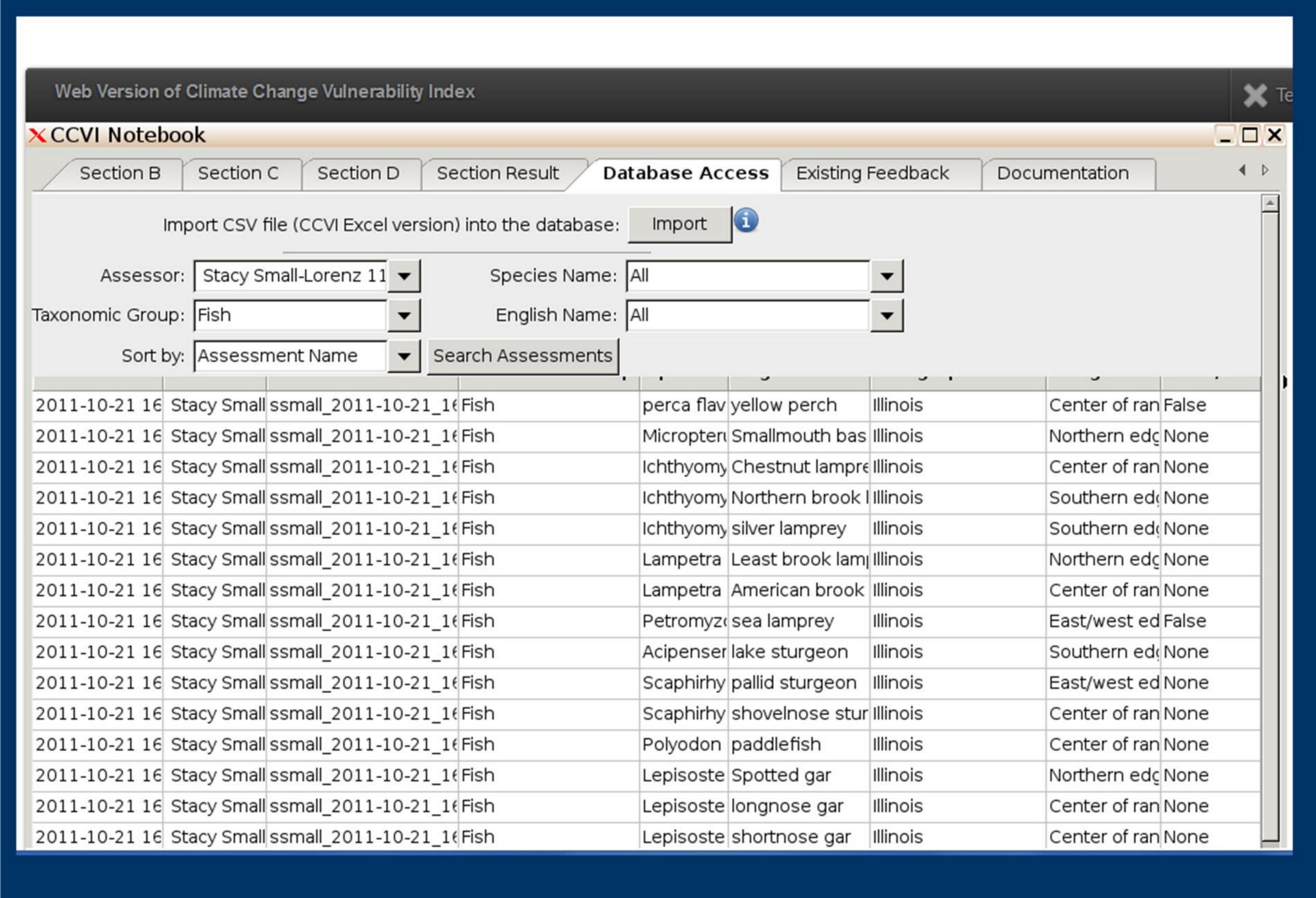


Tool and guidance developers – What can we help you test and explore?

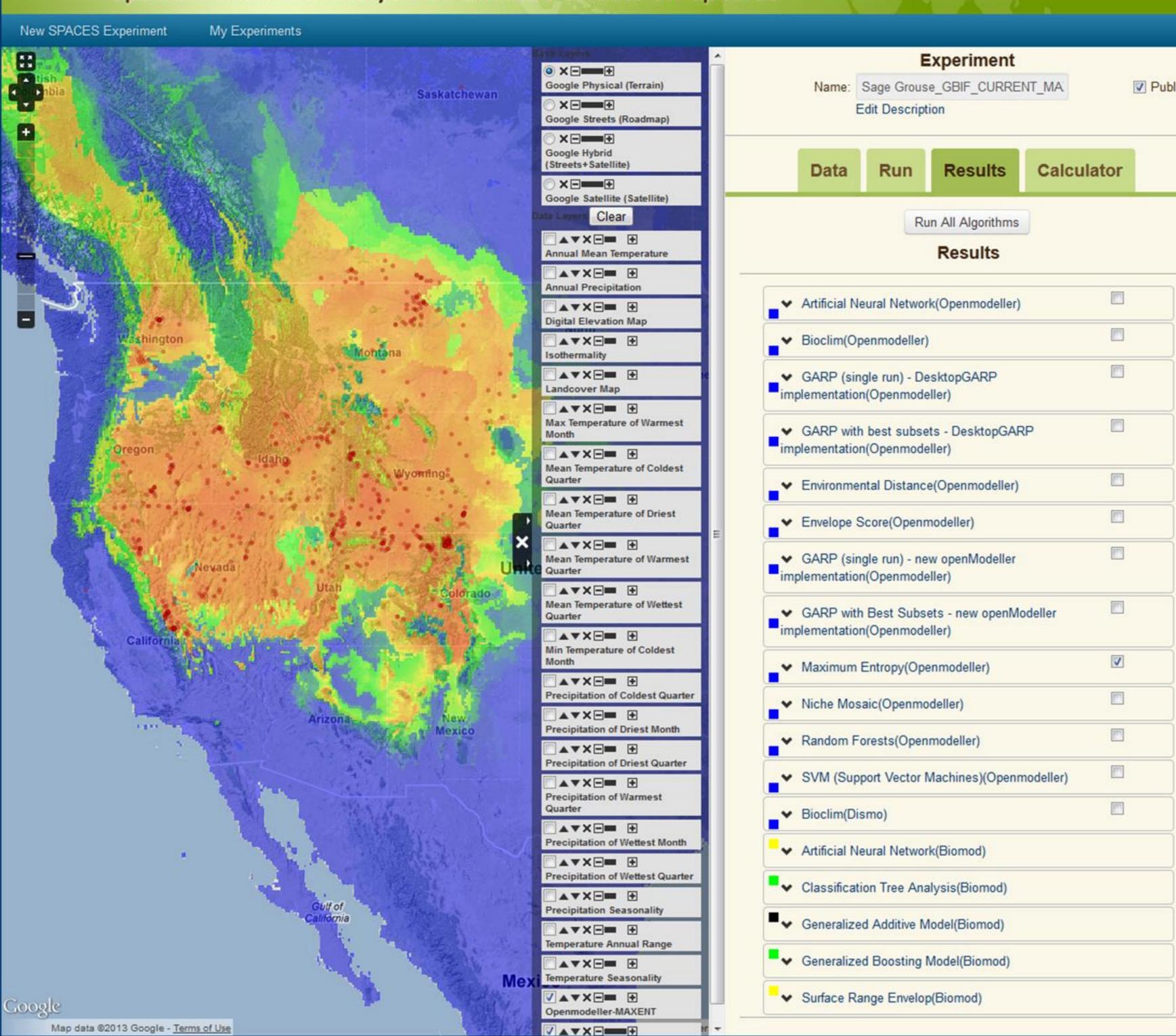


#### Climate Change Vulnerability Index (5:05 pm) About Tool Questions? \_ 🗆 × CCVI Notebook Section B Section C Section D Section Result Database Access Existing Feedback Section A Home The NatureServe Change Vulnerability Index Release 2.1 @ 7 April 2011; Bruce Young, Elizabeth Byers, Kelly Gravuer, Kim Hall, Geoff Hammerson, Alan Redder With input from: Jay Cordeiro, Kristin Szabo NatureServe Funding for Release 2.0 generously provided by the Duke Energy Corporation. Web Tool Iteration 2.0 \* = Required Field Geographic Area Assessed: States: ☐ Alabama ☐ Alaska Assessment Name: ☐ Arizona Patrick J Doran 85 Assessor: English Name: Species Scientific Name: Major Taxonomic Group: G-Rank: S-Rank: Relation of Species' Range to Assessment Area: Check if species is an obligate of caves or $_{\textstyle \square}$ groundwater aquatic systems: Select collaborators/reviewers and request feedback: 🕡 Check if this assessment will be stored as R F Name "private" - only you can view it: kimhall\_tnc Reviewers have the abiltiy to make comments on assessments for which they have been requested to do James Lukey so. Collaborators have the same priviledge and can also Reid Johnson update the original assessment to fix errors or make improvements. Assessment Notes (to document special methods and data sources) Reviewer Comments:





# 7010393 3459364 9030336 Spatial Portal for Analysis of Climatic Effects on Species



# SPACES – Facilitating range change projections

Interested in testing the tool and engaging in discussions with researchers & practitioners?

Get in touch!



### Four initial focal areas



- From vulnerability assessments to action NatureServe CCVI, niche models, interactive versions of frameworks for adaptation
- Local connections: City of Chicago "Climate Checklist" for resource managers
- Connecting diverse forest managers in the upper Midwest (Federal, State, Tribal, NGOs, Industry, private non-industrial)
- Connecting groups working on Great Lakes coastal community adaptation – workshop support.

# My "dashboard"

Workspace

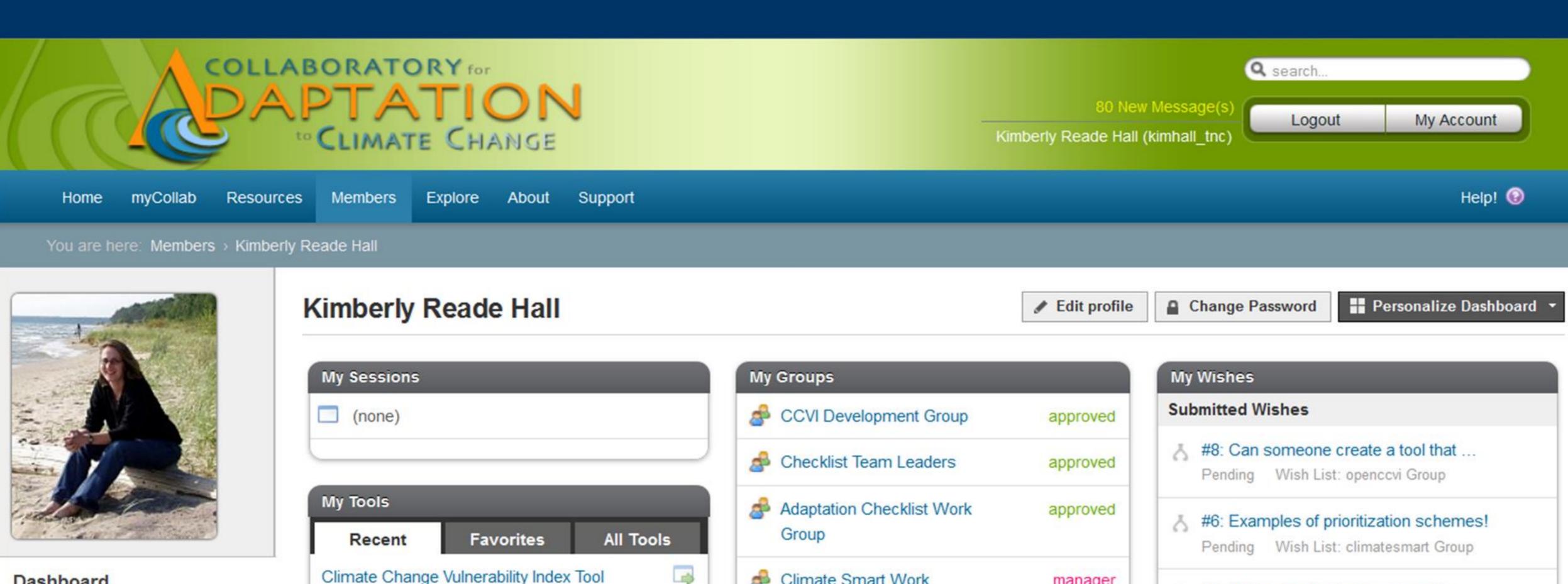
Resources

Tools & Models

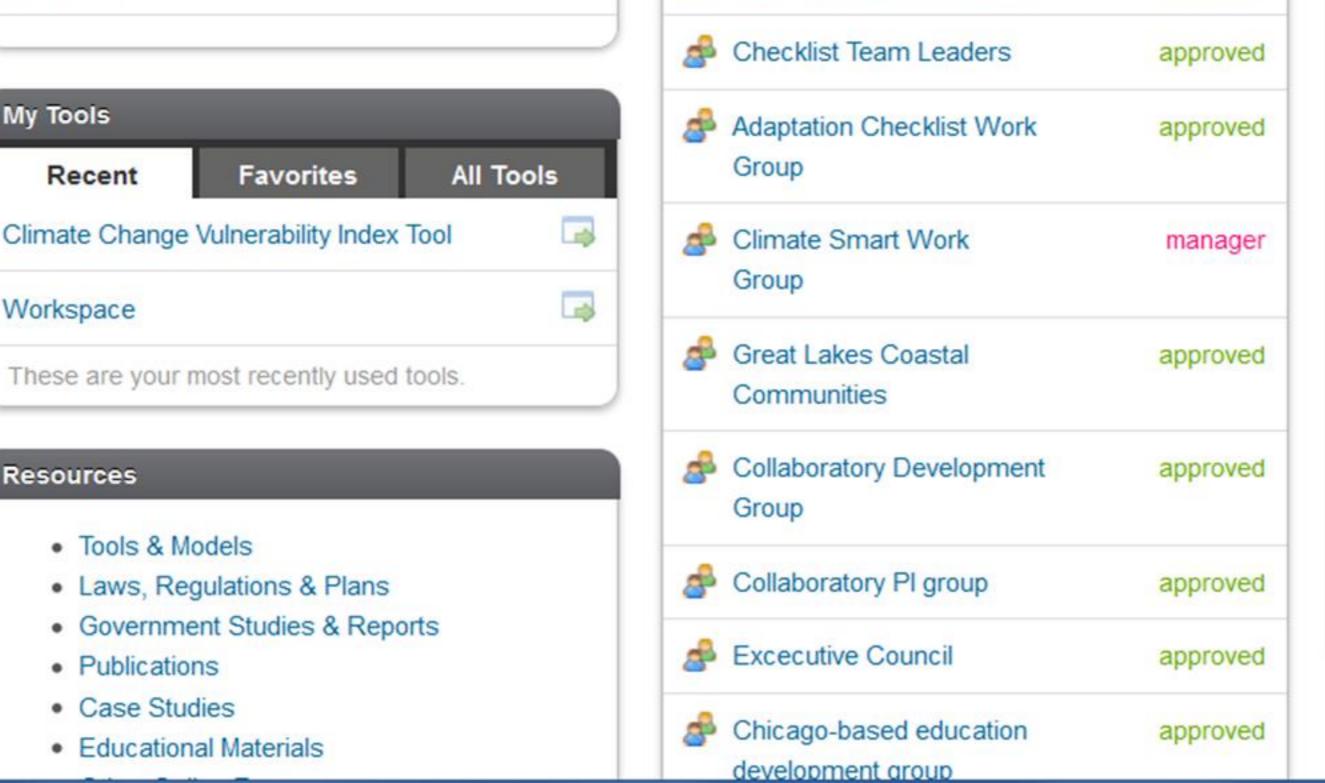
Publications

Case Studies

Educational Materials



Dashboard Profile 72 Contributions Points 14 Groups Usage 1 Favorites



#5: Add a standardized geographic ...

Pending Wish List: openccvi Group

Pending Wish List: openccvi Group

You have no open wishes at this time.

#4: Create a direct link to ...

**Assigned Wishes** 

# Front page of the Open CCVI group



9 New Message(s

Kimberly Reade Hall (kimhall\_tnc)

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Group manag

Show Manager Co

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Visible

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Managers:

Members:

Policy:

Tags:

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You are here: Groups > Open CCVI User Group



#### Overview

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Calendar

#### Open CCVI User Group

About the Group

Show Public Description (+)

#### Welcome! Thanks for joining the CCVI user group.

This is an open working group for people interested in using the NatureServe Climate Change Vulnerability Index for evaluating the potential vulnerability of species to climate change. This working group is intended to help people using the tool find each other, and to help establish connections across other working groups (some of which may be private) that arise that are focused on particular assessments. This is a good place to post broad suggestions on how to use or improve the tool, to post information on ongoing use of the tool, and to request help from other users. Note that all resources or information posted here is expected to be viewable by anyone (open group).

Here as some ideas to help you get started. First, please add your name to the wiki so we can all get better connected, and develop a community for peer review, while avoiding duplicative assessments. Also, you can share your ideas for improvement in the CCVI as implemented here on the wishlist— as top ideas emerge, we can discuss them on the discussion page. Next, you might take a look at the resources page, and add any that you would like to share. Finally, if you have webinars, workshops or presentations that you would like others to know about, add them to the calendar. Help this group space grow into something that makes this work more efficient and fun for all of us!

Group Members

View all members →





Andrew Carroll











Patrick J Doran

# Open CCVI resources page



9 New Message(s)

Kimberly Reade Hall (kimhall tnc)

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#### Open CCVI User Group

- Resources

5 results

#### Guidelines for using the NatureServe Climate Change Vulnerability Index

09 Nov 2011

Publications

Contributor(s): Bruce Young

★★★★★ 5.0 out of 5 stars

From NatureServe: Motivated by the need for a means to rapidly assess the vulnerability of species to climate change, NatureServe developed a Climate Change Vulnerability Index. The Index uses a ...

https://adapt.nd.edu/resources/219

#### Resources

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#### Updating the Illinois Wildlife Action Plan: Using a vulnerability assessment to inform conservation priorities

15 Feb 2012 Case Studies Contributor(s): Katherine J Kahl, Kimberly Reade Hall,

 $\star\star\star\star\star$  0.0 out of 5 stars

Jeff W Walk, Patrick J Doran

This case study is one in a series that provides conservation practitioners and decision-makers with tangible examples of how information is being used to advance conservation strategies that ...

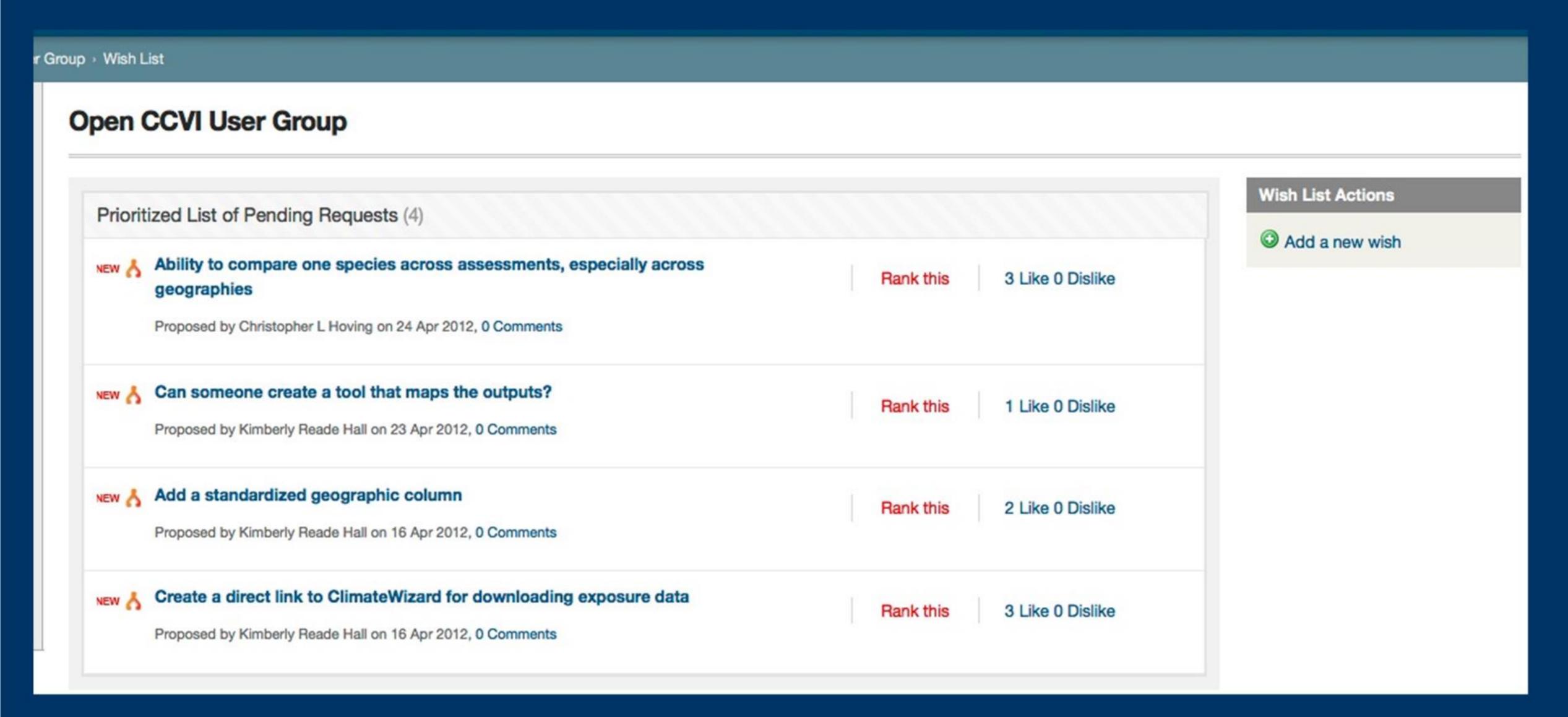
https://adapt.nd.edu/resources/248

#### Landscape-scale indicators of biodiversity's vulnerability to climate change

03 Nov 2011 Publications Contributor(s): Kimberly Reade Hall

 $\star\star\star\star\star$  0.0 out of 5 stars

# Open CCVI wish list



# Current CCVI discussion topics



9 New Message(s)

Kimberly Reade Hall (kimhall\_tnc)

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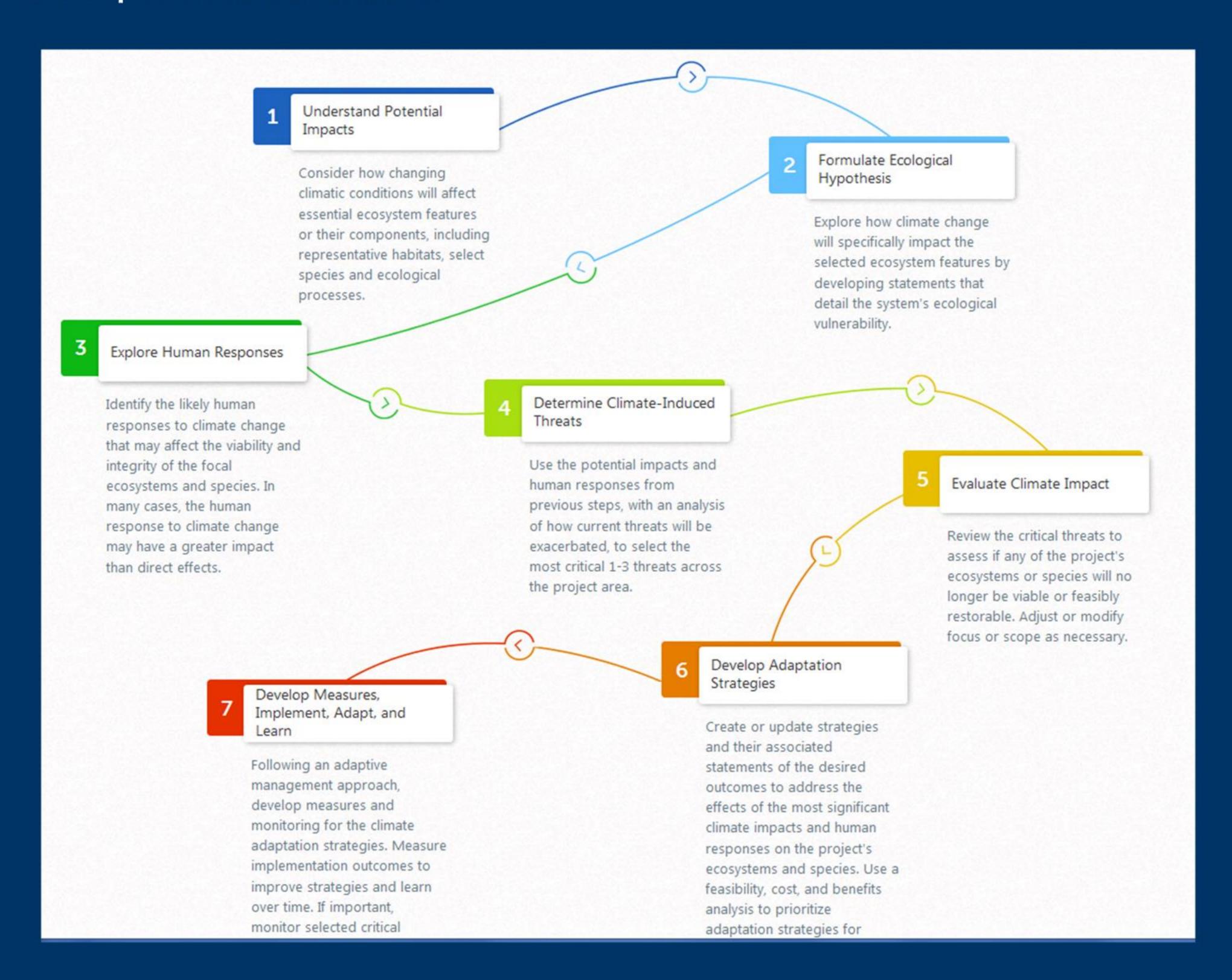
Wish List

Calendar

#### **Open CCVI User Group**

Q Search **CCVI** Discussion topics Discussions on handling particular taxa This category of discussions is a place for people to share ideas, "rules of thumb," or Posts Discussions concerns about how the Index handles particular taxonomic groups. Discussions on managing the shared database Discussion in this section focus on the shared database for the CCVI that is included Discussions Posts here in the Collaboratory version. How do we manage this resource as it grows? Discussions on using and presenting results Discussions here should focus on how to interpret, use, and present results. Posts Discussions Add Category

# Development area – interactive guidance linked to tools "Adaptation workflows"



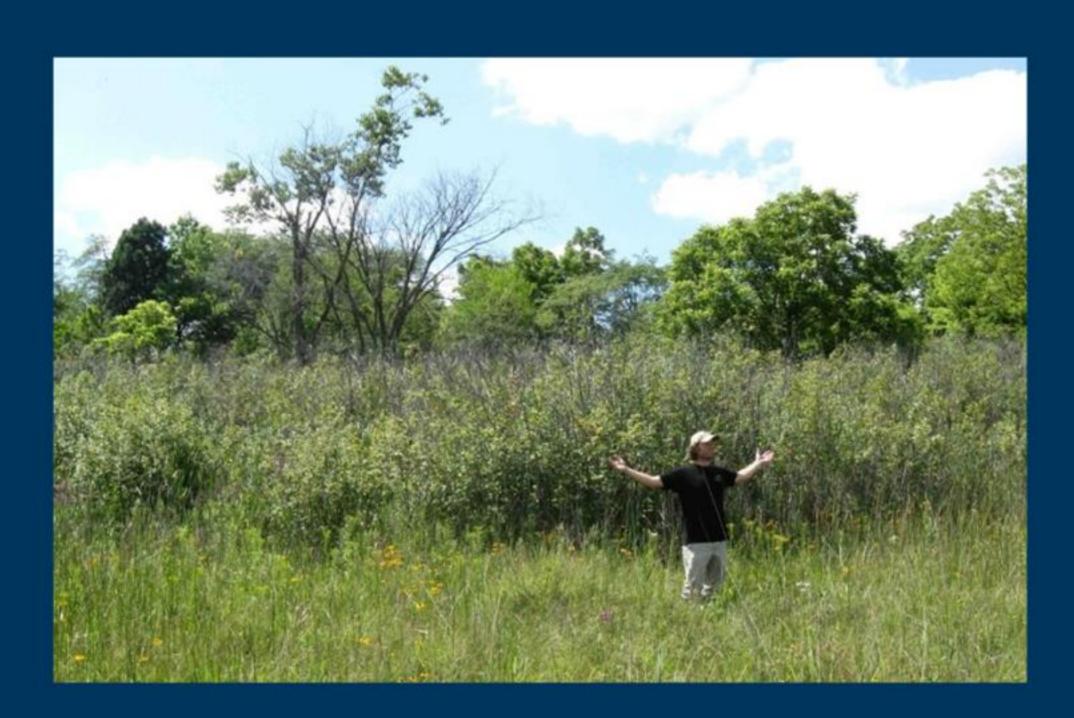
# Development area – interactive guidance linked to tools "Adaptation workflows"

UNDERSTAND THE POTENTIAL IMPACTS OF CLIMATE CHANGE Consider how changing climatic conditions will affect essential ecosystem features or their components, including representative habitats, select species and ecological processes. **Example**: Climate models predict that the shrub-steppe habitat in Eastern Washington, USA will experience increases in temperature and altered precipitation patterns. Tools: Climate Wizard TACCIMO Climate Report Resources: **Publications** Case Studies Online Resources CAKEX Discussion: View/Post Responses

Understand Potential Impacts Formulate Ecological Hypothesis Explore Human Responses Determine Climate-Induced Threats Evaluate Climate Impact Develop Adaptation Strategies Develop Measures, Implement, Adapt, and



# Thank you!









## THE KRESGE FOUNDATION

