

Afternoon Breakout Sessions

2:00PM	Breakout Round 1: Trainings and Tutorials A. Advanced Phenological Information System - <i>Jeff Morisette/National Invasive Species Council</i> B. Generative Models to Forecast Community Reorganization with Climate Change - <i>Amanda Schwantes/Duke University</i> C. Circuitscape - <i>Kim Hall/The Nature Conservancy</i> D. NASA Web-based Tools for Satellite Data Analysis - <i>Cindy Schmidt/NASA Ames Research Center and Aaron Friesz/LP DAAC</i>
2:40PM	Break
2:55PM	Breakout Round 2: Trainings and Tutorials A. Advanced Phenological Information System - <i>Jeff Morisette/National Invasive Species Council</i> B. Generative Models to Forecast Community Reorganization with Climate Change - <i>Amanda Schwantes/Duke University</i> C. Riverscape Analysis Project - <i>Gordon Luikart/University of Montana</i> D. Accessing Essential Biodiversity Variables (EBVs) from ORNL DAAC - <i>Alison Boyer/ORNL DAAC</i>
3:35PM	Break
3:50PM	Breakout Round 3: Trainings and Tutorials A. Spectral Data Discovery, Access and Analysis through EcoSIS Toolkits - <i>Ting Zheng/University of Wisconsin, Madison</i> B. Software Workflows and Tools for Integrating Remote Sensing and Organismal Occurrence Data Streams to Assess and Monitor Biodiversity Change - <i>Walter Jetz/Yale</i> C. Amplify your Work: Storytelling Workshop and Presentation - <i>U.Group</i> D. A Satellite-based Mobile Warning System to Reduce Atlantic Sturgeon Interactions in Delaware Waters - <i>Matt Oliver/University of Delaware</i>
4:30PM	Break
4:45PM	Breakout Round 4: Trainings and Tutorials A. Spectral Data Discovery, Access and Analysis through EcoSIS Toolkits - <i>Ting Zheng/University of Wisconsin, Madison</i> B. Software Workflows and Tools for Integrating Remote Sensing and Organismal Occurrence Data Streams to Assess and Monitor Biodiversity Change - <i>Walter Jetz/Yale</i> C. Programmatic Discussion with A.8 PIs - <i>NASA Applied Sciences Team</i> D. Programmatic Discussion with A.50 PIs - <i>Gary Geller/NASA Jet Propulsion Laboratory</i>



Afternoon Breakout Sessions

Breakout Round 1: 2:00 – 2:40 PM

A. Advanced Phenological Information System

Jeff Morisette/National Invasive Species Council

B. Generative Models to Forecast Community Reorganization with Climate Change

Amanda Schwantes/Duke University

C. Connectivity Modeling with Circuitscape

Kim Hall/The Nature Conservancy

Ranjan Anantharaman/ MIT

D. NASA Web-based Tools for Satellite Data Analysis

Cindy Schmidt/NASA Ames Research Center

Aaron Friesz/LP DAAC

NOTE: Space is limited to 30 participants per session. Sign-up early for sessions you are especially interested in attending.

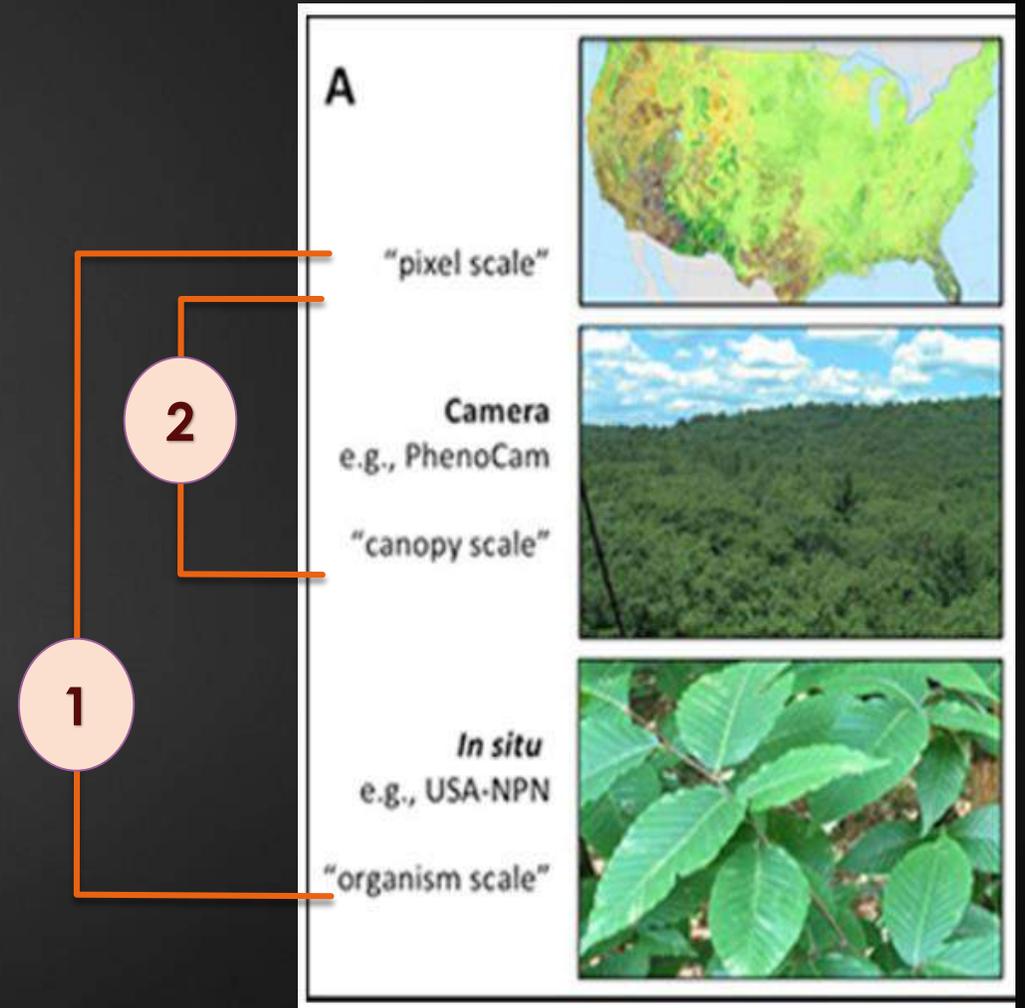


The Advanced Phenology Information System

- *There are currently several fairly advanced phenology-related datasets.*
- *But integration is currently lacking.*
- *So the APIS project is developing tools for more synthesis.*

The tutorial will cover:

1. An *r* package to access and analyze USA National Phenology network field observations and gridded products
2. An *r* shiny app to access and analyze phenocam and MODIS time series.



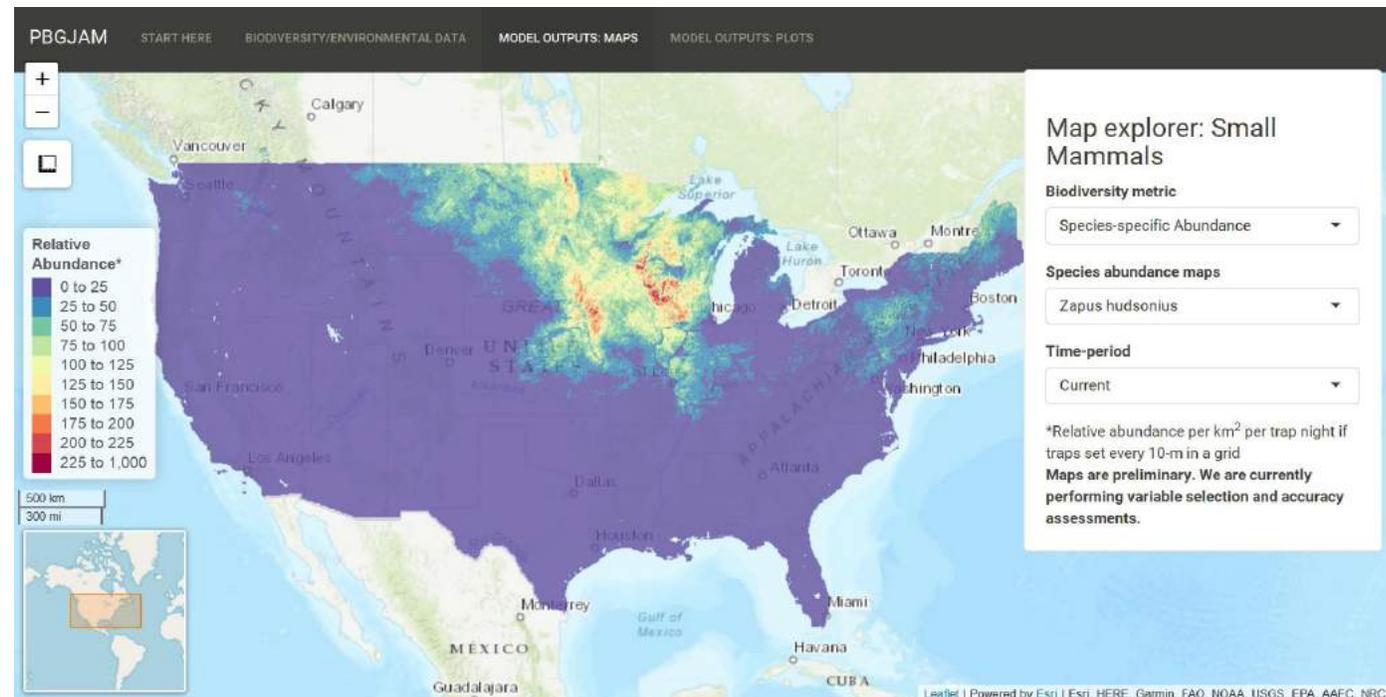
Generative Models to Forecast Community Reorganization with Climate Change

Christopher Kilner, Taylor Minich, Chase Nuñez, Lane Scher, Amanda Schwantes, Shubhi Sharma
Co-PIs: Jennifer Swenson, Jim Clark

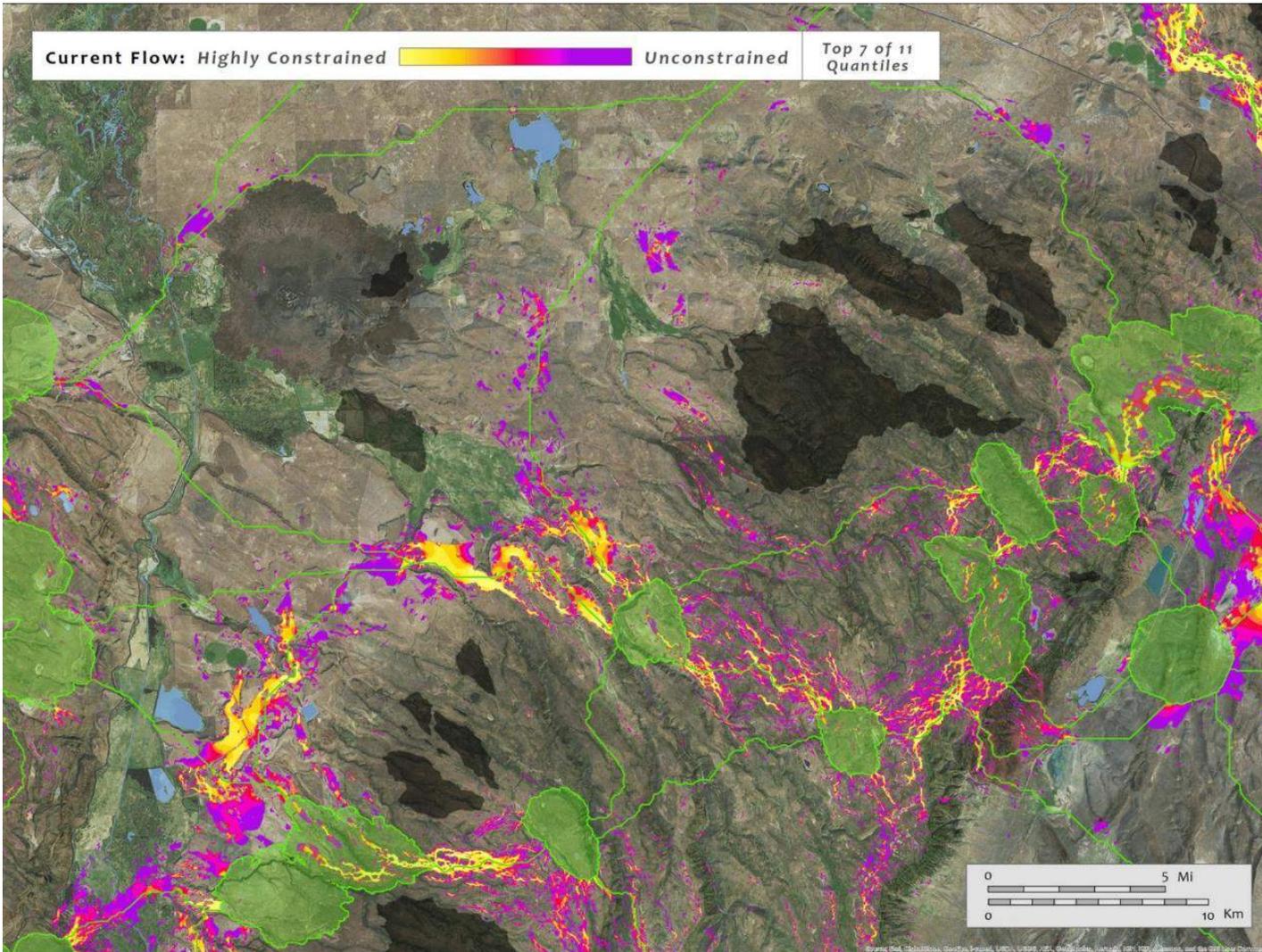
GJAM predicts species and community response under climate change by integrating remotely-sensed habitat and **biodiversity** data through a **Bayesian multivariate** approach

We will show how to:

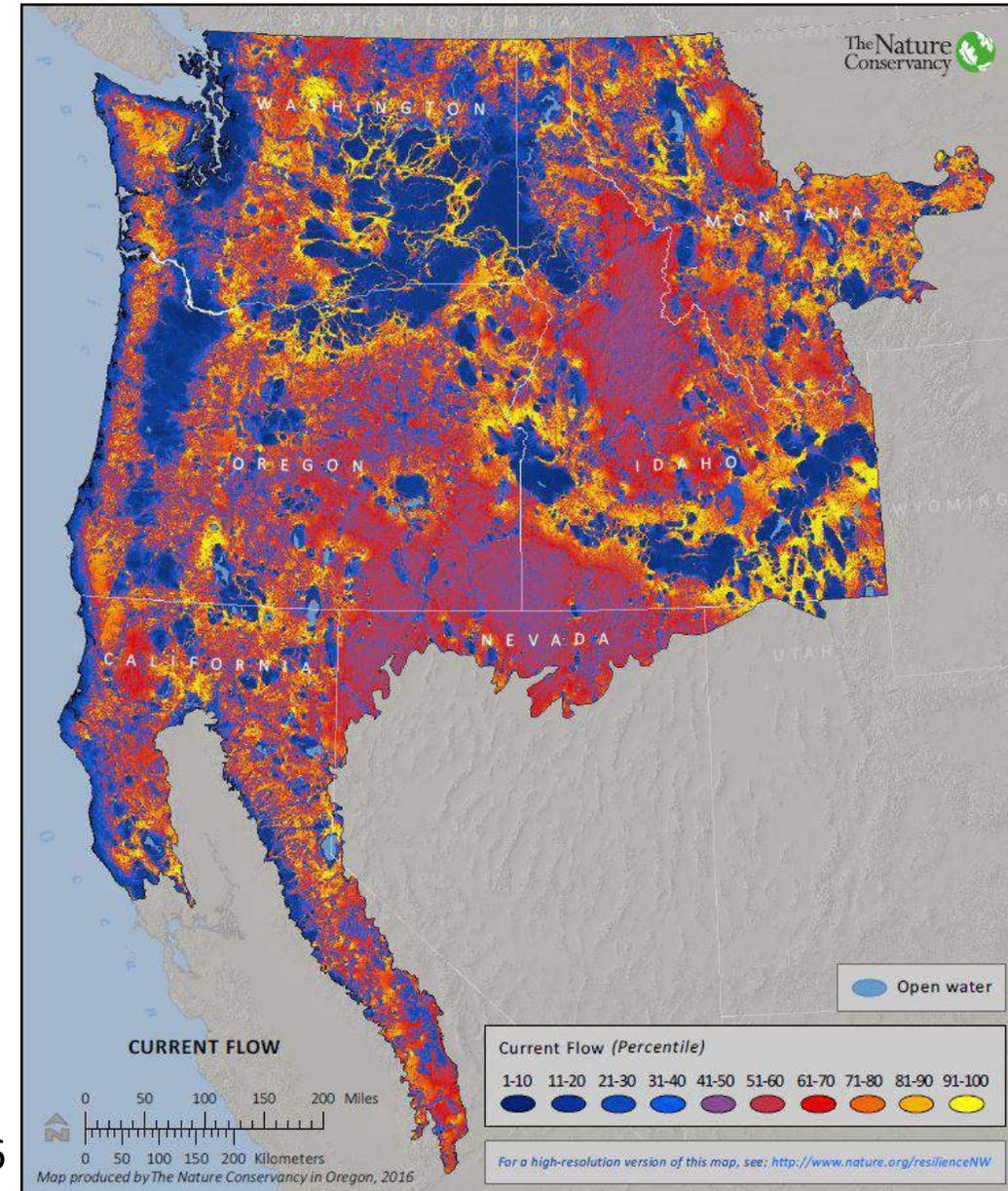
- Fit a GJAM and interpret results in R
- Interact with our web app
- Process remotely-sensed data from Google Earth Engine in python



Connectivity modeling with Circuitscape



Habitat connectivity among sage grouse leks - Jones et al. 2015



Landscape structural connectivity – McRae et al. 2016



NASA Web-based Tools for Satellite Data Analysis

Cindy Schmidt/NASA Ames Research Center

Aaron Friesz/LP DAAC

Time: Breakout 1 (2-2:40)

The Application for Extracting and Exploring Analysis Ready Samples (*AppEEARS*) offers a simple and efficient way to access and transform geospatial data from a variety of federal archives.

AppEEARS enables users to subset geospatial datasets using spatial, temporal, and band/layer parameters.

This session will overview the *AppEEARS* API by:

- Leveraging of Python and Jupyter notebooks to show how to interact with the *AppEEARS* API
- Demonstrating how to integrate the API into an analysis workflow.

Participants should bring a laptop.

AppEEARS

Afternoon Breakout Sessions

Breakout Round 2: 2:55 – 3:35 PM

A. Advanced Phenological Information System

Jeff Morisette/National Invasive Species Council

B. Generative Models to Forecast Community Reorganization with Climate Change

Amanda Schwantes/Duke University

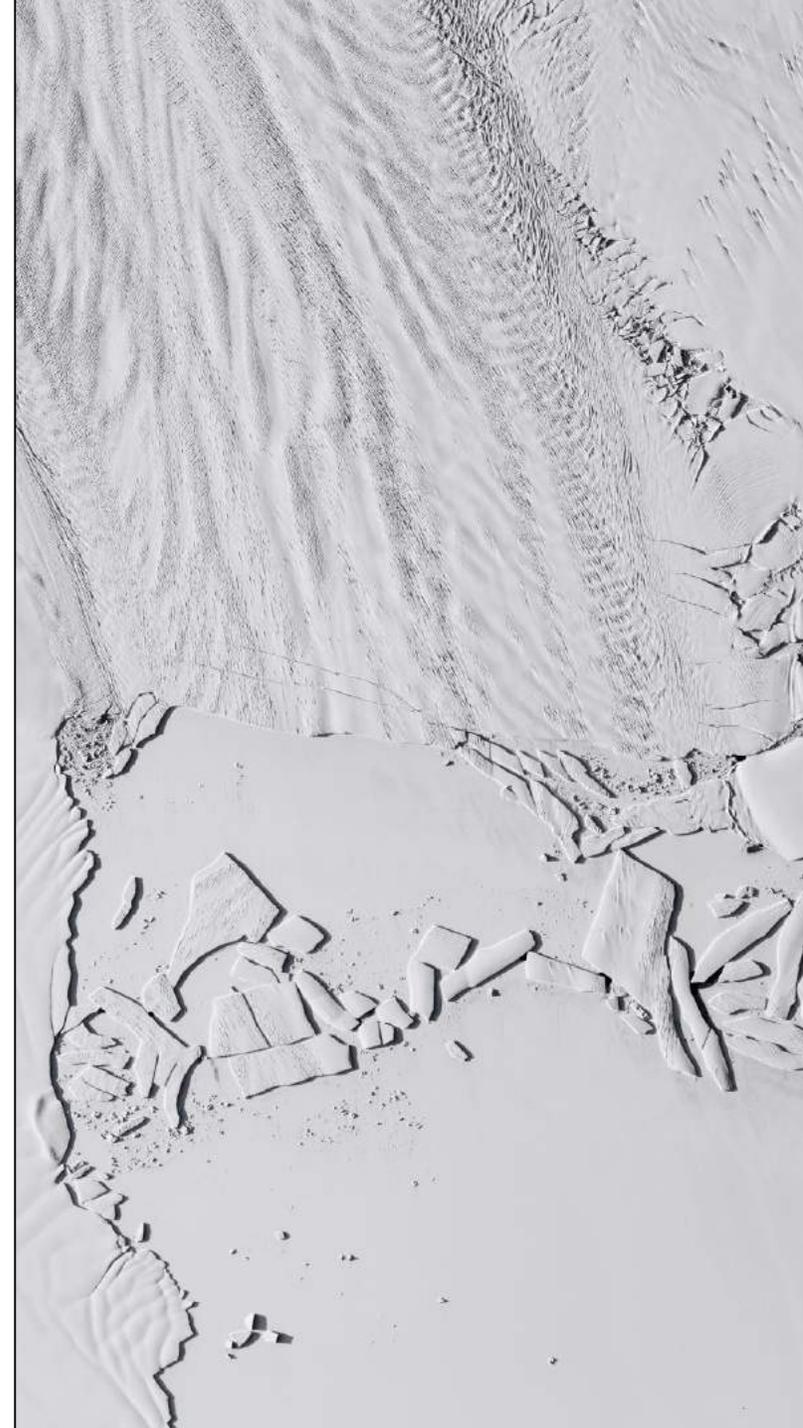
C. Riverscape Analysis Project

Gordon Luikart/University of Montana

D. Accessing Essential Biodiversity Variables (EBVs) from ORNL DAAC

Alison Boyer/ORNL DAAC

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The Riverscape Analysis Project (RAP): An integrated platform for salmonid conservation



Web-based support tool for salmonid conservation

Basin scale data for the Pacific NW and fine scale (HUC 12) for the Columbia River Basin

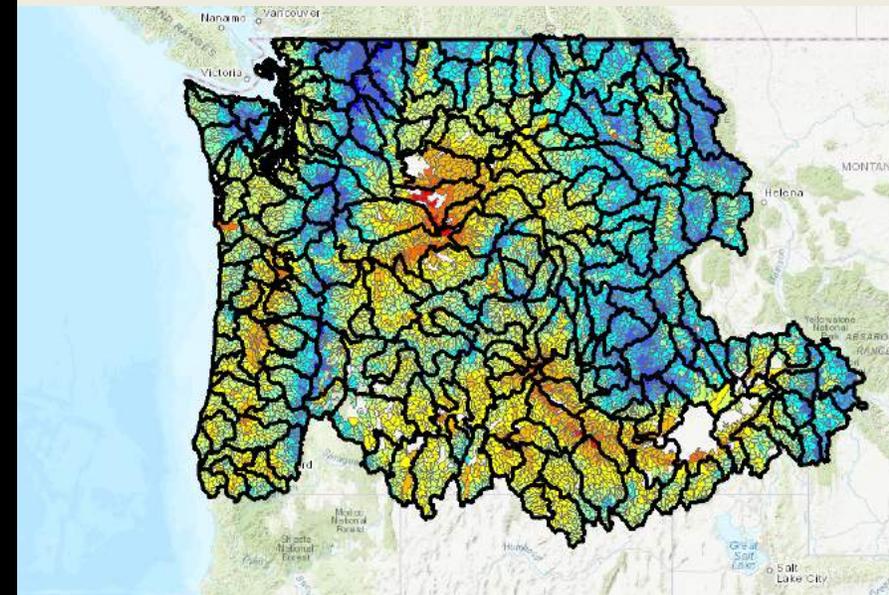
Data

- Expanded access to remotely-sensed climate/habitat data

Tools

- Basic CCVA
- Demogenetic monitoring (Nb)
- Landscape genetics (connectivity)

Columbia River Basin



Accessing Essential Biodiversity Variables (EBVs) from ORNL DAAC



Wednesday at 2:55pm - Breakout 2D

Learn about data and services available from NASA's data center for Terrestrial Ecology

- Hundreds of EBV datasets from field studies, models, aircraft, and satellites
 - Ecosystem Structure & Function
 - Land Use & Land Cover
 - Climate
- Bring your laptop for a live demo of API access and analysis of data in Python



Afternoon Breakout Sessions

Breakout Round 3: 3:50 – 4:30 PM

A. Spectral Data Discovery, Access and Analysis through EcoSIS Toolkits

Ting Zheng/University of Wisconsin, Madison

B. Software Workflows and Tools for Integrating Remote Sensing and Organismal Occurrence Data Streams to Assess and Monitor Biodiversity Change

Walter Jetz/Yale

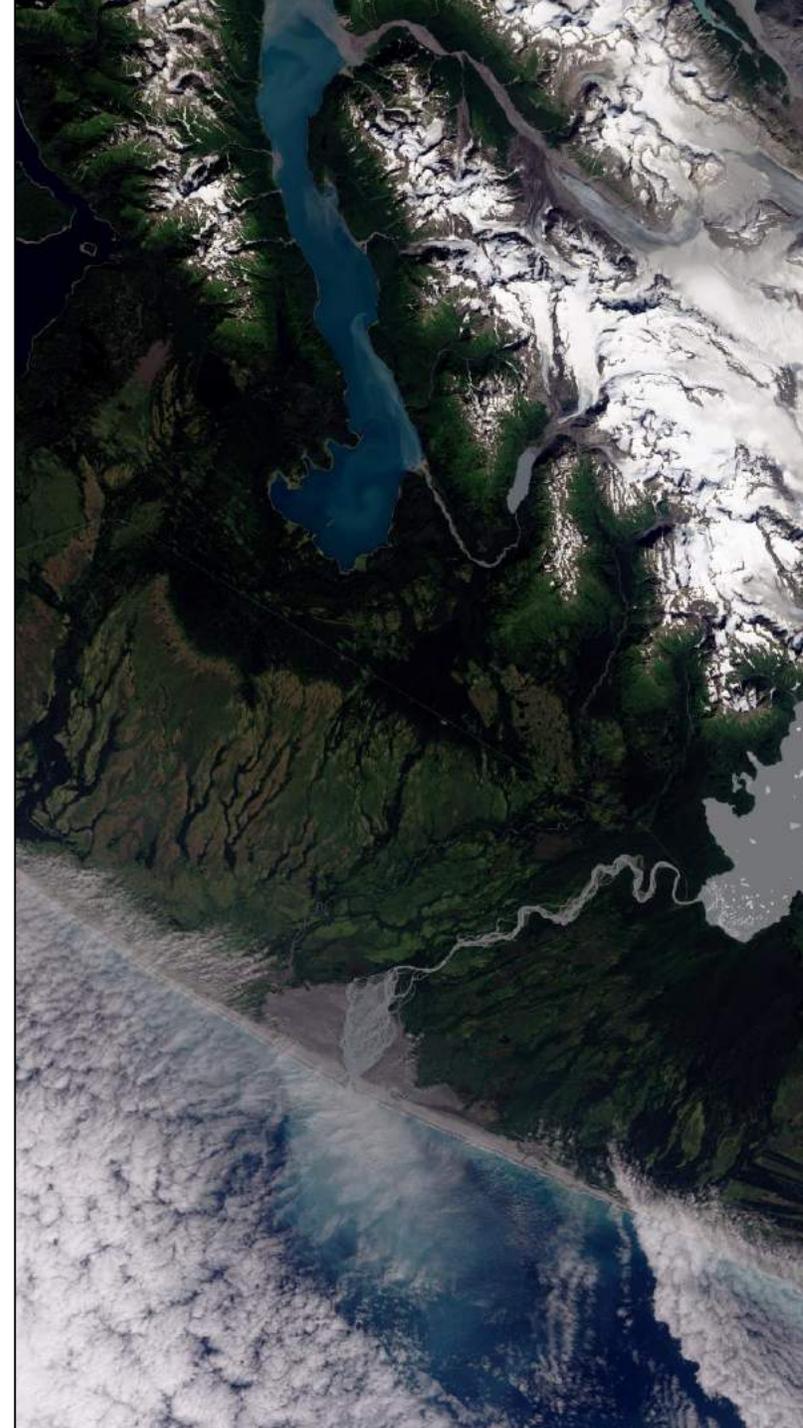
C. Amplify your Work: Storytelling Workshop and Presentation

U.Group / NASA ASP Communications Team

D. A Satellite-based Mobile Warning System to Reduce Atlantic Sturgeon Interactions in Delaware Waters

Matt Oliver/University of Delaware

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Spectral Data Discovery, Access and Analysis: **EcoSIS Toolkits**

Ting Zheng/University of Wisconsin, Madison

Time: Breakouts 3 & 4 (3:50-4:30, 4:45-5:25)

EcoSIS is an online ecological spectral database created to store, share, and find spectral data.

EcoSML is an ecological spectral model library that allows scientists to share and find spectral models to predict traits such as chemistry, species, structure, and disease.

The session will take participants through the process of using and uploading data and models.

Participants should bring a laptop.

Software Workflows and Tools for Integrating Remote Sensing and Organismal Occurrence Data Streams to Assess and Monitor Biodiversity Change

Walter Jetz / Yale

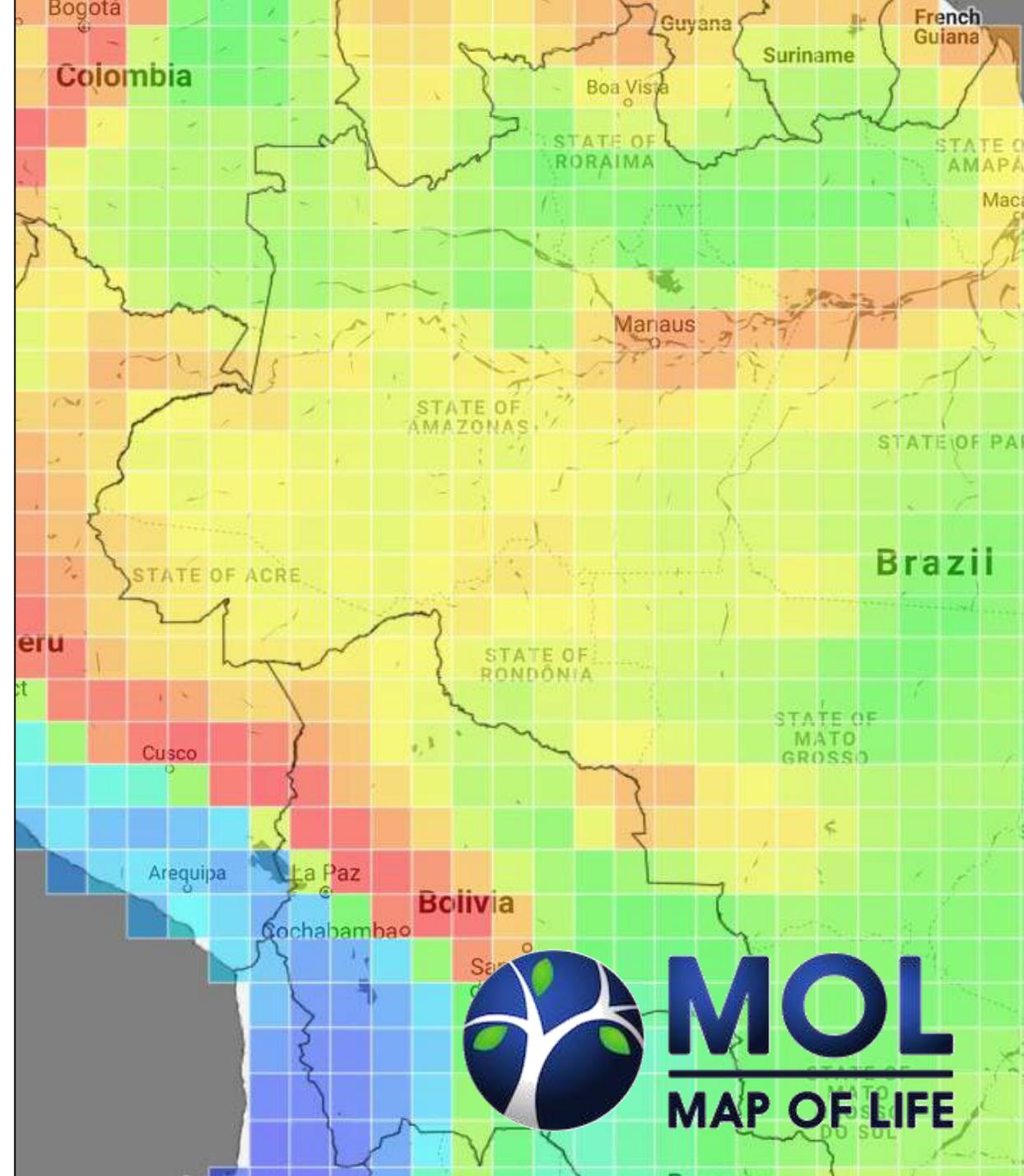
Time: Breakouts 3 & 4 (3:50-4:30, 4:45-5:25)

We will introduce a prototype system for annotating organismal occurrence data with gridded environmental data from remote sensing and other model-based sources.

The workshop will guide participants through:

- 1) Uploading a sample dataset of occurrence records to the **Map of Life** system
- 2) Selecting desired environmental variables
- 3) 'Annotating' occurrence data with environmental data
- 4) Visualizing the realized species' environmental 'niche' space

Participants should bring a laptop with a web browser (chrome is recommended).



Amplify your Work:

Storytelling Workshop and Presentation

NASA Applied Science Communications Team

Time: Breakout 3 (3:50-4:30)

This session will cover

- Effective, easily-applied *methods for science communication*.
- *The foundations of storytelling*:
 - Written, oral, nonverbal, and visual components.

This session aims to build science communications material.

Attendees will participate in interactive activity and presentation

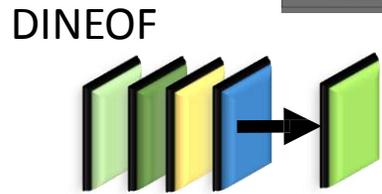
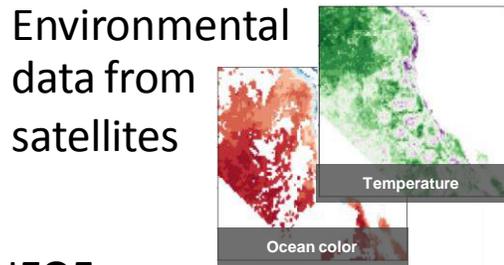
Follow up opportunities through office hours will further develop the content built in this session.



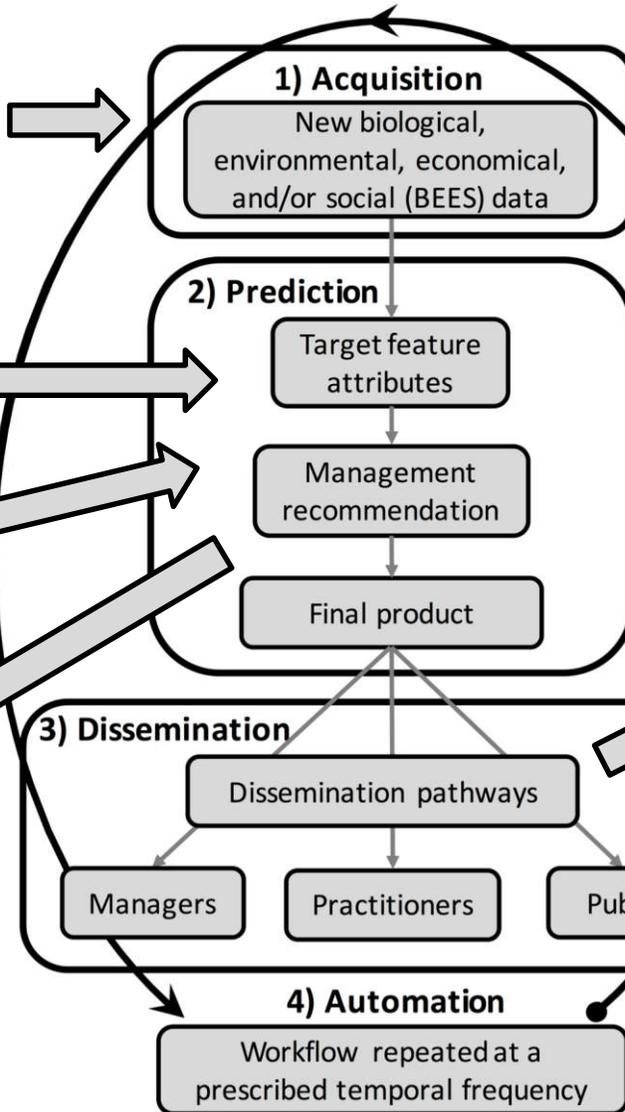
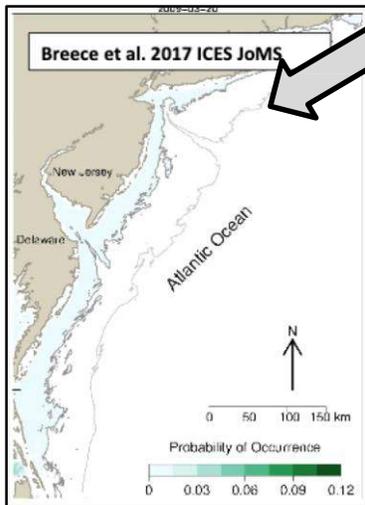
The Atlantic Sturgeon Risk Model



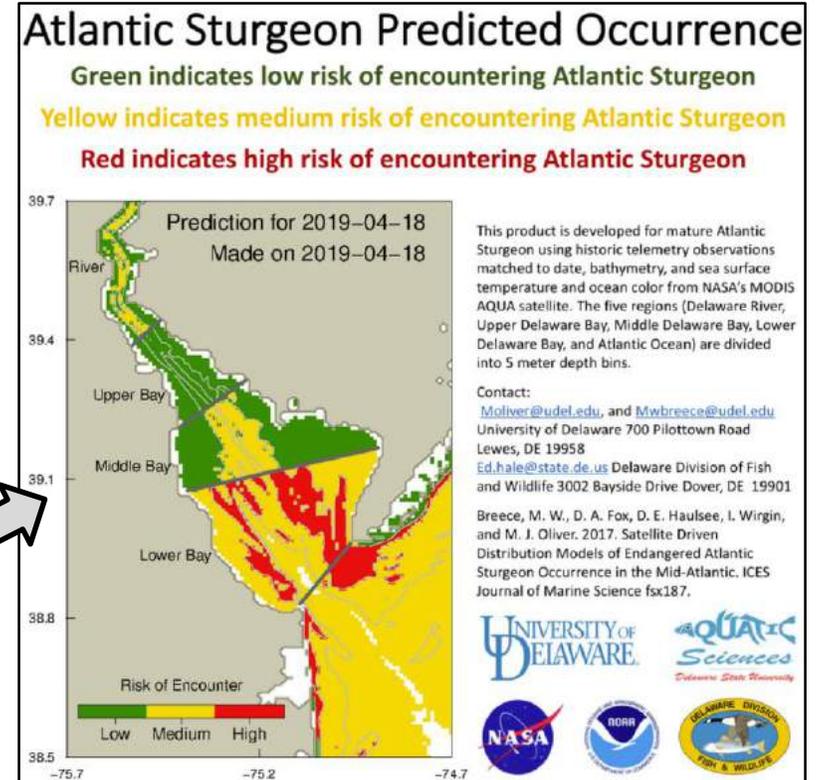
Tool operationalization



Daily probability of occurrence



Welch et al. JAE



SMS

Apr 19 Medium Risk: River all, Up Bay less than 16ft, Mid Bay less than 16ft over 33ft, Low Bay less than 16ft more than 33ft High Risk: , Up Bay more than 16ft, Mid Bay 16-33ft, Low Bay 16-33ft

Afternoon Breakout Sessions

Breakout Round 3: 4:45 – 5:25 PM

A. Spectral Data Discovery, Access and Analysis through EcoSIS Toolkits

Ting Zheng/University of Wisconsin, Madison

B. Software Workflows and Tools for Integrating Remote Sensing and Organismal Occurrence Data Streams to Assess and Monitor Biodiversity Change

Walter Jetz/Yale

C. Programmatic Discussion with A.8 PIs

Maury Estes/NASA MSFC

Jay Skiles/ NASA ARC

Argie Kavvada/NASA HQ

D. Programmatic Discussion with A.50 PIs

Gary Geller/NASA JPL

Cindy Schmidt/NASA ARC

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Programmatic Discussions

We will hold programmatic discussions with the A.8 and A.50 solicitation PIs

Time: Breakout 4 (4:45-5:25)

Programmatic Discussion with A.8 PIs

A.8: Sustaining Living Systems in a Time of Climate Variability and Change

Maury Estes/NASA MSFC

Jay Skiles/ NASA ARC

Argie Kavvada/NASA HQ



Programmatic Discussion with A.50 PIs

A.50: Group on Earth Observations Work Programme

Gary Geller/NASA Jet Propulsion Laboratory

Cindy Schmidt/NASA Ames Research Center



PIs and Collaborators funded by these awards, please attend these meetings.

