

Climate Voyager

An Iteratively Built Tool for Visualizing Climate Projections

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State Climate Office of North Carolina
March 15, 2017



What is Climate Voyager?

- A collection of tools displaying meaningful climate variables
- An innovative interface showing a range of future possibilities
- The result of iterative development via multiple feedback mechanisms




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Audience

- Anyone planning for future climate risks and opportunities
 - Foresters
 - Land managers
 - Water resource managers
 - Tribal groups



From CSC workshop with USET, November 2016




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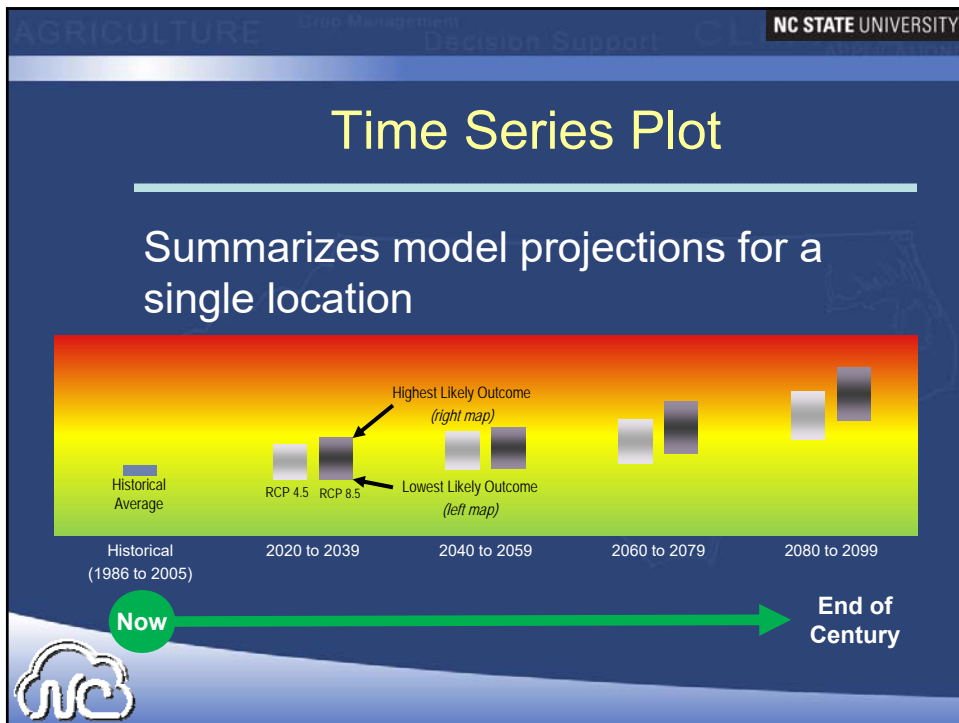
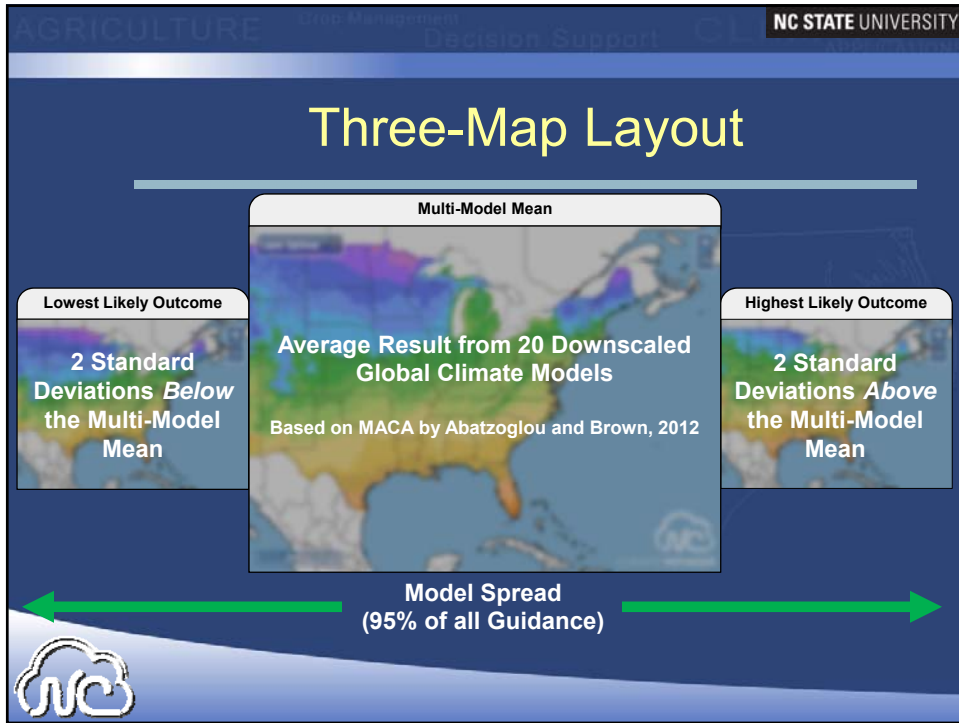
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Motivation

- Stakeholders are making decisions 30+ years in the future
- Best practices suggest using a wide range of model guidance – and there's plenty of it!
- Existing tools don't provide enough information at multiple scales



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Climate Voyager Demo

<http://climate.ncsu.edu/voyager>

CLIMATE VOYAGER A product of the State Climate Office of North Carolina About Temperature Precipitation Drought

Welcome to Climate Voyager!

Have you wondered what the climate might look like in 20 years? What about 40 years, or even 80? How cold might our wintertime temperatures get? How much more or less precipitation can we expect? Will droughts become more frequent?

If these questions intrigue you, or if they have implications for your own future planning, then Climate Voyager can help you find the answers. [Read more »](#)

To get started, check out the features of Climate Voyager on the [Introduction page](#), read some additional background information on the [FAQ page](#), or select a tool from one of the menus above.



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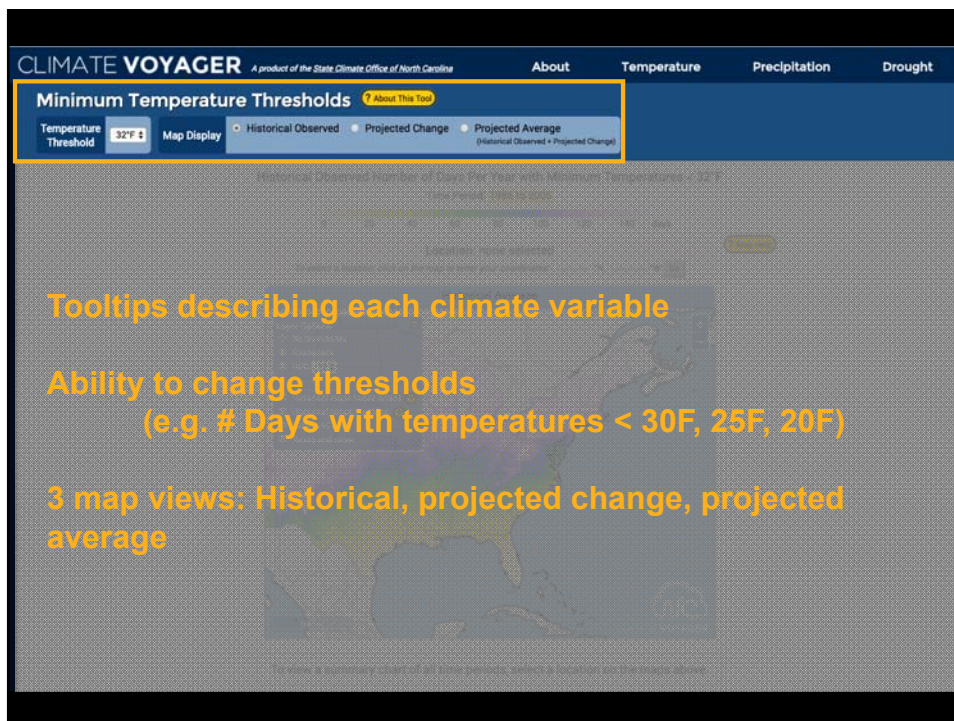
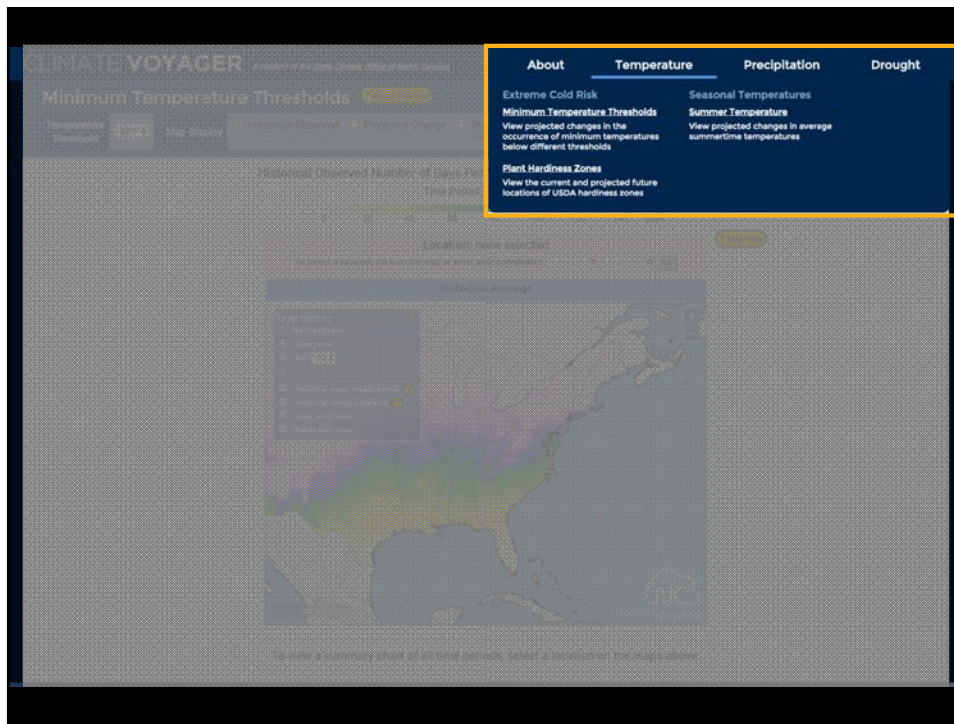
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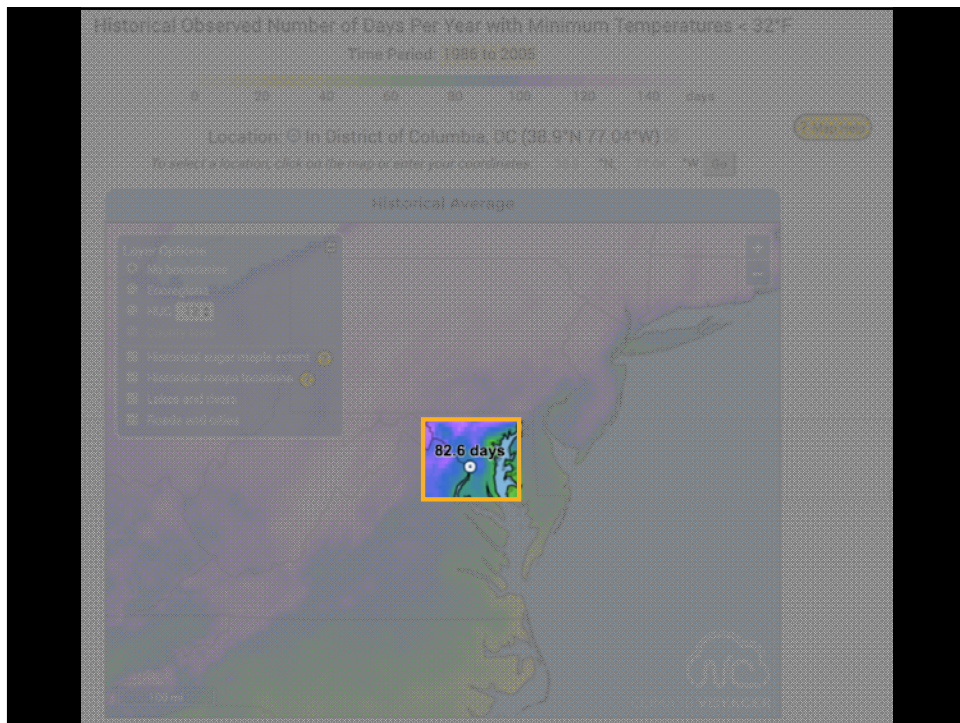
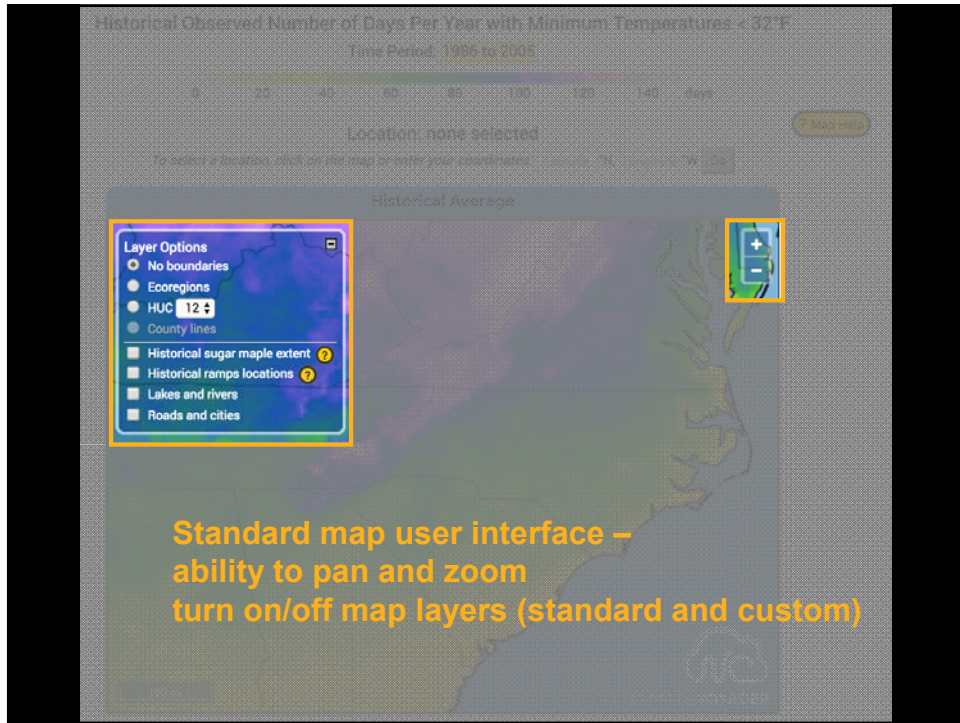
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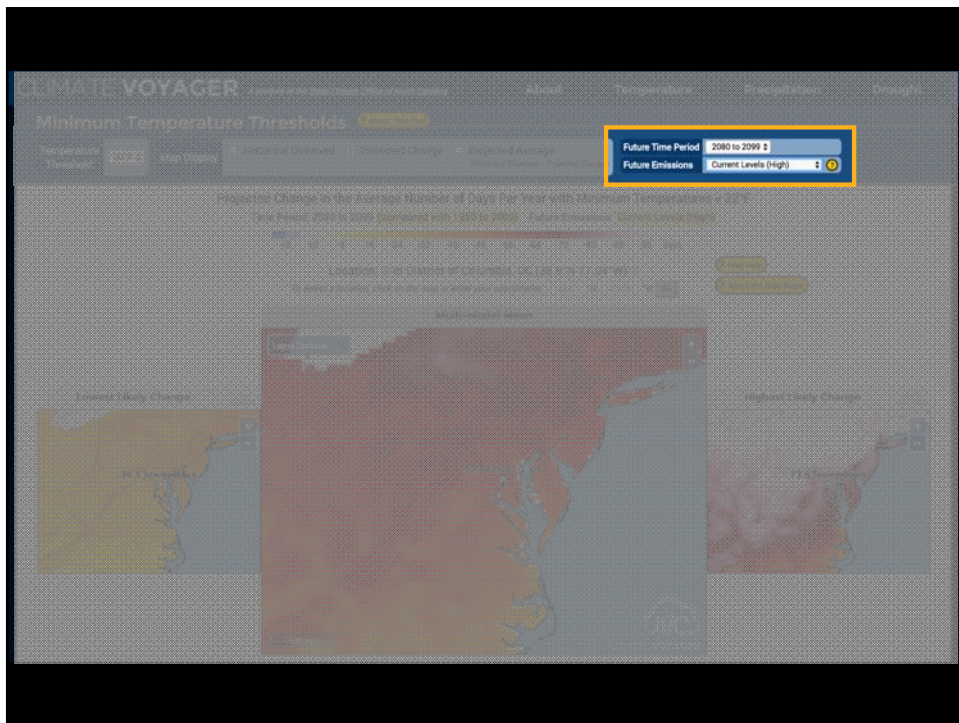
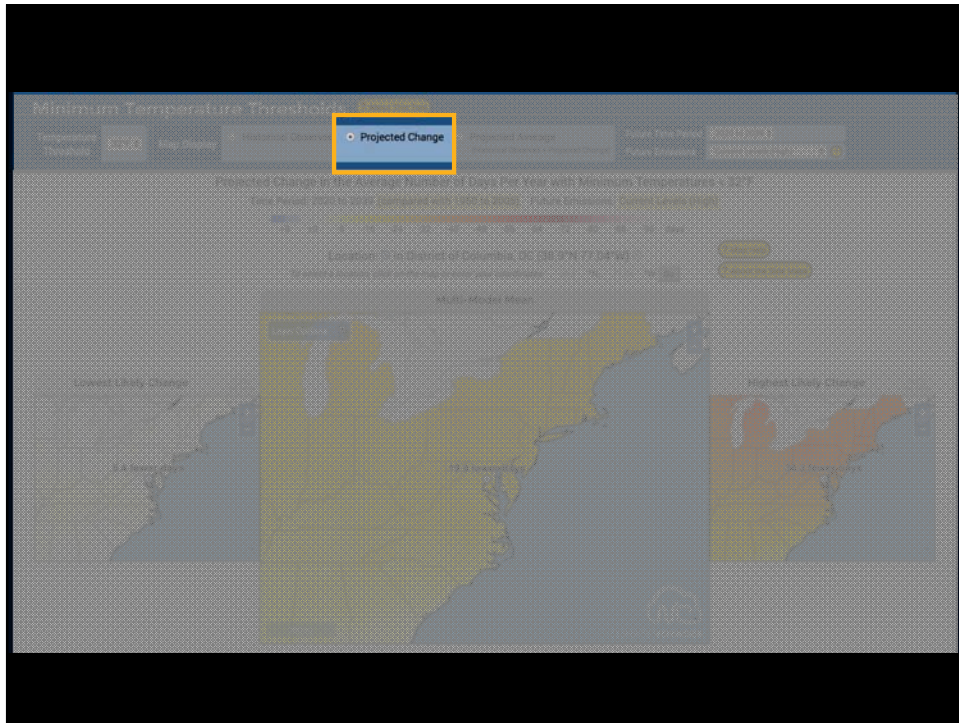


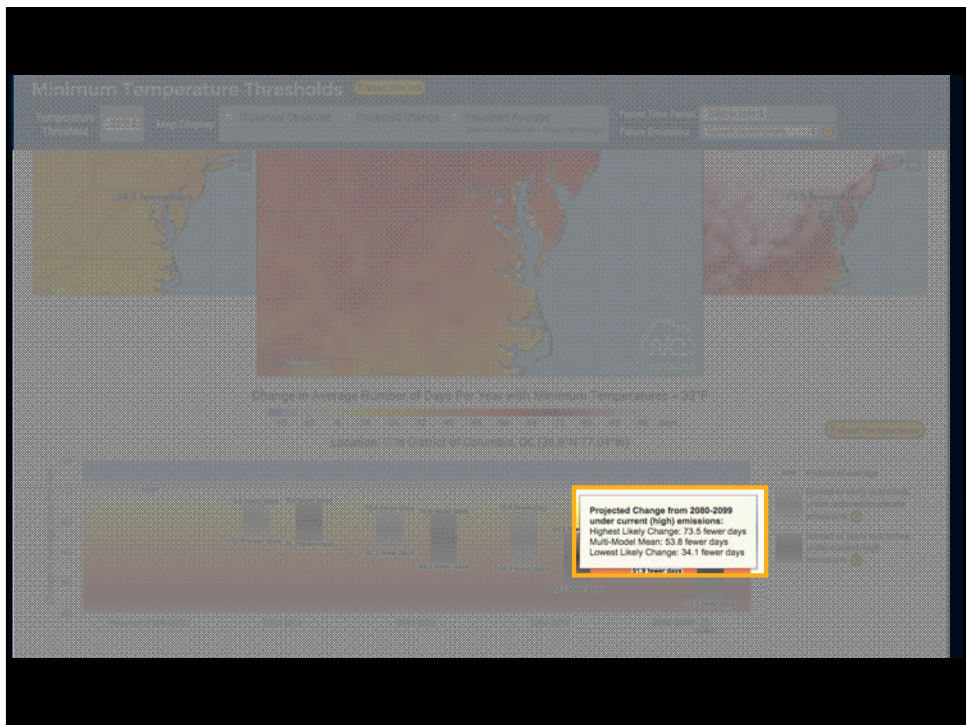
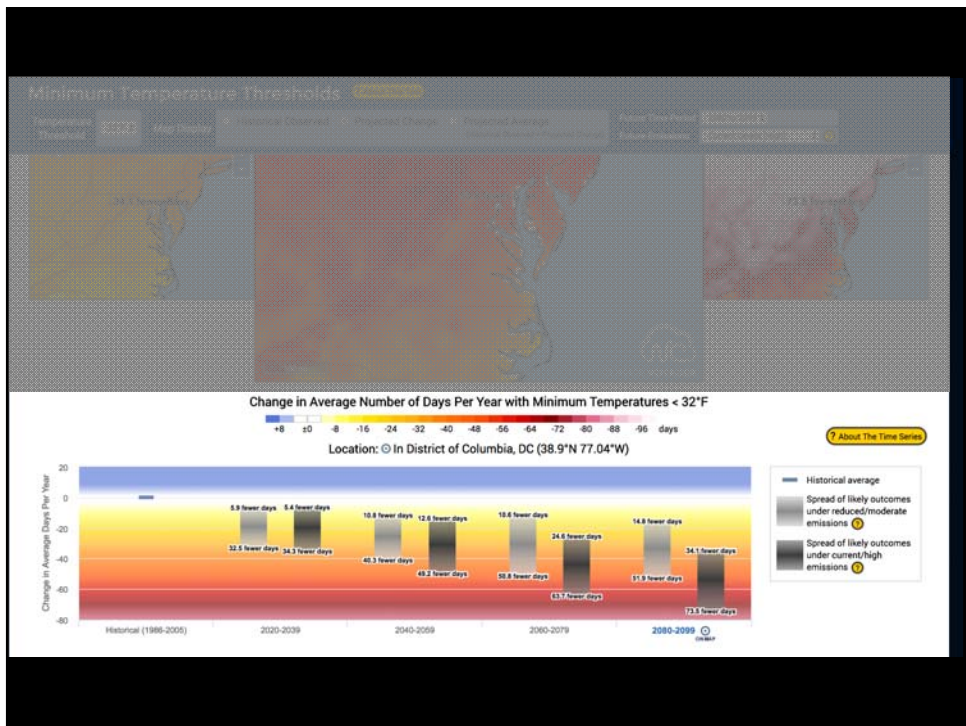
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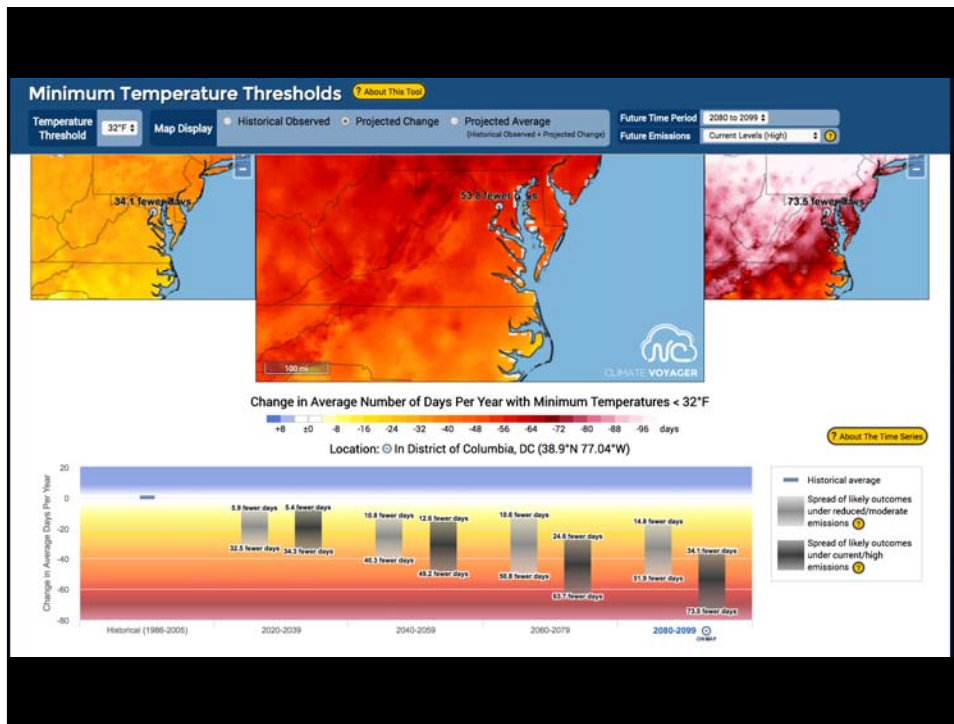
A product of the State Climate Office of North Carolina











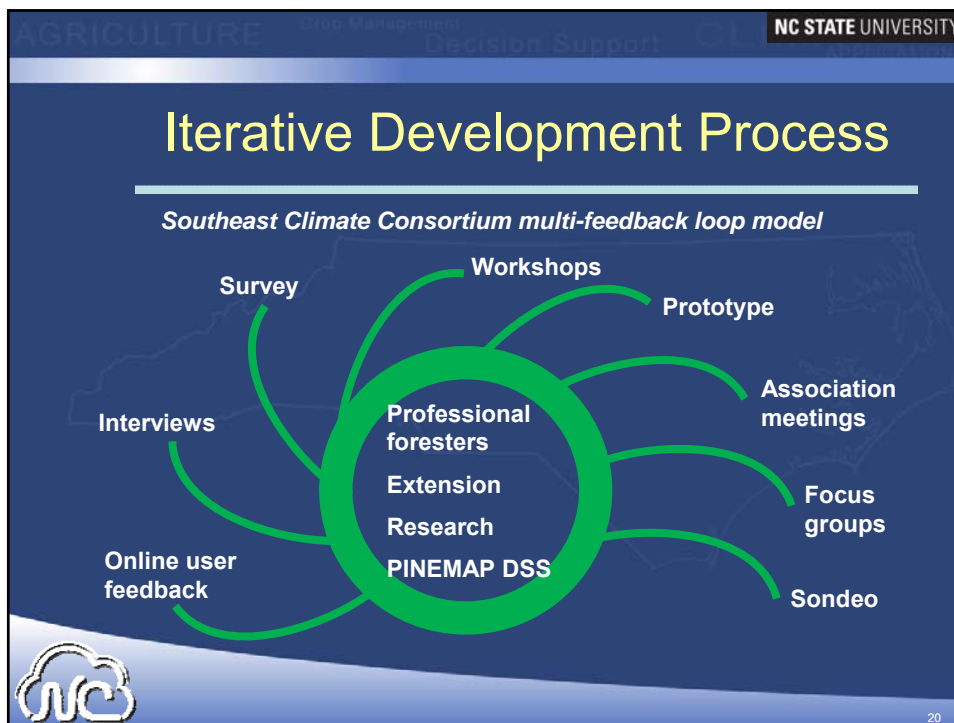
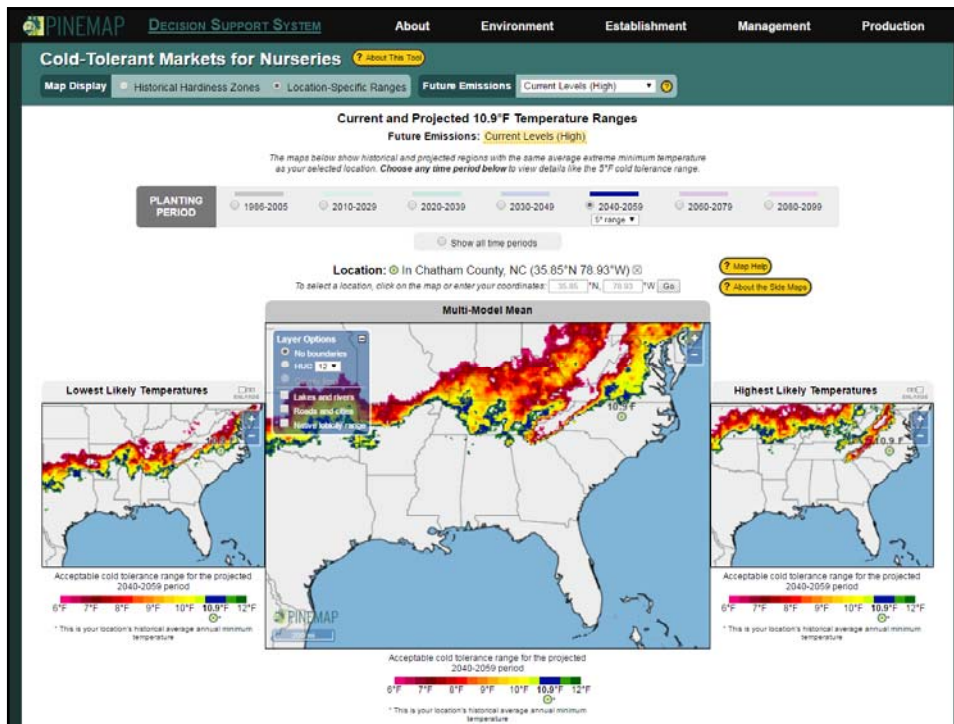
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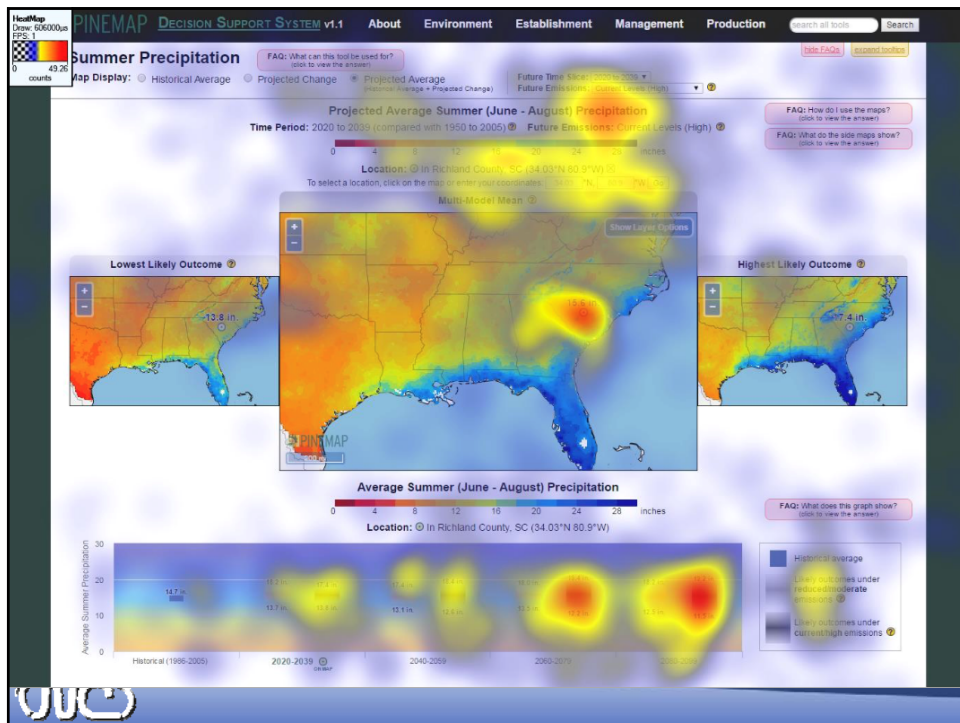
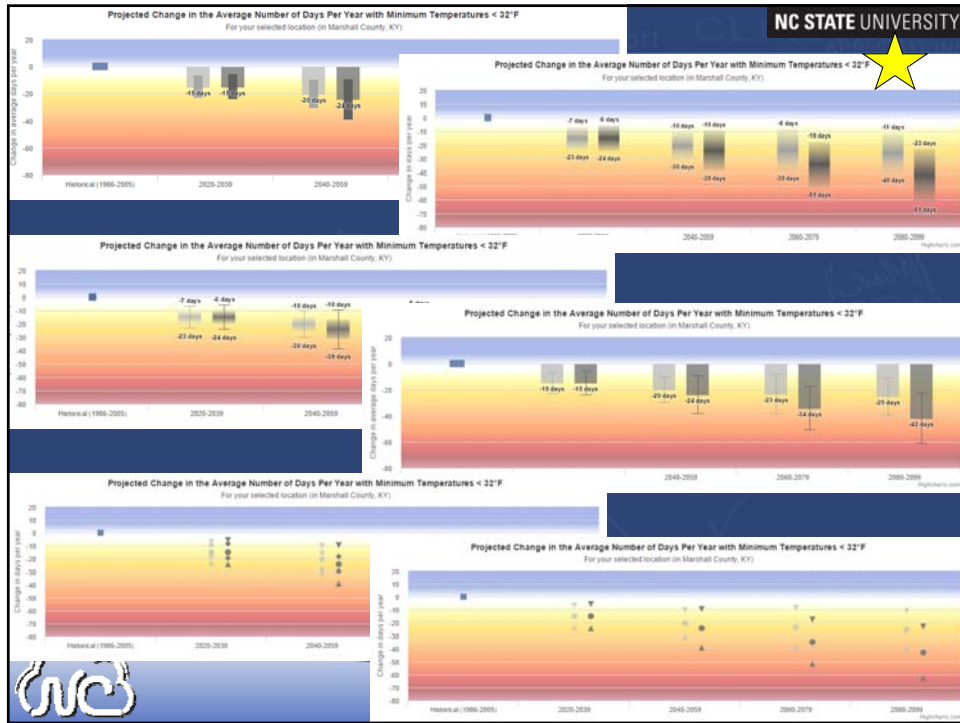
Development Process

- Began with the PINEMAP project

Pine Integrated Network: Education, Mitigation, and Adaptation Project

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Discussion Points

- What other parameters would be useful?
- Which precipitation thresholds are most important to you?
- What are your decision timescales?
- What are other applications of this interface?

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Preview: Water Yield from WaSSI

Projected Average Annual Water Yield

Time Period: 2080 to 2099 (compared with 1950 to 2005) Future Emissions: Current Levels (High)

0 6 12 18 24 30 inches

Location: none selected

To select a location, click on the map or enter your coordinates: Latitude °N Longitude °W Go


Multi-Model Mean

Layer Options

- No boundaries
- NADIC 12
- County lines
- Lakes and rivers
- Roads and cities
- Native land use ranges

Lowest Likely Outcome

Highest Likely Outcome




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Climate Projections

- Multivariate Adaptive Constructed Analogs (MACA)
 - 20 GCMs statistically downscaled to ~6km
 - RCP 4.5 and RCP 8.5
 - Projections for baseline (1950-2005) and future 2020-2099
 - Precip., min/max temp., wind speed, specific humidity, shortwave radiation



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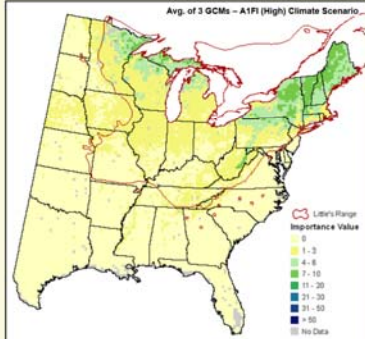
USFS Climate Change Tree Atlas

sugar maple (*Acer saccharum*) Model Reliability: High

Current Distribution
 Projected Future Habitat
 Predictor Maps

Climate Change Scenario Maps
Help

Avg. of 3 GCMs - A1FI (High)
 Compare Scenarios



Avg. of 3 GCMs - A1FI (High) Climate Scenario

Letter's Range Importance Values
 0
 1-3
 4-6
 7-10
 11-20
 21-30
 31-50
 > 50
 No Data

Notice:

This is an updated version of the Climate Change Tree Atlas. You can view the [previous sugar maple page](#), or [browse the previous Tree Atlas](#).

About sugar maple

Climate Change Adaptability

MODFACs
 What traits will impact sugar maple's ability to adapt to climate change, and in what way?
 1.34

Positive Traits

Shade tolerance
Environment habitat specificity

Negative Traits


None

[Learn More About the Models](#)

Summary of Predicted Changes

Range and Niche Maps

Predictor Analysis



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TNC's Climate Wizard

