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CSF Cornell Climate Smart Farming

Cornell's Climate Smart Farming Program: Decision Tools & Practices

Allison Morrill Chatrchyan & Brian Belcher, **Cornell University**

Thursday, September 20, 2018. 2:00 pm – 3:00 pm

USDA United States Department of Agriculture National Institute of Food and Agriculture

Northeastern IPM Center

Cornell Climate Smart Farming

Webinar Details

- Welcome
- A recording of this webinar will be available within a week at

http://www.neipmc.org/go/ipmtoolbox

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We Welcome Your Questions

- Please submit a question **at any time** using the Q&A feature to your right at any time

- If you'd like to ask a question anonymously, please indicate that at the beginning of your query.

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Some Questions for You

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Cornell's Climate Smart Farming Program: Helping Producers Reduce Climate Risk on Farms

Northeast IPM Program

Allison Chatrchyan and Brian Belcher
Cornell Institute for climate Smart Solutions
September 20, 2018

Cornell CALS
College of Agriculture and Life Sciences

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Think about it…

How have extreme weather events or the changing climate affected your farm or community over the last few years??

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NE Temperature Trend

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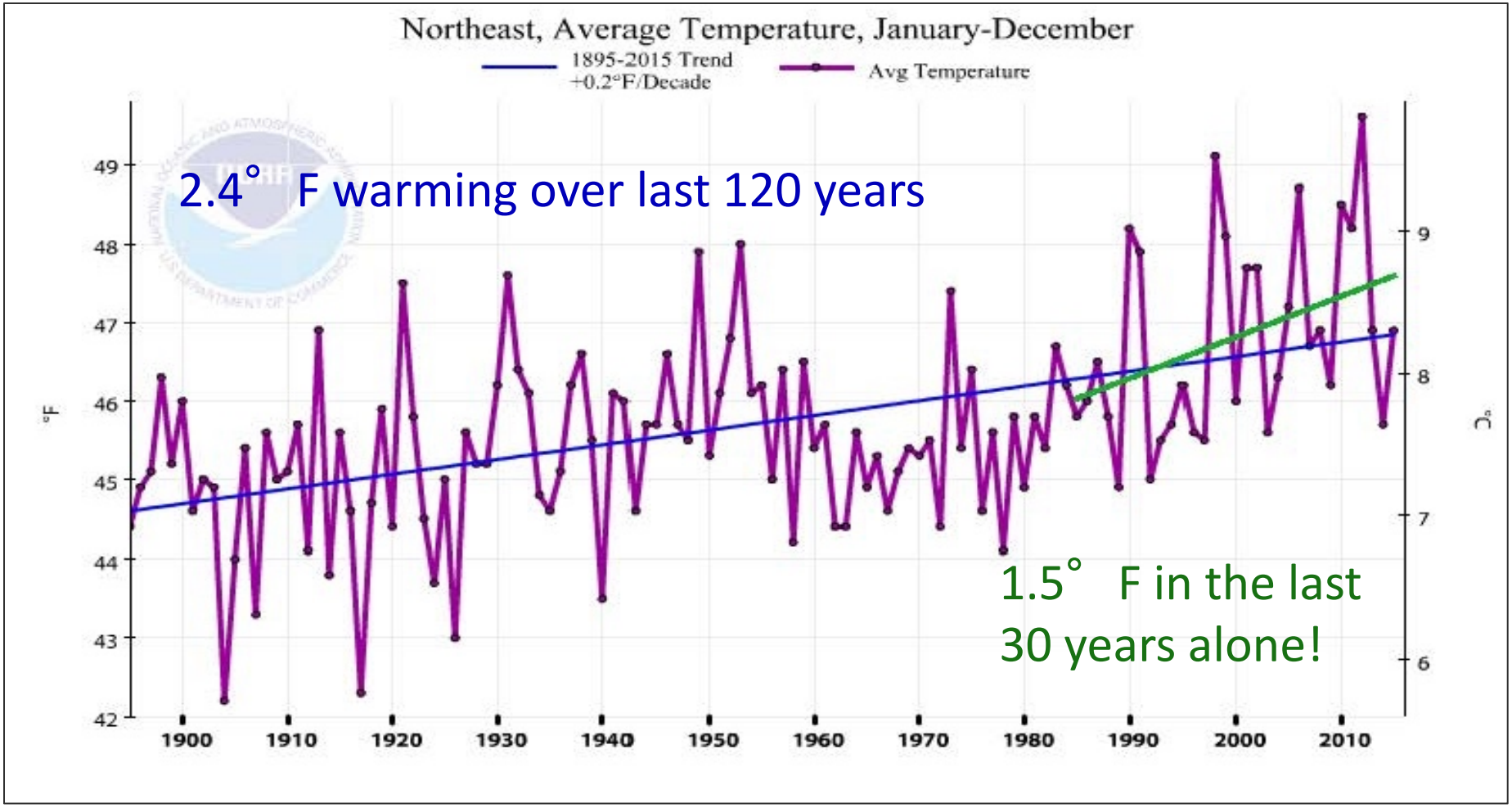
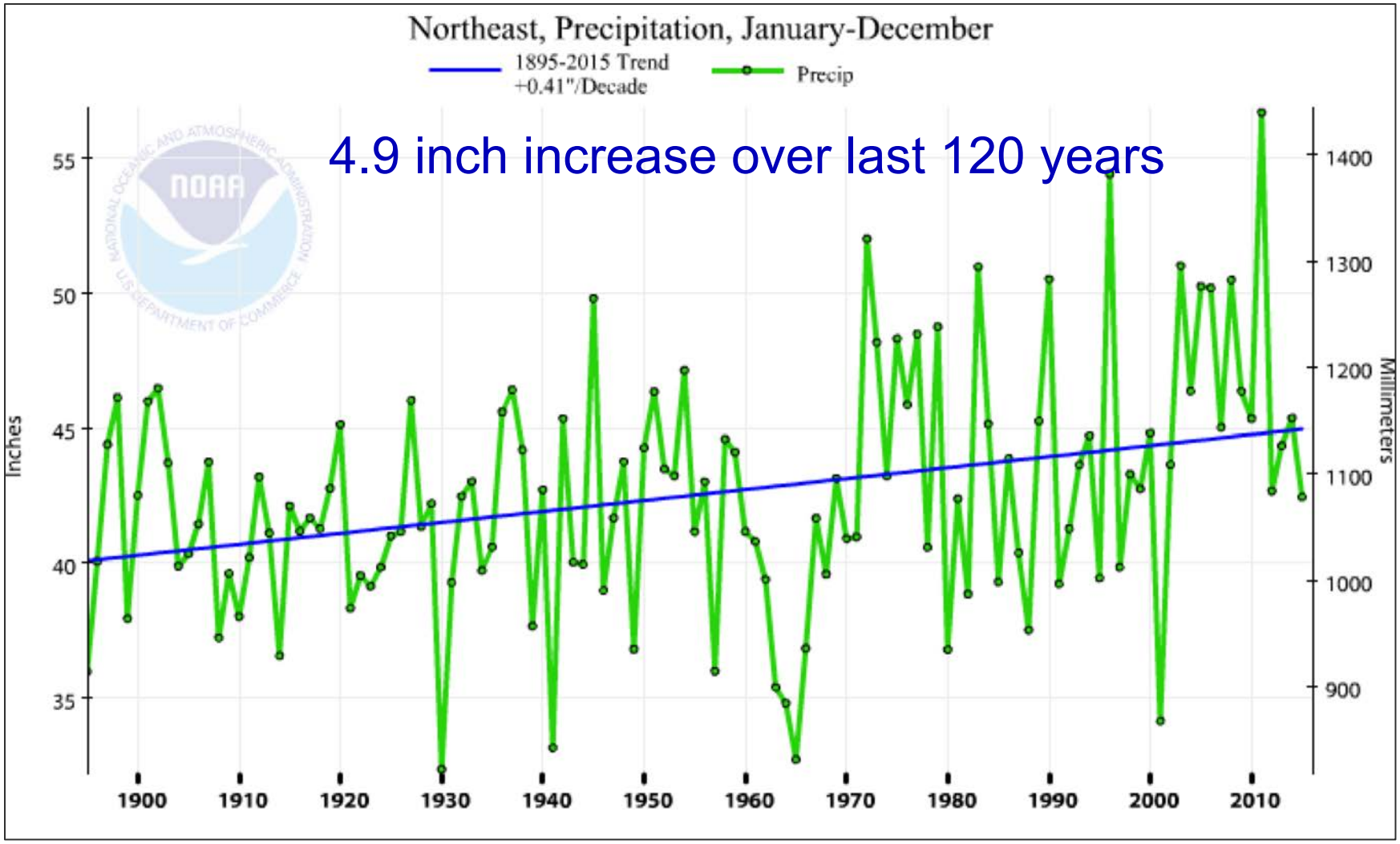


Source: NOAA NCDC. Data 1895-2015.

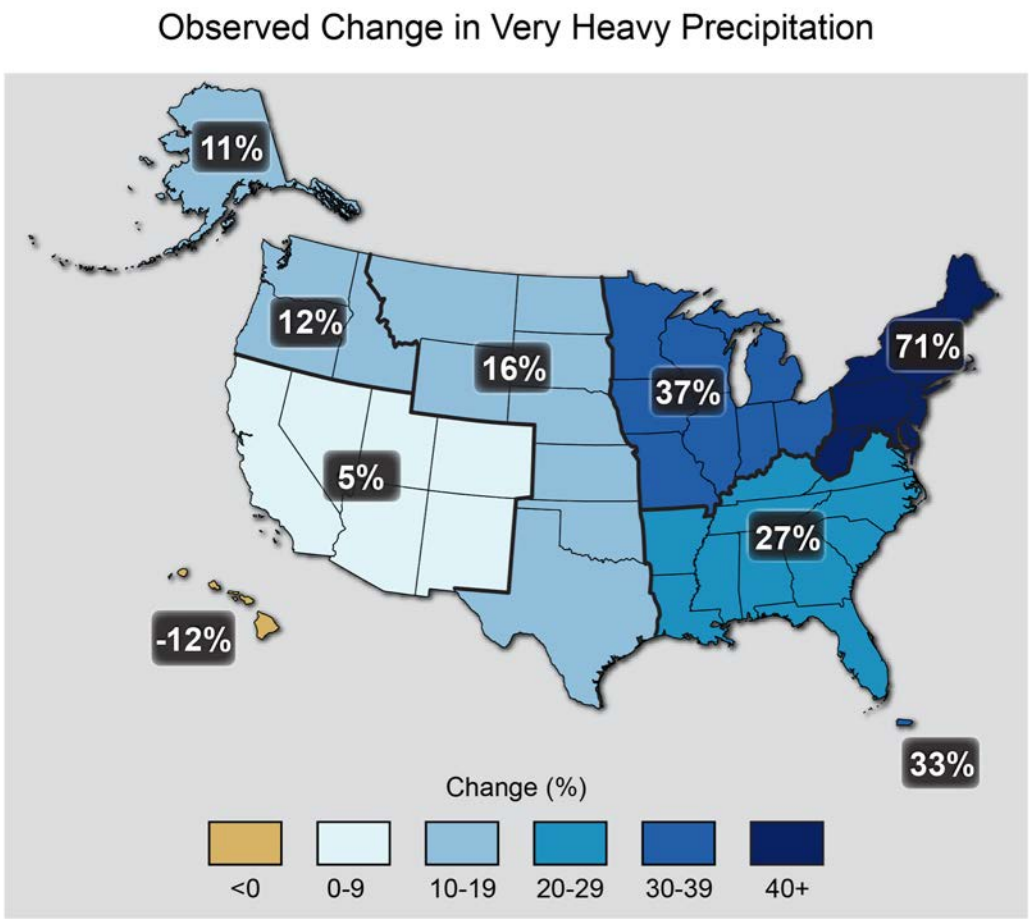
NE Precipitation Trend



Source: NOAA NCDC. Data 1895-2015.

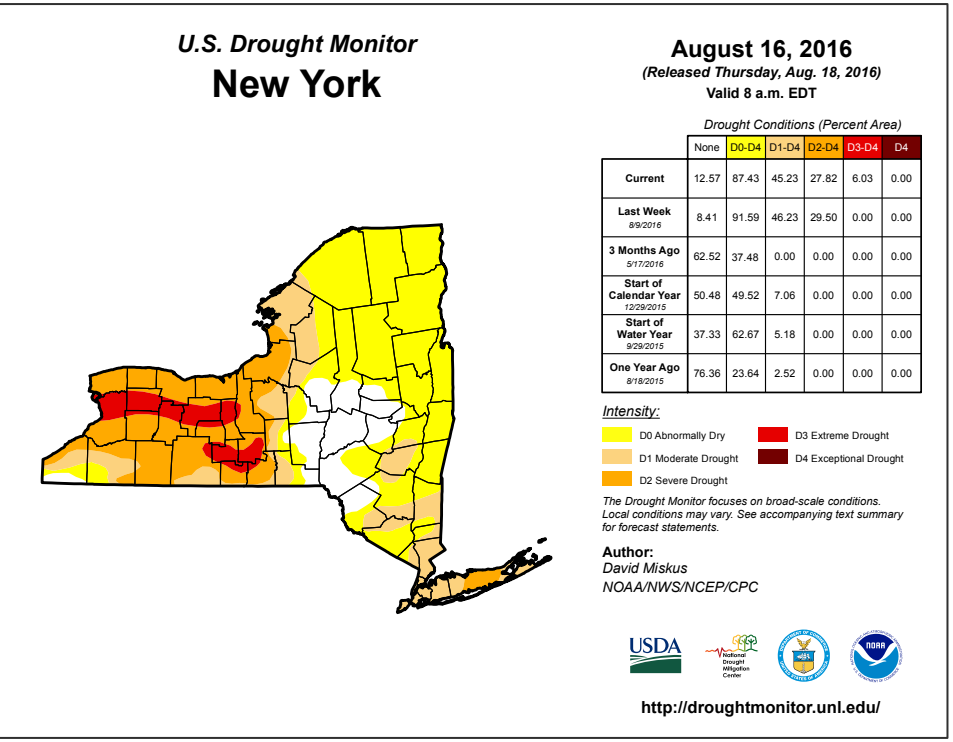
Observed Trends in 1-day Very Heavy Precipitation (1958 to 2012)

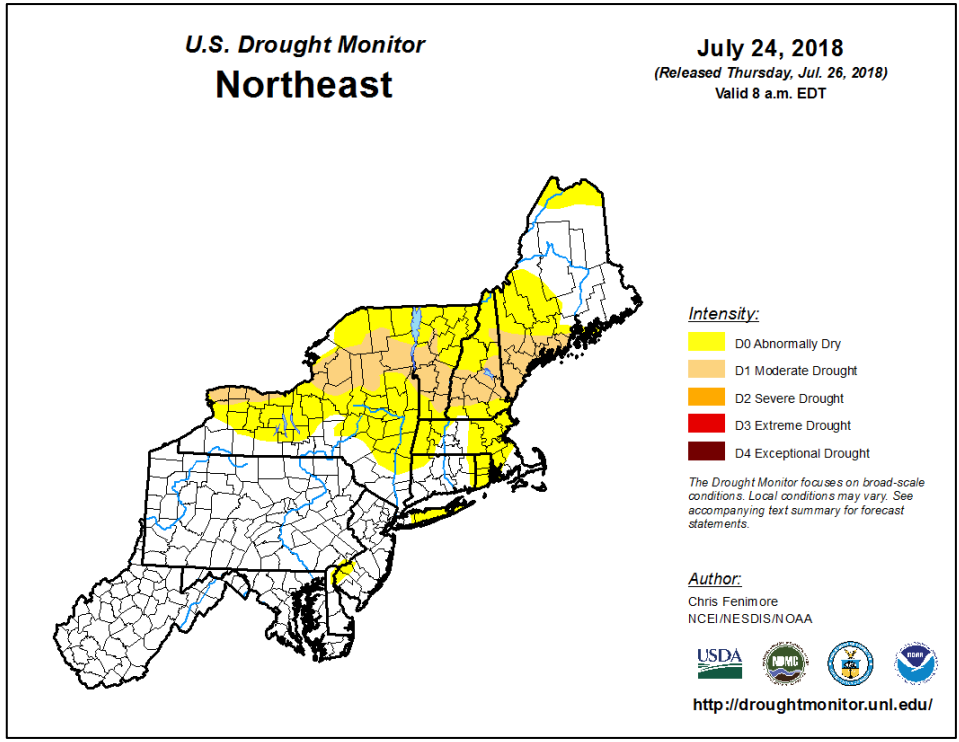
The Northeast has had the greatest increase in heavy precipitation in the United States.



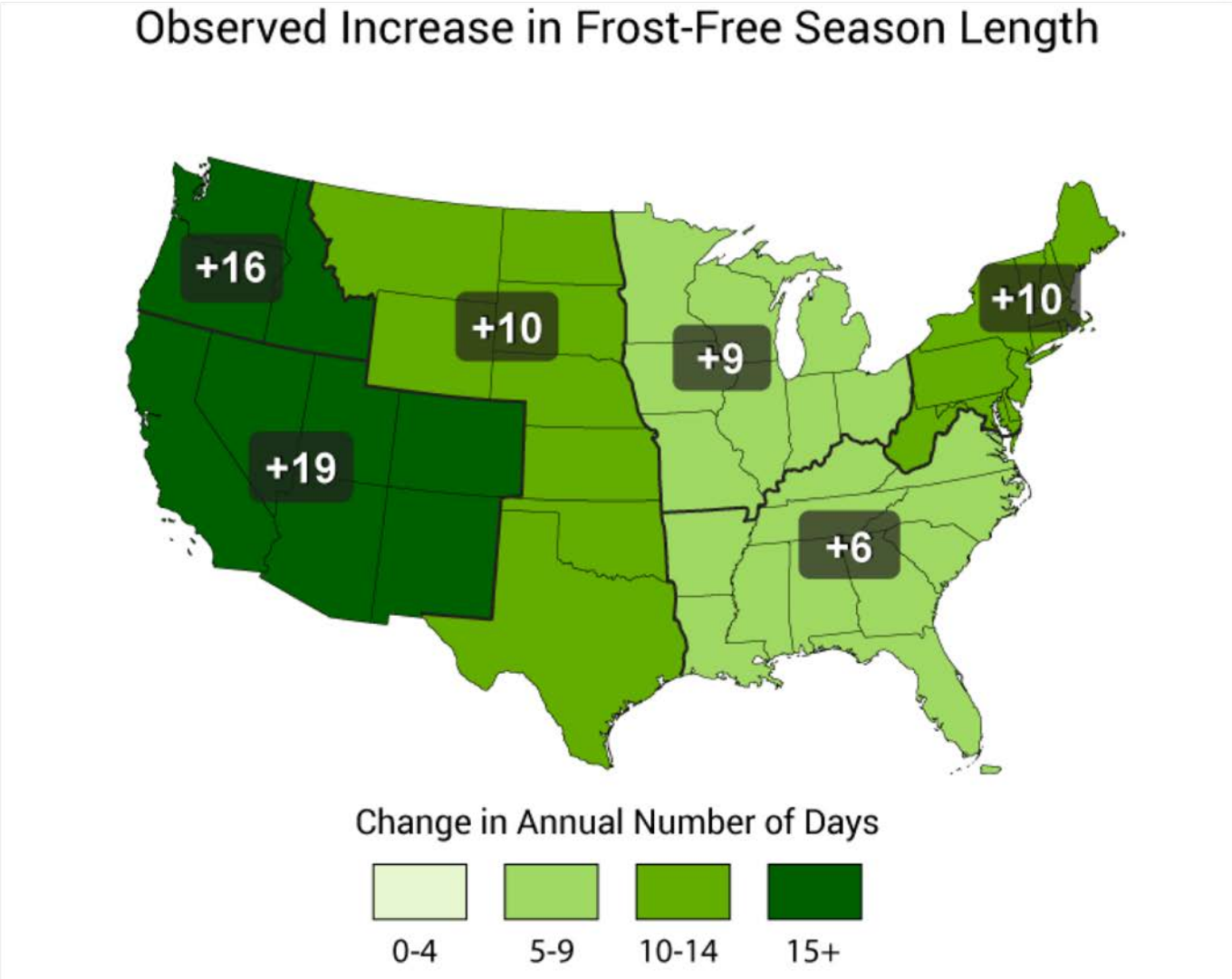
Source: NOAA/NCDC

Short-Term Drought





US Drought Monitor: http://droughtmonitor.unl.edu/



The period between the last occurrence of 32° F in the spring and the first occurrence of 32° F in the fall, has increased in each U.S. region during 1991-2012 relative to 1901-1960. NOAA/NCDC / CICS-NC.

Growing Food: Challenges and Opportunities

Challenges:

- Extreme weather
- Floods
- Droughts
- High temperature stress
- New pests and disease
- Variability & Uncertainty

Opportunities:

- Adequate water
- Longer, warmer growing seasons
- Shifts in productivity elsewhere
- Potential to expand and diversify markets: 22% U.S. population
- Job creation, economic growth

Wolfe et al., 2018.

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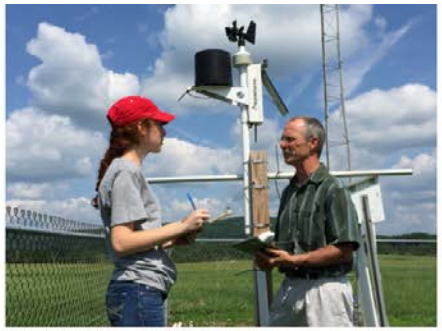
CICSS
Cornell Institute for Climate Smart Solutions

- Formed in 2013
- Working toward resilient and sustainable agricultural, ecological, and social systems in the face of a rapidly changing climate
- Launched Cornell Climate Smart Farming (CSF) Program and CSF Extension Team in 2015



Research

Education/Outreach

Partnerships

climateinstitute.cals.cornell.edu/

Cornell Climate Smart Farming Program Goals

- Increase farm resiliency to extreme weather events, climate variability and change, through assessing risk & adopting BMPs (**adaptation**).
- Increase energy efficiency and renewable energy capacity to reduce GHG emissions and operating costs, and utilize BMPs (**mitigation**).
- Sustainably **increase agricultural productivity** and farming incomes, to contribute to regional & global **food security**.

- Based on FAO definition of CSA

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NE Context Matters:

- Varying Landscapes
- Diversity of Farm Types, Sizes and Crops
- Different Climate Signals

NE: Avg Farm Size MA = 68 acres
http://climatesmartfarming.org/

MW: Avg. Farm Size Kansas = 747 acres
https://mygeohub.org/groups/u2u/tools#U2Utools

SE: Avg Farm Size GA: 228 acres
http://agroclimate.org/

- Decision Tools
- Resources
- Videos
- Extension: Links to NYS CSF Team & Each NE State
- 900 website hits per month

www.climatesmartfarming.org

CSF
Climate Smart Farming

Extension Team

Dr. Kitty O'Neil, Field Crops & Soil Health

Dr. Kim Morrill, Dairy & Livestock

Mary Wrege, Renewable Energy

Laura McDermott, Small Fruit

Sarah Ficken, Dairy and Vegetables

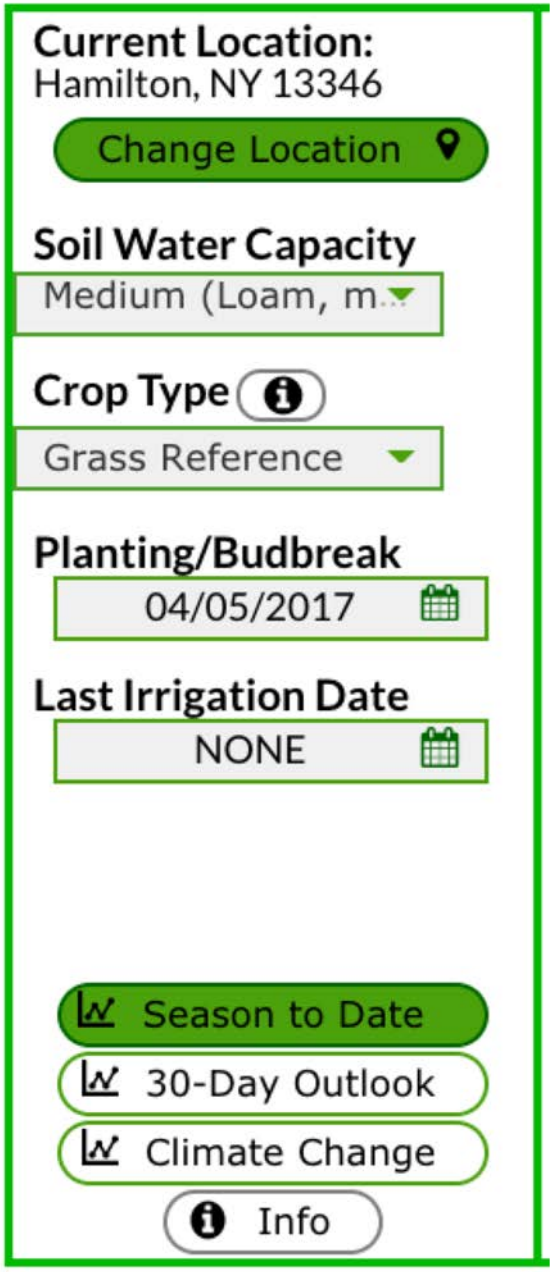
CSF Extension Team works with Cornell Researchers & Cornell Cooperative Extension System:
100s Educators across State, in Every County:
http://climatesmartfarming.org/climate-smart-farming-extension-team/

CSF Video: Oechsner Farm

"A normal season does not seem like it happens any more. It's either really dry, or really wet. It seems like when we get rain, it's apocalyptic…We got 5 inches of rain in about 1.5 hours, and I had a lot of soil loss…I see the impact for generations."

http://climatesmartfarming.org/videos/oechsner-farm/

CSF Tools



- Data:
  - Northeast Regional Climate Center at Cornell (NOAA Funded)
  - 4X4 KM gridded climate data
  - NWS forecasts
  - Agricultural models

- Farmer Input:
  - Location: Any farm location in NE, save multiple locations
  - Planting Date, Crop
  - Choose Season to Date, Last Season, Seasonal Outlook
  - Climate Change Data: in Development
  - Info: Meta Data behind the tools

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Growing Degree Day Tool

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CSF Growing Degree Day Calculator

Climate | Tools | Team | Resources | Videos

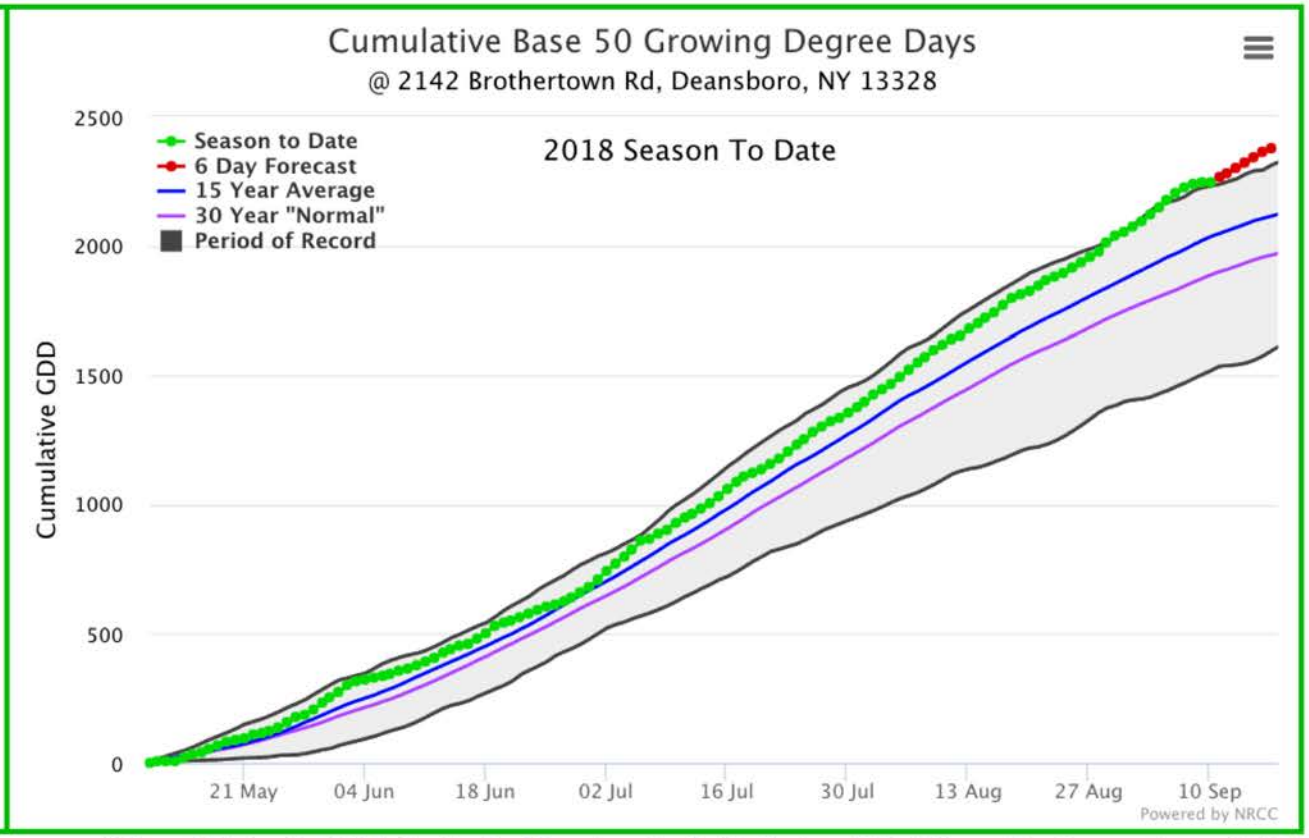
Current Location:
2142 Brothertown Rd,
Deansboro, NY 13328

Change Location

Planting Date:
05/10/2018

GDD Threshold
- (•) Base 50
- ( ) Base 8650

Season To Date
Season Outlook
Climate Change
Info



© Cornell University, 2016. Credits: Tool Developed by Art DeGaetano & Rick Moore. Previous version available here.

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Water Deficit Calculator

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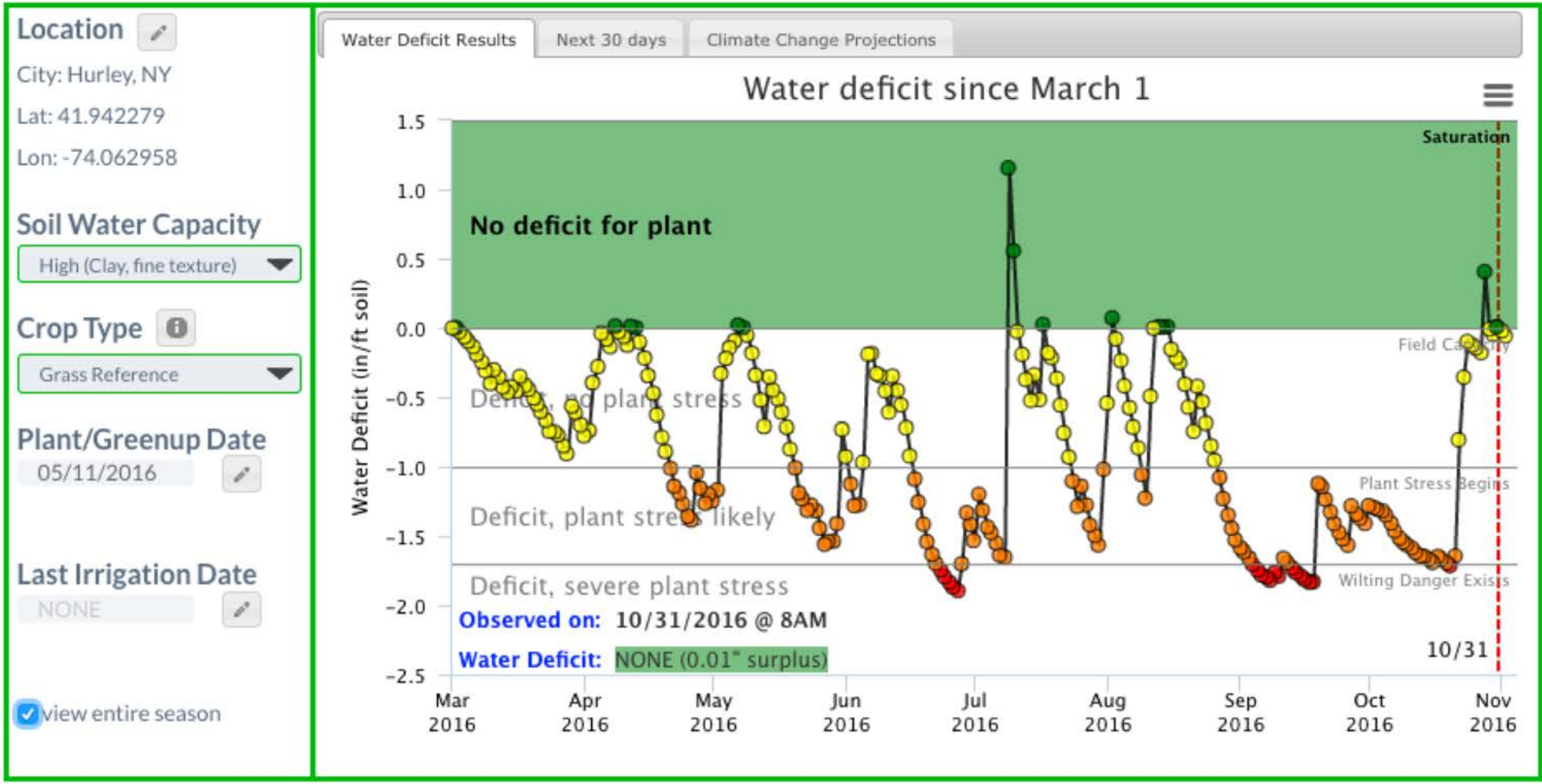

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Apple Freeze Risk Tool

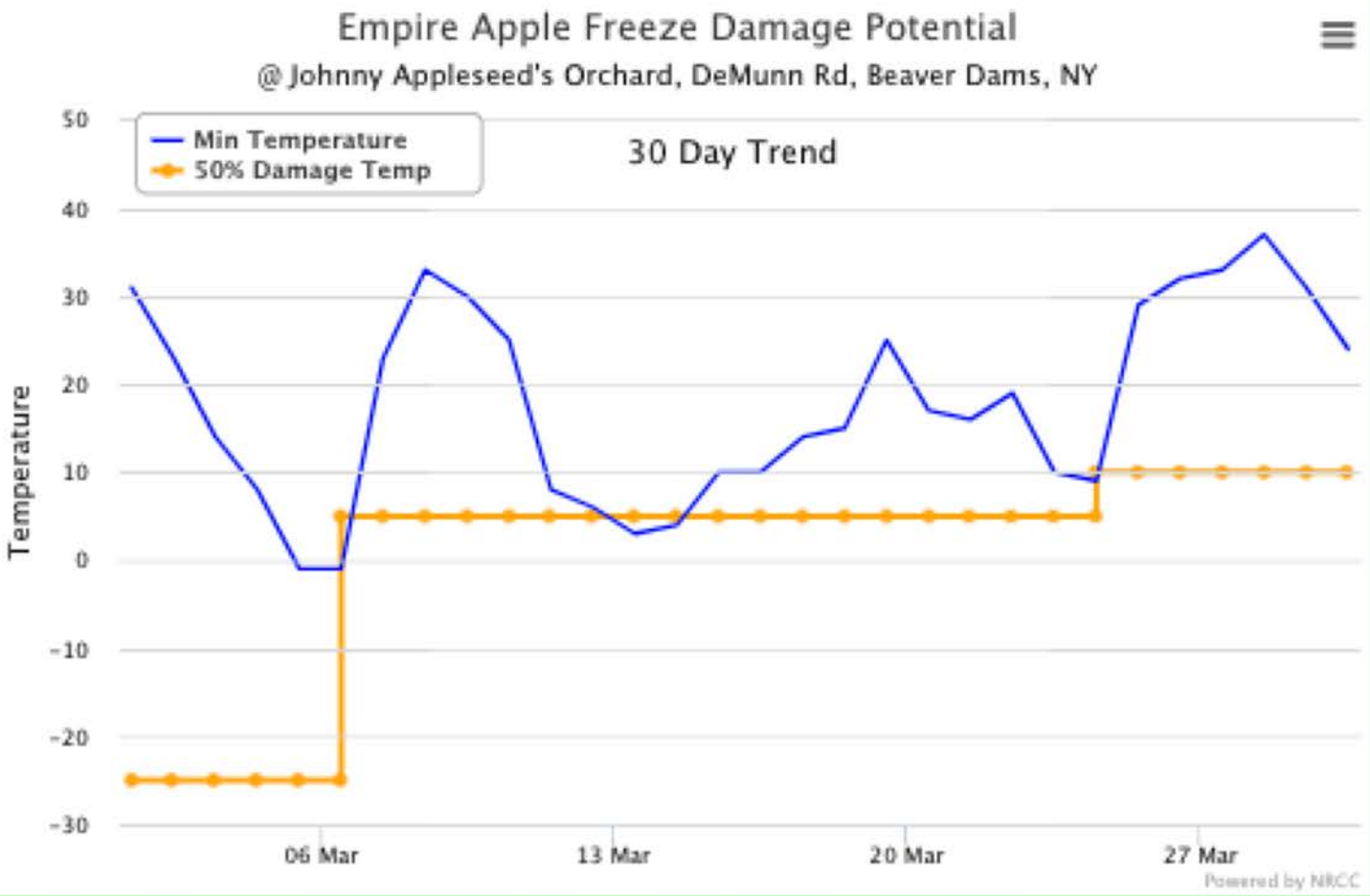
Current Location :
Johnny Appleseed's Orchard
DeMunn Rd, Beaver Dams, NY
Latitude : 42.282480
Longitude : -76.934862

Change Location

Date of Interest:
2017-03-15

Apple Variety
- (•) Empire
- ( ) McIntosh
- ( ) Red Delicious

Full Season



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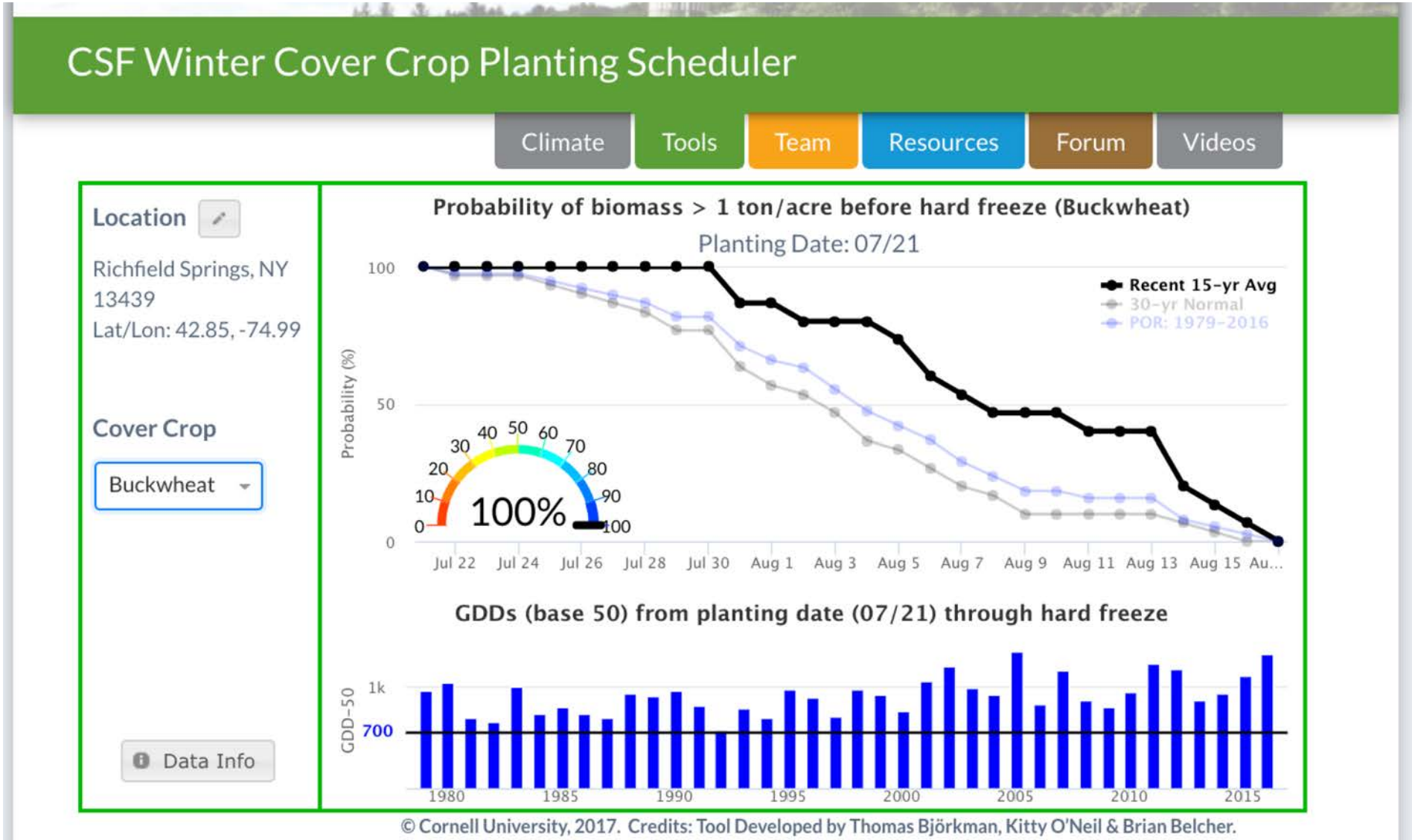
Cover Crop Scheduler



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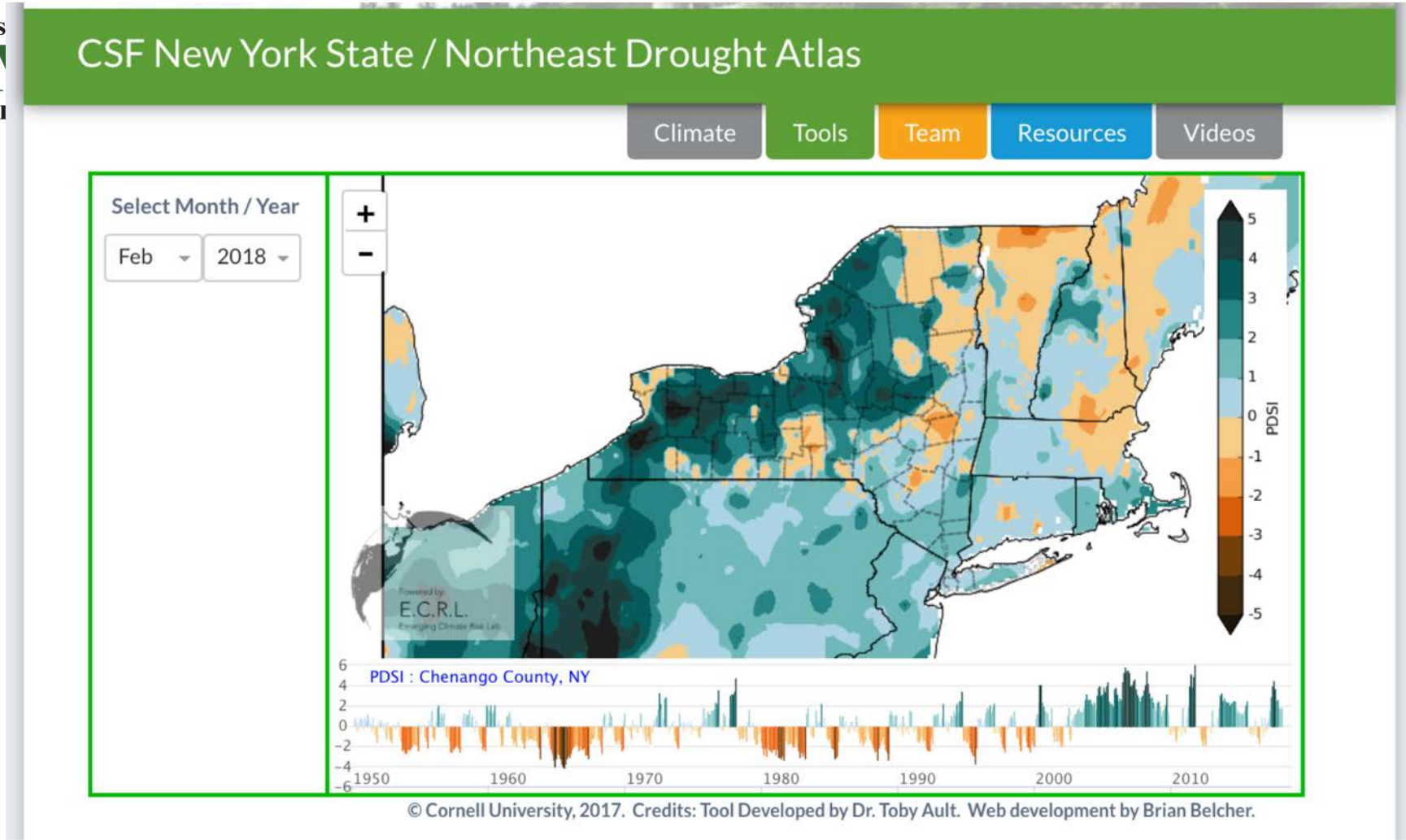

- Maps Palmer Drought Severity Index, updated every month
- Experimental forecasts in development

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In Development: Climate Change in my County

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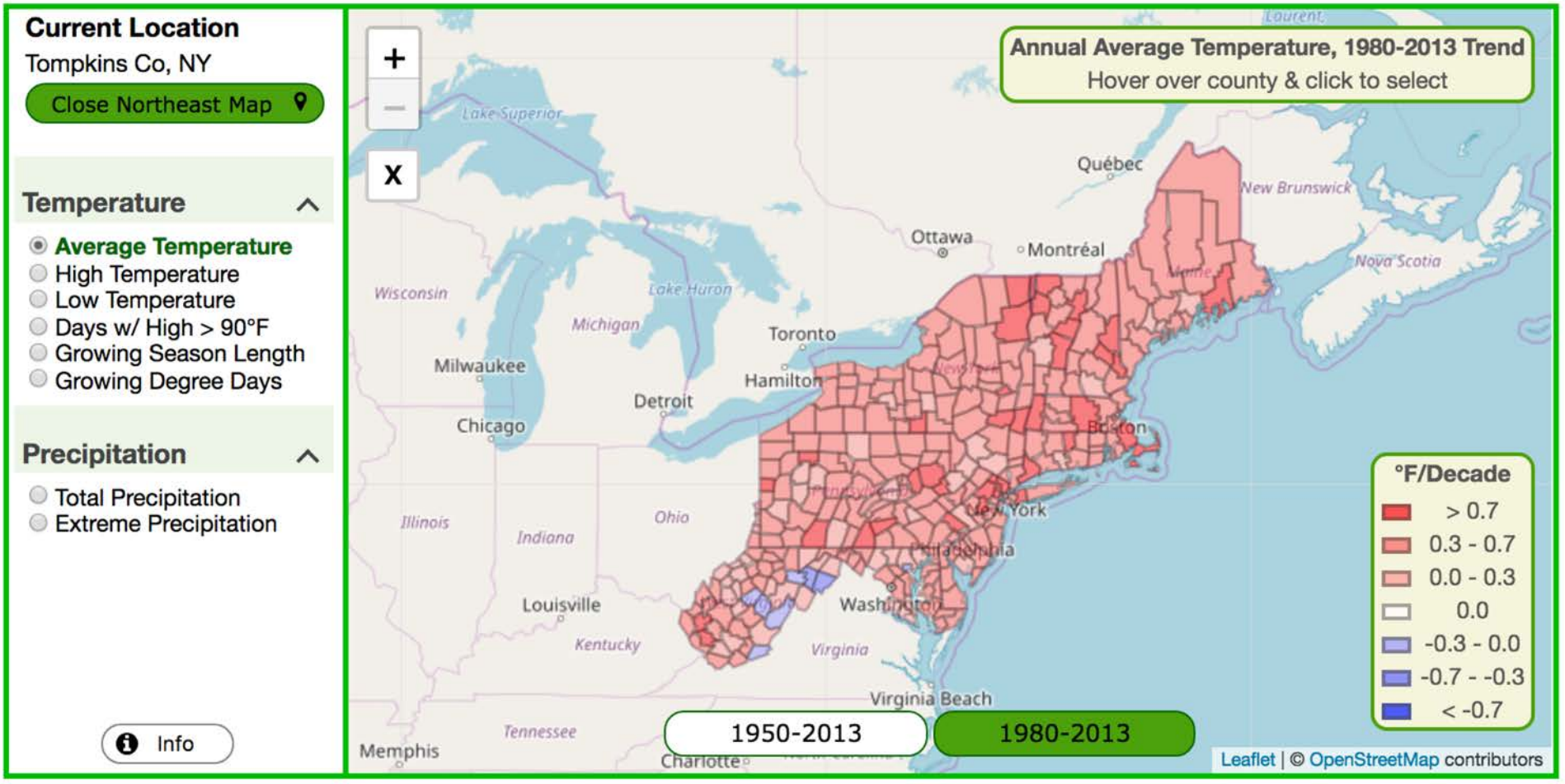

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Our Sister Site newa.cornell.edu

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Cornell University

Search Cornell

New York State Integrated Pest Management Program

NEWA Network for Environment and Weather Applications

Website status:
No problems reported
9/11/2018 6:26:31 AM

Weather Data | Pest Forecasts | Station Pages | Crop Management | Crop Pages | Weather Stations | Help

National Weather Service Forecast

Enter "City, ST" or "zip code"
City,ST Go

About NEWA

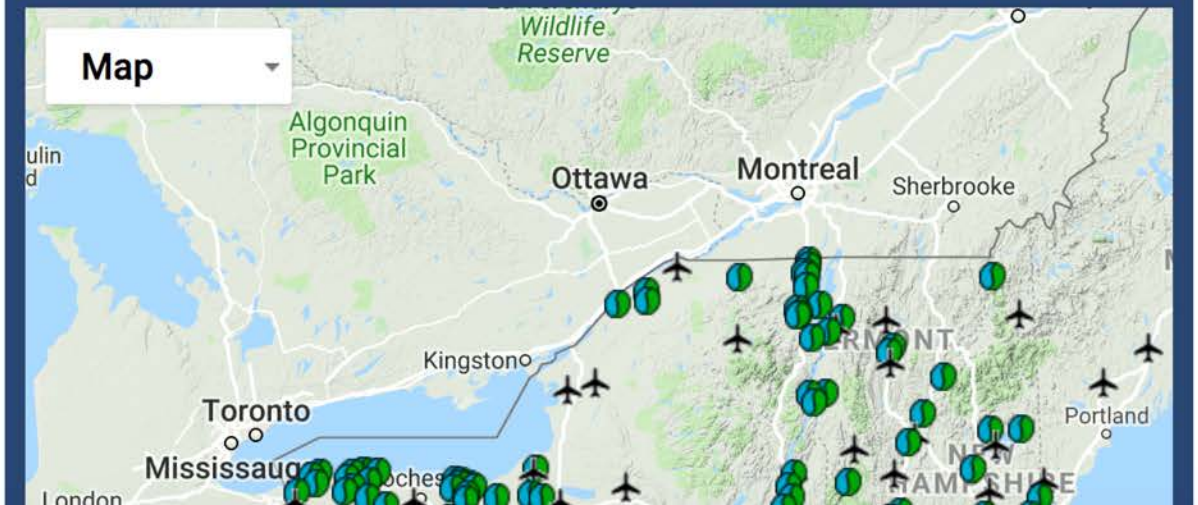
About NEWA
Contact Us
NEWA Press Releases & Reports
Vision Statement
Your NEWA Blog

Other Weather Data Sources

6-10 Day Outlook (NWS)

Welcome to the NEWA Home Page

Click on a map marker to go to the weather station's home page.



NEWA Toolbox Webinar

Dr. Juliet Carroll: May

http://www.northeastipm.org/ipm-in-action/the-ipm-toolbox/webinar-recordings/

Thank you. Any Questions?

Allison Chatrchyan, amc256@cornell.edu
Cornell Institute for Climate Smart Solutions
Climate Smart Farming Program:
climatesmartfarming.org

Find a Colleague

- To post a profile about yourself and your work:

  http://neipmc.org/go/APra

- "Find a Colleague“ site

  http://neipmc.org/go/colleagues

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Archive of Today's Webinar

on demand

http://www.neipmc.org/go/ipmtoolbox

Cornell Climate Smart Farming

Toolbox Webinars

Pest Management in No-till Corn Silage Systems – with an introduction to NE SARE funding programs & resources

Tuesday, September 25, 2018. 2:00 pm – 3:00 pm

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2019 RFA now available

- http://neipmc.org/go/PaGs

Acknowledgement

This presentation was funded by the Northeastern IPM Center through Grant #2014-70006-22484 from the National Institute of Food and Agriculture, Crop Protection and Pest Management, Regional Coordination Program.

USDA

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National Institute of Food and Agriculture

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