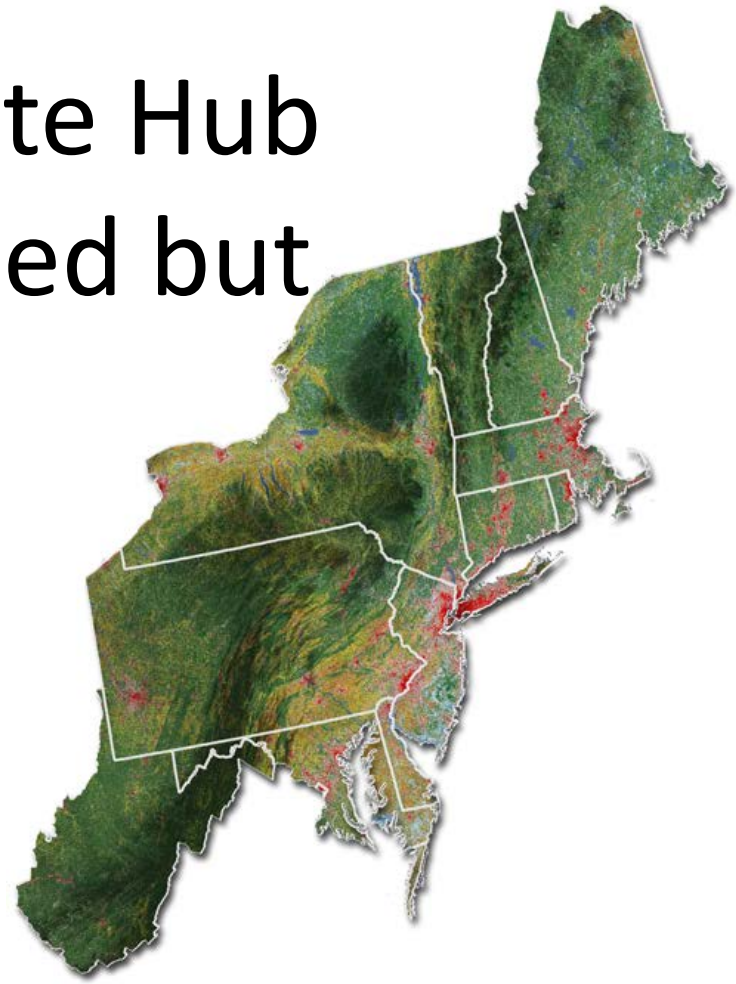
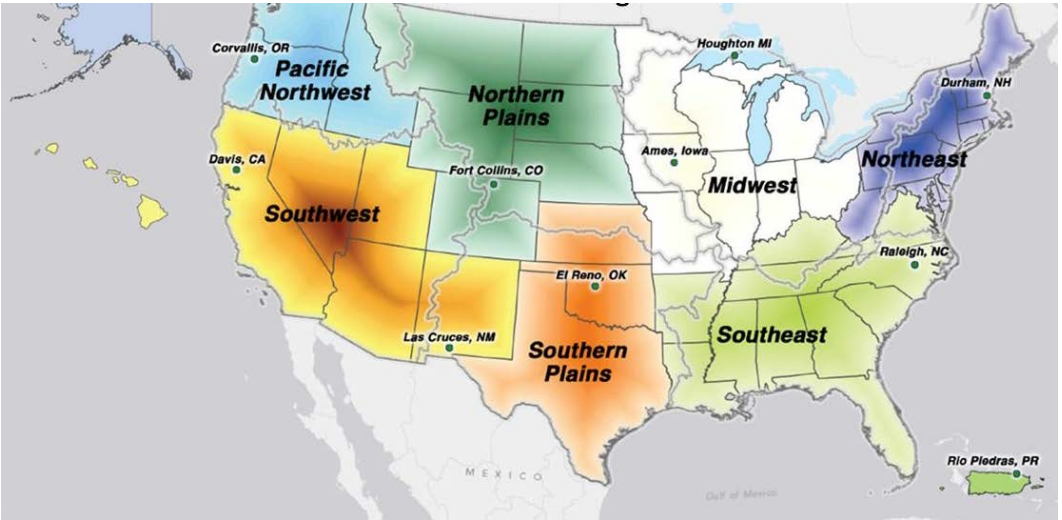
USDA Northeast Climate Hub turns 1: Lessons Learned but will we see 3?

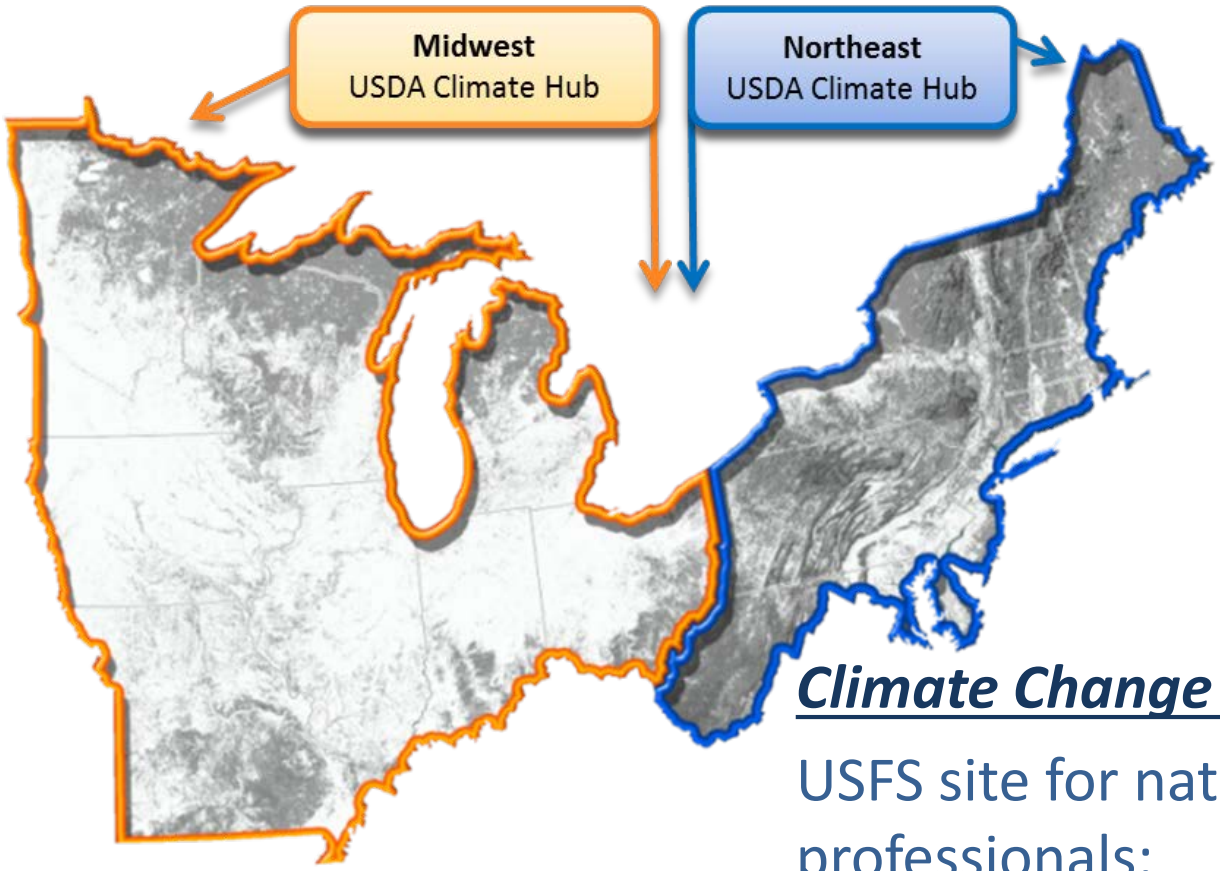




Regional Hubs for Risk Adaptation and Mitigation to Climate Change

Northern Forests Sub Hub

…provides additional capacity and expertise on forests to the Midwest and Northeast Hubs.



Climate Change Resource Center:

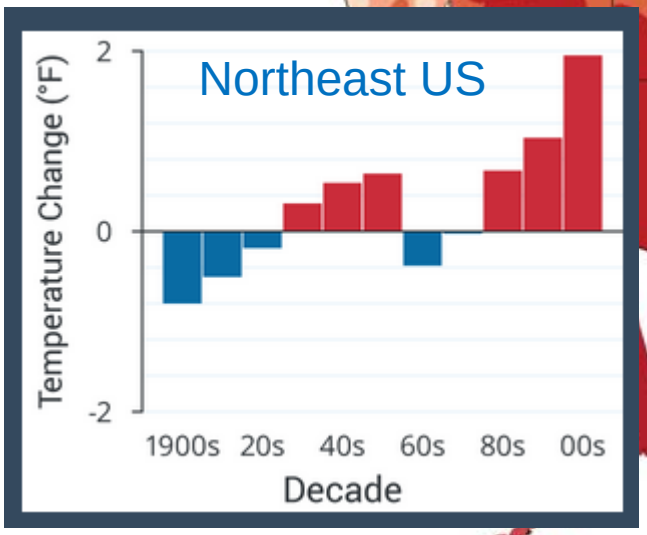
USFS site for natural resource professionals:
www.fs.usda.gov/ccrc/

USDA United States Department of Agriculture

WHY Hubs?

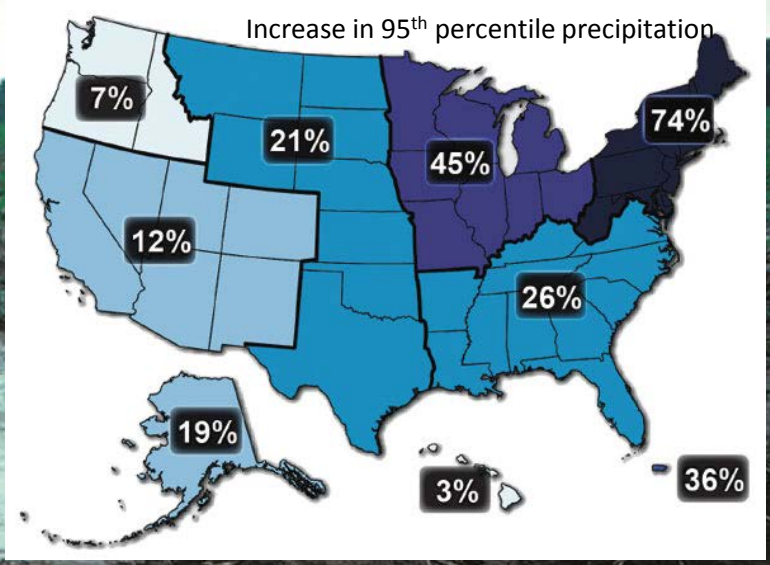
The Climate is already changing…

2014 was the hottest year on record globally, and temperatures from 2001 to 2012 were warmer than any previous decade in every region of the United States.



2014 was 0.01 C above that of the next warmest year (2010) but by much less than the margin of uncertainty (0.05 C). Therefore it is impossible to conclude which of 2014, 2010, or 2005 was actually the warmest year.

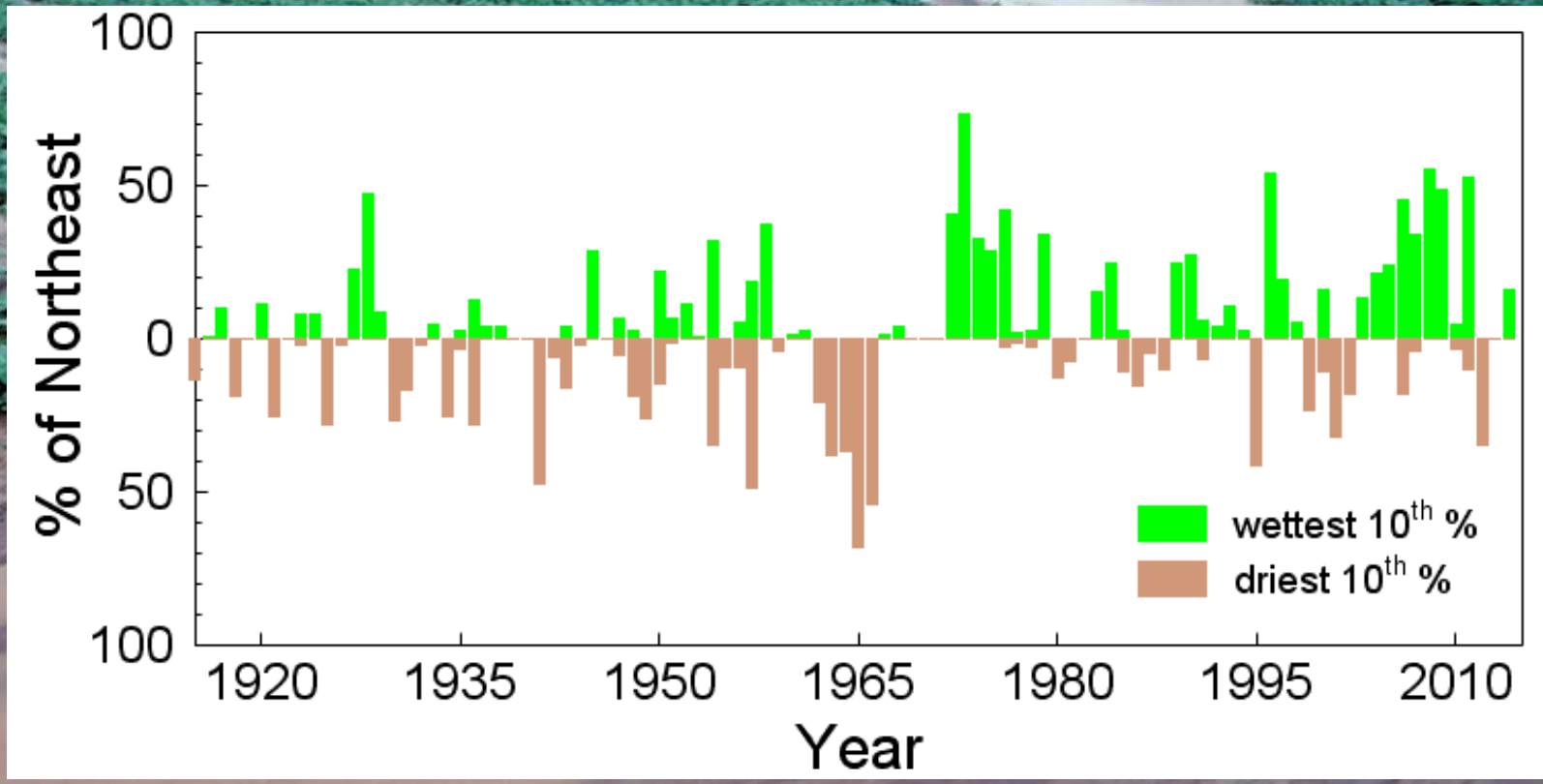
Hub focus is on recent changes in the NE climate: 1984-2013



- Greater rainfall intensity, increased precipitation
- Earlier snowmelt and leaf-out, longer growing season
- Higher daily max and min temperatures
- 15% increase in atmospheric CO_2

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

Wetter and Drier??



EXTREME WEATHER COMES AT A COST

CLIMATE AND WEATHER DISASTERS IN 2012 ALONE COST THE AMERICAN ECONOMY MORE THAN $100 BILLION

$30 BILLION

U.S. DROUGHT/HEATWAVE

ESTIMATED ACROSS THE U.S.

$65 BILLION

SUPERSTORM SANDY

ESTIMATED

$11.1 BILLION

COMBINED SEVERE WEATHER

ESTIMATED FOR INCIDENTS ACROSS THE U.S.

$1 BILLION

WESTERN WILDFIRES

ESTIMATED

$2.3 BILLION

HURRICANE ISAAC

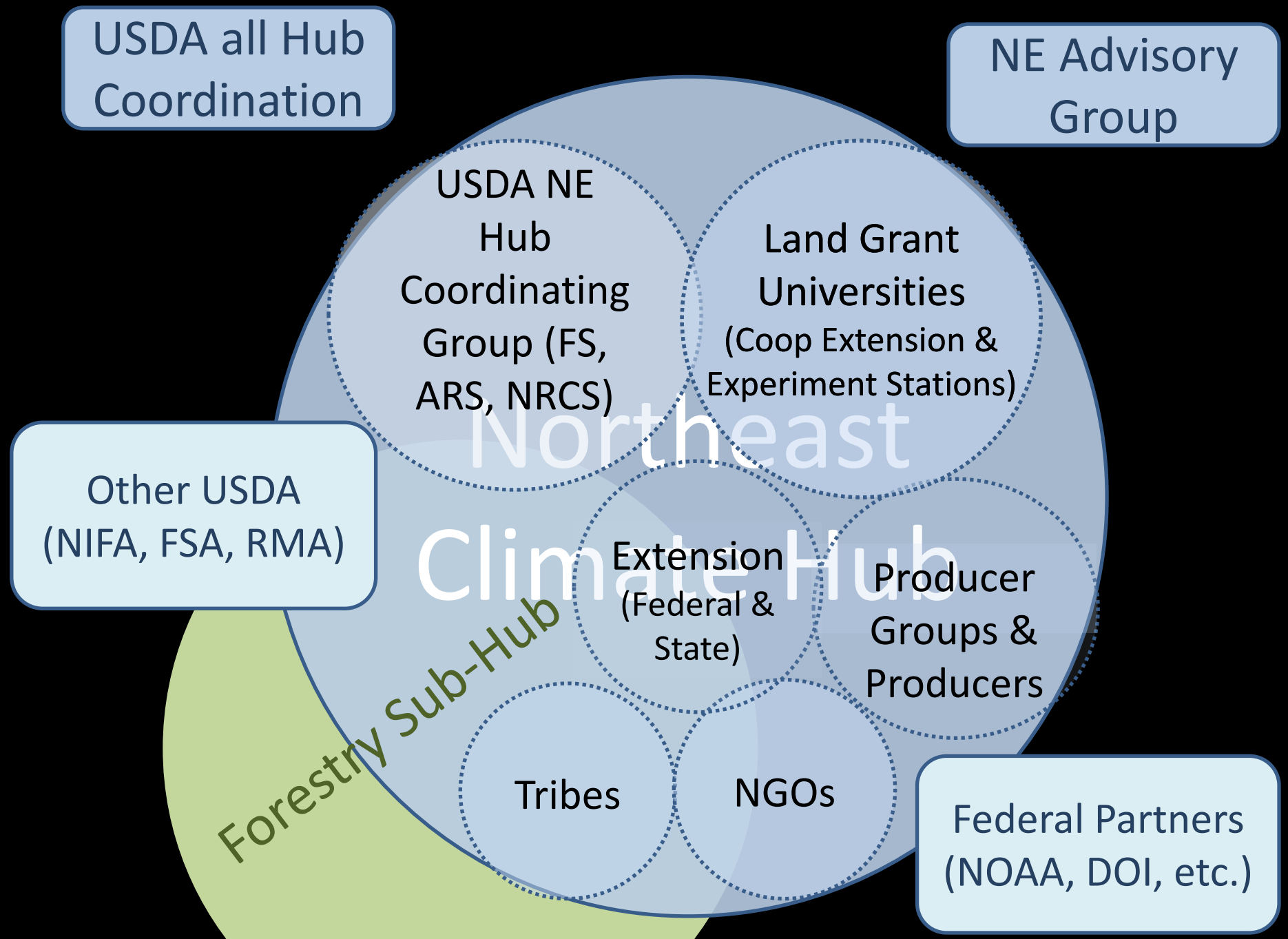
ESTIMATED

Mission: To develop and deliver science-based, region-specific information and technologies to agricultural and natural resource managers that enable climate-smart decision-making and provide assistance to enable land managers to implement those decisions.

Not Science but *Technology Transfer*

- Providing **Information**, **Tools**, & **Practices** to farmers and forest owners to assist them in achieving their goals, whatever the climate

- Hub Focus is on *what's happening now*.


USDA all Hub Coordination
NE Advisory Group
USDA NE Hub Coordinating Group (FS, ARS, NRCS)
Land Grant Universities (Coop Extension & Experiment Stations)
Northeast Climate Hub
Other USDA (NIFA, FSA, RMA)
Extension (Federal & State)
Producer Groups & Producers
Forestry Sub-Hub
Tribes
NGOs
Federal Partners (NOAA, DOI, etc.)



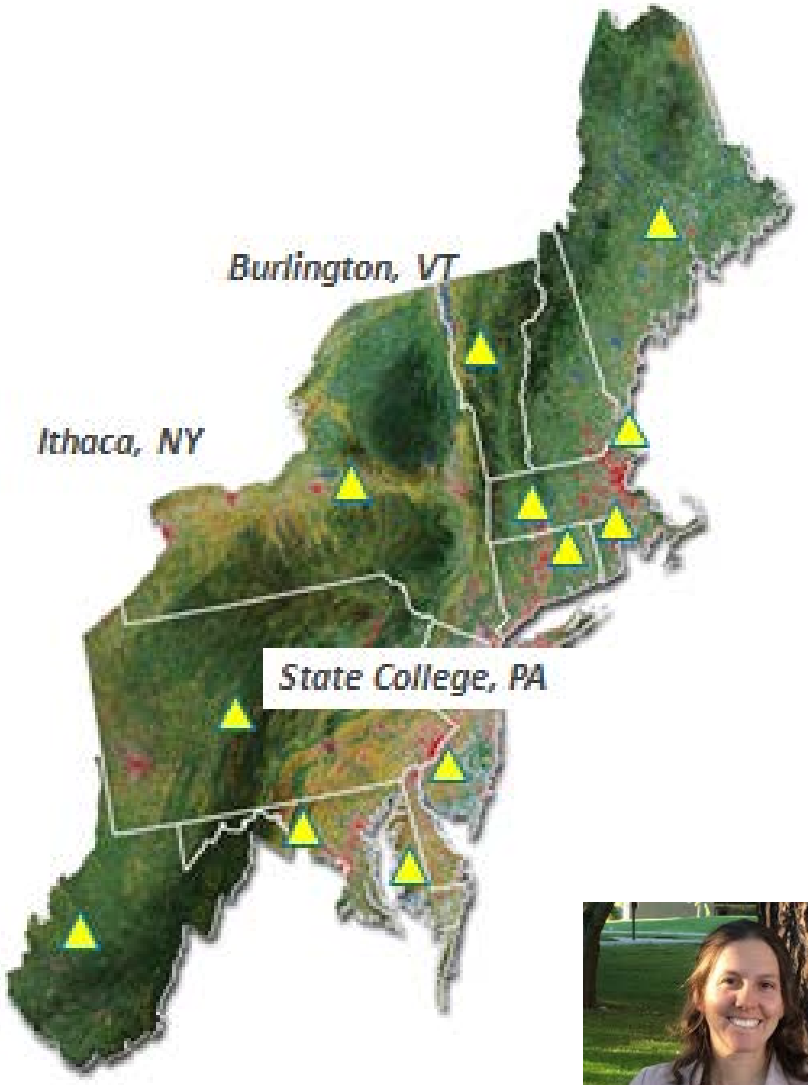



• Donna Gibson, ARS	Biological control	Tribal Relations
• Leon Kochian, ARS	Genomics of stress	Workplan, Big data
• Pete Kleinman, ARS	Nutrient management	Chesapeake Bay
• Lynn Knight, NRCS	Economics	State Conservationists
• Howard Skinner, ARS	Pasture GHG management	Vulnerability Assessment
• Darren Hickman, NRCS	Director, Eastern Tech Cen	eXtension
• Lindsey Rustad, FS	Forest Impacts	Website
• Holli Kuykendall, NRCS		Webinars
• Katrina Krause, FS		Administration
• Susan McGrane, FS		Finance & Budgeting
• Karrah Kwasnik, UNH		Website
• Chris Swanston, FS	Soil C	Director, Forestry Sub-hub
• Maria Janowiak, FS		Forestry Sub-hub
• Patricia Butler, MTU		Forestry Sub-hub
• Danielle Shannon		Forestry Sub-hub
• Erin Lane, FS	Fire planning	University Partnerships
• David Hollinger, FS	Forest C cycle	Federal Partnerships

Partnership Agreements

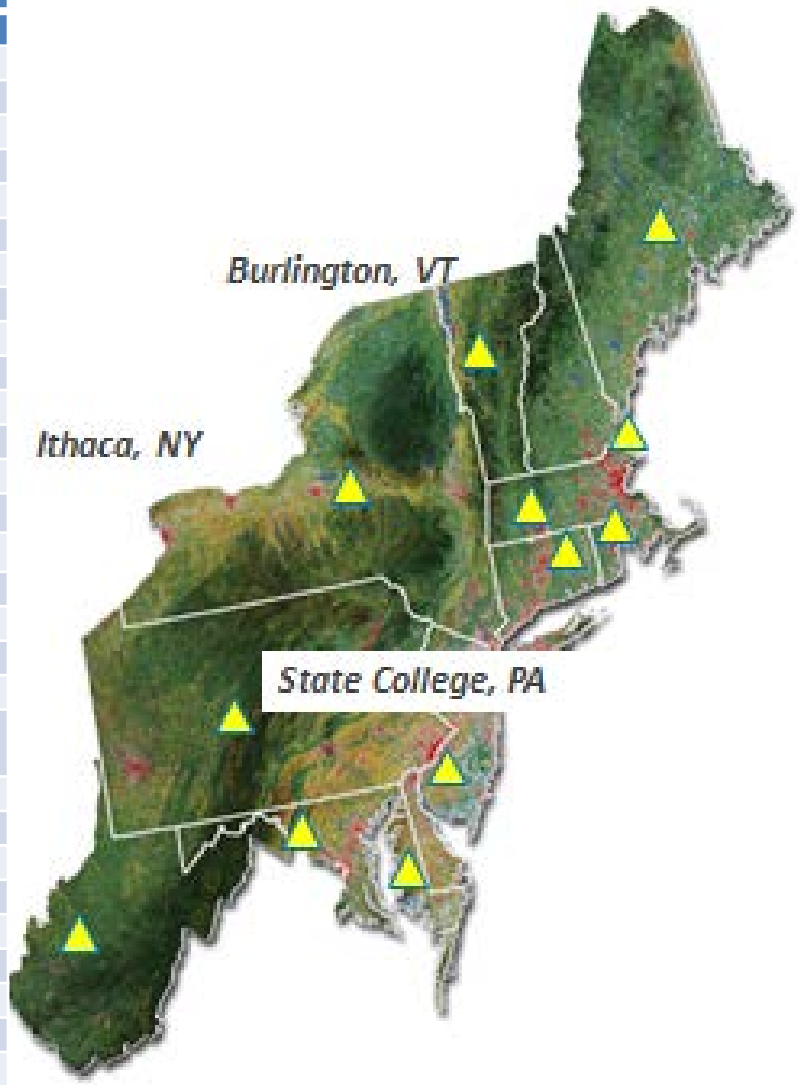
Agreements With Extension and Experiment Station Directors in each State:

- University of Connecticut
- University of Delaware
- University of Maine
- University of Maryland
- University of Massachusetts
- University of New Hampshire*
- Rutgers University
- Cornell University*
- Pennsylvania State University*
- University of Rhode Island
- University of Vermont*
- University of West Virginia



Partnership Agreements - POCs

University Partners Network: Points of Contact, Team Members		
State/Agency/University	Contact	Email
Connecticut: UConn	Tom Morris	Thomas.Morris@uconn.edu
	Jude Boucher	Jude.Boucher@uconn.edu
Delaware: UD	Jennifer Volk	jennvolk@udel.edu
	Michelle Rodgers	mrodgers@udel.edu
Maine: UME	Ivan Fernandez	ivanjf@maine.edu
	Fred Servello	fred.servello@maine.edu
Maryland: UMD	Paul Leisnham	leisnham@umd.edu
	Adel Shirmohammadi	ashirmo@umd.edu
Massachusetts: UMASS	Pat Vittum	pvittum@umass.edu
New Hampshire: UNH	Ted Howard	Ted.Howard@unh.edu
	Ken LaValley	ken.lavalley@unh.edu
	Jon Wraith	jon.wraith@unh.edu
	Chris Keeley	Chris.Keeley@unh.edu
New Jersey: Rutgers	Marjorie Kaplan	kaplan@envsci.Rutgers.edu
New York: Cornell	Allison Chatrchyan	amc256@cornell.edu
	Mike Hoffmann	mph3@cornell.edu
	Shorna Allred	srb237@cornell.edu
	Deb Grantham	dgg3@cornell.edu
Pennsylvania: Penn State	Rama Radhakrishna	brr100@psu.edu
	Gary Thompson	gat10@psu.edu, sfb11@psu.edu
	Daniel Tobin	dbt127@psu.edu
Rhode Island: URI	Bill Buffum	buffum@uri.edu
Vermont: UVM	Joshua Faulkner	Joshua.Faulkner@uvm.edu
	Kate Westdijk	katherine.westdijk@uvm.edu
	Ernesto Mendez	Ernesto.Mendez@uvm.edu
West Virginia: WVU	Jim Anderson	wetland@wvu.edu
Washington, D.C.:UDC	Elgloria Harrison	eharrison@udc.edu
NERA	Dan Rossi	rossi@AESOP.Rutgers.edu
NEED	Nancy Bull	nancy.bull@uconn.edu



USDA United States Department of Agriculture

University Partners Network

Information Sharing and Exchange

- Connect the hub with stakeholders
- Engage students
- Project tasks

University Collaborations

Stakeholder Risk

- Vulnerability assessment: synthesis.
- Literature review of stakeholder views.
- Survey to assess perceived risks.

University Collaborations

Capacity Discovery

A survey to identify current research and extension activities:

- what is happening relative to climate change and agriculture
- where are the gaps

Northeast Climate Hub - Year 1

USDA Priorities - Year 1

- Assess regional vulnerabilities to identify most pressing issues
- Develop Partnerships – NE Land Grants
- Establish web presence
- Work with other agencies in this space (i.e. Dept. of Interior and NOAA)
- Write workplan

Ag & Forestry Vulnerability Assessments

Top Priority for the USDA Climate Hubs in year one.
In the NE, led by Penn State (Dan Tobin) and Forestry Sub-Hub

USDA United States Department of Agriculture

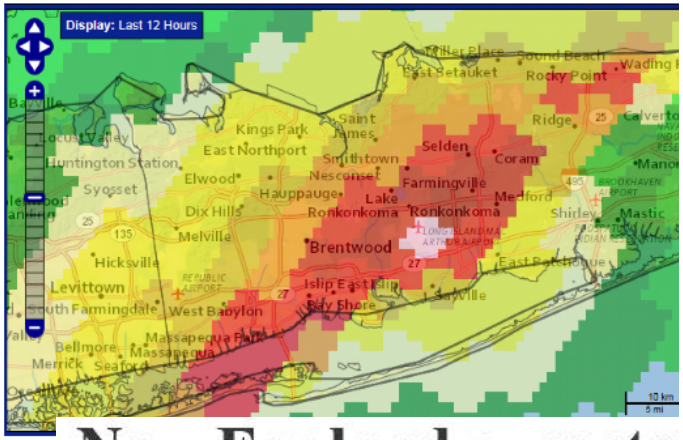
Highlights from the Vulnerability Assessments

- Threats:
  - Extreme precipitation
  - Drought
  - Frost after early spring
  - Pests
- Opportunities:
  - Longer growing season
- Vulnerabilities:
  - Tree fruit, maple syrup
  - Vegetables & field crops
  - Heat stress in cows

Capital Weather Gang

Astounding, record-smashing rainfall swamps Long Island; 11 inches in 3 hours

By Jason Samenow August 13, 2014



Doppl

The New York Times

Long Island Confronts Destructive Southern Pine Beetles

By TATIANA SCHLOSSBERG OCT. 28, 2014

It happens all over the South, and started in New Jersey more than a decade ago: the needles fading from green to yellow to red until the tree dies. It is the work of southern pine beetles, which invade the bark, lay eggs that hatch into larvae and hijack the tree's circulatory system, stealing its nutrients.

The beetles made their first appearance

a pitch pine at the Wertheim National Wildlif
ant for The New York Times

New England expects decent supply of apples after dismal 2012

Northeast Climate Hub Next Steps

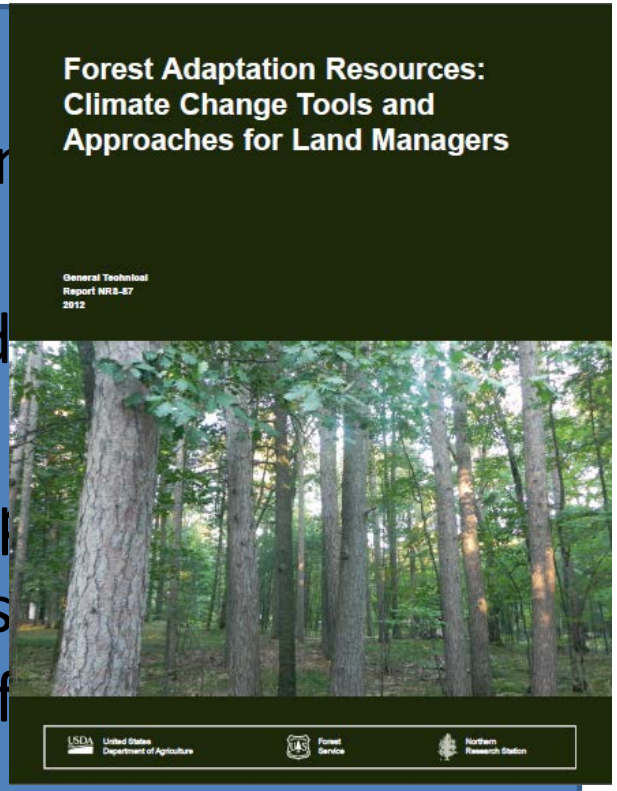
Priorities - Year 2

- Finding and cataloging adaptation information, practices, and examples
  - University Capacity Discovery Project
  - National effort to catalog Tools
- Seeking to understand Stakeholders needs & desires
- Working with eXtension America's Research-based Learning Network® to develop material for outreach specialists (next mode of expansion)
- Testing approaches to engage landowners – forestry adaptation workbook (NIACS CCRF)

Forests – Climate Change Response Framework

NIACS GTR NRS87

1. Identify location, ecosystems, and tir
2. Establish partnerships.
3. Assess ecosystem vulnerabilities and
potential.
4. Compile adaptation strategies and ap
5. Plan and implement at appropriate s
6. Integrate monitoring and evaluate ef



- Favor existing species that are expected to be better adapted to future conditions.
- Alter structure or composition to reduce risk or severity of fire.

Ag lands – Adaptation strategies (increasing resilience to climate variability)

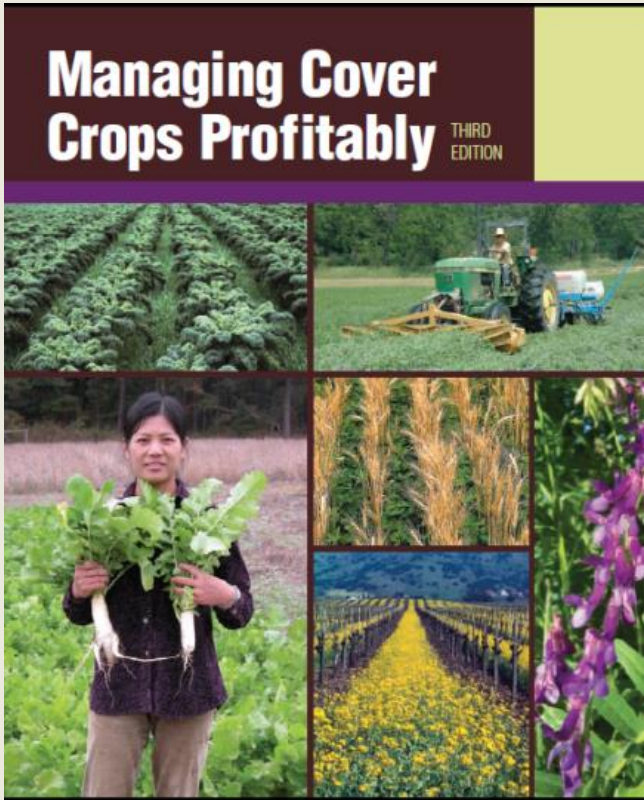
- Extreme Precipitation
  - Cover crops
  - Drainage
  - Tunnel houses
- Drought
  - Water containment, irrigation
  - Soil health
- Pests & disease
  - Better, faster information (warning systems, apps)
- Late frosts
  - New varieties?

Many existing NRCS Programs increase resilience to climate variation or help via mitigation

- Soil Health & Cover crops
- Riparian Buffers
- Reduce GHG emissions via
  - Improved Energy efficiency
  - Increasing soil organic matter
  - Reducing methane & nitrous oxide losses

Keep it Covered as Much as Possible

- Control Erosion
- Protect Soil Aggregates
- Suppresses Weeds
- Conserves Moisture
- Cools the Soil
- Provides Habitat for Soil Organisms



David Lamm, "Soil Health Farming in the 21st Century: a practical approach to improve Soil Health Planning Principles"

The Science of Conservation, We Deliver!

NRCS East NTSC

Lessons Learned

- Know your audience
  - Conservation Districts vs. Commissions
  - West Virginia University
  - CT Experiment Station
  - Organic farmers & Conservationists vs. Dairy farmers & Loggers
- Partner with someone smarter (and better looking) than you
- Use (& support) existing knowledge & resources
  - NIACS, NRCS
  - Universities

Challenges (will we see 3?)




- **Climate Change is a low priority for many producers (How do we reach producers & land owners?)**
- **Politically Charged Topic (How do we engage across the spectrum?)**
  - **President's Program**
- **Silos within USDA**
  - **ARS vs FS vs NRCS**
  - **All Hubs must be successful**

USDA

Chief Tom Tidwell

Senate Testimony 2/27/15

"Our researchers will provide managers with the knowledge they need to make sound risk-based decisions to take restorative actions, partly through the Regional Hubs for Risk Adaptation and Mitigation to Climate Change."