

USDA, NRCS and Climate Smart Agriculture: Reducing GHG's, Increasing Resilience, and Maintaining Productivity on Working Lands



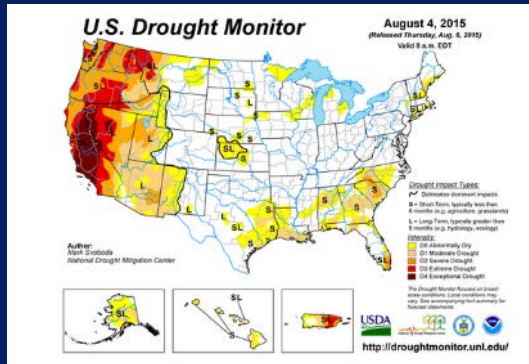
USDA United States
Department of
Agriculture
Natural Resources Conservation Service



Michael A. Wilson, PhD
National Leader for Climate Change
USDA – Natural Resources Conservation Service

Air Quality Task Force Meeting
Sacramento, CA
September 8, 2016

Climate Change Impacts are occurring



A study in the journal Climate Change found:

“found that even members of the public who are “alarmed” about a warming planet show relatively low levels of public-sphere action...”

C. Harvey, Washington Post, May 2016



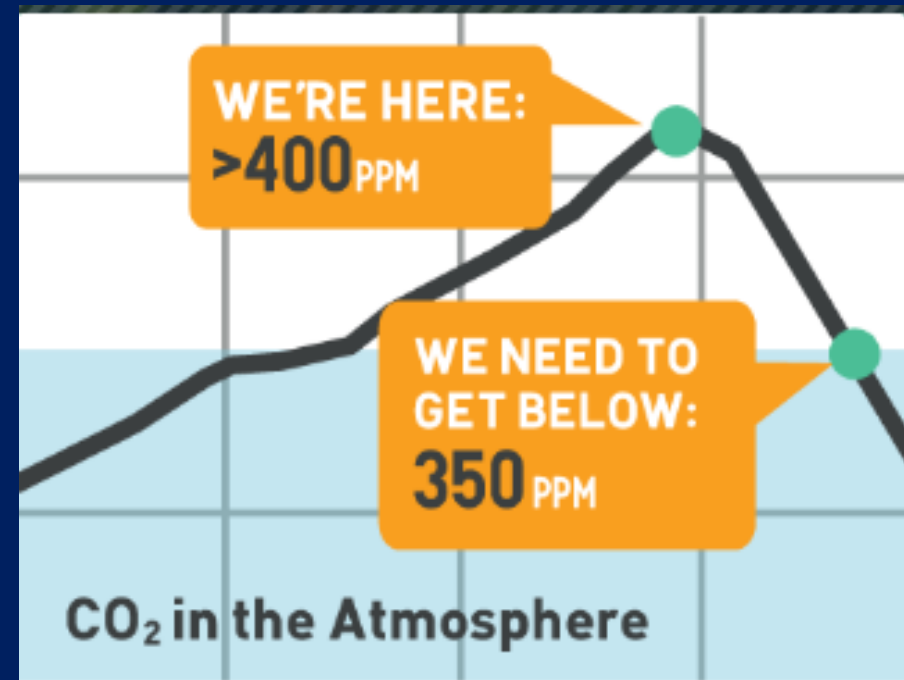
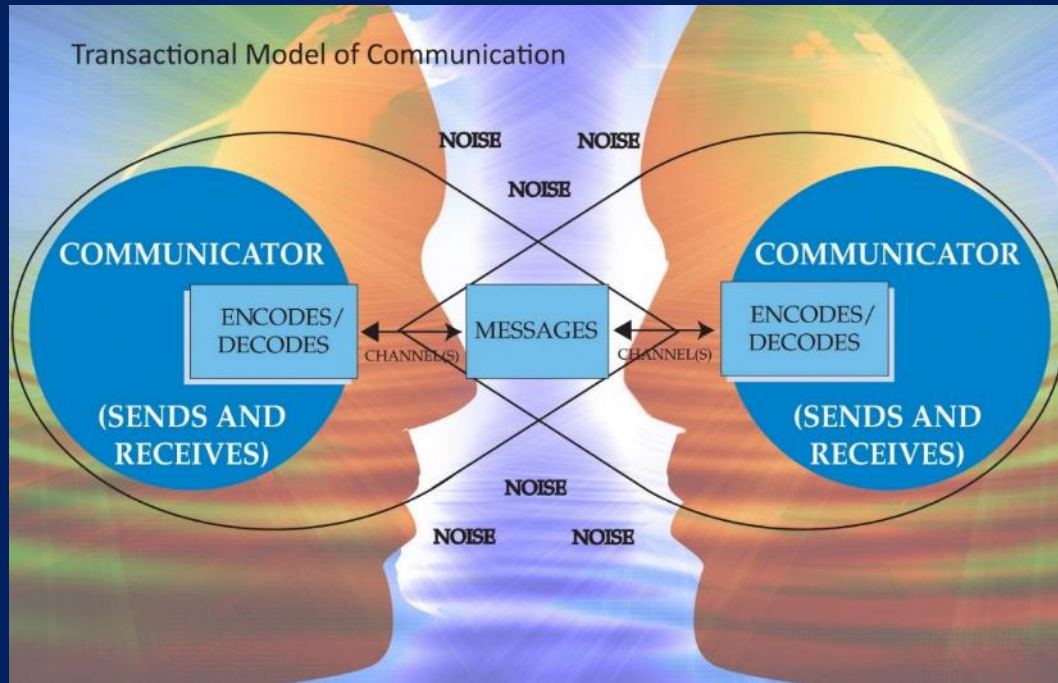
From a paper entitled “Quest for Climate-proof Farms:
“...(a) communication gap has long separated scientists from farmers in planning for climate change.”

Q. Schiermier; Nature, Vol 523, 2015

From article by David Roberts, Vox.com:

“People often seem to think that clever wordsmithery is the key to good framing, but it's not even really necessary. Two things make a message stick. First, it comes from a trusted source, and second, messages stick when they are repeated.”

Collectively universities, government, private industry and others (e.g., science, political and social leadership) have an obligation to provide a path that will prepare citizens to understand and address climate change issues –
.....this pathway is occurring and agriculture is playing a role



Agriculture issues – Now and in the Future

- **Regional climate change and extreme weather**
 - Temperature shifts (long-term and sudden)
 - Extreme storms: excessive rain/snowfall
 - Droughts: flash – seasonal – mega
- **Pests – insects, diseases, invasive**
- **Degradation of agricultural soil and water assets**
 - Air Quality
 - Soil carbon
 - Water Quantity (dryland and irrigated)
 - Water Quality (e.g., salinity, nitrates/hypoxia)
 - Erosion



Creating Resilience and Transformation In Agriculture

- Sustainability
- Environmental Protection
- Ecosystem Services (e.g., wildlife habitat, recreation, wetlands)
- Avoiding Regulation
- Yield and Profitability
- US and global food security (yield, food prices, distribution)
- Stewardship and Farmland preservation

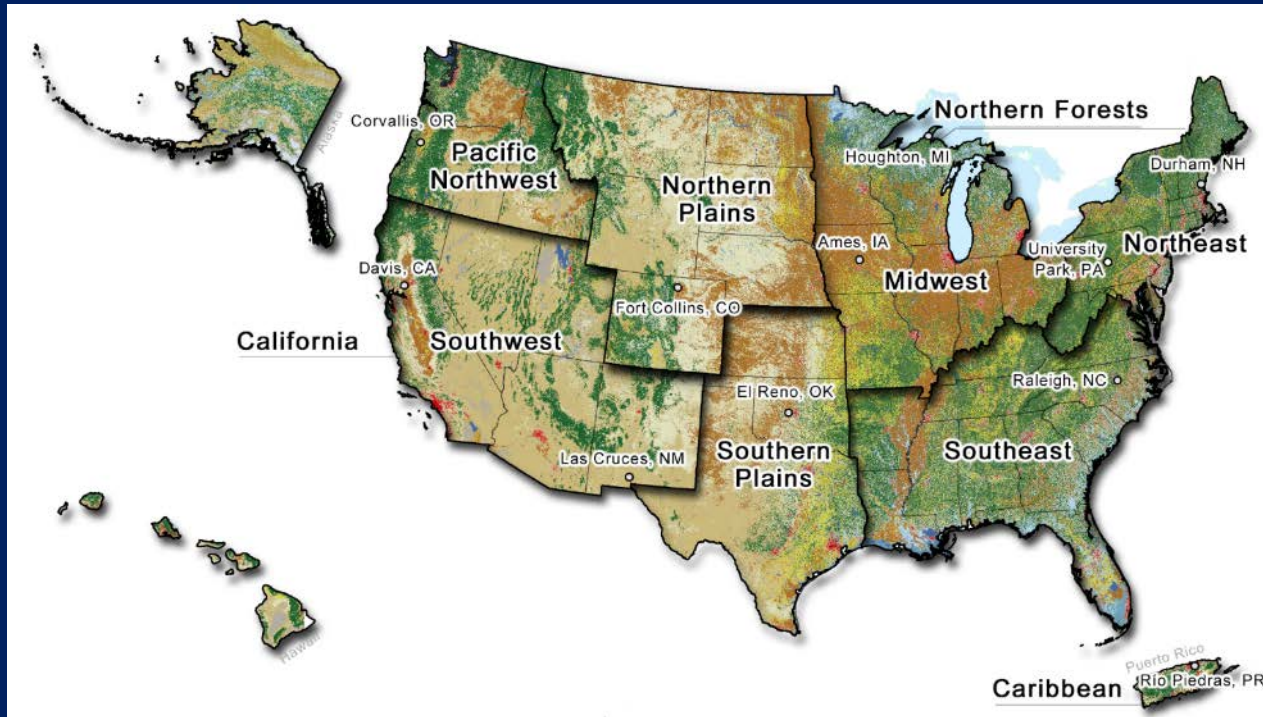
**Transforming to
build a more
resilient
agricultural
production
system**

2013–

USDA recognized that farmers, ranchers and forest land managers were in need of tools, information and best management practices that can enable them to maintain or increase production and profit in light of a changing climate.

**Science was not making it to the field
fast enough**

United States Department of Agriculture (USDA) USDA Climate Hubs



Agricultural Research Service (ARS)
US Forest Service (USFS)
Natural Resources Conservation Service (NRCS)
Farm Service Agency (FSA)
Rural Development (RD)
Animal and Plant Health Inspections Service (APHIS)
Risk Management Agency (RMA)
National Institute of Food and Agriculture (NIFA)

Regional Hubs for Risk Adaptation and Mitigation to Climate Change

USDA Climate Hubs

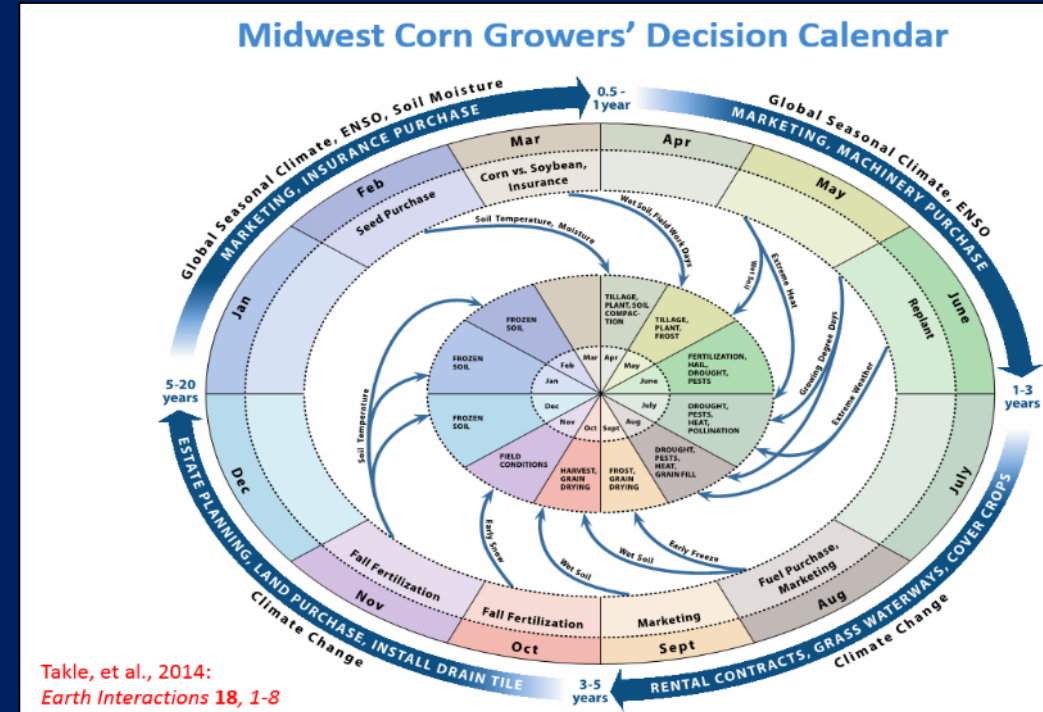
Regional Hubs for Risk Adaptation and Mitigation to Climate Change

Established: February 2014

Purpose: Develop and deliver science-based, region-specific information, technologies, and program support to agricultural / natural resource managers and communities

Clientele: farmers, ranchers, forest landowners, tribes, agribusiness, and resource managers

Rationale: To make climate-informed, timely decision-making in light of the increased risks and vulnerabilities associated with a changing climate.



Hubs develop solutions for a range of time scales (seasonal to decadal) due to the varying time frames for producer issues.



USDA United States Department of Agriculture CLIMATE HUBS PACIFIC NORTHWEST HUB

Search

Hubs Home Partners Regional Assessments Regional Data & Research Educational Materials About Us

Home » Northwest Hub

Northwest Hub Welcome Note
 The Pacific Northwest Climate Change Hub encompasses Alaska, Idaho, Oregon, and Washington. The purpose of the Hub is to deliver science-based knowledge and practical information to farmers, ranchers, forest landowners, and Native American tribes that will help them to adapt to climate change.

USDA United States Department of Agriculture CLIMATE HUBS MIDWEST HUB

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Home » Midwest Hub

Welcome to the Midwest Climate Hub
 Our goal is to provide information to help producers cope with climate change through the innovative linkage of research to education and extension partnerships.






USDA United States Department of Agriculture CLIMATE HUBS NORTHERN PLAINS HUB

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Home » Northern Plains Hub

Northern Plains Hub Welcome Note
 Welcome to the Northern Plains Hub, where our purpose is to deliver science-based knowledge, practical information, management/conservation strategies, and decision tools to farmers, ranchers, forest landowners that will help them to adapt to weather variability and changing climatic conditions.

Popular Topics:

- > Impacts on rangelands
- > Resources for land managers
- > Climate research and data

Adaptive grazing management strategies can be employed by ranchers to achieve desired production and conservation outcomes by...

USDA Climate Hubs

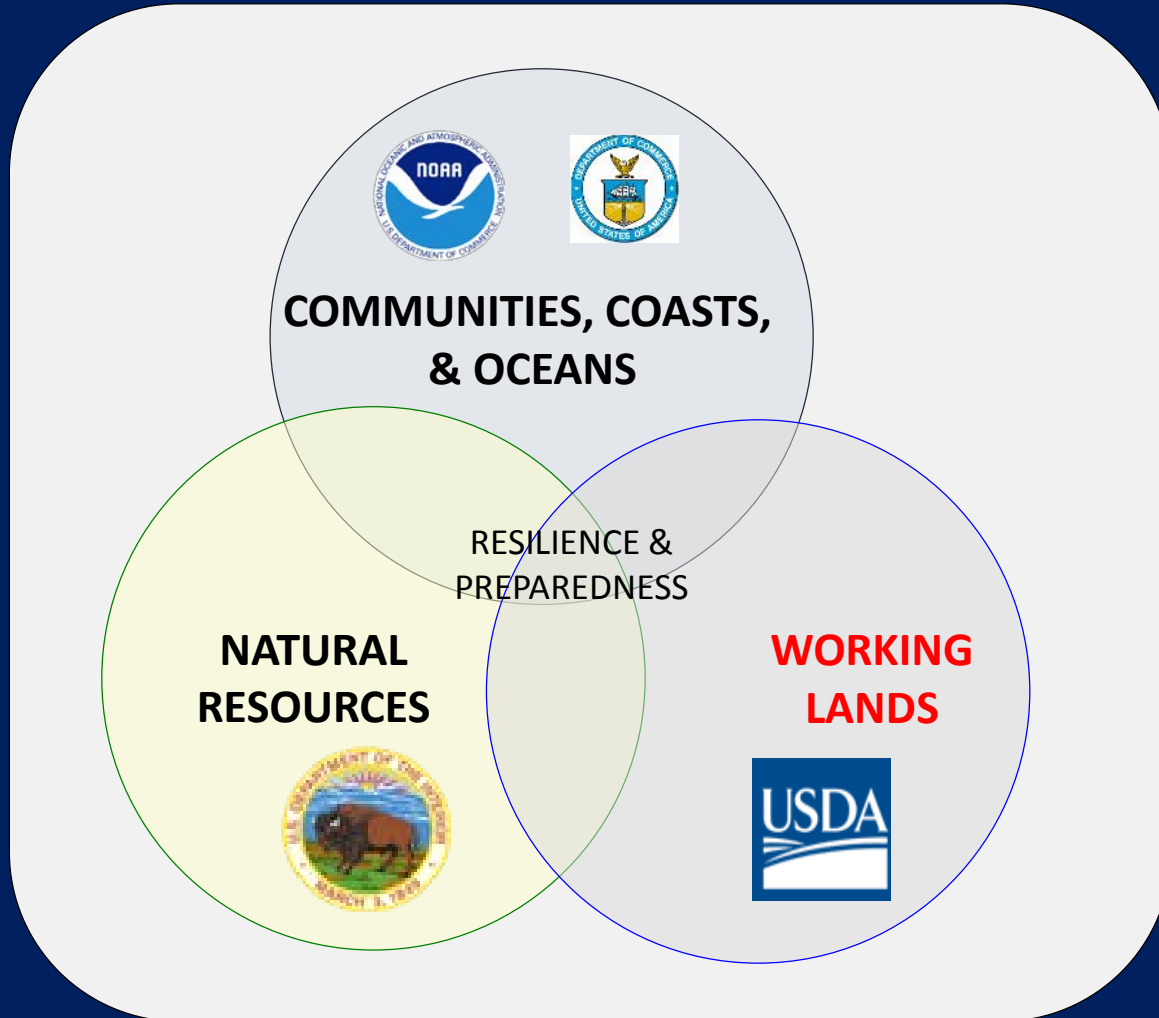
Regional Focus- differences in soils, landscapes, hydrology, land use and impact of climate change



FEDERAL INTERACTIONS

- Complement and build on existing regional climate change networks (e.g., CSCs, LCCs, RISAs)
- Multiple other partners for USDA Climate Hubs:

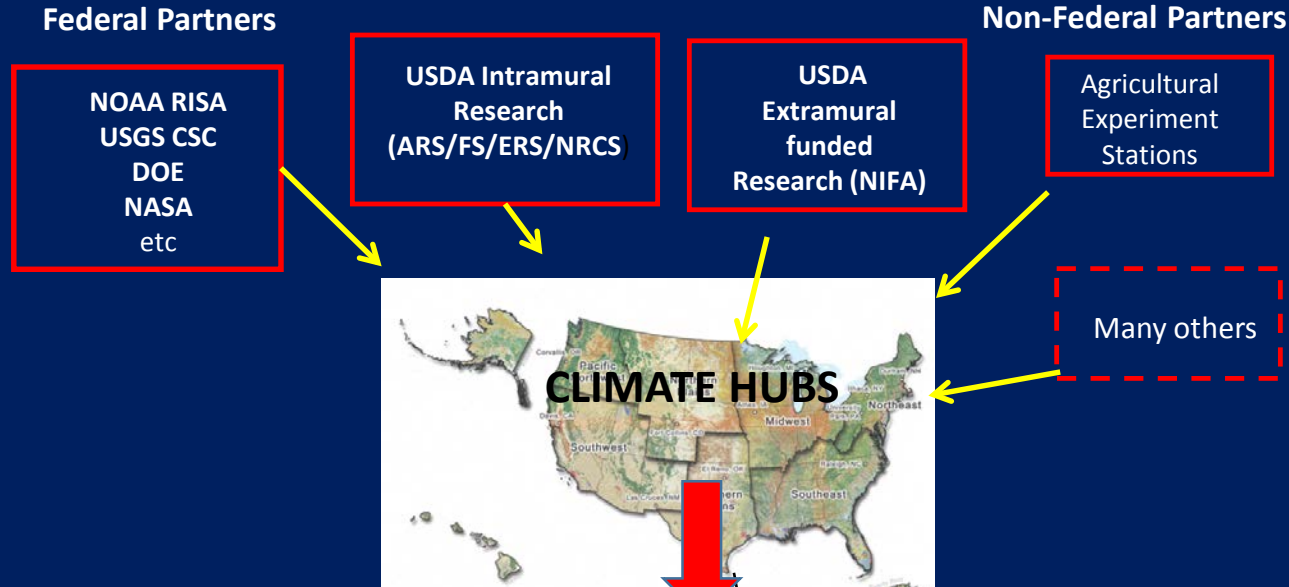
- **NASA, State Climatologists, Universities, Extension, Crop Advisors**



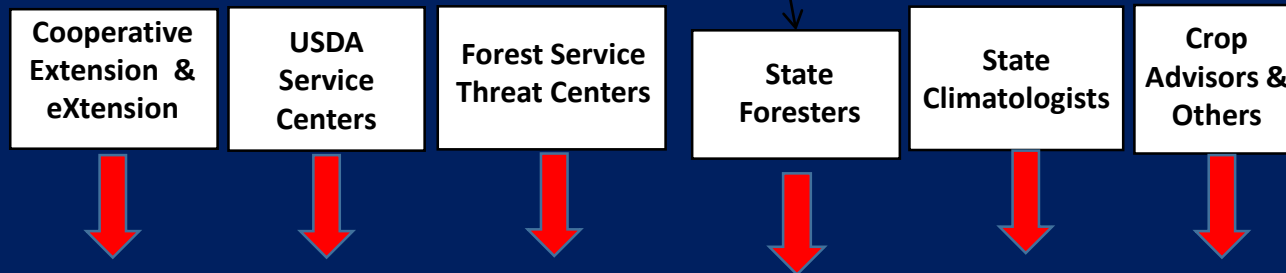
USDA-Focus on production agriculture, grazing systems, forest lands, and subsistence activities

Framework/Network for a USDA Regional Hub

Science and Technology providers:

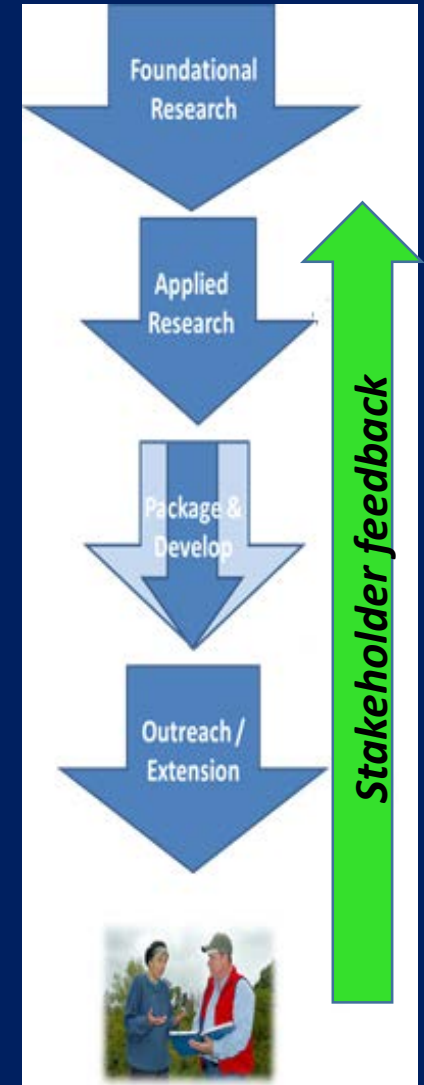


Technology Transfer providers (Tech-Transfer Stakeholders):



Land Management Stakeholders

Farmers / Ranchers / Forest Managers / Tribes / States / Feds / LCCs / Others



Initial Climate Hub Actions

Build a network of partners to connect the existing pieces

USDA **SERCCH – Finding Solutions for Agriculture, Forest, and Rangeland Sustainability in the Southeastern US**

A Proposal from the Agricultural Research Service, Forest Service, and Natural Resources Conservation Service to Develop the USDA Southeastern Regional Climate Change Hub (SERCCH) for Risk Adaptation and Mitigation to Climate Change in Raleigh, North Carolina



SERCCH Members & Partners

- USDA ARS – Plant Science Research
- USDA Forest Service – SRS-Raleigh (*Host*), NFS Region 8, State & Private
- USDA NRCS – East National Technology Support Center
- DOI Southeastern Climate Science Center
- DOI Landscape Conservation Cooperatives
- Mississippi State University
- National Atmospheric Deposition Program – Critical Load of Atmospheric Deposition
- NOAA Regional Integrated Sciences and Assessments Program
- North Carolina Central University
- North Carolina Department of Agriculture / Forest Service
- North Carolina State University
- PINEMAP
- RTI International
- Southeast Climate Consortium
- Southeast Watershed Forum
- Southern Group of State Foresters
- Southern Regional Extension Forestry
- State Climate Office of North Carolina
- The Nature Conservancy
- USDA National Agroforestry Center
- University of Alabama, Huntsville
- University of Florida
- University of Georgia
- United South & Eastern Tribes
- Virginia Agricultural Experiment Station
- Virginia Polytechnic Institute & State University

Proposed Host and Location
USDA Forest Service, Raleigh, North Carolina

Steven McNulty
Proposed Director, USDA Forest Service

David Marshall
Submitter, USDA Agricultural Research Service

Darren Hickman,
Submitter, USDA Natural Resources Conservation Service



Home » Regional Vulnerability Assessments

Regional Vulnerability Assessments

USDA's Regional Climate Hubs were established in February of 2014 to deliver science-based knowledge, practical information, and program support to farmers, ranchers, forest landowners, and resource managers to enable climate-informed decision-making in light of the increased risks and vulnerabilities associated with a changing climate. As part of their function, the Hubs were tasked with providing periodic regional assessments of risk and vulnerability to production sectors and rural economies, building on material provided under the [National Climate Assessment](#) conducted through the [United States Global Change Research Program \(USGCRP\)](#).

Throughout 2015, eight regional vulnerability assessments were published representing all of the Climate Hub regions across the country. With the publication of these Vulnerability Assessments, the Regional Climate Hubs are providing their stakeholders with an introduction to the region, regional sensitivities and adaptation strategies for working lands, a greenhouse gas emissions profile with mitigation opportunities, and an overview of how partner USDA agencies are being affected by a changing climate. These vulnerability assessments are an important first step in establishing a baseline "snapshot" of current climate vulnerabilities, and provides region-specific adaptation and mitigation strategies to increase the resilience of working lands in the region.



Click on a region below to read about your region's vulnerabilities and adaptation/mitigation opportunities!

Vulnerability Assessment Abstracts

Vulnerability Assessment Full Reports

- [Northeast Abstract](#)
- [Northern Forests Abstract](#)
- [Southeast Abstract](#)
- [Midwest Abstract](#)
- [Caribbean Abstract](#)
- [Northern Plains Abstract](#)
- [Southern Plains Abstract](#)
- [Northwest Abstract](#)
- [Southwest Abstract](#)
- [California Abstract](#)
- [Northeast and Northern Forests Region](#)
- [Southeast Region](#)
- [Midwest and Northern Forests Region](#)
- [Caribbean Region](#)
- [Northern Plains Region](#)
- [Southern Plains Region](#)
- [Northwest Region](#)
- [Southwest Region and California](#)

Vulnerability Assessments

Eight Regional Vulnerability Assessments published Fall 2015

Vulnerability-

Sensitivity of a particular system to climate changes, its exposure to those changes, and its capacity to adapt

Catalog Tools to Deliver Climate Information to producers

- Provide usable climate science and land management tools to make farmland and forests healthier, more productive, and resilient.



Climate Hubs Tool Shed

About Feedback Smart Search

search

Sector

- Agriculture ■ Climate ■ Ecosystem Services
- Forestry ■ Grazing Land ■ Livestock

Region

- Caribbean ■ Midwest ■ Northeast ■ Northern Plains
- Pacific Northwest ■ Southeast ■ Southern Plains
- Southwest ■ Southwest - Pacific Islands

Search

Tools found: 140

Agriculture Climate Ecosystem Services Forestry Grazing Land Livestock



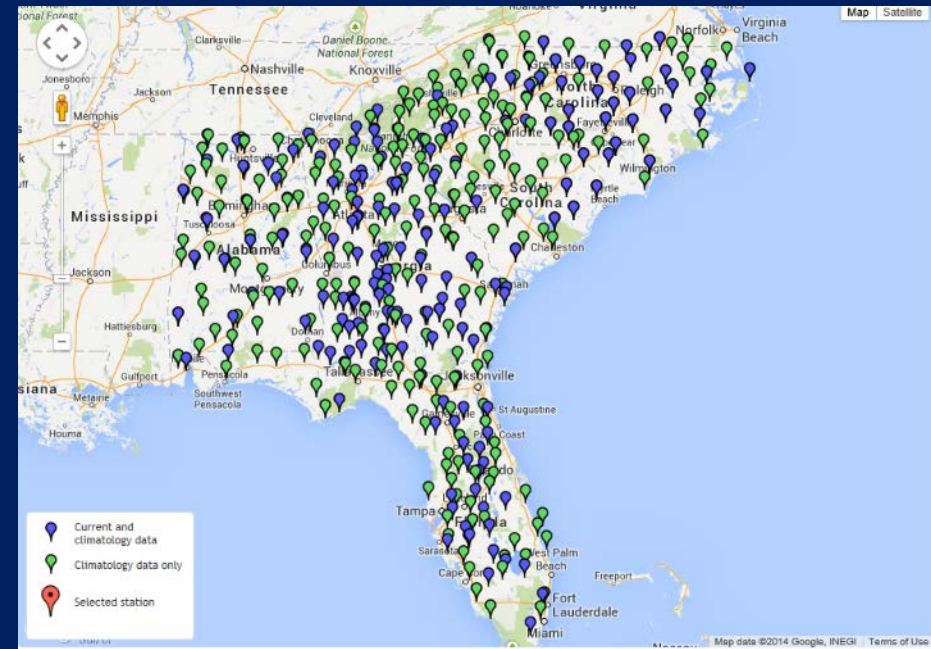


USDA Partner Efforts



AgroClimate.org--a web-resource of tools and data on climate and crops that can be used to assist with decisions about the management of agricultural systems in the Southeastern U.S.

- Seasonal Drought Outlook
- Climate Risk
- Freeze Risk
- Climate Anomaly Maps
- NWS Forecast
- ARID Monitory and Forecast

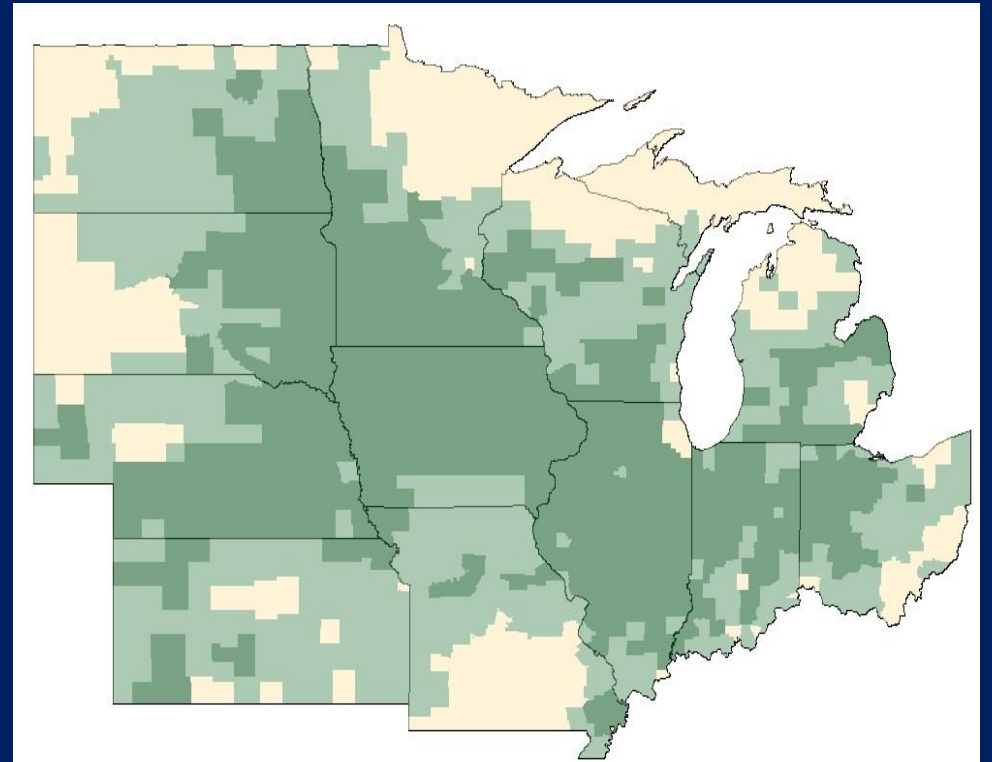


<http://agroclimate.org/>

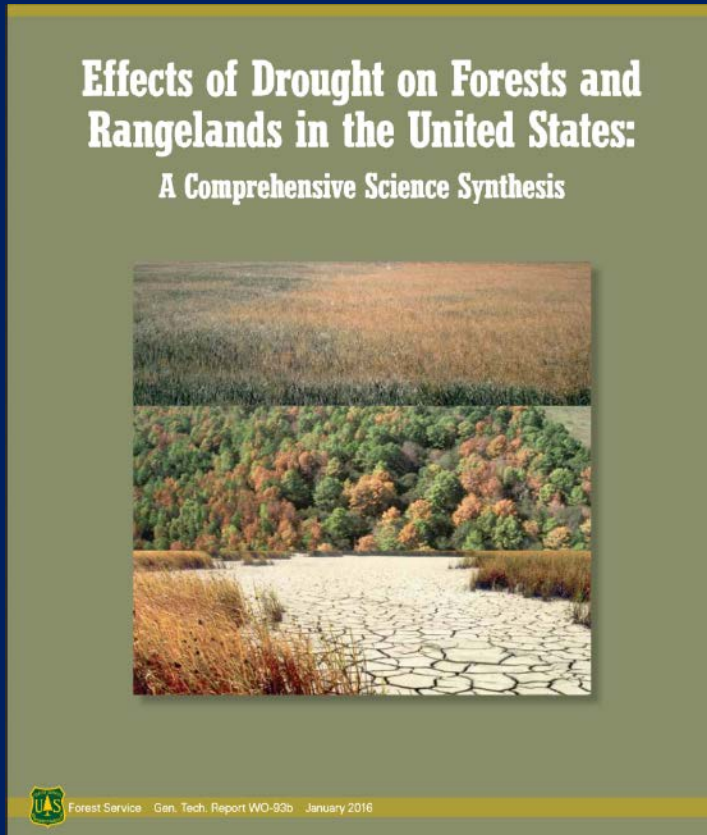
USDA Partner Efforts



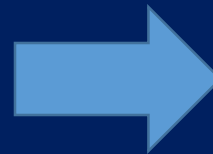
- **AgClimate View**
- **Probable Fieldwork Days**
- **Corn GDD**
- **Corn N Rate Calculator**
- **Nitrogen Watch**



Information Translation



300-page scientific document



USDA Regional Climate Hubs: Pacific Northwest
 Effects of Drought on Forests and Rangelands in the United States: A Comprehensive Science Synthesis

Drought Impacts on Forests and Rangelands in the Pacific Northwest and Alaskan Regions

Overview:
 The Northwestern states of Oregon and Washington are known for abundant precipitation, especially near the coast where large conifers dominate the natural landscape. The overwhelming portion of this precipitation falls during the October-April wet season, but very little falls during May-September. High levels of precipitation reach into southeast Alaska, although here the dry season is less pronounced. Eastern Washington and Oregon, as well as Idaho, have much less precipitation, but snowmelt and subterranean flow support year-around urban, industrial, and agricultural water use.

Loss of snowpack from warmer temperatures is already occurring and is projected to continue to decline given the effects of climate change on warmer winters (higher rain:snow ratio) and hotter summers that will reduce soil moisture and streamflows throughout the Northwest, much like we experienced in 2015. Global climate model projections for precipitation are inconsistent, but most indicate slightly wetter winters and slightly drier summers, including higher winter peak flows and more floods caused by rain or rain-on-snow extreme events. Dominant modes of climatic variation (El Niño Southern Oscillation, Pacific Decadal Oscillation) can in some cases accentuate extremes of drought and flooding.

Climate change is expected to alter the timing and magnitude, water temperature, and streamflow volume of rivers and streams. Snow-dominant watersheds will likely have earlier and reduced spring peak flow, increased winter flow, and reduced late-summer flow, and rain-dominant watershed could have higher winter streamflows. Mixed rain-snow watersheds will become more rain-dominant.

Temperatures in the Pacific Northwest have been increasing in the last 80 years. As this trend continues, it will lead to lower soil moisture in summer, lower growth in some tree species, lower fuel moistures, and increased area burned by wildfire.

Like most northern latitude locations, Alaska has experienced larger temperature increases than the rest of the United States. Growth has declined in white spruce forests of interior Alaska because of drought stress, spruce beetles have caused extensive mortality in southern Alaska, and the number of large wildfires has recently increased.

and higher mortality in the driest locations. This can alter ecosystem structure and function, reducing the goods and services coming from the land. Management options to deal with this additional stress include:

- Plant trees with genetic characteristics that confer tolerance to environmental stress now and in the future, considering both species and populations within species
- Manage forest stand density to ensure adequate soil water and other resources for the remaining trees.

Conclusions:

- Transition land managers from a reactive to an anticipatory mode to protect investments and defend against extreme weather events.
- Prepare for increased fire occurrence, especially where numbers of fires have historically been low (coastal coniferous forests).
- Invest in forest and shrubland fuels reduction, post-fire restoration efforts, and related research.
- Promote adaptation demonstrations, leveraging successful applications to advance climate change integration and adaptation in natural resource planning, particularly for owners and managers of livestock operations, woodlots, large forested areas, industrial lands, wildlife refuges, and watersheds.

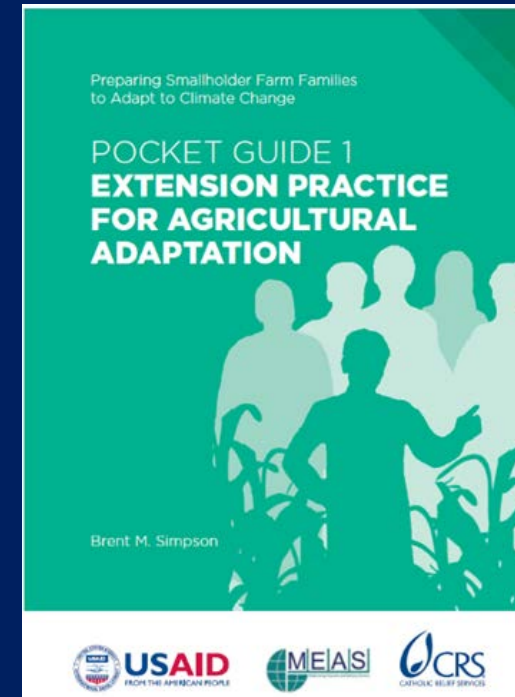
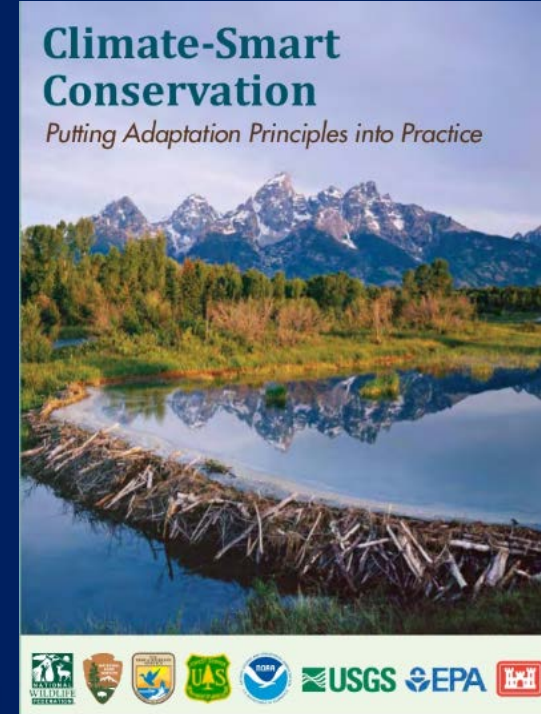
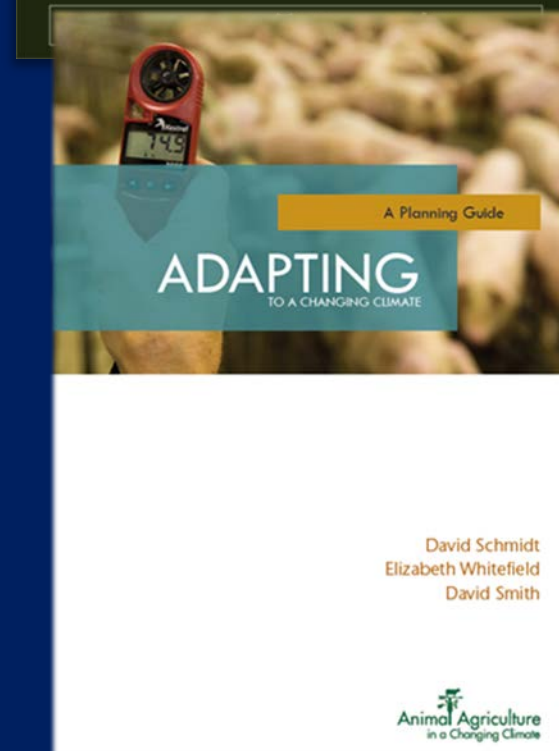
nd fall), reducing growth in some
 nearly all forest, rangeland, and
 will contribute to fire hazard and
 r forests and shrublands.
 sad and very intense.
 native plant species into
 invasive annual weeds exacerbate
 agebrush.
 : grazing and native ungulates.
 ight will reduce domestic and
 or become more severe and
 d insect pests expand into new
 e more opportunities for (non-
) mountain pine beetles in
 lands.
 non species support a vibrant
 species such as bull trout will be
 ential users and uses.
 : generally more resilient to
 asing adaptability.
 d one can expect lower tree growth

8 regional 2-pagers

Education: Adaptive Management Resources:

- For Different perspectives
 - Forestry
 - Wildlife
 - Livestock
 - Agriculture
 - International Development

- A variety of land owners with diverse goals and objectives
- Developing useful information, tools, and tactics for resource users



Development of: Adaptation Resources for Agriculture

Forest Adaptation Resources: Climate Change Tools and Approaches for Land Managers

General Technical
Report NRS-87
2012



USDA
United States
Department of Agriculture

Forest
Service

Northern
Research Station



Adaptation Resources for Agriculture: Responding to Climate Variability and Change in the Midwest and Northeast

Maria Janowiak, Daniel Dostie, Michael Wilson, Michael
Kucera, Howard Skinner, Jerry Hatfield, David Hollinger,
and Christopher Swanston


U.S. Department of Agriculture, Office of the Chief Economist
Climate Change Program Office
Washington, DC
Technical Bulletin 1944
September 2016

Published in cooperation with USDA's:
Midwest, Northeast, and Northern Forests Climate Hubs
Agricultural Research Service
Natural Resources Conservation Service
US Forest Service

NE Climate Hub
MW Climate Hub
NRCS
USFS
ARS

Nov 12, 2014:

President Obama announced that by 2025 the U.S. intends to reduce GHG emissions by **26 to 28 percent below 2005 levels**



UNITED FOR
CLIMATE ACTION
cop21.gouv.fr #COP21

Put a price on
CARBON

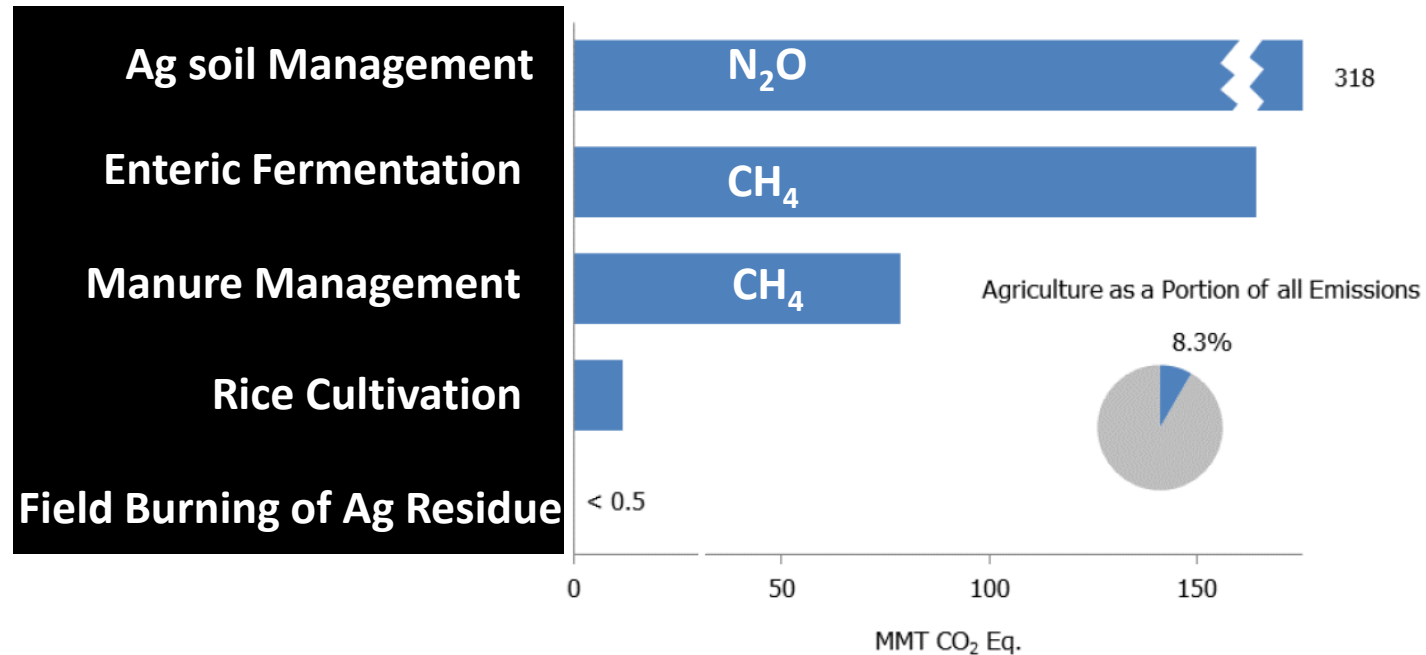
#PriceOnCarbon
caringforclimate.org/carbonpricing

WORLD BANK GROUP Caring for Climate



GREENHOUSE GAS EMISSIONS FROM AGRICULTURE

Figure 5-1: 2014 Agriculture Chapter Greenhouse Gas Emission Sources (MMT CO₂ Eq.)



Total 2014 US emissions =
6,870.5 MMT CO₂ Eq

2014 Ag emissions = 573.6
MMT CO₂ Eq

2014: Agriculture contributes 8.3 percent
of total U.S. greenhouse gas emissions.

USDA Conservation Programs

- Voluntary
- Provide technical and financial assistance
- Partnership driven (e.g., Conservation Innovation Grants, Regional Conservation Partnership Program)
- Addressing state and local conservation priorities
 - vulnerable soils/regions
 - wildlife conservation areas
 - urbanizing/endangered lands

Use conservation programs to assist farmers in profitability, resiliency, and protection of natural resources



NRCS—A pioneer in conservation for over 80 years, working with landowners, local and state governments, tribes, and other federal agencies to maintain healthy and productive working landscapes.



Background for USDA Action

- USDA is well-positioned to contribute since:
 - Farmers and ranchers can:
 - Reduce GHG emissions
 - Store carbon
 - On-going conservation efforts of agencies, for example
 - Soil Health Initiative
 - Forest Restoration
 - Climate Change Adaptation

Involves USDA Climate Change Program Office, multiple USDA Agencies and Partners

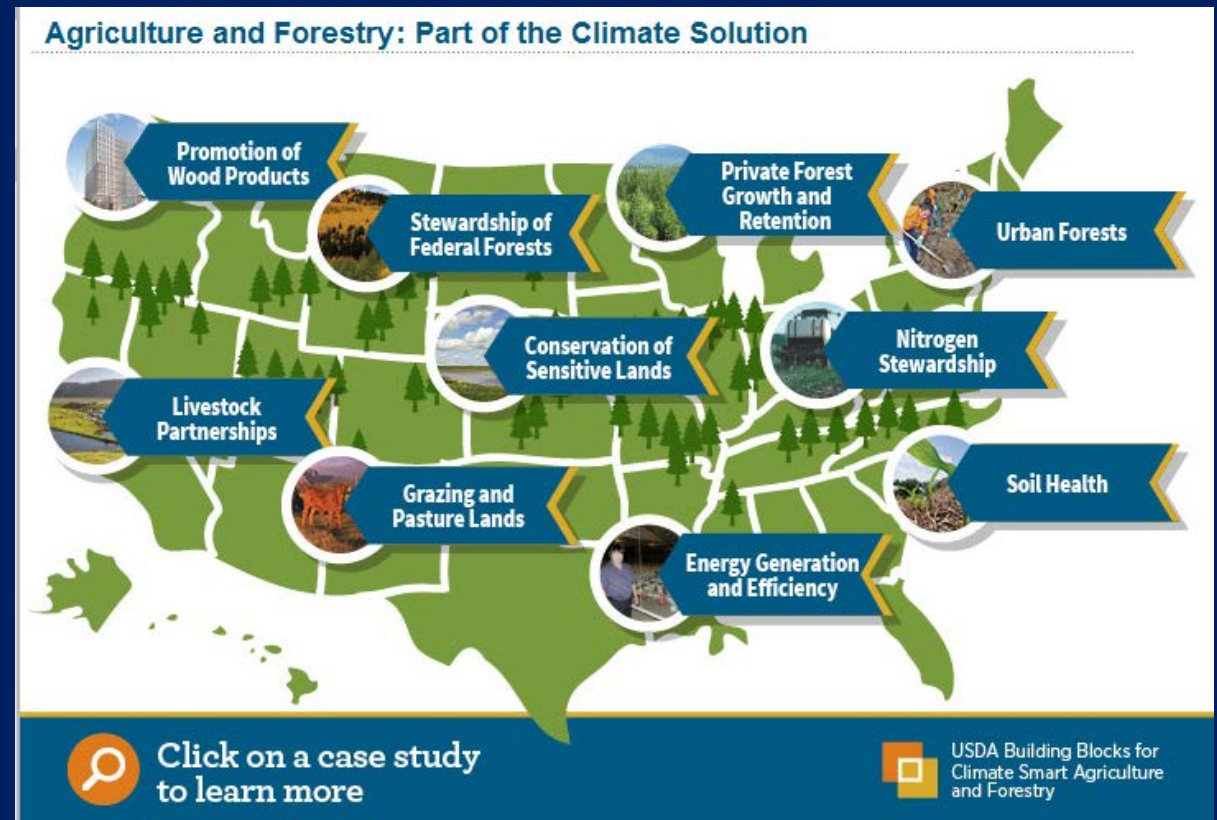
USDA Building Blocks for Climate Smart Ag and Forestry

Building Blocks Lead: USDA Climate Change Program Office

Agencies: NRCS, USFS, RD, FSA, ARS, NIFA, ERS, RUS

USDA Announcements

- **April 23, 2015** - Secretary's announcement at Michigan State Univ for the USDA Building Blocks for Climate Smart Agriculture and Forestry
- **Dec 12, 2015** – COP 21 International Climate Agreement (UNFCCC) in Paris
- **May 12, 2016**, Secretary released a roadmap for the Building Blocks



Building Block	Goals by 2025
Soil Health	Promote conservation practices that improve SOM, reduce emissions from soils/equipment
Nitrogen Stewardship	Reduce N ₂ O emissions and provide cost savings through application of 4 “Rs”
Livestock Partnerships	Use anaerobic digesters & impermeable covers on dairy and swine operations
Conservation of Sensitive Lands	Conservation Reserve Program and Easements to protect wetlands and organic rich soils
Grazing and Pasture Lands	Establish grazing management plans on an additional 9 M acres
Private Forest Growth and Retention	Through FLP and CFP, protect almost 1 M acres of working landscapes
Stewardship of Federal Forests	Reforest 32,000 acres per year on National Forest System lands
Promotion of Wood Products	Increase the number of wooden building projects
Urban Forests	Plant 100,000 additional trees in urban areas
Energy Generation and Efficiency	Promote renewable energy technologies and improve energy efficiency
Total	~122-136 MMT CO ₂ e

Equivalent of taking 25 million cars off the road, or offsetting emissions produced by powering nearly 11 million homes



USDA Building Blocks for Climate Smart Agriculture and Forestry



**Implementation Plan
and Progress Report**

May 2016

Highlight Two Building Blocks

- **Soil Health**
- **Nitrogen Stewardship**

Building Block Goals and Key Actions

Building Block	Goals (by 2025)	Greenhouse Gas (GHG) Reduction Goal (MMTCO ₂ e per year by 2025)
Soil Health	Integrate with the NRCS Soil Health Initiative and promote more than 10 NRCS conservation practices that improve soil organic matter, reduce emissions from soils and equipment, and promote healthier soils nationwide.	4.0-18.0
Nitrogen Stewardship	Reduce nitrous oxide emissions and provide cost savings by focusing on the right timing, type, placement, and quantity of nutrients.	7.0

Soil Health

- **Soil Health Monitoring and Enhancement Network**
- **Training:**
 - Advanced soil health training course and complementary webinar series to train trainers, train >2,000 field, area, and state technical staff
- **Certification** requirements for soil health management planners.



Soil Health

- **Partnerships:** to develop standardized comprehensive soil health assessment availability and economic data.
- **Conservation Practice Standards**—Review and update related to soil health management systems (SHMS).
- **Investment:** Continue to invest in research, education, and extension on practices that promote soil health and reduce GHG emissions from cropland.



Soil Health Management Systems

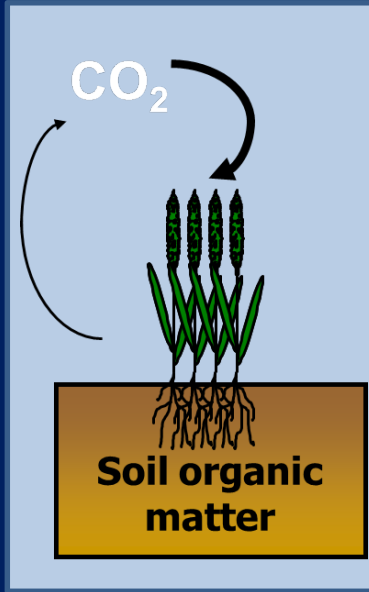
Conservation buffers



Conservation Tillage



Cover Crops



Nutrient Management



Water Management



Avoided Grassland Conversion (CRP)



Improved Rotations

Building Blocks Involve Partners

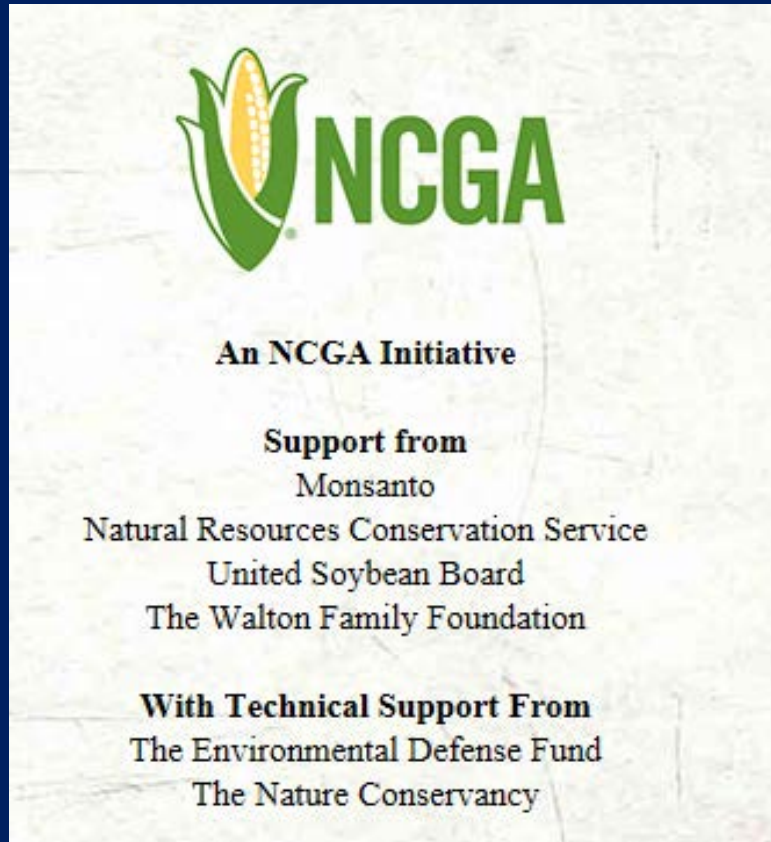
Farmer-led Movement for Soil Health Receives \$4 Million Boost

Funding will accelerate Soil Health Partnership's efforts to show farmers economic benefits of sound agriculture practices

Midwest Row Crop Collaborative

Members

- Cargill
- Environmental Defense Fund
- General Mills
- Kellogg Company
- Monsanto Company
- PepsiCo
- The Nature Conservancy
- Walmart
- World Wildlife Fund – US



Nitrogen Stewardship Building Block



Nitrogen Stewardship

Goal - Reduce 7 MMT CO₂e from Nitrogen Applications Annually

Enroll and maintain a total of 64 million acres of crop and pasture land under an enhanced nitrogen management plan designed to mitigate N₂O emissions

- Requires improving nutrient management on 4.5 million new acres each year from 2016 through 2025
- AND requires 75% of these new acres be maintained under an Enhanced 4R Nutrient Management Plan

Nitrogen Stewardship – 4R Approach

**Enhanced
Nitrogen
Management –
applying 4R
principles - right
time, right place,
right rate, and
using the right
source**

- *Benefits extend beyond N₂O emissions*
 - Reduced potential for nutrient runoff, resulting in improved local water quality
 - Improved nutrient use efficiency may reduce amount of fertilizer applied, thus reducing fertilizer costs without impacting yield; creating a “win-win” for producers
- Expected 75% of acres converted to enhanced nutrient management will continue– “nitrogen management conservation legacy effect”

Nitrogen Stewardship – Challenges



Weather—impact N losses/efficiency

Soil Health—Increase soils abilities to cycle N

Nitrogen Application-time, place, rate, source

Nitrogen Stewardship – Focus

Corn production in the US represents the largest use of nitrogen fertilizer, thus has largest potential for N₂O emission reductions

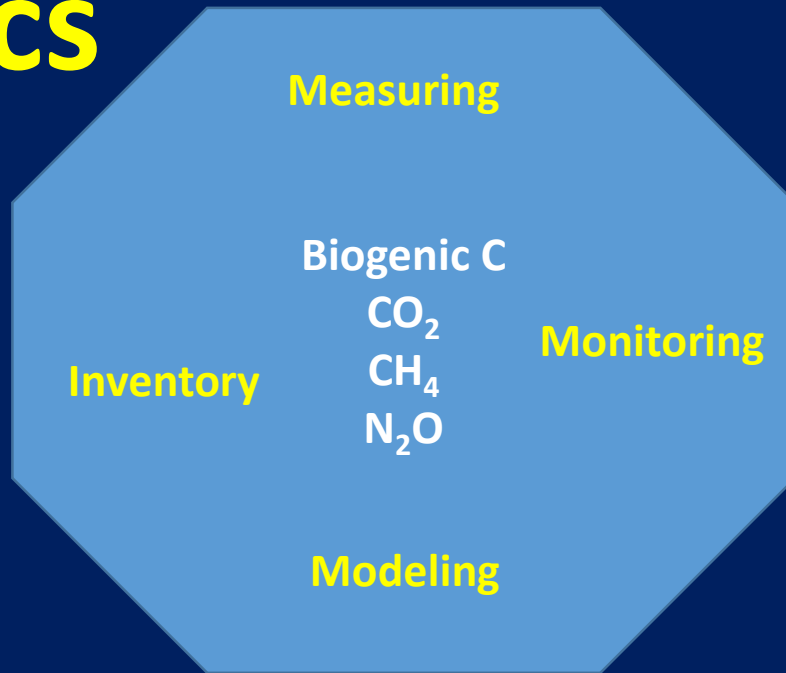
- **Priority placed on enhanced nitrogen management for corn production to mitigate N₂O emissions**
- **N₂O emission reduction quantification methodologies for corn rotations and new dynamic modeling approaches will improve measurement and mitigation of emissions in the future**

Nitrogen Stewardship – How?

To accomplish 64 million acres of crop and pasture land under an enhanced nitrogen management plan designed to mitigate N₂O emissions, NRCS will need to:

- **Prioritize efforts in major corn producing states**
- **Continue/Increase NRCS technical and financial assistance**
- **Recruit and train additional Technical Service Providers (TSPs), which will provide direct technical assistance to producers**
- **Acquire additional TSP funding**
- **Prioritize use of nutrient management conservation activity plan (CAP 104)**
- **Develop partnerships with ag industry, especially agronomic consultants and ag retailers**

Metrics



Two purposes

- Document results
- Track progress toward the goals

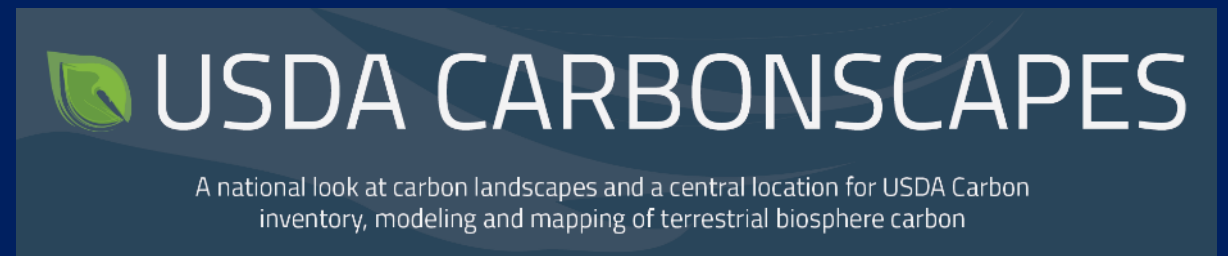
Two parts

- Practice and technology data
- Greenhouse gas calculations

Tracking both direct impacts of USDA actions and indirect effects of practice and technology diffusion



Whole farm and ranch GHG accounting tool



A national look at carbon landscapes and a central location for USDA Carbon Inventory, modeling, and mapping of terrestrial biosphere carbon

NRCS Commitment for USDA Building Blocks – 2016 Additional EQIP Funding

- **Additional \$72.3 million in EQIP financial assistance (FA) and technical assistance (TA) to states**
- **Targeted funds for conservation practices that align to GHG Building Blocks**
- **Increase soil organic C (carbon sequestration) and reduce GHG emissions associated with food and fiber production.**
- **Same practices will also increase resilience of soils and cropping systems against the impacts of climatic variability and extreme weather events**

California received \$4.73 million from this EQIP fund

Climate Smart EQIP Practice Priorities FY 2016

Climate Mitigation Building Block	Code	Conservation Practice
Soil Health	327	Conservation Cover
	328	Conservation Crop Rotation
	329	Residue and Tillage Management, No Till
	330	Contour Farming
	332	Contour Buffer Strips
	340	Cover Crop
	342	Critical Area Planting
	345	Residue and Tillage Management, Reduced Till
	386	Field Border
	393	Filter Strips
	412	Grassed Waterways
	585	Stripcropping
	601	Vegetative Barriers
	603	Herbaceous Wind Barriers
Nitrogen Mgt	590	Nutrient Management

Climate Smart EQIP Practice Priorities FY 2016

Climate Mitigation Building Block	Code	Conservation Practice
Livestock	366	Anaerobic Digester
Partnership	367	Roofs and Covers
Grazing & Pasture	512	Forage and Biomass Planting
	528	Prescribed Grazing
	550	Range Planting
Energy Efficiency	372	Combustion System Improvement
	374	Farmstead Energy Improvement
	670	Lighting System Improvement
Private Forests	672	Building Envelope Improvement
	380	Windbreaks and Shelterbelts
	381	Silvopasture Establishment
	390	Riparian Herbaceous Buffer
	391	Riparian Forest Buffer
	612	Tree and Shrub Establishment
	645	Upland Wildlife Habitat
650	Windbreak Renovation	

Thanks

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