Strategies for Adaptation and Mitigation

USDA Climate Hubs
USDA Building Blocks

Mission of the Climate Hubs

- Develop and deliver science-based, region-specific information and technologies, with USDA agencies and partners, to agricultural and natural resource managers that enable climate-informed decision-making, and to provide access to assistance to implement those decisions.
- Aligned with the USDA mission to provide leadership on food, agriculture, natural resources, rural development, nutrition, and related issues based on sound public policy, the best available science, and efficient management.

Vulnerabilities in the Pacific Northwest

Expected changes:

- Reduced snowpack
- Increased precipitation variability
- Warmer temperatures
- Increased range of weeds and pests
- Increased wildfire risk

Vulnerabilities in the Northern Plains

Expected changes:

- Increased temperatures
- Increased competition for water and irrigation
- Changed crop growth cycles resulting from warmer winters
- Longer growing seasons
- Increase in precipitation extremes

Vulnerabilities in the Midwest

Expected changes:

- Extreme rainfall and flooding
- Increased temperatures
- Growing seasons are almost two weeks longer than in 1950, and are projected to lengthen

Vulnerabilities in the Northeast and Northern Forests

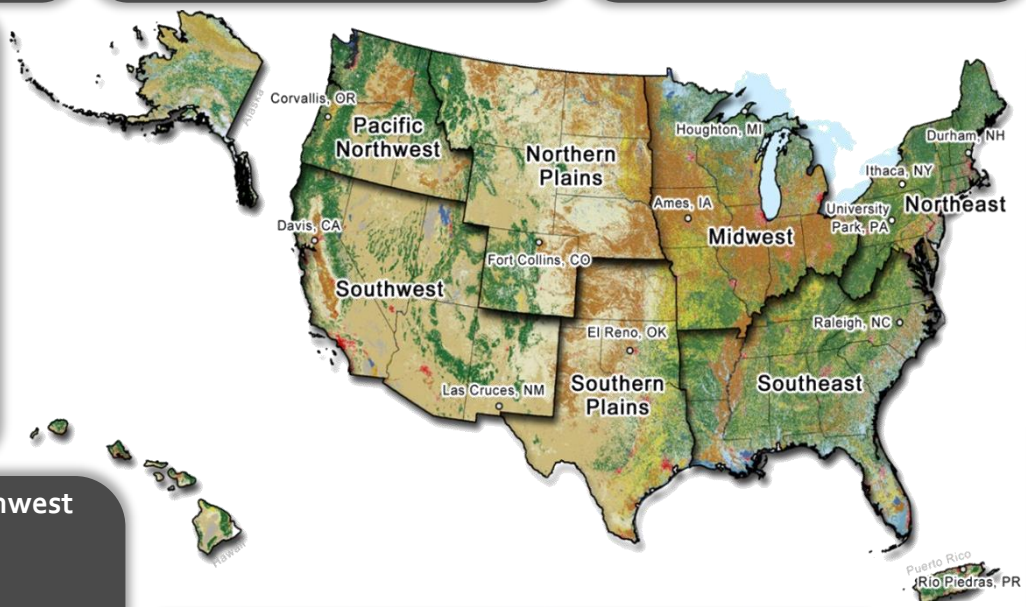
Expected changes:

- Extreme precipitation events
- Higher temperatures
- Reduced crop yields and milk production from heat stress
- Longer growing season
- Coastal flooding

Vulnerabilities in the Southern Plains

Expected changes:

- Decreased snowpack and streamflow
- Increased drought
- Increased temperature
- Possible Northward shift in crop production
- Shorter winter chill periods
- Wildfire



Vulnerabilities in the Southeast and Caribbean

Expected changes:

- Sea-level rise
- Drought
- Temperature increase
- Spread of nonnative plants, weeds, and pests
- Increased insects and pathogens

Vulnerabilities in the Southwest and California

Expected changes:

- Warmer temperatures
- Decreased snowpack and streamflow
- Increased drought and uncertainty in water supply
- Longer growing seasons
- Changes in plant diseases, pests, insects and weeds
- Warming could adversely affect wine, apples, and other crops
- Reduced yields from increased temperature and water scarcity for some crops
- Increased wildfire

Vulnerabilities in the Caribbean

Expected changes:

- Increased temperatures
- Spread of nonnative plants
- Increased insects and pathogens
- Increased sea level rise, leading to decreased fresh water availability and saltwater intrusions

Feature: **USDA Climate Hub Leaders**

The USDA Climate Hubs are located at an Agriculture Research Service (ARS) or Forest Service (FS) location. The ARS, FS, and Natural Resource Conservation Service (NRCS) provide leadership in each Regional Climate Hub. These leaders are working to deliver science-based information and tools to enable the agricultural and forestry sectors to implement climate-smart management practices in response to stressors due to climate variability. Photo credit: Sarah S. Wiener.

USDA United States Department of Agriculture
CLIMATE HUBS

Find more at: www.usda.gov/climatehubs

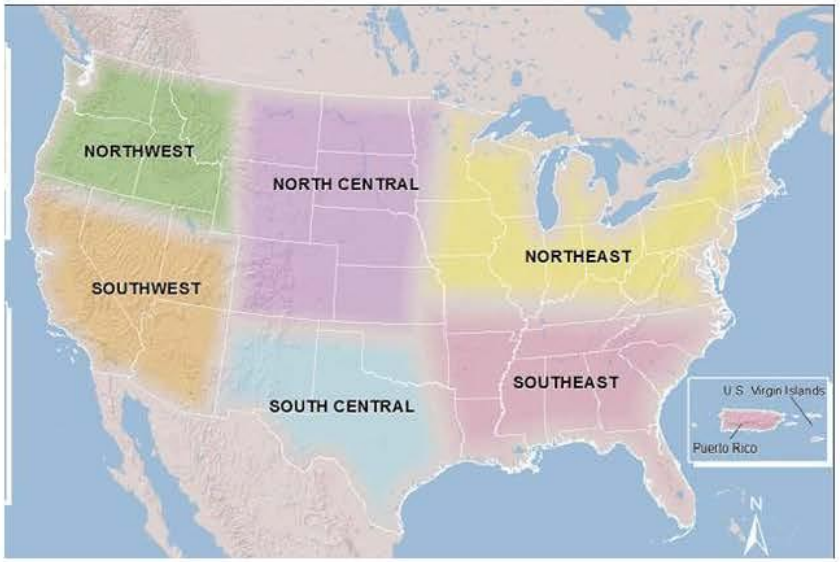
Linkages among Agencies

- NRCS
- FSA
- APHIS
- RMA
- NCAR/NOAA
- NASA
- Ag Expt Stations
- Cooperative Extension Service
- State Climate Offices/Regional Climate Centers

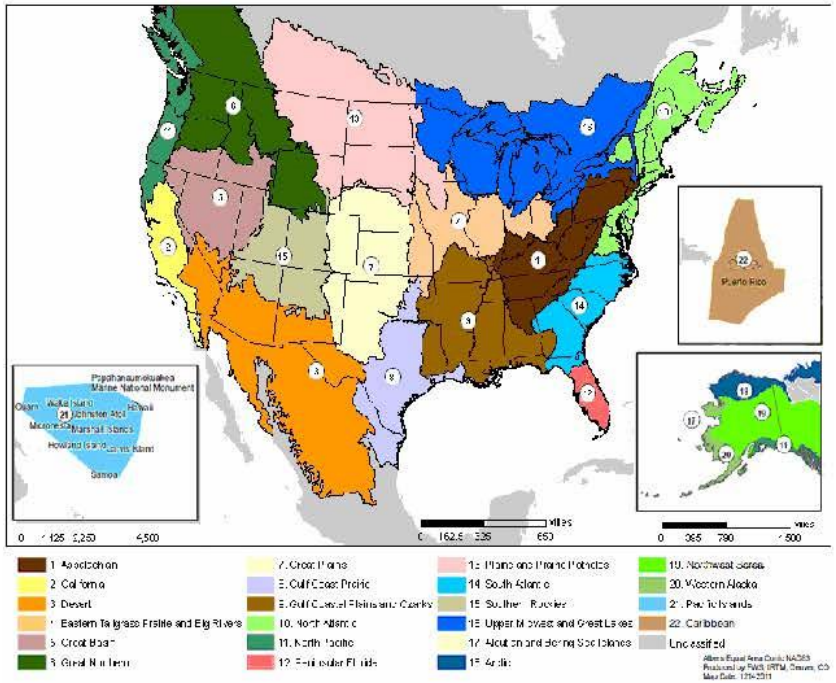
Partners
Crop consultants
Commodity organizations
Soil and Water Conservation Districts

Other federal regional efforts associated with climate change

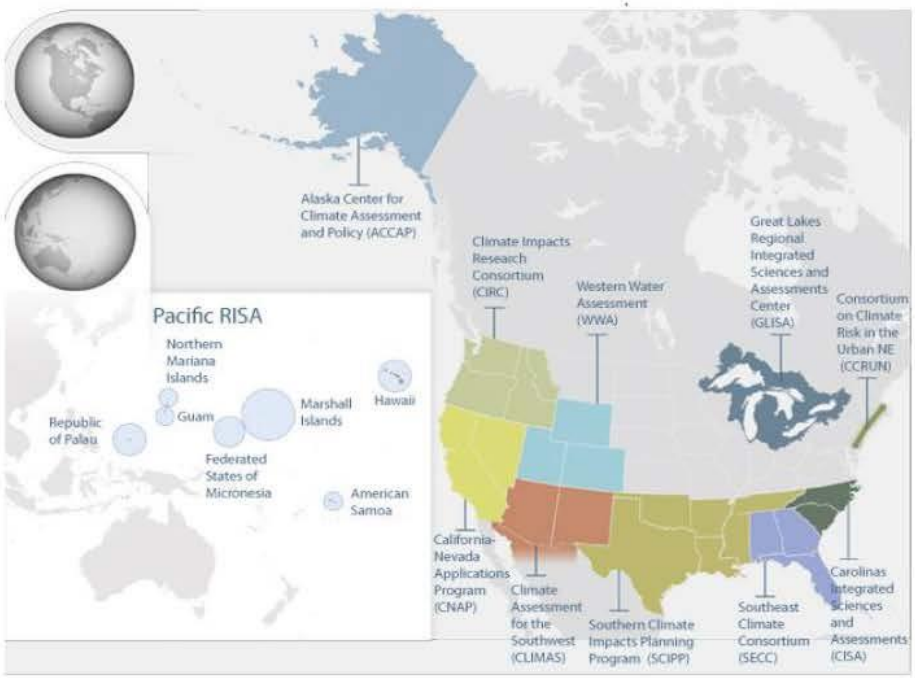
USGS Climate Science Centers



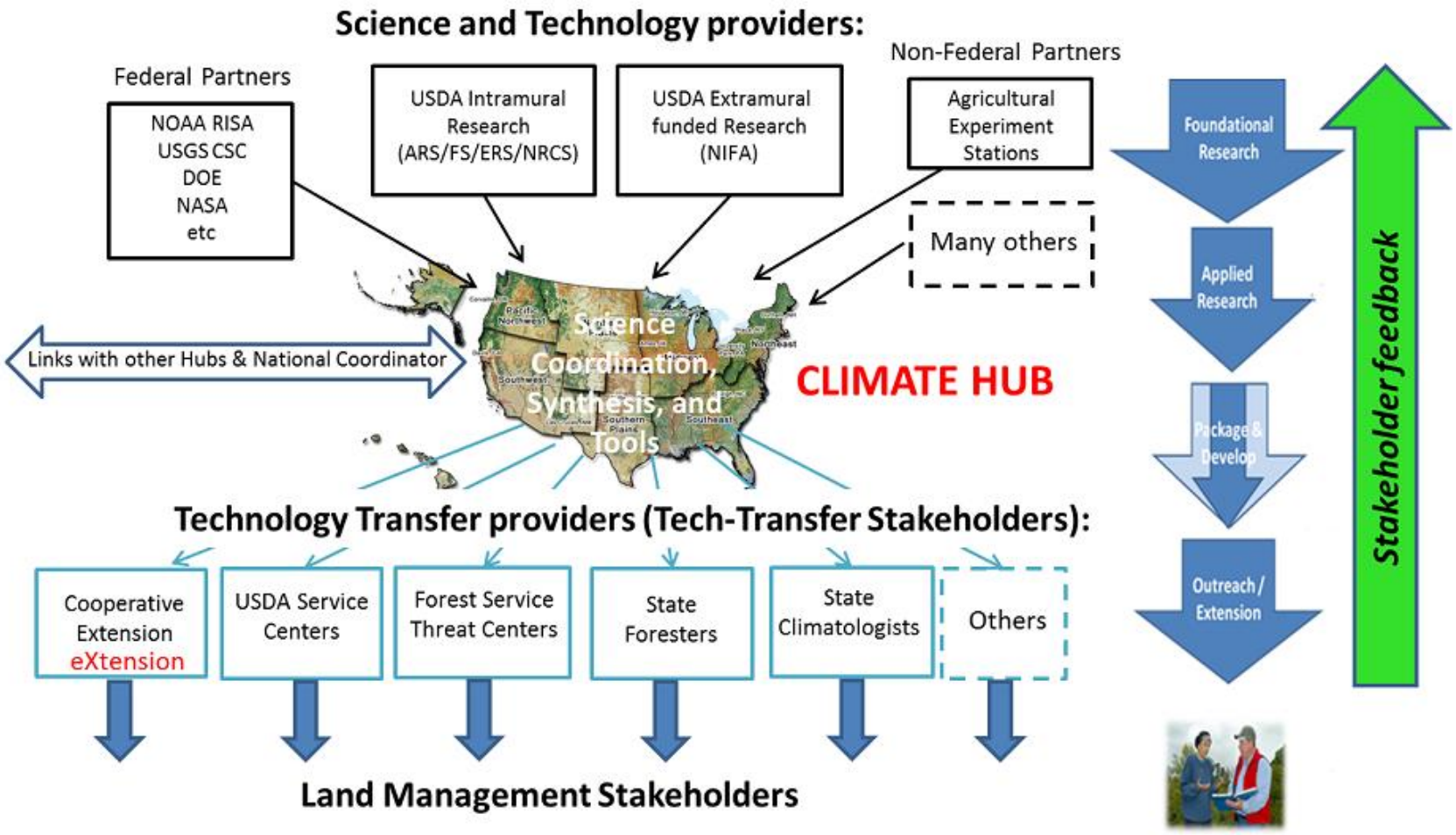
FWS Landscape Conservation Cooperatives



NOAA Regional Integrated Science and Assessments



Conceptual Framework for a USDA *Regional* Hub



Why is this important?

- Increasing climate variability
- Increasing extreme events
- Trends in climate and weather
- Stress that is places on agriculture and the natural resources

Adaptation and Mitigation

- Linked together to protect and enhance the natural resources of soil, water, and air
- Climate Hubs integrate information to deliver solutions to producers through a variety of outlets

Climate Hubs Tool Shed

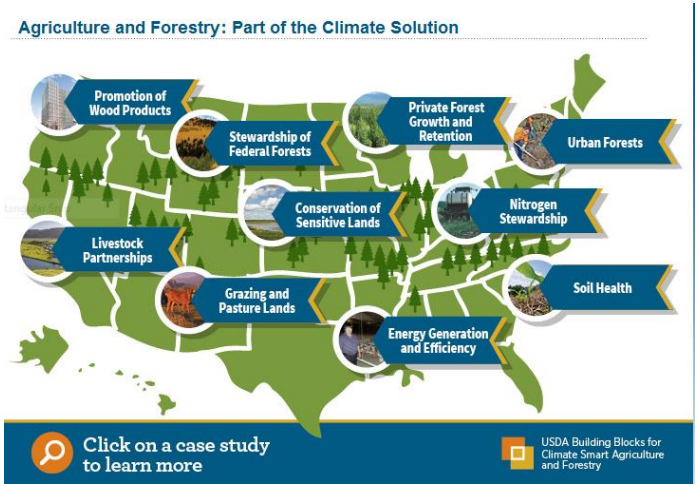
NEW!! The Climate Hubs Tool Shed provides information on tools from across the country that can assist agricultural and forest land managers in adapting to climate variability and change

Toolshed includes:

- Models
- Estimators/Calculators
- Atlases
- Datasets/Data layers
- Scenarios
- Monitoring
- Mapping
- Planners
- Imagery
- Inventories
- Indexes
- Analysis

USDA Building Blocks for Climate Smart Agriculture & Forestry

- Soil Health
- Nitrogen Stewardship
- Livestock Partnerships
- Conservation of Sensitive Lands
- Grazing and Pasture Lands
- Private Forest Growth and Retention
- Stewardship of Federal Forests
- Promotion of Wood Products
- Urban Forests
- Energy Generation and Efficiency



USDA Building Blocks for Climate Smart Agriculture & Forestry

USDA has a long history of cooperative conservation and partnerships with farmers, ranchers, and forestland owners. The principles that have guided USDA's cooperative conservation efforts also apply to each of these building blocks, and actions taken through this initiative will be:

- Voluntary and incentive-based
- Focused on multiple economic and environmental benefits
- Designed to meet the needs of producers
- Cooperative and focused on building partnerships
- Measured to evaluate progress

USDA Building Blocks for Climate Smart Agriculture & Forestry

Through this initiative, USDA is committing to reducing greenhouse gas emissions and increasing carbon stored in forests and soils by over 120 million metric tons of carbon dioxide equivalent per year by 2025. That amount is equivalent of taking 25 million cars off the road, or offsetting the emissions produced by powering nearly 11 million homes.

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