United States Department of Agriculture
USDA Climate Hubs
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INFORMATIONAL MEMORANDUM

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SUBJECT: USDA Climate Hubs Status Report for the Third Quarter of FY 2023

Accomplishment highlights are presented for Q3 (April-June 2023).

In the third quarter, the Climate Hubs hosted or participated in **75** workshops and webinars that engaged with **4,935** people through capacity-building activities.

The Climate Hubs produced **62** publications in the third quarter with **10** peer reviewed publications and **52** white papers or grey literature products. The Climate Hubs developed **4** new K-12 educational modules (**3** are bilingual) already reaching **26,759** students.

Highlight

USDA National Institute of Food and Agriculture funded $10M in projects via the Extension, Education and USDA Climate Hubs Partnership program area priority. These projects provide effective and translatable approaches to address climate change through regional partnerships with the USDA Climate Hubs and Extension. The projects funded this year will focus on specialty crops across the nation, reducing impacts on agricultural workers in the Caribbean, advancing water resilient strategies along the Pacific coast, climate tools and capacity building in the Midwest, peer-to-peer learning for producers in the Northeast and Midwest, promoting climate smart forestry in the Southeast and supporting climate-smart practices for livestock production in the Southern Plains. Find out more about the projects (link1, link2).

Climate Hub Highlights for FY23 Q3 (April-June 2023)
The following accomplishments provide a snapshot of the USDA Climate Hubs' work and are organized into three workstreams: (1) *Science and data synthesis*, (2) *Technology/tool co-development and support*, and (3) *Outreach, convening, and training*.

Science and data synthesis

"Flash drought" is the rapid onset or intensification of drought. It typically occurs after intense heatwaves and/or high winds, which rapidly deplete soil moisture. Given soil moisture's importance in agriculture, flash drought can cause large economic losses, like those in the Northern Plains in 2017. The National Integrated Drought Information System hosted the 2023 Flash Drought Workshop for 85 scientists and practitioners to improve the ability to forecast future flash droughts. The **Northern Plains Climate Hub** served as a panel speaker to discuss how flash droughts affect agriculture compared to slower-forming droughts. This workshop increased climate and agricultural literacy.

Agriculture plays a role in mitigation and adaptation to climate change. Yet, advances in climate-smart agriculture require a better understanding of farmer adoption. The **California Climate Hub** presented results from a recent study using data from more than 900 in-person surveys of California farmers. The study revealed differences between high, moderate, and low adopters of climate-smart practices. Results show that farm size and water access are correlated with adoption of climate-smart practices. Importantly, all groups identified practice uncertainty as the greatest challenge, suggesting that to expand the adoption of climate-smart practices among California farmers, reducing uncertainty in practice efficacy will be key. The results provide insights into where to target outreach efforts to promote the adoption of climate-smart practices.

Climate change is affecting national forests in many ways, and national forest managers can benefit from climate change vulnerability assessments to help them develop adaptation strategies to reduce the negative effects of climate change. The **Northwest Climate Hub** shared information on climate change vulnerability assessments in the western U.S. as a part of the Pacific Northwest Research Stations SciCast series. The webinar described an approach to vulnerability assessments, common vulnerabilities and adaptation options, and lessons learned from previous assessments.

In their role supporting the Science Advisory Panel of the California Wildfire and Forest Resilience Task Force, **California Climate Hub** developed the Central Coast Regional Profile to summarize the socio-ecological context of the Central Coast region of California related to community and ecosystem resilience to wildfire and climate change. Hub staff conducted expert interviews (32 interviewees) and a stakeholder survey (784 respondents) to inform the profile. The profile was also informed by reviewing the best available science and incorporating current condition assessments developed by another research team. State decisionmakers, stakeholders involved in wildfire resilience-related projects, and the wider public received a new resource on the issues and opportunities for increasing ecological and community resilience to wildfire in the Central Coast.

Some of the earliest climate change vulnerability assessments on national forests were conducted over a decade ago. For the most part, these assessments are still relevant and appropriate for use, but in some cases, new data and information are available that can help national forest managers better identify climate change vulnerabilities. The **Northwest Climate Hub** conducted a workshop with 45 Olympic National Forest staff to review their 2011 climate change vulnerability assessment, make them aware of new data and information, and help them think about climate change adaptation options.

Technology/tool co-development and support

Forest landowners and managers in the southeast can benefit from guidance based on peer-reviewed science to remain resilient and productive in the face of climate change and variability. However, as risks increase and emerging threats arise, guidance must be developed and shared to help producers make climate-informed decisions. To address this, the **Southeast Climate Hub** worked with state forest health managers in Florida and Louisiana to co-produce state-specific emerging forest threats facts sheets. These fact sheets educate forest landowners about threats their forests may encounter and provide management practices to maximize resilience and productivity in a changing climate.

Spring precipitation alleviated long-term drought conditions throughout much of the Southern Plains. Rainwater harvest systems can provide a clean water source for use during periods of drought. The **Southern Plains Climate Hub** shared information and conducted demonstrations of rainwater harvesting systems via workshops and individual meetings with historically underserved farmers and ranchers in Okmulgee, Oklahoma; Navajo Sustainable Ag Project; conservation districts; Quapaw Tribe; Kaw Nation; Chickasaw Nation; Comanche Nation; Kickapoo Tribe of Kansas; Alabama-Coushatta Tribe of Texas, and Absentee Shawnee Tribe. Participants were informed of the benefits of using these systems to address water scarcity challenges and make their communities more resilient to drought.

Climate change adaptation across a diverse ownership landscape is a challenge in the Northeast with forests fragmented by private ownership. In a series of facilitated workshops in New Hampshire, the Nature Conservancy (TNC) and the **Northern Forests Climate Hub** engaged landowners and managers adjacent to TNC owned lands to develop a landscape-wide approach to forest adaptation and management. In two regional workshops, "New Hampshire Climate Resilient Forest Management Workshops (Southwest NH and Mt. Washington Valley)", managers developed customized forest management plans, using the Forest Adaptation Resources and the Adaptation Workbook.

Over the dryland Southwest, drought conditions have improved markedly since Spring 2022, and this has had positive impacts on surface water availability and soil moisture. However, drought persists and will continue to have negative effects on agriculture and water supplies. The **Southwest Climate Hub** continues to encourage drought preparedness and planning with monthly drought briefings and drought adaptation case studies in collaboration with Drought Learning Network (DLN). The Hub is trying different methods for advertising resources for drought planning in partnership with NOAA NIDIS (April, May, June) and has produced videos to highlight the Grass-Cast grassland productivity tool.

In the Northeast, many acres of forested land are lost every year because sea level rise, land subsiding, and subsequent saltwater intrusion result in trees becoming too wet and salty to support proper tree growth. This issue will get worse over time, with increasing acreage affected in the mid-Atlantic region most specifically. Landowners and managers must gain knowledge about this climate threat, as well as adaptation strategies. In collaboration with Rutgers University, the **Northeast Climate Hub** offers a website page of resources on saltwater intrusion and coastal forest dieback for landowners and managers who might be affected by saltwater intrusion.

Outreach, convening, and training

Interest in agroforestry as a climate adaptation and mitigation practice is increasing among landowners in the Northeast. Once trees are planted on working lands, their maintenance becomes a new management challenge. Many new agroforesters find they are lacking information about appropriate care for their agroforestry systems. As part of the Climate Learning Forum project, the **Northeast Climate Hub** is hosting a series of "Healthy Trees" working groups to provide information and support to land managers who have recently added trees to their land.

Earth Day is often celebrated with creative ways for the public to engage in conservation and stewardship issues. In many states, Envirothon® is hosted on Earth Day, providing an environmental and natural resource conservation problem-solving, team building, and leadership experience that is competition for high school students across the U.S. and beyond. In Montana, the **Northern Plains Climate Hub** collaborated with Cascade County Conservation District and Montana State University Extension to co-develop a presentation on how agriculture in the state is adapting to climate change. Information shared during this event reached 115 high school students and teachers at Montana's 2023 Envirothon® event.

Climate education at all ages is a critical agent in addressing climate change. Teaching young people about protecting the planet in a playful and solutions focused way can help them feel empowered to make a difference. The **Caribbean Climate Hub** and Atencion Atencion Foundation have worked together to create three bilingual web-based learning modules for kids about climate, forests, and agriculture. The modules include videos, activities, and exercises for better understanding and learning. The platform hosting the modules is freely accessible and currently used by 70,000 children ages 3-8 and nearly 7000 educators in Puerto Rico, Colombia, and United States.

The climate is changing faster in Alaska than in anywhere else in the U.S. Climate changes are affecting subsistence of Alaska Natives, but there is little information on how climate change will likely continue to affect important subsistence species. The **Northwest Climate Hub** conducted a webinar, titled Vulnerability of Alaska Native Tribes in Prince William Sound and Adjoining Kenai Peninsula to Selected Climate and Nonclimate Stressors, to provide participants with the key findings of a new report on climate change effects on Alaska Native Tribe subsistence.

Climate change is already driving disturbance in ecosystems across the Southwest region through unprecedented drought, disruptions to the hydrological cycle, reduced snowpack, and increasing vegetation stress and wildfire. It is essential that natural resource managers are knowledgeable of the adaptation options available to them for increasing ecosystem resilience to the impacts of climate change. The **Southwest Climate Hub** presented at the Southwest Ecological Restoration Institute meeting and co-hosted a meeting with the Valencia Soil and Water Conservation District. The Southwest Climate Hub reached 250 people and contributed to a climate-adapted revegetation plan for the Big Hole Fire in 2022, strengthened collaboration in the Middle Rio Grande, and enhanced climate literacy.

The ability of Forest Service to successfully implement proposed management on its lands is often dependent on the support or resistance of local stakeholders and partners. The **California Climate Hub** collaborated with Forest Service to design and facilitate a workshop to engage stakeholders on a restoration strategy for the Mendocino National Forest. The workshop leveraged multiple decision support tools to gather input from attendees on their values and priorities for the forest and build understanding of the trade-offs the restoration strategy seeks to balance. The workshop engaged participants to build awareness and support for the restoration strategy and gather input from approximately 70 local stakeholders to inform the strategy's continued development.

Regional tribes are identifying shared climate adaptation priorities with National Forests to advance implementable on-the-ground projects as part of the Tribal Forest Protection Act (TFPA). The **Northern Forests Climate Hub** and several tribal partners are collaborating to host a series of workshops among tribes and their associated National Forests to identify mutual climate adaptation priorities and project plans that Tribes can initiate through the TFPA. The third of these workshops occurred in June 2023. Participants considered projects such as promoting regeneration of culturally important trees, the indigenous use of prescribed fire, supporting marten habitat across the landscape, and other projects. Funding for this project came from Forest Service through the Northern Research Station.

Greater area burned in a warming climate is increasing the need for reforestation. Assisted migration is a promising tool for maintaining forest resilience as the climate warms and fire activity increases. But landowners and managers need additional information and resources to effectively implement assisted migration. The **Northwest Climate Hub** hosted a workshop: "Northwest Reforestation: choosing plant materials suited to current and future climates." The workshop promoted shared learning around selection of plant materials for climate-informed reforestation with 55 representatives from tribes, several state and federal agencies, non-governmental organizations, and private landowners. As a follow-up to the workshop, the Northwest Hub developed a web page with workshop outcomes, reforestation case studies on sugar pine, post-fire ponderosa pine and post-harvest, and related resources.

Sharing science helps to expand adaptation and application of climate-smart practices. Following a formal request from Caribbean Community (CARICOM) to President Biden, the **Southeast Climate Hub** Natural Resources Conservation Service co-lead led a team to share soil health practices via workshops to Caribbean Nations. Through lectures and field exercises, workshop participants improved their ability to reduce fertilizer use and prevent nutrient loss to the environment, thus protecting their natural resources. Participants also gained knowledge and experience that can reduce the impacts of climate change and increase efficiency and production for a secure food supply within the country. Over 100 agricultural extension agents participated in the three workshops (45 in St. Vincent and the Grenadines, 54 in Guyana, and 34 Jamaica).