

# Climate Change Research at USDA

## Science in the Research, Education, and Economics (REE) Mission Area

The U.S. Department of Agriculture (USDA) has strategic plans for the Department “to expand economic opportunity through innovation, helping rural America thrive; to promote agriculture production sustainability that better nourishes Americans while also helping to feed others throughout the world; and to preserve and conserve our Nation’s natural resources through restored forests, improved watersheds, and healthy private working lands.” Climate change has the potential to disrupt USDA efforts to meet these core obligations and responsibilities to the Nation.



The issue of climate change is complex and affects multiple USDA mission areas and agencies. **The Climate Change Program Office (CCPO)** operates within the Office of the Chief Economist and functions as the Department-wide coordinator of agriculture, rural and forestry-related global change program and policy issues facing USDA. Many agencies within the Department, including the Research, Education, and Economics (REE) research agencies, have a role conducting research and supporting climate change science:

The **Agricultural Research Service (ARS)** is currently setting its priorities for the next five years of climate change research, building on its climate change research that began nearly 20 years ago. The existing priority of understanding how climate change and agricultural systems interact will be shifting to an emphasis on predicting how agricultural systems will respond to a changing environment, and applying predictions to managing agricultural systems to society’s benefit in a changing environment. The program will address four key needs for solving problems, supporting decisions, and reducing risks; these include 1) managing carbon in agricultural systems, 2) sustaining agricultural production while minimizing emissions of methane and nitrous oxide, 3) creating resilience in agricultural systems as the environment changes, and 4) adapting to changes in weather and water in agricultural systems.





The **Economic Research Service (ERS)** climate change research program is analyzing potential farmer, domestic and international market responses to a new climate regime, with a focus on the role of risk management tools and other policy options for addressing potential impacts. A second line of inquiry focuses on the economic, environmental and land use implications of alternative policy and market-based approaches to addressing climate and energy concerns. The ERS climate change research program builds on extensive expertise in the economics of land use and land management, technology adoption, conservation program design, environmental markets, biofuels, benefits of public investment in R&D, international trade and the nature of commodity markets.



The **National Institute of Food and Agriculture (NIFA)** Climate Portfolio contributes significantly to the mission of USDA to provide leadership on agriculture production, natural resources management, food security, food safety, and climate-related issues based on sound public policy, the best available science, and efficient management. Its goal is to develop sustainable agriculture and forestry based strategies for adaptation, mitigation, and climate science education and extension. For example, under the Regional Approaches for Adaptation to and Mitigation of Climate Variability and Change portfolio element, large scale projects of a regional nature bring together a multi-state, multi-institutional, and trans-disciplinary team to integrate scientific discoveries and technology with practical application. And, under the Science Delivery and Decision Support portfolio element, researchers aim to develop the delivery of scientific research to support public discussion and planning, adaptive management, and policy making. This requires integrating knowledge from many diverse fields across science and non-science disciplines and making credible information available to stakeholders, educational entities, and the public.



*A USDA Vision for Climate Change Science:*

*Farmers, foresters, ranchers, land owners, resource managers, policy-makers, and Federal agencies are empowered with science-based knowledge to manage the risks, challenges, and opportunities of climate change and positioned to reduce emissions of atmospheric greenhouse gases and enhance carbon sequestration.*



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