



Project Title: [Effects of Climatic Variability and Change on Forest Ecosystems: A Comprehensive Science Synthesis for the U.S. Forest Sector](#)

Headline Title (2-5 words): **National Climate Assessment – Forest Sector Report**

Brief Summary (Abstract): This report is a scientific assessment of the current condition and likely future condition of forest resources in the United States relative to climatic variability and change. It serves as the U.S. Forest Service forest sector technical report for the 2013 National Climate Assessment (NCA) and includes descriptions of key regional issues and examples of a risk-based framework for assessing climate-change effects. The report builds on the portion of the 2009 NCA that discussed forest ecosystems and incorporates new findings from scientific and management perspectives.

Project Location: Nationwide

Partners: The report was written by a team of forty-five experts from federal service, universities, and NGO's, and was developed as a technical input document in support of the 2013 National Climate Assessment.

To provide national stakeholder input to the forest sector technical report, a workshop was held in Atlanta, Georgia, on July 12–14, 2011, to solicit input from public, private, and tribal forest stakeholders, nongovernmental organizations, academics, professional organizations, private corporations, and federal agencies. These stakeholder suggestions helped to frame the subject matter content and management options in the report, ensuring relevance for decision makers and resource managers.

Background: By the end of the 21st century, forest ecosystems in the United States will differ from those of today as a result of changing climate. Although increases in temperature, changes in precipitation, higher atmospheric concentrations of carbon dioxide (CO<sub>2</sub>), and higher nitrogen (N) deposition may change ecosystem structure and function, the most rapidly visible and most significant short-term effects on forest ecosystems will be caused by altered disturbance regimes. For example, wildfires, insect infestations, pulses of erosion and flooding, and drought-induced tree mortality are all expected to increase during the 21st century. These direct and indirect climate-change effects are likely to cause losses of ecosystem services in some areas, but may also improve and expand ecosystem services in others. Some areas may be particularly vulnerable because current infrastructure and resource production are based on past climate and steady-state conditions. The ability of communities with resource-based economies to adapt to climate change is linked to their direct exposure to these changes, as well as to the social and institutional structures present in each environment. Human communities that have diverse economies and are resilient to change today will also be prepared for future climatic stresses.

Project Goals: The assessment provides technical input to the 2013 NCA and serves as a framework for managing forest resources in the United States. The NCA aims to help the federal government prioritize climate science investments, and in doing so will help to provide the science that can be used by communities around the country to plan more sustainably for our future.



NATIONAL *fish, wildlife & plants*  
CLIMATE ADAPTATION STRATEGY

Strategy Goals Implemented: Goal 5, Strategy 5.2, Action 5.2.1 - Produce regional to subregional projections of future climate change impacts on physical, chemical, and biological conditions for U.S. ecosystems.

Climate Impacts Addressed: Changes in temperature and precipitation patterns, extreme weather events, and associated ecosystem disturbances and stressors such as wildfire, invasive species, and native pest populations.

Status of Project Implementation: Completed in 2012

Project Outcomes: The forest sector technical report is the key technical input to the NCA forest sector chapter and this is the first time that the forest sector is being addressed as a stand-alone sector in the NCA. The report examines biophysical, social, and economic consequences of changing climate on forests; and discusses management options that could help mitigate change and help forests adapt to climate change. Because impacts can vary regionally, the report includes a section that highlights the most important issues by region.

Funding Sources: USDA Forest Service

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