Appendix 1: Report Development Process

The National Climate Assessment (NCA) supports the U.S. Global Change Research Program (USGCRP) and its Strategic Plan[1] in multiple ways. The Strategic Plan focuses on climate science that informs societal objectives; the USGCRP program and the NCA help build an information base to support climate related decisions, including decisions to reduce human contributions to future climate change, and to adapt to changes that are occurring now and are projected in the future. In order to facilitate the integration of federal science investments with academic, public, and private sector climate change research, the Third NCA process focused on building strong relationships with stakeholders and experts outside the government. Early in the process, the National Climate Assessment and Development Advisory Committee (NCADAC) and NCA Coordination Office developed a strategy to engage a broad range of the American public. Open participation, communication, and feedback have been integral to the preparation of this far-reaching assessment.[2]

NCA Goal and Vision

As established by the NCADAC,[3] the overarching goal of the NCA process is to enhance the ability of the United States to anticipate, mitigate, and adapt to changes in the global environment that are increasingly linked to human activities.

The vision is to advance an inclusive, broad-based, and sustained process for developing, assessing, and communicating scientific knowledge of the impacts, risks, vulnerabilities, and response options associated with a changing global climate, and to support informed decision-making across the United States.

Legislative Foundations

The NCA is conducted under the auspices of the Global Change Research Act (GCRA) of 1990.[4] The mandate for the U.S. Global Change Research Program (USGCRP) as a whole is: "To provide for development and coordination of a comprehensive and integrated United States research program which will assist the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change."

Section 106 of the GCRA requires a report to the President and the Congress every four years that integrates, evaluates, and interprets the findings of the USGCRP; analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years.

Institutional Foundations

U.S. Global Change Research Program (USGCRP)

USGCRP is a federation of the research components of 13 federal departments and agencies that supports the largest investment in climate and global change research in the world. USGCRP coordinates research activities across agencies and establishes joint funding priorities for research. USGCRP's Strategic Plan, adopted in 2012, focuses on four major goals: advance

science, inform decisions, conduct sustained assessments, and communicate and educate. The USGCRP agencies maintain and develop observations, monitoring, data management, analysis, and modeling capabilities that support the nation's response to global change. The agencies that comprise the USGCRP are:

Department of Agriculture
Department of Commerce
Department of Defense
Department of Energy
Department of Health & Human Services
Department of the Interior
Department of State
Department of Transportation
Environmental Protection Agency
National Aeronautics and Space Administration
National Science Foundation
The Smithsonian Institution
U.S. Agency for International Development

The Subcommittee on Global Change Research (SGCR) oversees USGCRP's activities. SGCR operates under the direction of the National Science and Technology Council's (NSTC) Committee on Environment, Natural Resources and Sustainability (CENRS) and is overseen by the White House Office of Science and Technology Policy (OSTP). The SGCR coordinates interagency activities through the USGCRP National Coordination Office (NCO) and interagency working groups (IWGs).

National Climate Assessment (NCA) Components

The **Interagency NCA Working Group (INCA)** is comprised of representatives of the 13 government agencies listed above, plus additional agencies that have chosen to engage in supporting the NCA activities. INCA is responsible for coordinating, developing, and implementing interagency activities for the NCA, providing critical input to identify and support future NCA products, and developing interagency assessment capacity at the national and regional scales. Through INCA, the agencies have supported the development of the 30 chapters and the process to create the Third NCA report in a variety of ways.

The **National Climate Assessment and Development Advisory Committee (NCADAC)** is a 60 member federal advisory committee established by the Department of Commerce on behalf of USGCRP. Forty-four non-Federal NCADAC members represent the public, private, and academic sectors; 16 non-voting ex-officio members represent the USGCRP agencies, the Department of Homeland Security, the SGCR, and the Council on Environmental Quality. The NCADAC charter charges the group with developing the Third NCA report and with providing recommendations about how to sustain an ongoing assessment process. The NCADAC selected the authors of the individual chapters and coordinated many of the assessment activities leading

to this report. This included NCADAC meetings and more than 20 NCADAC subcommittee working groups on specific assessment needs (for example, regional and sectoral integration, engagement and communication, indicators, and international linkages). An Executive Secretariat of 12 individuals (a subset of the full committee) helps to coordinate the activities of the full committee.

The **NCA Coordination Office** is a part of the USGCRP National Coordination Office in Washington, D.C. The office is supported and funded through an interagency agreement with the University Corporation for Atmospheric Research (UCAR). A team of UCAR staff and federal detailees (agency employees assigned to the NCA Coordination Office) with expertise in planning, writing, and coordinating collaborative climate and environmental science and policy activities provides support for the development of the NCA report and sustained assessment.

The **NCA Technical Support Unit** is funded by NOAA and is located at NOAA's National Climatic Data Center in Asheville, NC. The TSU staff provides multiple kinds of support to the NCA, including climate science research, data management, web design, graphic design, technical and scientific writing and editing, publication production, and meeting support.

The **National Climate Assessment Network (NCAnet)** consists of more than 100 partner organizations that work with the NCA Coordination Office, NCADAC, report authors, and USGCRP agencies to engage producers and users of assessment information.[5] Partners extend the NCA process and products to a broad audience through the development of assessment-related capacities and products, such as collecting and synthesizing data or other technical and scientific inputs into the NCA, disseminating NCA report findings to a wide range of users, engaging producers and users of assessment information, supporting NCA events, and producing communications materials related to the NCA and its report findings.

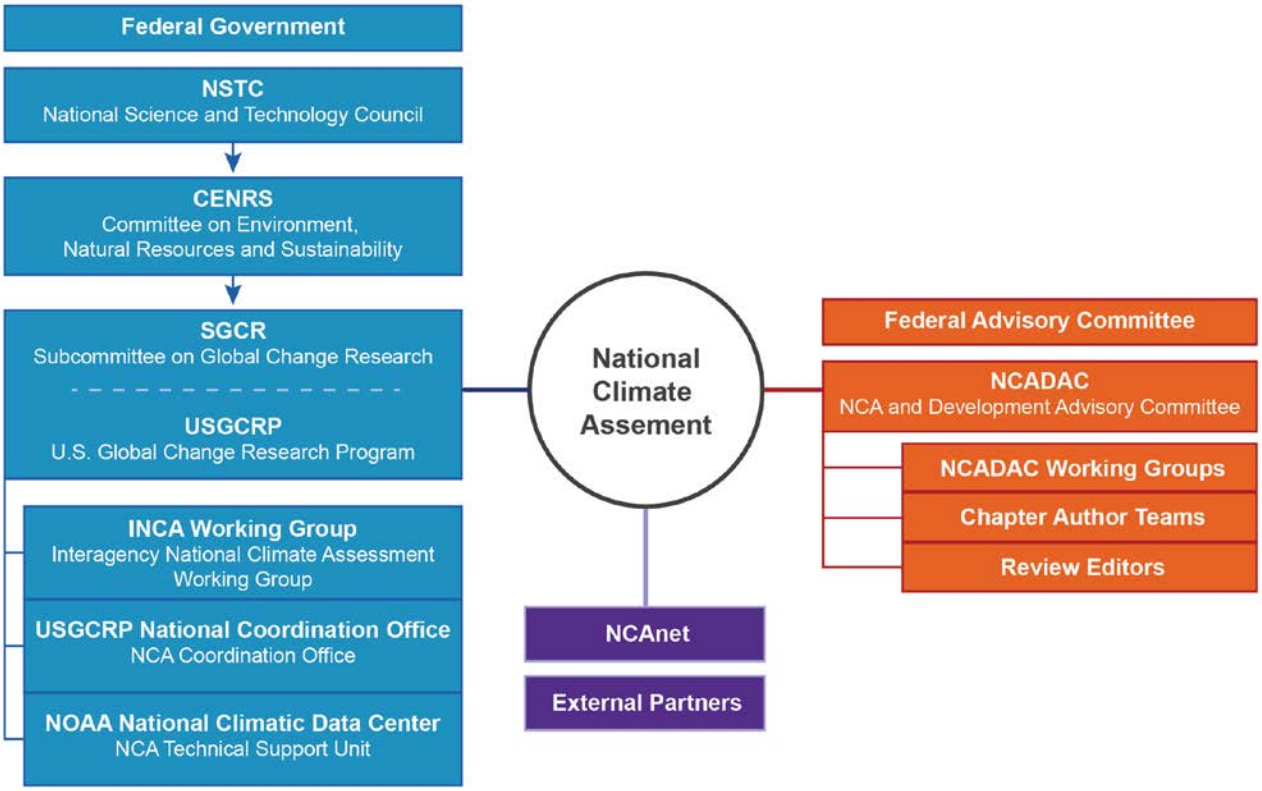

Figure: Organization of NCA components

Creating the Third NCA Report

Process Development

The NCA Engagement Strategy provides a vision for participation, outreach, communication, and education processes that help make the NCA process and products accessible and useful to a wide variety of audiences. The overall goal of engagement is to create a more effective and successful NCA – improving the processes and products of the effort so that they are credible, salient, and legitimate and building the capacity of participants to engage in the creation and use of NCA products in decision-making.[2] The strategy describes a number of mechanisms through which scientific and technical experts, decision-makers, and members of the general public might learn about and participate in the NCA process.

As part of the assessment process, a series of 14 process workshops helped establish consistent assumptions and methodologies. The resulting reports provide a consistent foundation for the technical input teams and chapter authors.

The NCA Coordination Office organized listening sessions, symposia, and sessions at professional society meetings during the development of the NCA report and sustained assessment process. These sessions provided updates on the NCA process, solicited broad input from subject matter experts, and collected feedback on the approach, topics, and methodologies under consideration.

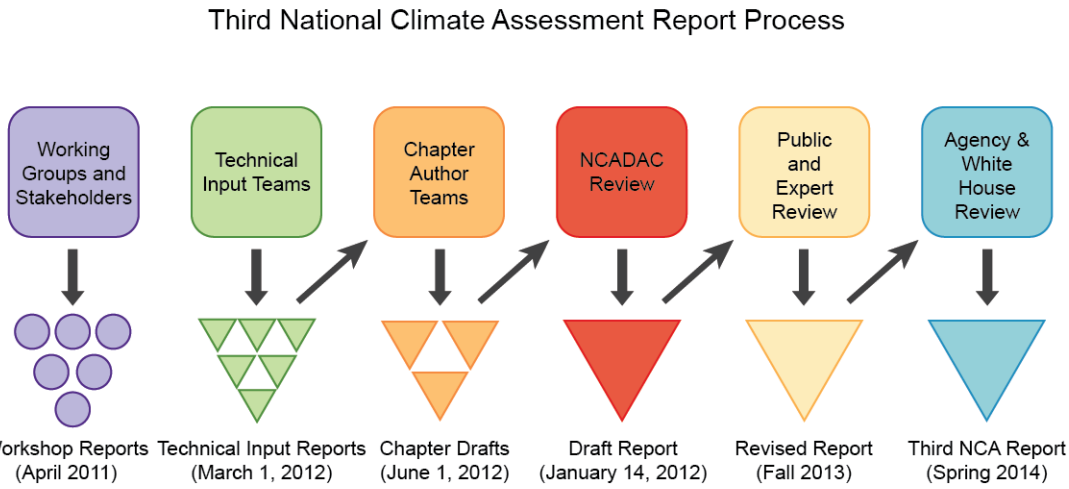

Figure. This graphic illustrates the activities and products that were developed during the third NCA report development process.

Technical Input Reports

A public Request for Information[6] resulted in submission of more than 500 technical input documents authored by more than 800 individuals from academia, industry, and government, including 25 technical inputs[7] sponsored by USGCRP agencies. These inputs included documents and data sets for review and consideration by the author teams that developed the NCA report. Technical input authors used a variety of mechanisms to engage stakeholders in the scoping, writing, and review of their documents, including workshops, web-based seminars, and public comment periods, among other methods.

In addition, the Technical Support Unit climate science team developed nine peer-reviewed regional climate scenario documents (one for each of the eight regions and one for the contiguous U.S.),[8] providing a scientific consensus view of historical climate trends and projections under the IPCC Special Report on Emissions Scenarios (SRES) A2 and B1 scenarios.[9] A separate interagency committee developed four peer-reviewed sea level rise scenarios.[10] These scenarios were used by chapter authors as underpinnings for their impact assessments.

Third NCA Report Draft Development and Review

The NCADAC selected two to three convening lead authors and approximately six lead authors for each chapter, based on criteria that included expertise, experience, geography, and ensuring a variety of perspectives. They included authors from the public and private sectors, non-governmental organizations, and universities. Beginning in December 2011, each of the author teams met multiple times by phone, web, and in person to produce and refine drafts of their chapters. Traceable accounts developed for each chapter provide transparent information about the authors' decision processes, scientific certainty, and their level of confidence related to the key findings of their respective chapters. All authors served in a volunteer capacity.

After reviewing the draft Third NCA report, the NCADAC released it for public review and comment on January 14, 2013.[11] Concurrently, the NCA underwent an independent expert review by the National Research Council, a part of the National Academies. A three-month review period allowed individuals and groups to examine the draft and provide comments aimed at improvement. The comments were provided using a secure online comment system to ensure that all comments were captured and appropriately addressed.

Regional town hall meetings, conducted by the NCA Coordination Office (one per region, plus coasts) and by NCAnet partners (three additional meetings), brought together authors, NCADAC members, and members of the public to discuss the NCA process and encourage participants to submit comments on the draft report. Report authors, NCADAC members, NCA staff, and NCAnet partners organized, spoke at, and participated in sessions at professional society meetings, web-based seminars, community meetings, and other events similarly aimed at providing an overview of the draft report and encouraging comments.[12]

By the time the public comment period closed on April 12, 2013, the online comment system received 4,161 comments from 644 government, non-profit, and commercial sector employees, educators, students, and the general public. Chapter author teams and the NCADAC amended the draft report in response to comments, prepared written responses to each comment received, and external review editors evaluated the adequacy of the responses to the comments on each chapter. As the result of a NCADAC consensus decision, the entire review process was "blind", that is, NCADAC members and authors did not know the identity of commenters when responding to each comment. The public comments (including commenters' identities) and the chapter authors' responses to those comments were posted online with the final report.

The National Research Council provided a second review of the report, and the NCADAC considered this review in developing a final draft for submission to NOAA for government review in fall 2013.

NCA Final Report

Any adjustments to the NCADAC's Fall 2013 draft as a result of the government review process were made with the authors' approval, and the NCADAC approved the final form of the report in Spring 2014. Once accepted and finalized following government review, the report is now provided as the assessment by the Federal government of the United States, pursuant to the requirements of the Global Change Research Act. A number of products derived from the report support the outreach activities following the report release.

Engagement Activities

What follows is a sample of activities convened in support of the development of the Third NCA Report. A full list of activities is available online at http://assessment.globalchange.gov.

NCADAC Meetings: All meetings were open the public. The presentations, documents, and minutes for each NCADAC meeting are available online at http://www.nesdis.noaa.gov/NCADAC/Meetings.html.

- April 4-6, 2011, Washington, DC
- May 20, 2011, Teleconference
- August 16-18, 2011, Arlington, VA

- November 16-17, 2011, Boulder, CO
- April 10, 2012, Teleconference
- June 14-15, 2012, Washington, DC
- August 15, 2012, Teleconference
- September 27, 2012, Teleconference
- November 14-15, 2012, Silver Spring, MD
- January 11, 2013, Teleconference
- May 13, 2013, Teleconference
- July 9-10, 2013, Washington, DC
- November 18, 2013, Teleconference

Process and Methodology Workshops: Reports from these workshops are available online at http://www.globalchange.gov/what-we-do/assessment/nca-activities/workshop-and-meeting-reports.

- Midwest Regional Workshop, February 2010, Chicago, IL
- Strategic Planning Workshop, February 2010, Chicago, IL
- Scoping the Product(s) and Work Plan for the Third National Assessment, June 2010, Washington, DC [no report available]
- Communications Scoping Meeting, July 2010, Washington, DC [no report available]
- International Scoping Meeting, August 2010, Washington, DC [no report available]
- Knowledge Management Workshop, September 2010, Reston, VA
- Regional Sectoral Workshop, November 2010, Reston, VA
- Ecological Indicators Workshop, November 2010, Washington, DC
- Scenarios Workshop, December 2010, Arlington, VA
- Climate Change Modeling and Downscaling Workshop, December, 2010, Arlington, VA
- Valuation Techniques and Metrics Workshop, January 2011, Arlington, VA
- Vulnerability Assessments Workshop, January 2011, Atlanta, GA
- Physical Climate Indicators Workshop, March 2011, Washington, DC
- Societal Indicators Workshop, April 2011, Washington, DC

Agency-Sponsored Technical Input Development Workshops

- Trends of Severe and Local Storms, including Tornadoes and Extreme Precipitation, July 2011, Asheville, NC
- Forestry Sector Stakeholder Workshop, July 2011, Atlanta, GA
- Land Use and Land Cover Stakeholder Workshop, November 1011, Salt Lake City, UT
- Energy Supply and Use Workshop, November 2011, Washington, DC
- Energy, Water, Land Planning Meeting, November 2011, Washington, DC
- Urban Infrastructure and Vulnerabilities Workshop, November 2011, Washington, DC
- Trends in Observed Causes in Heat and Cold Waves as well as Drought, November 2011, Asheville, NC
- Attribution of Changes in Climate Extremes, December 2011, Asheville, NC
- Ecosystems, Biodiversity, and Ecosystem Services Workshop, January 2012, Palo Alto, CA
- Water Sector Technical Input Workshop, January 2012, Washington, DC
- Coastal Zone Stakeholders Meeting, January 2012, Charleston, SC

- Climate Change and Health Workshop - Southeast, February 2012, Charleston, SC
- Rural Communities Workshop, February 2012, Charleston SC
- Climate Change and Health Workshop - Northwest, February 2012, Seattle, WA

Listening Sessions

- Annual Meeting of the Association of American Geographers, April 2011, Seattle, WA
- American Water Resource Association Spring Specialty Conference, April 2011, Baltimore, MD
- International Symposium on Society and Resource Management, June 2011, Madison, WI
- Annual Soil and Water Conservation Society Conference, July 2011, Washington, DC
- Ecological Society of America Annual Meeting, August 2011, Austin, TX
- American Meteorological Society Annual Meeting, January 2012, New Orleans, LA

Regional Town Hall Meetings

- Hawaii & Pacific Islands Town Hall, December 2012, Honolulu, HI
- Southwest Regional Town Hall January 2013, San Diego, CA
- Northeast Regional Town Hall, January 2013, Syracuse, NY
- Great Plains Regional Town Hall, February 2013, Lincoln, NE
- Alaska Regional Town Hall, February 2013, Anchorage, AK
- Midwest Regional Town Hall, February 2013, Ann Arbor, MI
- Southeast Regional Town Hall, February 2013, Tampa, FL
- Northwest Regional Town Hall, March 2013, Portland, OR
- Oceans and Coasts Town Hall, April 2013, Washington, DC

NCAnet Partners Activities

The NCAnet Partners meet monthly (since January 2012) in Washington, D.C.; teleconference and web conference capabilities allow participants to join remotely. NCAnet Partners hosted more than 25 events around the country for the public and stakeholders throughout the NCA process. A list of partners, minutes from meetings, and a list of events and resulting products is available at http://ncanet.usgcrp.gov.

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