

Future Directions for the U.S. National Climate Assessment

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US Global Change Research Program



Global Change Research Act (1990):

“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.”



United States
Global Change
Research Program

13 Federal Departments & Agencies +
Executive Office of the President

More information:

<http://www.globalchange.gov>



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National Climate Assessment: GCRA (1990), Section 106

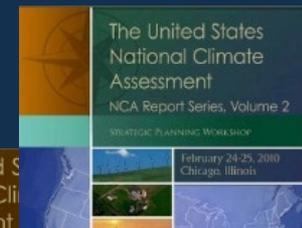
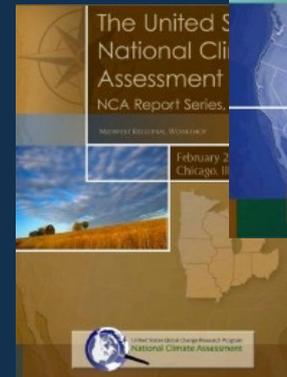
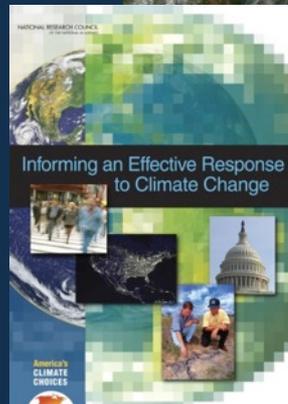
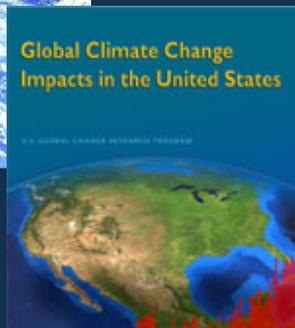
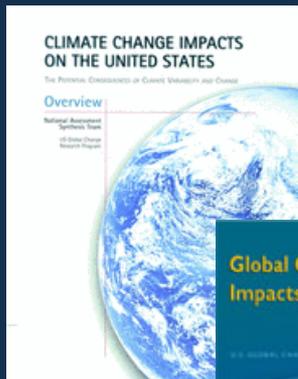
...not less frequently than every 4 years, the Council... shall prepare... an assessment which –

- **integrates, evaluates, and interprets** the findings of the Program (USGCRP) and discusses the scientific uncertainties associated with such findings;
- **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.**



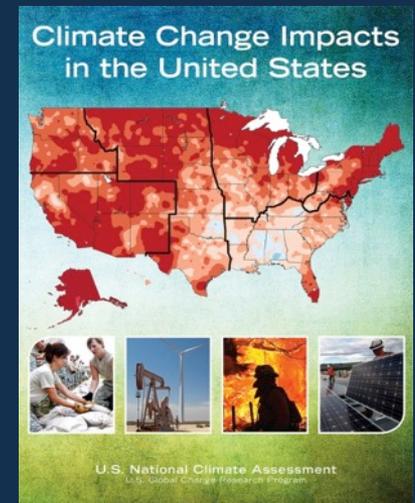
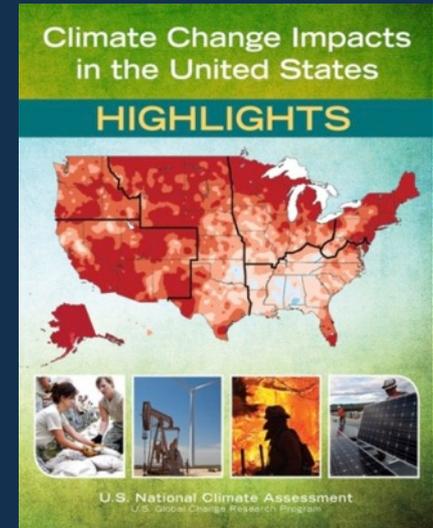
THE NATIONAL CLIMATE ASSESSMENT

- The NCA is an ***inclusive, broad-based, and sustained process*** for assessing and communicating scientific knowledge of the impacts, risks, and vulnerabilities associated with a changing global climate in support of decision-making across the United States.



NCA3: CLIMATE CHANGE IMPACTS IN THE U.S.

- Full report (Digital, 850 pages)
 - Interactive, web-based
 - Linked to data and sources
 - Graphics (high-res files, interactive figures)
 - Supporting information
 - Slides and other materials
- Highlights (Printed, 148 p)
- NCA2014.globalchange.gov
 - Over 150k web hits in the first 24 hours!
 - Over 1 Million in the first 3 months



NCA SUCCESS

- Three aspects of NCA3 were crucial to success:
 - Stakeholder engagement
 - Clear communication principles
 - Transparency of process and information

NCA: STAKEHOLDER ENGAGEMENT

Ongoing stakeholder engagement is crucial to the success of the NCA process and quadrennial reports.

- **Workshops:** Numerous workshops on Assessment methods & process
- **Formal and informal conversations:** Listening sessions, town hall meetings, professional society meetings; other events
- **Technical inputs and special assessment reports:** Regional, sectoral, and response topics
- **Public comment periods:** on topics, draft reports, and ongoing activities
- **NCAnet:** network of +150 partner organizations, multiple “affinity groups”; online at <http://ncanet.usgcrp.gov>



NCANet

Business & Industry

Professional Societies

Faith

Issue-Based NGOs (Enviro, Health, etc.)

Education (K-12, Higher Education, Informal)

Government (Local, State, Federal)

Tribal



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THIRD NCA REPORT PROCESS

Third National Climate Assessment Report Process



NCA3 COMMUNICATION

- Written in a popular style for non-technical audiences
- Chapters are arranged around key messages
- Lots of photos, case studies and examples
- “Risk-based framing” highlights impacts and opportunities that are important for decision makers
- Strong figures with access to supporting information (metadata) via Global Change Information System
- Access to underlying technical information, including traceable accounts, data sets, and reference material

GLOBAL CHANGE INFORMATION SYSTEM (GCIS)

- Information infrastructure that provides **transparency**
- Connects a user to all relevant information:
 - Authors
 - Key Findings
 - Figures
 - Datasets (and calculations)
 - References
 - Supporting information
- Cutting edge of information documentation!



NCA3 Online

nca2014.globalchange.gov

Key Message 6: Water Quality Risks to Lakes and Rivers
Increasing air and water temperatures, more intense precipitation and runoff, and intensifying droughts can decrease river and lake water quality in many ways, including increases in sediment, nitrogen, and other pollutant loads.

Water Quality Risks to Lakes and Rivers
Water temperature has been increasing in some rivers. The length of the season that lakes and reservoirs are thermally stratified both upper and deeper layers is increasing with increases in air and water temperatures. In some cases, seasonal mixing may be eliminated in shallow lakes, decreasing dissolved oxygen and leading to excess concentrations of nutrients (nitrogen and phosphorus), heavy metals (such as mercury), and other toxins in lake waters. In lakes, lower and more persistent low flows under drought conditions as well as higher flows during floods can worsen water quality, increasing precipitation intensity, along with the effects of wildfires and fertilizer use, are increasing sediment, nutrient, and contaminant loads in surface waters used by downstream water users and ecosystems. Mineral weathering products, like calcium, magnesium, sodium, and silicon and nitrogen loads have been increasing with streamflow. Changing land cover, food production, and other factors are expected to increase...

Supporting Evidence

data.globalchange.gov

Global Change Information System
Connecting global change resources.

image : 26fc56f4-b4e0-425b-adc8-14c6d961d558

Global Temperature and Carbon Dioxide
Cooperative Institute for Climate and Satellites - NC
Kenneth Kunkel

The time range for this image is January 01, 1980 (00:00 AM) to December 31, 2012 (23:59 PM).
This image was created on July 31, 2013.
The spatial range for this image is -90.00° to 90.00° latitude, and -180.00° to 180.00° longitude.

Attributes: temperature, carbon dioxide, global observed

This image was derived from dataset nca3-nccl-gsl-anomalies-r201307 using the activity 26fc56f4-nca3-nccl-gsl-anomalies-r201307-process. This image was derived from dataset nca3-epi-co2-r201307 using the activity 26fc56f4-nca3-epi-co2-r201307-process.

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Alternatives: [JSON](#) [YAML](#) [text](#) [Twitter](#) [%stripes](#) [JSON Images](#) [HTML+JSL](#) [HTML+JSON](#) [Graphics](#) [SVG](#)

PDFs in print layout and graphics files are also available:

www.globalchange.gov/nca3-downloads-materials



U.S. Global Change
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SUSTAINED ASSESSMENT

- Build a **sustained assessment process** that improves our ability to understand, assess, anticipate, and respond to global change impacts and vulnerabilities
- Connect institutions and activities in regions and sectors through **networks** of information providers and users
- **Continuously** define climate-related risks & opportunities over time, at national, regional, and local scales
- Incorporate **ongoing evaluation** of effectiveness
- Embrace an **evolving framework** that encourages information providers and users to pursue new science and new knowledge to meet their own needs



EXAMPLES

- **Special reports:** In-depth reports on topics of emerging need or new science
 - Climate and Health
 - Food Security
 - Others: Drought, Forests, Carbon Cycle, Extremes?
- **Indicators system:** Climate indicators that help users connect to relevant datasets and information
 - Pilot stage, ongoing development
- **Scenarios decisions:** Early selection of climate information for focus in the 2018 NCA
 - CMIP5 and RCPs 4.5 and 8.5 as focus for impacts, other information – i.e., RCP2.6 - to be included as appropriate
- **Ongoing engagement:** NCAnet



CHALLENGES

- Cross-sectoral impacts
 - Water-Energy-Land example in NCA3
 - How to model, how to explain?
- Scenario sync
 - Scenarios - model intercomparison – impacts studies – assessments
 - How to sync up cycles? Or best manage the inherent out-of-sync?
- Communicating uncertainty
 - How to frame risks in a decision-relevant way?
 - How to discuss IAM results?

Third National Climate Assessment

Climate Change Impacts in the United States

<http://nca2014.globalchange.gov>



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[@usgcrp](https://twitter.com/usgcrp)

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