INCA Working Group: Sustained Assessment
Potential 2013-2017 NCA Special Report Topics
Draft 6-7-2012

Objective

The purpose of this document is to present a set of priority National Climate Assessment (NCA) topics identified by the Interagency National Climate Assessment Task Force (INCA) that might be undertaken in the near term, as part of the sustained assessment process. This document is intended to initiate discussions about priority NCA activities among the entities involved in the assessment: the National Climate Assessment Development Advisory Committee (NCADAC), the Subcommittee on Global Change Research (SGCR), and the staff of the US Global Change Research Program (USGCRP).

Background

NCA products provide a status report on climate change science and impacts. They are based on scientific observations made at multiple scales using a variety of techniques; they identify current trends in natural, social and physical systems and compare these observations to predictions from a variety of models. The NCA aims to incorporate advances in the understanding of climate science into larger social, ecological, and policy systems, and with this provide integrated analyses of impacts and vulnerability.

NCA efforts create new scientific capabilities and knowledge that are based on information from diverse sources including modeling and scaling techniques, integrated observational data sets, valuation methods, climate indicators, and scenarios, and the observations of scientists and managers across the country. However, the foundations of the NCA are the long-term research efforts that are coordinated more broadly by USGCRP. Improved overall coordination and communication spanning the underlying science and assessment efforts will strengthen and accelerate desired USGCRP outcomes – a coordinated research portfolio, science priorities informed by stakeholder feedback and national needs as seen through the lens of the NCA, and improved science integration for the growing number of cross-disciplinary science questions and topics.

Recognizing the important contribution the NCA can make to the ongoing challenge of understanding climate change impacts and improving the Nation's ability to respond to those impacts, the US Global Change Research Program (USGCRP) incorporated a "Conduct Sustained Assessments" goal in its recently adopted Strategic Plan (May 2012). The benefits of a sustained assessment approach include increased efficiency and leveraging of existing federal

science investments, deeper stakeholder involvement, a more effective knowledge base for adaptation and mitigation decision support, and a way to inform science priorities over time.

One part of the strategy for the sustained assessment process is to initiate important "special assessment reports" and processes in the interim between the four-year synthesis reports (i.e., during the 2013-2017 time frame). Similar to those of the IPCC, these special reports and activities focus on topics of national importance to either deepen our understanding of climate change effects on a particular sector or region (for example, oceans) or to investigate new issues of concern (for example, food security). The ultimate goal is to build the national capacity to conduct more sophisticated, useful and credible assessments over time, and to support decisions that reduce risk and increase opportunities for the United States, and more broadly, across the globe.

An important conversation in the sustained assessment process is finding the intersection between topics that are of high interest to the federal agencies that support the NCA activities, and the needs and priorities of the National Climate Assessment Development Advisory Committee (NCADAC). The NCADAC is the federal advisory committee that is chartered to produce the quadrennial synthesis reports that are required under the GCRA. They are also required to provide advice regarding the sustained assessment process, and can choose to produce NCA special reports. Such reports would need to be approved by the NCADAC, and adhere to federal Information Quality guidelines) and Federal Advisory Committee Act (FACA) requirements. In contrast, the Interagency National Climate Assessment Working Group (INCA) represents the USGCRP agencies and manages the NCA from an operational perspective. The INCA has been discussing potential interim report topics and criteria for prioritizing them in the context of developing an interagency operating plan for the NCA. These interim reports, which may or may not be associated with the NCADAC special reports, can result in a wide array of products; for example:

1. Single-agency or multi-agency technical input documents that are expected to contribute to future NCA synthesis products
2. Multi-agency synthesis and assessment products (SAPS) that may also be produced as USGCRP documents
3. Progress reports on the development of important NCA products and activities; for example, the status of indicators or scenarios, or the development of the Global Change Information System (GCIS)
4. Reports that synthesize the state of knowledge on a topic based on federal and/or external investigations or workshops or that establish or refine assessment methodologies

5. Research initiatives that directly respond to gaps identified by NCA teams. These initiatives may include both internally funded and externally funded research, and may result in data, reports or publications, and/or improved access to information.

The INCA, working through the NCA coordination office, will engage the NCADAC to determine special report topics of mutual interest for consideration as a NCADAC Assessment Product. These topics could be included in the NCADAC's own priority activities and result in a full review process (IQA, National Research Council, public/agency comment and response, etc.). The NCADAC and the INCA will need to work collaboratively to select topics and implement the processes that are required to ensure appropriate outcomes. The current expectation is that several of these assessments would be ongoing at any given time, with delivery dates staggered across the years starting with 2014. In providing this document to the NCADAC, the INCA is initiating a dialogue that we hope will result in decisions about near-term products (2014-2017) that are of interest to both groups.

Special Report Topics

The INCA has been developing an evolving list of NCA priorities over time. Substantial agency research and assessment activities have already culminated in a set of topics and reports that will underpin the 2013 Report. Some of these topics are included by legal requirement in the quadrennial synthesis reports of the NCA. As a result, the emphasis for this prospective list of priorities is primarily on new topics, recognizing that more "traditional" topics will also require investments in the time frame prior to the 2017 assessment.

This preliminary list of potential special report topics emerged from INCA discussions at their April 12, 2012 retreat. Agency interest has also been identified and compiled within a broader matrix of topics and activities that includes many more "typical" assessment topics, including scientific basis for climate change evaluations, sectors, regions, mitigation, adaptation, assessment processes, and development of assessment tools and capacity. These topics were identified based on interviews with the principals of USGCRP from NASA, NOAA, DOE, DOI, USDA and EPA. Input was also received from DOD/USACE and NSF. Each agency representative was asked to review this information, in addition to considering their current involvement in the NCA, in formulating their priorities.

The discussion of success metrics for the NCA factored into, and essentially merged with prioritization criteria for choosing interim report criteria. These included:

- Communication metrics (for example, potential for citations or publications)
- Use by decision-makers on an ongoing basis

- Advancing knowledge or understanding on topics of scientific or societal interest
- Improved coordination of federal activities/ added value from the interagency process
- Engagement of stakeholders
- Achievement of objectives from the NCA strategy documents (including sustaining the NCA process)
- Achievement of agency strategic mission objectives
- Increased awareness and accessibility of agency data
- Ability to produce credible and actionable climate-related information
- Potential for high-quality USGCRP-branded products

Other criteria that were considered came from the Sustained Assessment Working Group of the NCADAC. They include:

- Meeting the requirements of the Global Climate Change Research Act of 1990
- Aligning activities to the core mission of the NCA
- Leveraging other non-NCA activities that are underway and on their own timetables
- Sequencing of activities based upon dependencies (critical path considerations)
- Enhancing ability to support the next quadrennial NCA report
- Focusing on users by addressing needs and interests of multiple constituencies versus narrow interests
- Needing to advance fundamental capabilities for conducting vulnerability, impact, and adaptation assessments
- Recognizing and supporting activities that would likely not be accomplished outside the NCA context
- Integrating and facilitating otherwise disparate activities that collectively can enhance scientific understanding or increase resilience
- Leveraging other assessment work
- Having defined pathways for moving forward (i.e. funding, presence of leadership or champion, agency and NCADAC interest, and available opportunities to proceed)
- Facilitating ongoing assessment of how user or stakeholder needs are being met

Potential Special Report Topics

The following list of 11 topics are those that are currently highest priority from the INCA member perspective[1] based on their views of multiagency support, potential for leverage, and strong interest in the topic. An additional 10 topics are of significant interest and could also be considered if sufficient interagency support developed. Although there is not an exact

[1] This document has not yet been reviewed by the USGCRP Principals (as of May 20, 2012)

correspondence between the topics in this list and the USGCRP priority topics identified through separate discussions with the Principals, several of these topics are directly related to short term USGCRP priorities.

Topics with Multi-Agency Support/Interest

- **Arctic** – There is a major opportunity to leverage high-profile activities currently underway in the Arctic prior to 2017, including the US-led Arctic Change Assessment, other major investments and interests from DOE, NASA, NSF, DOI, USACE, and DOD, as well as related US efforts under the Arctic Council.
- **Food security** – Increasing demand for food production globally, underlying stresses and vulnerability, and associated climate risks would be the focus of this effort. USDA plans to be the Agency lead for the effort, in collaboration with the NCADAC and other relevant USGCRP agencies, when a determination is made regarding the type of report that is to be produced on the subject.
- **Coastal** – Most agencies have facilities or assets at risk in coastal zones, and coastal zones are identified as high-risk areas in all regions. The NSF is developing a coastal theme as part of its Science, Engineering and Education for Sustainability (SEES) portfolio. The specific focus of this effort will be determined through an evaluation of NCA inputs, interagency dialog and consultation with the NCADAC.
- **Scenarios** – Socioeconomic and land use scenarios are important for improving our ability to assess climate change impacts and responses. In addition, to build useful scenario products that have regional applications, there needs to be a greater investment in producing regional models of sea level change and/or downscaling/rightscaling of climate model information.. Agencies are also interested in investigating the potential of participatory scenario planning as an engagement/adaptation/regional planning tool. This effort would seek to address all of these issues.
- **Indicators** – Developing a national integrated set of indicators that monitor rates of change and the capacity to respond is a major part of the NCA strategy. These indicators would be connected to the GCIS and serve as an ongoing update of the status of important issues (e.g. Sea ice extent) without requiring a new NCA report each time the observations are updated. NOAA and NASA are planning to invest in internal and external support for contributing to an indicator system.
- **Oceans** – There is substantial opportunity for partnership with the National Ocean Council and other external interests. Oceans are undergoing rapid changes and combined with the very significant vulnerabilities identified to date increases the need for additional interagency oceans work related to the NCA.

- **Water** – Three major studies have been suggested by INCA, including one underway by DOE for improved insights into regional integrated water cycles, exploring human and natural systems interactions, the role of both groundwater and surface water, and gaps in hydrologic cycle understanding that are important from a water management perspective; an expanded focus on Water Resources and Drought; and an assessment on Water Quality and Climate. The NSF has a program on water sustainability and climate as part of SEES. USACE has a current interest in and is supportive of research to help characterize the regional response of the hydrologic cycle to climate change, especially to changing extremes at both ends of the distribution of precipitation, drought, and floods.
- **Human Health**– This report would be one, or several, place-based, data driven assessments of specific health impacts and vulnerable populations. Depending on resources and availability of data, this could be done at the scale of a city or a larger region of the United States.
- **Valuation** – This refers to economic and non-economic valuation of climate change impacts and responses. A report would focus on improved techniques for establishing the cost of impacts across regions, sectors and timescales as well as documenting the costs and benefits of local and regional adaptation and mitigation responses.
- **Uncertainty** – This is the characterization, attribution, and understanding combined uncertainties in human and natural systems. This topic would address uncertainties associated with models and model results, implications for users and producers of science, and improved decision support in the context of attribution. Work on communicating uncertainties may also be included in a report.
- **Extreme Events: Impacts and Adaptation Responses** – This effort would focus on informing decisions and risk reduction strategies associated with extreme events in specific sectors and regions. The potential for transferring applications to other locations will also be considered.

Topics with Possible Agency Interest

- International influences on physical, social, economic, and environmental impacts in the US
- Sustained assessment relative to timing and staging of other major science initiatives, (e.g. IPCC)
- Methodologies for evaluation of adaptive capacity/tipping points and for evaluation of effectiveness of adaptive responses (lessons learned)
- State of the science in decadal forecasting/short-term predictive capacity
- Extended investigations of impacts and vulnerabilities of Tribal lands and resources

- Information systems to support decisions
- Urban systems, vulnerability and monitoring capacity
- Analysis of observed change (attribution)
- Capacity for using assessments (touches on information systems, sustained assessment, and evaluation)
- Watershed/system analysis: Mississippi and near shore Gulf environment; SF bay delta
- Carbon sequestration and dynamic emissions studies