



## Evaluation of the Third National Climate Assessment (NCA3) Production and Dissemination Processes and Products

### FINAL EVALUATION REPORT

Prepared for the North Carolina Institute for Climate Studies (NCICS) and the US Global Change Research Program (USGCRP)

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## EXECUTIVE SUMMARY

The Third National Climate Assessment (NCA3), *Global Climate Change Impacts in the United States* (Melillo et al., 2014), is the product of a team of over 350 experts drawn from academia; local, state, tribal, and federal governments; and the private and non-profit sectors. Led by a 60-person Federal Advisory Committee, the development process and resulting NCA3 report included consideration and incorporation of hundreds of inputs received from a diverse set of public and private stakeholders across the United States as well as extensive review by experts, federal agencies, a panel of the National Academy of Sciences, and the public. NCA3 was released online in May 2014 with derivative print products (*Overview* and *Highlights*), providing climate change information organized by regions, sectors, and response strategies.

## EVALUATION PURPOSE AND METHODS

The purpose of this evaluation was to learn from the experiences of developers of the NCA3 on the process of creating and disseminating the report; as well as from users on their experiences with the report. In this evaluation, we identify lessons learned and opportunities for improvement, and provide recommendations that can be applied to future NCA planning, development, engagement, and outreach efforts. This evaluation was carried out independently by a third-party evaluation team led by Dantzker Consulting, LLC, and its partners (herein referred to as the evaluation team), working with staff from the North Carolina State University's *North Carolina Institute for Climate Studies* (NCICS) and the US Global Change Research Program (USGCRP). Data collection and analysis activities for the evaluation included a combination of focus groups and phone interviews with NCA3 developers; two online surveys with developers and users; web analytics, and citation, content, and representational analyses. Data collection instruments addressed seven main sets of evaluation questions derived from the 2014 NCA3 evaluation workshop.

## EVALUATION FINDINGS

Evaluation findings center around seven main areas related to NCA3 development and outcomes.

### ***NCA3 Structure and Process: Was the NCA development process sufficiently inclusive? Was the process for nominating and selecting authors, reviewers, and other developers appropriate?***

Broad inclusion of a diverse set of experts and stakeholders in providing inputs as well as in the development and dissemination processes was a hallmark of NCA3. Most developers interviewed citing diversity and inclusion as a key factor contributing to a successful NCA3 development process and final product. More than 70% of developers surveyed considered the NCA3 development process inclusive in terms of geographic regions, disciplines, and types of users (e.g., public and private sector organizations, agencies, and academia) represented. Stakeholder engagement began at the onset of the process and continued throughout report development. Engagement activities included conducting listening sessions around the U.S., as

well as workshops and meetings with stakeholder groups not previously involved in climate-related work. Stakeholders were also invited to provide technical inputs into the production of the report. The development process also included a public review on the draft report, to which developers responded to over 4,000 public comments. Yet lack of funding for an even more inclusive stakeholder engagement and NCA3 development process hindered greater participation of individuals representing minority and indigenous groups, which many developers cited as critical to the continued success of the NCA process. Developers cited lack of funding to cover travel, lodging, care for children or other dependents while away, and unpaid work time, as critically important factors limiting full participation of these groups in the NCA process. NCA3 developers also cited users—those directly impacted and working in decision making arenas—as a primary group that was underrepresented in the development process.

***Inputs and Resources: Were technical, scientific, and process inputs provided to NCA developers adequate and useful? Was the guidance and training process adequate and useful? Were staff and technical support useful?***

The technical input process was deemed by developers as critical to chapter development, with NCA staff and technical support instrumental in helping authors develop their chapters. Many NCA developers found regional climatologies and scenarios of value. More than 80% of developers surveyed thought the regional and sectoral inputs were useful. However, challenges such as timing of delivery existed during the NCA3 process, which complicated the chapter drafting process. While many developers agreed that guidance, training and other resources provided during development were useful, many developers also cited the need for more guidance and training on tone and writing style for example, at the start of chapter development to help facilitate the writing and review process.

***Writing and Review Process: Did the process that the chapter author teams use result in integration of different sources of knowledge? Did the review process improve the product?***

Chapters integrated knowledge sources, yet opportunities to diversify remain. While most developers felt integration of diverse knowledge sources was successful, some felt there was an over reliance on peer-reviewed, published literature, overlooking important information residing in local and regional management plans and other technical documents outside the peer-reviewed literature. Developers described the writing process as largely successful due to effective collaboration within author teams. They also expressed a desire for greater cross-integration opportunities between chapters to help present a more robust narrative of the topic area. By all accounts, the review process was laborious and time-consuming, and many developers commented on the negative impacts of the effort such as working around the clock to meet unanticipated deadlines. Virtually all developers agreed response to public comments and development of traceable accounts were arduous and painstaking, but were critical as it led to an improved final product.

***Communication and Group Dynamics: Was the communication and power balance between categories of developers appropriate? Did the assessment process adequately deal with conflict and controversy?***

Communication was generally effective within chapter teams, largely due to the fact that many chapter teams were composed of individuals who had worked together in the past and/or had a mutual respect for one another. Many authors had little to no interaction with the Federal Advisory Committee leadership, since process information was most often transferred from the committee to convening lead authors, rather than being shared in a more centrally-accessible manner. In addition, authors experienced only limited interaction between chapter teams, which led to less integration of chapter content than some envisioned as possible. Developers cited a need for greater clarity around roles, process, and timeline as early as possible so that developers have a shared expectation up front of level of effort and timing. A power imbalance was perceived by some to exist in NCA3's leadership dynamics, and this finding was reinforced by the survey results where only 36% of respondents felt that power was appropriately balanced between different groups of developers. However, overall, conflict and controversy were described as minimal, and handled well in cases where disagreements occurred. Tensions were more often described in terms of 'spirited discussions' and a shared willingness to submit to a consensus-oriented process.

***Benefits of NCA3 Engagement: In what ways did participants and their respective organizations benefit from engagement in the NCA process?***

Personal motivation for participating in the NCA process was rooted in passion for the issue and making a difference, reinforced by survey findings where 86% of developers reported participating in NCA3 to contribute to an important cause. Recruitment by NCA leadership and respected peers was a leading factor among professional motivations for participating. NCA3 participants also stated that they benefited professionally by connecting with other experts in the field. In addition, their involvement enabled them to connect their home agencies, organizations, and institutions with new stakeholders. Yet, overall time commitment, high level of effort, and lack of travel and networking support were cited as disincentives for participating in future NCA processes.

***Dissemination, Access, and Perceptions of NCA3: To what extent has the NCA and its products been accessed by targeted and other audiences? To what extent are NCA products understandable in terms of navigability, readability and graphic appeal? How have the NCA and its products been perceived by users?***

Awareness of the NCA3 report among the broader NCA user community came from multiple sources, with organizational colleagues and the USGCRP listserv topping the list. Results from the survey of the NCA3 user community indicated that the most popular report features were the *Highlights* section; regional chapters; and the report's many graphical resources, which were provided in accessible files via the website (<http://nca2014.globalchange.gov/>). NCA3 products, especially the website, were easy to navigate and credited as accessible and visually appealing. User survey respondents were most interested in information on climate change response

strategies (e.g., adaptation, decision support, and mitigation), the water resources chapter, and regional chapters (e.g., the Northeast). Developers felt that NCA3 dissemination could have been more expansive and sustained after the report's release in 2014; this finding was supported by web analytics results showing a drop in downloads and views in 2016 compared to 2015.

***NCA3 Applications and Outcomes: How are NCA3 products being used? In what ways are NCA3 products helping to improve the use of science to inform decisions? Is the NCA3 contributing to changing knowledge, attitudes, and behaviors related to climate science?***

More than half the users surveyed cited using the report primarily for personal learning and raising awareness of climate change in their communities. Others reported using the report to inform government planning or develop climate science related policy. This aligns with developers' perceptions of the NCA3 audience as 'decision-makers,' broadly speaking. However, developers shared the feeling in interviews and focus groups that the report's audience was not well-defined, suggesting a need to clarify the NCA audience in the future. The NCA3 has also been frequently used in educational settings and cited in the peer-reviewed literature. Among survey respondents, NCA3 did not change the views and perceptions of climate change; however, most (83%) reported an improved understanding of climate science after reading the report. Users also mentioned behavior changes, such as taking steps in their personal lives, to better respond to climate change.

## **RECOMMENDATIONS**

Based on evaluation activities, several primary recommendations surfaced for consideration in future NCA development processes. Additional recommendations are included in the main evaluation report.

**Create an open and formalized process for future calls for nomination to achieve maximum openness and transparency**

Given the inclusivity that was achieved with NCA3, as well as the aspects of fuller inclusion still to be achieved in future efforts, greater transparency of the nomination and selection effort should be achieved by: 1) including a full, open call for nominations at the start of the NCA development process for non-federal membership to an NCA leadership team, and 2) developing, and growing over time, a detailed database of past, current, and potential NCA developers representing specific areas of expertise, either by sector, geography, response strategy (e.g., mitigation, adaptation, decision support, research), or other stakeholder constituencies.

**Provide clear communication about the expectations and timeline for the NCA process and roles and responsibilities**

Developers understand an NCA development process is complex and expect an iterative process along the way. However, it is important to communicate clear guidance on the process, roles and responsibilities, timeline, communications channels, and other expectations at the beginning of the NCA process, and throughout as needed, in a timely manner. Clarity on

participants' roles, as well as a clear timeline, should occur in the launching phase of the NCA development, so developers understand what is expected of them. Changes that occur along the way need to be communicated with plenty of lead time to allow participants to adjust accordingly.

#### **Budget to provide adequate, dedicated funding to enable fuller participation by underserved groups, including travel and networking support**

Agencies need to include in their budgets dedicated funds for USGCRP to conduct ample NCA outreach and stakeholder engagement. Future NCA development processes should provide greater support for and inclusion of underserved communities, such as African American, Latino, and Tribal, and those of lower socioeconomic status who need funding support to participate.

#### **Foster further inclusion and integration of NCA stakeholders into the development process**

Future NCAs should continue to expand definitions of inclusion in the NCA process in terms of geographies and topical areas covered, and more importantly, stakeholders engaged in the process, whether by participation in the development group itself and its leadership opportunities, or as contributing authors, reviewers, or providers of technical inputs. Geographies cited as needing more attention and representation in future NCAs included the west coast and transboundary regions and the international context. Topical areas cited included a variety of cross-sectoral issue areas as well as topics such as pests and pathogens and the built environment. Future NCA processes should consider ways of engaging stakeholders in dialogue where mutual learning could take place towards a goal of finding common ground – such as with climate skeptics or religious conservatives for whom technical or scientific information is not necessarily the limiting factor to climate-related action.

#### **Identify and engage intended audiences in understanding NCA use and impact**

The need to explicitly identify the audience for the NCA report was evident across several evaluation activities. The evaluation produced insights on its use primarily in academic and federal contexts, with limited information of its use in other contexts like K-12, or informal education. Where possible, we recommend that the NCA website be leveraged to track user data through pop-up surveys with visitors on specific pages, to solicit feedback on the report and also their affiliations, while maintaining anonymity. As the NCA4 development process unfolds, the existing NCA3 website can be leveraged to conduct user surveys systematically over a period of time to learn more about NCA users. Additionally, individuals from K-12/informal education sectors can be more actively involved in the stakeholder engagement phase, and in a dissemination strategy (e.g., tracking peer-reviewed publications citing the NCA3 and engaging authors in dissemination in their professional circles).

#### **Include opportunities for chapter interaction and cross-fertilization of content**

Interactions across chapter teams will be useful for breaking disciplinary boundaries and perceived 'stovepipes' and promote the cross-fertilization of ideas and information. Structuring ways for chapter teams to connect and communicate with each other early and throughout the

process will lead to improved information sharing, consistency, and integration across the final report and result in a more meaningful, comprehensive, and cohesive product.

## IMPLICATIONS FOR FUTURE NCAS AND SUSTAINED ASSESSMENT

The NCA3 evaluation surfaced insights from developers who shared their views in prospective, future-oriented ways beyond their experiences specific to the development and use of NCA3. These were shared in relation to the next NCA (NCA4) process and product, as well as a sustained NCA process—more often referred to as ‘a sustained assessment’ or ‘the sustained assessment.’ Aspects of planning and development for both the NCA4 and a sustained process emerged in various ways, including the very nature of what a sustained assessment might encompass and how such a process would or should be defined. Themes that emerged regarding future NCAs were naturally complementary to the findings and recommendations surfacing from other areas of focus in the NCA3 evaluation.

### **NCA Purpose and Process: Evolving Structures to Meet Future Needs**

Many respondents considered the question of what future NCA processes and products could look like in relation to NCA3 and its predecessors. Respondents acknowledged the various legal drivers and frameworks that continue to play a role in the NCA process, such as the Global Change Research Act of 1990 (GCRA, 1990) and others, and explained tensions that existed, at times, with respect to the question of whether the report was being considered a federal, as opposed to a non-federal, product. Several respondents emphasized how important it was that the report was perceived to be coming from a third-party organization, outside of government, and not to be seen as ‘just another federal report.’ Many respondents emphasized how the NCA3 Federal Advisory Committee had contributed to NCA3’s broad scope and vision, and led to a deeper commitment on the part of NCA3 developers. At the same time, many federal respondents noted that the primary concern of agency participants in the development process was budgetary, since agencies were in a position of being asked to contribute a combination of staff, budgetary resources, and other forms of in-kind support, such as staff travel support or meeting space, to the NCA3 process.

### **Alternative NCA Process Models**

Respondents described alternative models for the NCA that have been considered including variations on a ‘hub and spoke’ model in which the NCA development would be led by a central organizing group of federal authors, who then interface and collaborate with a larger group of associated authors organized by regions, sectors, decision strategies, or other organizing principles. In contrast, a starker distinction was also offered, in which the NCA is clearly determined to be a federally-produced report, in which federal agencies lead sector-driven and sector-focused chapters along clearly delineated sectoral lines, such as forestry (US Forest Service), health (Department of Health and Human Services), agriculture (US Department of Agriculture), energy (Department of Energy) and others. This type of agency-led model with clear sectoral dividing lines, and federal leadership, was offered by several respondents primarily as a means to describe how future NCAs should likely not be organized. Comparing the

models suggested, the evaluation team recommends, in alignment with developers' views, that the hub and spoke model may be a useful alternative to consider for future NCAs due to the broader diversity of stakeholders, users, and non-federal perspectives offered.

#### **NCA Federal Advisory Committee: Structures and Roles to Ensure Inclusivity**

The NCA3's Federal Advisory Committee was large and perceived to be unwieldy at times in its functioning. However, the value of having an adequately diverse committee, achieved by greater representation afforded by its larger size, was cited by most of these respondents as a valuable aspect of an NCA. In terms of ensuring diversity of input, developers held different views on the structure of alternative NCA models – with some very much opposed to a purely, or dominantly, agency-led process, and others seeing possible advantages. Despite these differences, developers widely shared the common goal of ensuring an inclusive process for future NCAs, in particular, having enough people involved to have ownership of the product, interaction with authors throughout the process, and being able to provide a diversity of input into review.

#### **Identifying and Engaging Priority NCA Audiences**

While a formal NCA3 engagement strategy was approved by the NCADAC in May 2011 and stakeholder engagement was a principal pillar of the assessment process implementation, the fact that many authors were unclear about the report's primary audience reveals a critical gap. Future NCAs and the sustained assessment will need to address this issue of identifying and differentiating audiences to address various needs in order to achieve greatest impact. Given that future assessments may move away from a single printed document model, this may support the idea of providing tailored content for different audiences with language, graphics and messages to meet the needs of stakeholders identified in the engagement strategy.

#### **NCA Format and Content: Adapting to Information and Access Needs**

Developers generally agreed that future NCAs will need to adapt and change as the nature of climate science and the needs of decision makers continue to evolve. Future NCAs are expected to continue to evolve with respect to how data and information are managed, not only throughout but also between NCA reports. Future NCA reports will not necessarily need to provide entire comprehensive reviews of the entire state of climate science, some developers described, at least until a point in time at which the science may have shifted so significantly as to warrant such a comprehensive report. Trends may shift and change regionally and new information at state, regional, or local levels may allow reporting at finer scales of detail. To respond in these ways to more localized change, formats for NCA-applicable information will need to be adaptable and amenable to online formats that allow for ready updating and review. Future NCAs will need to address intersecting issues more readily and comprehensively. Many other cross-sectoral issues should be considered to give proper attention to interdisciplinary issues for which challenging and difficult solutions are most needed.

### **Integrated evaluation for quadrennial NCAs and sustained assessment**

Moving forward, a sustained assessment process will want to establish an integrated yet flexible role for evaluation to assist with ongoing planning and learning in different NCA contexts. An integrated role for evaluation should include not only evaluation activities in relation to the quadrennial NCA cycle but also planning, implementation, and evaluation of NCA processes, products, engagement, and use as sustained assessment evolves. Evaluation should be considered as a prospective, planning-level approach to help guide implementation towards meaningful outcomes, such as ensuring successful process, reaching out to new stakeholder audiences, and meeting the needs of users. Formative evaluation methods can be helpful early in planning to help design approaches which are later assessed with summative evaluation approaches. Small scale, pilot approaches to evaluation can be helpful to test new questions and innovative approaches before making larger investments of time or other resources. Evaluation should be used during the NCA development process to allow for real-time opportunities for feedback and quick-turnaround process improvement. Evaluation of dissemination strategies, audience uptake, and use of NCA products will enable further fine-tuning to meet audience needs, and assist with strategy course-correction where necessary as climate issues, stakeholder users, and information needs change.