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## OFFICE OF SCIENCE AND TECHNOLOGY POLICY

Public Comment on an Annotated Outline for the Fourth National Climate Assessment

**ACTION:** Notice of request for public comment.

**SUMMARY:** With this notice, The U.S. Global Change Research Program (USGCRP) seeks public comment on the proposed content and scope of the Fourth National Climate Assessment (NCA4) as indicated by the draft outline presented here. A Request for Information in 2015 sought public input on the sustained National Climate Assessment (NCA) process more generally (80 FR 26105, <https://federalregister.gov/a/2015-10352>). The outline for NCA4 is informed by that previously received public input.

General topics on which public comment is requested, in addition to the proposed outline, include: 1) ways to make the assessment information accessible and useful to multiple audiences; 2) the specific types of detailed information at regional scales that would be most useful; 3) suggestions for how to best describe risks and impacts, as well as potential opportunities to reduce those risks and impacts on sectors of the economy as well as natural and social systems; 4) suggestions for new approaches to topics addressed in previous assessments; and 5) suggestions regarding overarching themes that NCA4 should consider addressing.

A call for author nominations and technical inputs may soon be posted in one or more subsequent Federal Register Notices. A draft of NCA4 will also be released for public comment prior to its final release. Background information, additional details, and instructions for submitting comments can be found at [www.globalchange.gov/notices](http://www.globalchange.gov/notices). For more information about the NCA and access to previous NCA reports and activities, please see <http://assessment.globalchange.gov>. Responses to the questions below can be entered via the website noted above.

**DATES:** Comments will be accepted through July 29, 2016.

**ADDRESSES:** Comments from the public will be accepted electronically via

<http://www.globalchange.gov/notices>. Instructions for submitting comments are on the website.

Submitters may enter text or upload files in response to this notice.

*Instructions:* Response to this Request for Comment is voluntary. Respondents need not reply to all questions or topics; however, they should clearly indicate the question or topic to which they are responding. Responses may be used by the U.S. Government for program planning on a non-attribution basis. OSTP therefore requests that no business proprietary information or copyrighted information be submitted in response to this Request for Comment. Please note that the U.S. Government will not pay for response preparation, or for the use of any information contained in the response.

**FOR FURTHER INFORMATION CONTACT:** Emily Therese Cloyd, (202) 223-6262, [ecloyd@usgcrp.gov](mailto:ecloyd@usgcrp.gov), U.S. Global Change Research Program.

**SUPPLEMENTARY INFORMATION:** USGCRP is mandated under the Global Change Research Act (GCRA) of 1990 to conduct a quadrennial NCA. Under its current decadal strategic plan (<http://go.usa.gov/3qGU4>), USGCRP is building sustained assessment capacity to support the Nation's ability to understand, anticipate, and respond to risks and potential impacts brought about by global environmental change, namely the human-caused buildup of greenhouse gases in our atmosphere that is causing climate change. The last NCA from 2014 (NCA3: <http://nca2014.globalchange.gov>) and the process to develop it provide a foundation for subsequent activities and reports.

Recent special assessments by the U.S. Government will be utilized for NCA4, including: The Impacts of Climate Change on Human Health in the United States

(<https://health2016.globalchange.gov/>); Climate Change, Global Food Security, and the U.S. Food System ([http://www.usda.gov/oce/climate\\_change/FoodSecurity.htm](http://www.usda.gov/oce/climate_change/FoodSecurity.htm)); and Effects of Drought on Forests and Rangelands in the United States (<http://www.fs.fed.us/science-technology/climate-change/drought-forests-and-rangelands>). Other USGCRP special reports under development include the Second State of the Carbon Cycle Report (SOCCR-2, <https://www.carboncyclescience.us/news/federal-register-notice-2nd-state-carbon-cycle-report-soccr-2>) and the Climate Science Special Report (CSSR, <https://www.federalregister.gov/articles/2016/03/31/2016-07208/united-states-global-change-research-program>).

There will be a number of overarching themes and perspectives in NCA4 that are, in part, responsive to needs and gaps identified in NCA3. The following are likely to be such themes throughout NCA4:

- NCA4 will attempt to highlight advancements or improvements, since NCA3, in understanding of the science of human-induced climate change and the resulting implications for the United States.
- For risks and potential impacts, NCA4 will identify populations of concern, which was a theme highlighted in *The Impacts of Climate Change on Human Health in the United States* (2016).
- Major research needs, key uncertainties, and information gaps will be identified.
- Current and future risks associated with climate change will be characterized with quantifiable metrics wherever possible, and with the needs of multiple audiences in mind.
- Consistent treatment of different timeframes of interest will be sought throughout NCA4, with emphasis on the near-term (i.e., over the next few decades) trends and projections to

inform adaptation needs, the long-term (i.e., latter half of this century) projections that are more scenario dependent, and in some cases timeframes well past 2100 to indicate legacy effects of the human influence on the climate and oceans.

Comments are sought on these proposed overarching themes. Additional suggestions will be reviewed as they relate to the proposed structure of the report.

What follows is a proposed high-level and draft annotated outline intended to guide the scope and content for NCA4. Public comments are sought on all aspects of this draft outline. The proposed outline is presented here in five parts: (1) introduction and context for NCA4; (2) the foundational physical science; (3) human health and welfare, societal and environmental areas that are vulnerable to a changing climate; (4) regional analyses within the United States; and (5) identifying the information needed to support climate change adaptation, increased resiliency, and risk reduction.

### ***1. Introduction and Context for NCA4***

The introductory and context-setting sections of the NCA4 will describe:

- Context for the NCA4 as noted above, including the NCA's relation to complementary domestic and international assessment efforts.
- Advancements in science since NCA3 (2014), as well as any new approaches or differences in scope relative to NCA3. This information will include the special assessments completed or in-progress post-NCA3, in particular those under the auspices of USGCRP (some examples of these special assessments are provided throughout this notice).
- Changing global and national conditions that influence 1) drivers of climate change, namely the activities that lead to emissions and thus the atmospheric buildup of

greenhouse gas concentrations; and 2) resiliency and vulnerabilities, such as demographic change and economic development.

- The geographic scope (see section 5) and the temporal scope (e.g., recent historic to next 25 to 100 years) of NCA4. The lexicon used for the confidence and uncertainty levels associated with key statements and findings (and accompanying traceable accounts) may be similar to that used in the recent climate change and human health assessment (<https://health2016.globalchange.gov/documenting-uncertainty>).

## **2. *The Foundational Physical Science (based on the Climate Science Special Report)***

The USGCRP is in the process of developing the Climate Science Special Report (CSSR). The CSSR will highlight advances in the physical science of climate change since NCA3 (2014), and will provide the primary scientific underpinnings and framing for the entire NCA4. The Federal Register Notice for the CSSR can be found at

<https://www.federalregister.gov/articles/2016/03/31/2016-07208/united-states-global-change-research-program>. To briefly summarize here, it will generally cover:

- Observations of changes in: atmospheric composition, radiative forcing, temperature, precipitation, large-scale climate modes (e.g., El Nino events), drought, floods and associated hydrologic events (streamflow, snowpack), sea level rise, ice sheet dynamics, biogeochemistry of land and marine systems, climate variability, ocean acidification, extreme storms such as hurricanes, atmospheric rivers, polar changes including permafrost and land-ice dynamics, and attribution of physical and biophysical processes to human activities.
- Future projections of changes in the aforementioned climate system processes will be based on modeling results of the Coupled Modeled Intercomparison Project Phase 5

(CMIP5) driven by the emissions scenarios and Representative Concentration Pathways (RCPs) as used in the IPCC Fifth Assessment Report (e.g., [http://sedac.ipcc-data.org/ddc/ar5\\_scenario\\_process/RCPs.html](http://sedac.ipcc-data.org/ddc/ar5_scenario_process/RCPs.html)). Future projections will include perspectives on mitigation pathways.

### ***3. Human Health and Welfare, Societal and Environmental Vulnerabilities to a Changing Climate***

This section of NCA4 will provide national-level overviews of observed and projected future trends and potential effects in key areas of concern for people and the environment, including human health, social well being, and natural systems. These same areas will be addressed to varying degrees in each of the regional sections of the outline described under Part 4.

Within each of these areas, non-climatic trends (e.g., population changes) will be briefly discussed in order to set a broader context within which climate change effects can be understood. Observed and projected risks, impacts and potential benefits as a result of climate change will be identified in each of these areas, with quantifiable metrics wherever possible. The role of extreme events in each area will be addressed where possible. In addition, potential adaptive measures to minimize risks will be described for each area, to the extent these are identified in the published literature.

The GCRA of 1990 requires that the NCA analyze “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.”

In addition to these mandated topics, the following additional specific areas are proposed for inclusion in NCA4: effects on tribal and indigenous communities; coastal effects; ocean acidification and marine resources; and key international effects, particularly those that may raise

environmental, humanitarian, trade, or security issues for the United States. Cross-sectoral issues where interactions can result in significant effects are also being proposed in this section of NCA4; these potentially include (but are not limited to): the water-energy-land nexus; the interactions among biodiversity, land use, and climate; and linkages between air quality and climate.

#### ***4. Regional Analyses within the United States***

Under this proposed outline, the regional detail for each of the areas described in Part 3 above will be placed in this section of the report. In other words, Part 3 will provide more generalized information at a national level, whereas Part 4 will go into greater depth to provide information at sub-national and regional levels.

NCA3 included the following regions of the United States (see <http://nca2014.globalchange.gov/report#section-1948>): Northeast, Southeast and the Caribbean, Midwest, Great Plains, Southwest, Northwest, Alaska, Hawaii and Pacific Islands, Oceans and Coasts. The proposed regional breakout for NCA4 is the same with the exception of the Great Plains; because that was such a large region, stretching from the Gulf Coast to the Canadian border, it will be divided into two regions: Northern and Southern Plains.

In addition to the themes for each area described in Part 3, the regional sections in Part 4 will also include State-level information as appropriate and where available, as well as urban and rural case studies where possible to showcase, with local specificity, climate trends, potential risks, and resiliency planning.

#### ***5. Identifying the Information Needed to Support Climate Change Adaptation, Increased Resiliency, and Risk Reduction***

This part of NCA4 will focus on identifying near-term needs and opportunities for adaptive measures and resiliency planning in the face of observed and projected changes in climate, as well as the dependency of risk and potential impacts on greenhouse gas emissions scenarios over the longer term. NCA4 is not a policy document, and as such will not be evaluating policy measures, actions, instruments or mechanisms to deliver or incentivize either adaptation or mitigation responses at any level of government. Rather, the intention of this part of NCA4 is to inform the Nation, and different regions within the Nation, about near-term adaptation needs over the next few decades that are likely to persist regardless of emissions pathway, and, over the longer term, the reduced and/or avoided levels of risks and impacts in the United States, as a result of different levels of global greenhouse gas mitigation.

Adaptation needs and opportunities will be drawn from relevant information from Parts 2, 3 and 4 as outlined above.

In addition to physical metrics of changing risks and potential impacts over time under different greenhouse gas emissions scenarios, analysis of costs of adaptation options and potential impacts (or avoided impacts) will be included where possible, in part with input from recent EPA efforts, such as the report on Climate Change in the United States: Benefits of Global Action (<https://www.epa.gov/cira>).

Case studies and links to decision-support tools (e.g., the Climate Resilience Toolkit, <http://toolkit.climate.gov>) will also be included here.

Public comments are sought on all of the draft outline sections described above for NCA4.

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