M E M O R A N D U M

Date: July 28, 2017
To: Council
From: Rich Seagraves
Subject: Science Report

Attached is the cover page and summary from the Review of the Draft Climate Science Report recently completed by the National Academy of Sciences. The complete report is available electronically on the Council website under the Science Report Tab. The Climate Science Report is intended to inform the Fourth National Climate Assessment and provides an updated detailed analysis of the findings of how climate change is affecting the United States. During the Council Science report I will be highlighting the findings of the Academy review – which is an independent review of the Climate Science document.
PREPUBLICATION COPY

Review of the Draft
Climate Science Special Report

Committee to Review the Draft Climate Science Special Report
Board on Atmospheric Sciences and Climate
Division on Earth and Life Studies

This prepublication version of Review of the Draft Climate Science Special Report has been provided to the public to facilitate timely access to the report. Although the substance of the report is final, editorial changes may be made throughout the text and citations will be checked prior to publication. The final report will be available through the National Academies Press in spring 2017.

A Report of

The National Academies of
SCIENCE • ENGINEERING • MEDICINE

THE NATIONAL ACADEMIES PRESS
Washington, DC
www.nap.edu
Summary

The United States Global Change Research Program (USGCRP) is moving towards a sustained assessment process that allows for more fluid and consistent integration of scientific knowledge into the mandated quadrennial National Climate Assessment. As part of this process, the USGCRP is developing the Climate Science Special Report (CSSR), a technical report that details the current state-of-science relating to climate change and its physical impacts. The CSSR is intended to focus on climate change in the United States and to inform future USGCRP products, including the Fourth National Climate Assessment, Box 1.

The Committee to Review the Draft Climate Science Special Report (“The Committee”) evaluated the draft CSSR and this document presents consensus responses to the Statement of Task questions (See the Introduction and Appendix B for the full Statement of Task). Broadly, these questions focus on determination of whether the draft CSSR accurately presents the scientific literature in an understandable, transparent and traceable way; whether the CSSR authors handled the data, analyses, and statistical approaches in an appropriate manner; and the effectiveness of the report in conveying the information clearly for the intended audience. Responses to the Statement of Task questions in this report include overarching comments that apply to the entire draft CSSR, as well as comments specific to the Executive Summary (ES) and individual chapters. A collection of line comments provided by committee members is also included in Appendix A.

The Committee commends the CSSR authors for producing an impressive, timely, and generally well-written draft report and was impressed with the breadth, accuracy, and rigor of the draft CSSR. The draft CSSR is new and significant in several ways. First, it focuses on changes in the climate system as they affect the United States. Previous reports on this topic, such as those produced by the Intergovernmental Panel on Climate Change (IPCC), have focused on global-scale changes, which may not always translate directly to climate changes occurring in the United States. Second, the report provides a synthesis of recent manifestations of continued climate change observed since the publication of the last IPCC report in 2013, including: a new global temperature record set in 2014, which was broken in 2015 and again in 2016 thanks in part to a strong El Niño event; continued decline in Arctic sea ice; and record high globally averaged atmospheric carbon dioxide which has now passed 400 ppm. Third, the draft CSSR includes several significant advancements that have been made in the science of climate change, including the rapid development of the field of extreme event attribution, and new evidence concerning the Antarctic ice sheet that raises and better quantifies the upper bounds of projected sea level rise. These recent observed changes in Earth’s climate system and substantial advancements in the science of climate change underscore the importance of up-to-date assessments like the draft CSSR. The draft CSSR, by building on previous solid work and incorporating recent advances, provides a valuable update.

In this document, the Committee also provides recommendations for how the draft CSSR could be strengthened. Some notable overarching comments include:

- The key findings throughout the draft CSSR would benefit from greater inclusion of quantification statements, where possible. Values are provided for some key findings (usually related to temperature) and are effective in making the messages more impactful, but more values could be reported.

- The traceable accounts that support the key findings often contain an insufficient level of detail and should be better utilized. The “Description of Evidence Base” provided for many key findings across many chapters list citations to support the finding, but do not summarize the
BOX 1

The Front Matter “About This Report” section of the draft CSSR provides the following description of the goals and intended audience.

“As a key input into the Fourth National Climate Assessment (NCA4), the U.S. Global Change Research Program (USGCRP) oversaw the production of this special, stand-alone report of the state of science relating to climate change and its physical impacts. The Climate Science Special Report (CSSR) serves several purposes for NCA4, including providing 1) an updated detailed analysis of the findings of how climate change is affecting weather and climate across the United States, 2) an executive summary that will be used as the basis for the science summary of NCA4, and 3) foundational information and projections for climate change, including extremes, to improve “end-to-end” consistency in sectoral, regional, and resilience analyses for NCA4. This report allows NCA4 to focus more heavily on the human welfare, societal, and environmental elements of climate change, in particular with regard to observed and projected risks, impacts, adaptation options, regional analyses, and implications (such as avoided risks) of known mitigation actions.

Much of this report is intended for a scientific and technically savvy audience, though the Executive Summary is designed to be accessible to a broader audience.”

Evidence contained within those citations. This low level of detail makes it difficult for readers to understand the evidence base and lessens the impact of the finding.

- The draft CSSR includes many time series datasets and analyzes trends that have been observed or simulated, however the selected time periods for trend analysis are not presented in a consistent manner. The Committee recommends that the CSSR authors standardize the time periods used for the present and historical baseline, wherever possible, and include significance statements and/or ranges in values where appropriate.

- For select chapters, the Committee recommends expanding the discussion of specific topic areas, to better reflect the full breadth of literature and understanding of the subject.

The Committee appreciates the opportunity to provide recommendations for this important draft report and notes that attention to the suggestions provided here will further enhance this document and contribute positively to the foundational role the draft CSSR will play in the forthcoming National Climate Assessment.