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Advisory Committee on Climate Change and Natural Resource Science (ACCCNRS)

September 17-18, 2014

The Advisory Committee on Climate Change and Natural Resource Science (ACCCNRS or the Committee) met for the fourth time on September 17-18, 2014 at the Portland 911 Federal Building in Portland, Oregon. See Appendix A for a list of Committee members who attended this meeting.

High Level Summary of Meeting Outcomes

- The Committee agreed on the substance of one commendation and nine recommendations.
- The Committee agreed to hold the next ACCCNRS meeting in spring 2015.
- The Committee established a Science Agenda Work Group that will help frame the approach and questions for continued ACCCNRS input on the National Climate Change and Wildlife Science Center (NCCWSC) Science Agenda at the next ACCCNRS meeting.
- A Downscaling Work Group will arrange a conference call(s) to frame the issue(s) associated with downscaling, and, if appropriate, will draft a message or recommendation about a path forward for addressing this issue for the Committee's consideration.
- The Program Evaluation Work Group will propose a national-level evaluation framework for NCCWSC, for the Committee to review at the spring meeting.
- Meridian Institute will make the Committee's agreed upon edits to the ACCCNRS Report as documented in this summary. Meridian will make revisions in tracked changes, and circulate the next draft (Draft #4) to the Committee for confirmation. The timeline for completing Draft #4 is forthcoming, following consultation with an editor.

Opening Remarks

Sarah Ryker, Deputy Associate Director, U.S. Geological Survey (USGS) and ACCCNRS Co-Chair, and David Behar, Climate Program Director, San Francisco Public Utilities Commission

and ACCCNRS Co-Chair, welcomed the Committee, presenters, and observers in attendance. Sarah Ryker spoke to the need for the Committee to provide input on the NCCWSC Science Agenda and to finalize the Committee's messages to the Department of the Interior (DOI). David Behar emphasized the importance of completing and submitting the first comprehensive ACCCNRS Report to the Secretary of the Interior prior to the Committee charter and membership renewal process in May 2015.

ACCCNRS Charter and Membership Renewal Process

Sarah Ryker provided an overview of the ACCCNRS charter and membership renewal process. Sarah explained that the ACCCNRS was developed with the intent of being a standing committee and will not be disbanded when its charter "expires" in May 2015. The Secretary and DOI staff will discuss the quality and type of input the Committee has provided during its first active year, and will determine what type of input is needed from the Committee moving forward. Sarah said that completing the ACCCNRS Report prior to the charter renewal in May will help DOI understand what type of input can be asked of the ACCCNRS. The new charter may or may not be the same as the current charter.

Furthermore, Sarah explained that in the process of renewing the charter, DOI will consider the current membership seats on the Committee and will determine whether there are gaps in representation. Tim Mealey, Meridian Institute, noted that the Committee has previously discussed the need to expand the number of members representing business/private interests on the Committee.

The terms of existing ACCCNRS members and alternates will expire in May of 2015 or 2016, depending on whether theirs is a two or three-year term. Term expirations are noted for each member in the Committee Membership List in Appendix B. Members may serve for more than one term.

Review and Discussion of the Draft NCCWSC Science Agenda

Doug Beard, Chief, NCCWSC, and Shawn Cater, Senior Scientist, NCCWSC, reviewed the draft NCCWSC Science Agenda and NCCWSC national science priorities, and the processes through which the agenda and priorities were developed. Shawn's PowerPoint presentation slides are available here.

The Committee was asked to provide feedback on:

a) whether the NCCWSC Science Agenda covers an appropriate range of topics and if other topics should be incorporated,

b) whether NCCWSC should consider other factors or processes when identifying national priorities, and if additional priorities and/or products should be included in near-term national action, and
c) what other input the Committee should provide on the NCCWSC Science Agenda, and how the Committee should continue to provide feedback on the NCCWSC Science Agenda moving forward.

NCCWSC Science Agenda & Priorities

USGS staff explained that the draft NCCWSC Science Agenda (or Science Agenda) was initially developed through an internal process with an objective of responding to stakeholder needs. The content of the Science Agenda was based on the projects the Climate Science Centers (CSCs) had been working on within their first two years, as NCCWSC recognized the existing projects to be reflective of what was being asked for by the enterprise's constituents. Upon reviewing each CSC regional agenda, NCCWSC established the two following general themes for the national Science Agenda, which are meant to encompass all the activities being done at the CSCs: *science infrastructure and capacity*; and *thematic science projects*.

Because the Science Agenda encompasses the full range of science activities underway at CSCs, NCCWSC needed to select some priority areas for national-level work by NCCWSC that would build upon and complement the CSC work. NCCWSC identified three primary national science priorities:

1. Conduct a national synthesis of the ecological consequences of drought. This priority was identified as a research need by the CSC university principal investigators, and was vetted through a review of existing research done by CSCs, other USGS programs, and academics. USGS staff explained that the priority to synthesize ecological consequences of drought is also in alignment with other agency initiatives and with new budget initiatives supported by legislators.
2. Conduct a synthesis of climate impacts to migratory birds. This priority was identified through a review of NCCWSC and CSC sponsored research and will summarize currently funded work on similar taxa among all CSCs, which will provide a framework for continuing and coordinated work in this area.
3. Provide guidance on the use of downscaled climate information by natural resource managers and "impact scientists" supporting their decisions. Work in this area has already been initiated at the request of multiple other agencies (via the Interagency Land Managers Adaptation Group), and in response to: a) CSC stakeholders' requests for guidance, and b) the recognition that there needs to be a balance of investments among other areas of research.

NCCWSC will revisit national science priorities on an annual basis, whereas the Science Agenda will be revised roughly every five years. NCCWSC is now collecting input on the Science Agenda from CSC directors and the ACCCNRS in anticipation of a future revision.

Committee Feedback on the NCCWSC Science Agenda and Science Priorities

In the discussion about the NCCWSC Science Agenda and science priorities, Committee members provided both positive feedback and suggestions for improving the document. Positive comments included that the draft Science Agenda is well-organized, sufficiently broad, and well-focused on the issues that need to be addressed through CSCs.

Individual Committee members made the suggestions below regarding the NCCWSC Science Agenda and priorities. Additional input on the NCCWSC Science Agenda and science priorities is captured in the next section on "lightning talks".

NCCWSC Science Agenda Development Process

- NCCWSC should first undertake a rapid (6-12 month) synthesis of existing climate science, the best available climate science, and research gaps, because resource managers are already in need of this information.
- NCCWSC should consider offering ways for stakeholders to provide input other than through the LCCs, CSCs and ACCCNRS, such as holding an annual stakeholder event. Some stakeholders, such as states, may prefer this to existing avenues.

NCCWSC Science Agenda Content & Science Priorities

- The Science Agenda should include information on: how the Agenda was developed; how NCCWSC identified the national science priorities; how NCCWSC will identify and address research gaps and provide users with the information they need; NCCWSC/CSC partnerships; and specific projects the enterprise is working on. Including a description of how the Agenda was developed will better enable the Committee to provide informed feedback on NCCWSC's process for developing its Science Agenda and identifying science priorities.
- The Science Agenda needs to include text about the process by which NCCWSC will align its current and future Science Agendas with the national priorities of the U.S. Global Change Research Program (USGCRP), the President's Climate Action Plan, and partners, such as the National Oceanic and Atmospheric Administration (NOAA). NCCWSC is currently in the process of identifying science priorities for the 2016 fiscal year and should be coordinating with its counterparts and other national strategies.
- NCCWSC should establish a unique niche and work within its areas of strength that other well-established groups (e.g., migratory bird and other Joint Ventures) are not already addressing. Some Committee members expressed a concern that the text provided in the Science Agenda was not adequate to determine whether the NCCWSC has indeed established a unique niche.
- NCCWSC should focus on the projected climate impacts on and the adaptive capacity of species.
- NCCWSC is taking a great step by creating the Vulnerability Assessment Registry and Database, and attention and resources should be dedicated to the database.

Committee Member Lightning Talks on Climate Science Needs & the NCCWSC Science Agenda

Nine Committee members volunteered to briefly describe and frame a pressing need for climate science or decision-support. These short talks, referred to as "lightning talks", were intended to help the Committee identify priorities and types of products to be considered for inclusion in the NCCWSC and/or CSC Science Agendas moving forward. Each lightning talk is summarized below.

1. Paul Beier (Regents' Professor, School of Forestry, Northern Arizona University, and Past President, Society for Conservation Biology) suggested a model of how to identify what information is needed to inform adaptation decisions in order to help NCCWSC select its thematic science priorities. For example, the use of downscaled climate models and syntheses of ecological consequences of drought, two of the science priorities NCCWSC identified, can both help to inform adaptation strategies, and thus seem to be justified science priorities. Paul noted that while seven of the nine goals listed in the draft NCCWSC Science Agenda pertain to vulnerability assessments, which is information needed in adaptation strategies, only two of the nine pertain to adaptation strategies directly. Additionally, Paul said there tends to be over-emphasis of some science components that inform adaptation strategies (e.g., climate models and climate change impacts), but not enough research on the sensitivity of species to climate change, and no research on their adaptive capacity. Paul's PowerPoint slides are available here (slides 3-7).

2. John O'Leary (State Wildlife Action Plan Coordinator, State of Massachusetts and the Northeast Association of Fish and Wildlife Agencies) also spoke to the importance of adaptation strategies, and the need for vulnerability assessments to inform those strategies. John explained that there is not enough data on the adaptive capacity of species and ecosystems – how they will respond to factors of climate change – and without that information, vulnerability assessments may provide an incomplete picture. Because of this large research gap, John suggested that there is a critical need for more work on vulnerability assessments. John's PowerPoint slide is available here (slide 9).

3. Lara Hansen (Founder, Chief Scientist, and Executive Director, EcoAdapt) suggested that, when possible, NCCWSC should create "living documents" by adding to and updating existing resources rather than developing new ones. She said that users have fickle relationships with climate data, and creating more climate data will not address the problem; that what is needed is compilation, evaluation, packaging, and distribution of existing data. She also explained that there is existing infrastructure (e.g., councils, professional societies, etc.) that provide an avenue for stakeholders to access information, and that NCCWSC should co-produce science and tools with members of this infrastructure such that the targeted audience will immediately know where to find the information they need. Lara's PowerPoint slide is available here (slide 11).

4. Larry Irwin (Fellow, National Council for Air and Stream Improvement, Inc.) suggested that NCCWSC and the CSCs consider engaging and leveraging resources of private forest and rangeland owners for demonstrating and testing the effectiveness of various adaptation options,

such as increasing productivity and resilience in working forests and rangelands. Larry stated that experiments can be conducted on private land with fewer administrative hurdles than on federal lands. Another reason Larry said NCCWSC and the CSCs should work with private landowners is because private landowners tend to have more data regarding wildlife response to climate change impacts than federal landowners.

5. Ann Marie Chischilly (Executive Director, Institute for Tribal Environmental Professionals, Northern Arizona University) spoke to the need to help tribes and federal partners work together. Tribal members often do not understand how climate science relates to tribes and tribal members. Ann Marie described two projects working to highlight the impacts of climate change on tribal lands and people: 1) Case of the Pyramid Lake Paiute Tribe, led by Karletta Chief, University of Arizona; and 2) Monitoring and Analysis of Sand Dune Movement and Growth on the Navajo Nation, led by Margaret Hiza Redsteer, USGS. Ann Marie noted that in both of these cases, the scientists are also tribal members, which has made some aspects of these projects easier. She explained the sensitivities about sharing traditional knowledges (TKs) with federal and other non-indigenous groups. By sharing TKs, indigenous peoples risk unauthorized distribution, misinterpretation, and misuse of this valuable knowledge. These risks have resulted in a distrust of scientists by some tribal members. It is hoped that the two documents to be summarized in the ACCCNRS Report (one on tribal engagement and one discussing traditional knowledges) will provide insight and guidance on how tribes and federal partners can better work together: Ann Marie's PowerPoint presentation slide is available here (slide 13).

6. Jeff Williams (Manager, Climate Consulting, Entergy, Inc.) suggested that the NCCWSC Science Agenda should include research on economics and the valuation of ecosystem services. He said projects with a combined focus on ecosystems, communities, and the economy should be given priority. Jeff also said that adaptation managers, in his experience, need to look at the potential extreme outcomes in climate projections. Jeff said that science users in risk management are often interested in different information than is being provided, and the NCCWSC and CSCs should figure out how to provide information to and communicate with these stakeholders. Jeff's PowerPoint slides are available here (slides 15-23).

7. Peter Frumhoff (Director of Science and Policy, Union of Concerned Scientists) explained the need to address extremes of climate projections, rather than the means, in order to help managers prepare for these events. He noted that such extremes (e.g., megadroughts) are typically only focused on at times of occurrence. He added that although decision makers need to address near-term concerns, there needs to be an approach for taking the long-term into account in order to develop quality climate adaptation regimes. Peter said that the NCCWSC Science Agenda is missing a focus on low-probability, high-impact outcomes. Peter also said that in order to meet the global goal of avoiding climate change of greater than 2° Celsius, negative net emissions will need to be achieved. He said that the actions necessary to reach negative net emissions (e.g., wind energy) will also have impacts, and more information is

needed on the intersection between the risks of climate change and of human adaptation to climate change. Peter's PowerPoint presentation slides are available here (slides 25-27).

8. Brad Udall (Senior Water and Climate Research Scientist/Scholar, Colorado Water Institute, Colorado State University) said that science needs to move beyond climate models, downscaled models, and over-quantification of data. Additionally, Brad emphasized that planning for climate change should be addressed as planning for global change (i.e. climate plus other stressors). He also briefly described the three following freshwater case studies: 1) the Rio Grande River, which is at risk of being de-watered; 2) the Colorado River, which has more demand than supply, a condition that may be exacerbated by climate change; and 3) the Sacramento – San Joaquin Bay Delta is a natural conveyance for water, and if it fails due to sudden salinization, southern California will be unable to access 70% of the water upon which it normally depends.

9. David Patte (Senior Advisor, Pacific region, U.S. Fish and Wildlife Service) listed examples of other national strategies that the NCCWSC Science Agenda should be explicitly linked to: 1) the Landscape Conservation Cooperatives (LCCs) network's science plan, which is currently being drafted and includes seven themes, three of which relate to those in the NCCWSC Science Agenda (climate change, conservation planning, and conservation design); 2) The National Action Plan: Priorities for Managing Freshwater Resources in a Changing Climate; and 3) The National Ocean Policy Implementation Plan.

Committee Requests for More Information

Some Committee members expressed uncertainty about how the three national science priorities relate to the national Science Agenda, and a Committee member asked that the NCCWSC make a clearer link between the two. Committee members also asked for more explanation on the type of input NCCWSC is seeking from the Committee. The Committee established a Science Agenda Work Group, as described in the following section, which will work to help clarify these points.

Discussion on the Process for the Committee to Provide Feedback on NCCWSC Science Agenda

USGS staff said they looked to the Committee for guidance on how it wished to provide input on the NCCWSC Science Agenda moving forward. The Committee discussed a few options, including forming a science subcommittee or holding an annual Committee meeting dedicated to reviewing and providing feedback on the NCCWSC Science Agenda. Because the current Committee membership includes the range of perspectives from which USGS would like input, the Committee decided not to form a separate science subcommittee (which would include additional members) at this time. The Committee agreed to establish a Science Agenda Work Group that will help frame the approach and questions for continued input on the NCCWSC Science Agenda by the full Committee, at the next meeting in spring 2015.

Northwest Climate Science Center's Science and Stakeholder Engagement

Gustavo Bisbal, Director, NW CSC; Nicole DeCrappeo, Research Coordinator, NW CSC; John Mankowski, Coordinator, North Pacific LCC; Don Sampson, Executive Director, Portland State University Institute for Tribal Government; Jill Hardiman, USGS

Northwest CSC (NW CSC) staff presented information about the NW CSC's science and stakeholder engagement efforts and its collaborative engagement with the LCCs, NOAA's Regional Integrated Science and Assessments (RISA) teams, and the U.S. Department of Agriculture's (USDA) Regional Climate Hubs (Climate Hubs). John Mankowski also presented on the North Pacific LCC's (NP LCC) strategic goals and stakeholder engagement processes. The NW CSC and NP LCC staff's PowerPoint presentation slides are available here.

Throughout the presentation, Committee members had the opportunity to ask questions and discuss how the work of the NW CSC and NP LCC can inform the ACCCNRS's recommendations. Key points from the discussion included:

CSC Consortium Funding

- There are three streams of funding for the CSCs and university partners: 1) USGS funds two CSC staff positions (a third position for a tribal liaison will be funded at five of the CSCs); 2) the five-year cooperative agreements fund a lead principal investigator, other staff (mostly part-time), and some students; and 3) flexible research funding for short-term projects (about two years) to achieve the science objectives determined by the CSC's Stakeholder Advisory Committee (SAC).
- Committee members said it is important for CSCs to continue to leverage funding.

NW CSC Science and Engagement Efforts

- The NW CSC has developed a NW Climate Research Portfolio to track how many projects the NW CSC and its national and regional counterparts are working on in relation to a particular topic within the region. The portfolio helps the agencies assess whether there is unnecessary duplication or research gaps within agency projects.
- The NW CSC intends to not only participate in State Wildlife Action Plans (SWAPs), but to initiate conversation surrounding the plans. The NW CSC has talked with LCCs about how the LCCs have been involved in SWAPs.
- The NCCWSC and CSCs have not yet figured out a way to effectively track *outcomes* of the CSCs' science work and engagement efforts; doing so would usually require a longer period than the enterprise tends to be involved in those respective processes and is, in any case, a complex attribution problem.
- It has been difficult for the NW CSC to engage with non-governmental constituents, who cannot be on the NW CSC SAC. However, the CSC has found creative ways to do so. For example, the NW CSC has issued informal requests for proposals (RFPs) for non-

governmental stakeholders to partner with one of the consortium universities; this provides a way to share funding and ideas with non-governmental stakeholders.

- Sometimes, the NW CSC and its university partners do not receive responses to their outreach to resource managers.
- The public is confused about the different and shared roles of the CSCs and LCCs.
- A Deputy Director of USGS has served as chair of the NW CSC's SAC and participated in responding to RFPs and pushing unsolicited proposals forward. Other USGS scientists have not participated in NW CSC processes in formal ways.
- The USGS Cooperative Research Units are not a part of the NW CSC SAC, and the NW CSC works very little with them.
- The Secretary of Interior's office is working on improving coordination across agency lines at the Department level. For example, in order to help determine how to best respond to the President's Climate Action plan, DOI staff have joined meetings convened by the Task Force on Climate Preparedness and Resilience and sit on the Task Force's interagency working group on climate change.

North Pacific LCC Engagement Efforts

- The ACCCNRS should think about what issues they may want to collaborate on with the LCC Council, which was formed eight months ago. The LCC Council is not a FAC, but is multi-sectoral.
- The NP LCC does not have concerns about their coordination at the regional level, but would like to see more coordination at the leadership level of the LCC Network.
- Although the NP LCC does not have regulatory authority, it will work on regulatory issues upon a stakeholder's request.

Review and Discussion of the ACCCNRS Report

The Committee reviewed and discussed Draft #3 of the ACCCNRS Report. Below is a summary of the revisions agreed upon by the Committee.

Overall Report

The Committee agreed on the following items pertaining to the general content and structure of the report, as well as the Introduction and Glossary sections:

General Content and Structure

- The Committee will ensure that the declarative verbs in each of the recommendations accurately state what the Committee intends (e.g., "the Secretary will clarify" versus "the Secretary will direct").
- Remove reference to the Communications/Networks Working Group, since this group did not meet.

- The Conclusion section of the report will be retitled as "Next Steps and Conclusions," or something similar. This section may include:
    - a description of how the Committee has or intends to address each of the duties in its charter (this description may be fully or partially addressed in the Introduction section, as well);
    - the Committee's next steps to complete intended tasks or works in progress (e.g., the program evaluation framework for NCCWSC);
    - acknowledgement that user uptake of information is different from and does not necessarily lead to successful adaptation strategies or successful adaptation, and that it would be desirable to try to assess both.
- Peter Frumhoff and David Behar will draft language for the Committee's consideration that suggests NCCWSC conduct a social science study that evaluates the enterprise's actionable science activities.
- In order to make the Committee's recommendations more visible in the report, the bold recommendation text will be moved to come before the supporting text (i.e., the reasoning and background will follow the recommendation).

Introduction

- Language will be added to the Introduction, or possibly to the cover memo submitted with the report, to explain that the Committee determined whether recommendations would be addressed to the Secretary, USGS, or NCCWSC and the CSCs based on whether the recommendations included an action only the Secretary could address, or actions that USGS or the NCCWSC/CSCs could address independently.
- A sentence will be added to the Introduction to clarify that the recommendations are not presented in order of priority.
- A paragraph will be added to the Introduction to: a) describe the inclusion of presentations from and interactions with CSC staff in the ACCCNRS meetings to help the Committee develop a better understanding of NCCWSC and the CSC; and b) caveat the recommendations and content of the report by explaining that the Committee is in the process of learning about the operations and activities of the enterprise.
- The duty item (E) in the Committee's charter will be added to the list of duties in the report's Introduction.

Glossary

- A sentence will be added to the beginning of the glossary to note that the terms are defined as they are intended for the purposes of this report.
- Meridian Institute will review where in the report the terms in the glossary are used and will ensure the terms are used consistently based on the definitions.
- The Intergovernmental Panel on Climate Change's definition of downscaling will be used in the glossary, with the quantified reference to scale removed.

- Revise the definition of "decision maker" to be a person or group that has decision-making authority over land and resources "with whom", rather than "for which," actionable science is or could be co-produced.
- The first phrase in the definition of boundary organization will be deleted such that the definition reads as follows: boundary organizations not only bridge and broker knowledge between scientists and decision makers, but they often carry out related research aimed at facilitating effective interaction between these groups. Additionally, an example of a boundary organization (e.g., RISAs and LCCs) will be provided to clarify that this report is not referring to non-governmental boundary organizations.
- Gary Morishima and Ann Marie Chischilly will propose definitions of the following terms: traditional knowledges, tribe, western science.

Actionable Science

The Committee agreed on the following changes to the Actionable Science section of the report:

- Revise the statements on page 11, lines 16-21, to read: "In addition to co-production of actionable science, which the Committee believes should be the primary objective of the enterprise, there are instances where fundamental science may be needed to improve the quality/relevance of actionable science or to improve the ability to meet the needs of decision makers. Where NCCWSC/CSC funding is provided for these needs, ties to "demand-side" users should be maintained throughout, consistent with co-production values. The Committee also encourages NCCWSC to communicate to other research funders (including USGS Research and Development Program, other USGS programs, and other federal agencies) concerning these needs to encourage support where the work meets the funder's missions."
- It was agreed that the report should not specify that a decision maker must request particular fundamental science before CSCs can conduct such science, because it may be the CSCs, NCCWSC, or a partner that first recognizes the need. A Committee member asked why NCCWSC collects stakeholder input through LCCs if LCCs are not decision makers. USGS staff explained that LCCs are aggregators of information and work directly with decision makers, which enables LCCs to share with the CSCs what stakeholder needs they are hearing. Furthermore, CSCs work directly with decision makers on projects even when they have "come through" an LCC.
- Revise Recommendation #2 to read: "NCCWSC and the CSCs should prioritize the expertise and tools necessary to conduct engagement and outreach to co-produce actionable science. The Committee chose not to specify targeting a certain amount of funding for RFPs for this purpose. Instead, the Committee selected to leave the Recommended Practice more open-ended with flexibility for NCCWSC and the CSCs to determine the best way to do so.
- Move Recommendation #2 and its corresponding text from the Role section to the Actionable Science section, on page 12 between lines 17 and 18 or 23 and 24. The Committee decided to do so because Recommendation #2, which recommends that

NCCWSC and the CSCs prioritize the outreach and engagement necessary to co-produce actionable science, is relevant to the Committee's emphasis on co-production of actionable science as a key focus of the NCCWSC enterprise.

- Paul Beier will suggest additional edits to the appendix, titled, "Guiding Principles and Recommended Practices for Co-Producing Actionable Science: a 'How To' Guide for DOI Climate Science Centers and the National Climate Change and Wildlife Science Center", and revisions to the guide will be documented and shared with the Committee before finalizing the report.

Reinforcing and Strengthening the Role of the NCCWSC and CSCs in the Climate Science Decision-Support Landscape

In preface to the Committee's discussion about the Role section in the ACCCNRS Report, Robin O'Malley (Policy and Partnership Coordinator, NCCWSC) provided an update on a federal interagency document that summarizes the regional coordination between the CSCs, LCCs, RISAs, and Climate Hubs. Robin O'Malley, Adam Parris (NOAA), Bill Hohenstein (USDA), and representatives from the LCC program are developing this document, which will be independent from the ACCCNRS Report and circulated to the Committee once finalized. Robin explained that the document focuses on how the four different regional networks coordinate and on the commonalities between the research focuses of each. The document will include three to five case studies to demonstrate projects that the different regional centers work on together. A Committee member suggested that once the Committee has a better understanding of the information provided in this document, the Committee may need to make revisions to Recommendation #4, which addresses regional coordination across federal counterparts within the climate science decision-support landscape.

In addition to moving Recommendation #2 and its corresponding text to the Actionable Science section, as mentioned above, the Committee agreed on the following revisions to the Role section of the ACCCNRS Report:

- Move the sentence that begins on page 13, line 34 that reads, "With so many science and decision-support providers, there is a great need to clarify the specific roles and strengths of various federal programs, coordinate efforts, minimize the potential for redundancy, and identify and address unmet stakeholder needs," to either the beginning of the paragraph that describes the development of the RISAs, LCCs, CSCs, and Climate Hubs, or make the sentence its own paragraph.
- Revise the statement on page 14, lines 7-10, to read: "The Committee commends the Secretary's recent decision to create and fund tribal liaison positions to support increased tribal engagement in CSC activities and provide a means to better address matters that may not align closely with USGS funding constraints related to fish, wildlife, and ecosystems."

- In either Recommendation #3 or its supporting text, clarify that "non-governmental partners" include non-governmental organizations and private landowners, businesses, etc.
- Make the following two revisions to Recommendation #4: a) add "increase" or "expand" in front of "its efforts to coordinate operations and promote complementarity…," to acknowledge existing NCCWSC and CSCs coordination activities, and b) include language to the effect of, "the Committee recommends that the Secretary" direct (or request) the NCCWSC, CSCs, and their federal counterparts to…," in recognition of the fact that NCCWSC and CSCs cannot achieve coordination alone; that federal counterparts will also need to participate, in order to fully realize coordination benefits.
- Clarify that the science coordination teams referenced in Recommendation #4, Recommended Practice #4 could focus on both regional and national topics of high priority that span multiple sectors, regions, etc.
- In Recommendation #4, Recommended Practice #5, revise the word "could" to "should" and add reference to NOAA's Climate Program Office (CPO) and the "LCC Network," rather than just "the LCCs," to indicate suggested coordination with the regional centers and the national headquarters of the two programs. Revise Recommendation #5 to say that the Committee recommends that USGS increase leveraging and coordination of research, products, and communications "between", rather than "by," the NCCWSC-CSC enterprise and climate science research entities from other USGS programs.
- Berrien Moore and Cliff Duke will propose language to add to and support Recommendation #6 based on findings from the independent program review of the former USGS Biological Resources Discipline.
- For all of the recommendations focused on coordination, emphasize leveraging capacity as one of the main purposes of coordination between the NCCWSC/CSCs and others.
- The Committee agreed to use different terms, such as "decision-support," in place of "climate science services," a term recognized to be politically sensitive. It was noted that "climate science services" will also need to be replaced in the heading of section III-C.

Tribal and Indigenous Peoples Matters

The Committee agreed on the following revisions to the TIP section of the ACCCNRS Report:

- Where appropriate, in Recommendations #7 and #8, under Recommended Practices, specifically call out state agencies to be included in conversations and coordination with tribes, to recognize the very strong state interest in tribal matters, and vice versa.
- In Recommendation #7, Recommended Practice #3, delete the statement that USGS is convening a listening session in conjunction with the First Stewards symposium in July 2014. The intended listening session was not held.
- Strengthen Recommendation #8 by clarifying that it is directed to NCCWSCC and the CSCs, and by recommending that the enterprise "promote the use of," rather than "consider," both western science and TKs by decision makers.

- In Recommendation #8, Recommended Practice #2, emphasize that the Committee recommends NCCWSC and the CSCs invite tribal and indigenous peoples to synthesize existing TKs, rather than only creating new TKs, and include a reference to the TKs Guidelines document.

Program Evaluation

The Committee recognizes that the CSCs' performance within their most recent award periods cannot be evaluated based on criteria that were not included in their original agreements. USGS staff explained that the measures included in the ACCCNRS's proposed CSC program evaluation framework that apply to those original agreements will, however, be used when conducting the upcoming evaluations of the CSCs and their university partners. The evaluations of the CSCs' science performance are planned to be done by an external entity, while USGS or another bureau, such as the Interior Business Center, may conduct internal evaluations on the CSCs' administrative performance. When a Committee member asked whether the ACCCNRS will be involved in the external evaluation process, USGS staff said that the Committee can request to have a few Committee members talk with the external contractor conducting evaluations of the science component. Another stage of the CSC evaluations includes collecting feedback from users, which the Committee, and possibly the SACs, will be involved in as that process evolves. Furthermore, USGS staff said that USGS will use the Committee's program evaluation framework in developing the performance criteria in future RFPs for CSC host arrangements. It is important to note that different criteria will be selected to evaluate the CSCs and the university partners.

The Committee discussed the narrative of the Program Evaluation section in the report, as well as the CSC program evaluation framework appendix, and agreed on adding a few points of clarity:

- A sentence will be added to the narrative of the Program Evaluation section of the report to clarify that the program evaluation framework was developed for the evaluation of the CSCs.
- A sentence will be added to note that the framework for the CSCs may be applicable to the evaluation of NCCWSC, and the Committee will be developing the framework for NCCWSC as a next step.
- A sentence will be added to suggest that both internal and external reviews be included in the evaluation process of the CSCs.

Work Plan 2014-2015

The Committee briefly reviewed the ACCCNRS work plan for 2014-2015, which includes the items below:

- Establish a process in which the Committee will provide input on the NCCWSC Science Agenda and science priorities moving forward.
- Develop a program evaluation model for NCCWSC to be reviewed and discussed by the Committee at the spring 2015 meeting.
- Consider expanding the number of members representing business/private interests on the Committee before the membership renewal process, and before the spring 2015 meeting.
- The next time the Committee invites a presentation from a CSC, incorporate more time on the agenda to interact with staff from the CSC, and for ACCCNRS discussion after the CSC presentation.
- Meet with or invite presentations from other agency programs or councils/committees (e.g., the CSC SACs, the LCC Council, NOAA's CPO, etc.) to share national climate science priorities and discuss interagency coordination on these priorities.

Closing Remarks

David Behar said the Committee continues to exceed expectations and thanked the Committee for its tremendous work. He also said he is happy to hear that USGS will be distributing the final ACCCNRS Report to others within and outside of DOI. Sarah Ryker thanked the Committee for a great meeting and for developing the draft ACCCNRS Report. She then said that it will be important to find a way to keep the Committee briefed over the next few months on USGS activities that relate to the Committee's work and interests.

Next Steps

Below is a list of next steps to be completed prior to the spring 2015 ACCCNRS meeting.

ACCCNRS Report
The next steps for completing Draft #4 of the ACCCNRS Report include:

- David Behar and Peter Frumhoff will propose language suggesting that NCCWSC conduct, as part of the NCCWSC Science Agenda, a social science study that comprehensively evaluates the successes and failures of the enterprise's actionable science activities with an eye to enhancing our understanding of best practices and to guide future activities in the enterprise and beyond.
- Gary Morishima and Ann Marie will draft definitions of "traditional knowledges," "tribe,"and "western science" for the purposes of the ACCCNRS report.
- Cliff Duke and Berrien Moore will draft language to support Recommendation #6 based on findings from the independent program review of the former USGS Biological Resources Discipline.

- Meridian will draft the Next Steps and Conclusion section of the report to include a description of how the Committee will address its duties and next steps for the Committee.
- If Committee members have suggested definitions for any of the remaining terms in the Glossary, they will send draft language to Jennifer Pratt Miles jprattmiles@merid.org. Meridian Institute may ask a few members to help write definitions.

Meridian Institute will make the agreed upon edits to the report in tracked changes, and will circulate Draft #4 to the Committee for confirmation. Following a consultation with an editor, Meridian Institute will also propose a timeline for completing Draft #4.

Work Groups

Below are the three Work Groups that will be help to advance the work of the Committee and prepare for the spring 2015 meeting:

- **Science Agenda Work Group -** The Committee established a work group that will help frame the approach and questions for continued ACCCNRS input on the NCCWSC Science Agenda at the next meeting, which will be held in spring 2015.
- **Program Evaluation Work Group** – This work group will propose a national-level evaluation framework for NCCWSC, for the Committee to review at the spring meeting.
- **Downscaling Work Group -** David Behar will convene the downscaling work group that was developed at the June 2014 meeting. This work group will frame the issue(s) associated with downscaling, and, if appropriate, draft a message or recommendation from the Committee about a path forward for addressing these issues, for the Committee's consideration. The volunteers for this work group include: David Behar, Shawn Carter, Peter Frumhoff, Berrien Moore, Gary Morishima, Adam Parris, Jeff Peterson, Brad Udall, and Leigh Welling.

Other Next Steps

- Meridian Institute will prepare and circulate a summary of the meeting for Committee member review and comment.
- Meridian Institute will circulate a Doodle Poll with potential spring 2015 meeting dates.
- USGS will organize a webinar to provide the Committee with a demonstration of the Climate Resilience Toolkit (CRT) that is being developed by a group from the Council on Environmental Quality (CEQ) and Office of Science and Technology Policy (OSTP).
- USGS will select components from the Committee's program evaluation framework to develop the performance criteria in future RFPs. Because this material will be used in a competitive procurement process, USGS will share those elements that are able to be publicly disclosed at the spring 2015 meeting.
- The document that summarizes the regional coordination between the CSCs, LCCs, RISAs, and Climate Hubs will be circulated to the Committee once finalized.

- USGS will consider expanding the number of members representing business/private interests on the Committee before the membership renewal process, and before the spring 2015 meeting.

Appendix A | Meeting Participant List

September 17-18, ACCCNRS Meeting

Attendee List

David Behar, Co-chair, Climate Program Director, San Francisco Public Utilities Commission/Water Utility Climate Alliance

Paul Beier, Regents' Professor, School of Forestry, Northern Arizona University, and Past President, Society for Conservation Biology, Society for Conservation Biology, Member

Ann Marie Chischilly, Executive Director, Institute for Tribal Environmental Professionals and Northern Arizona University, Member

Natalie Dubois, Climate Change & Wildlife Scientist, Defenders of Wildlife, Alternate

Cliff Duke, Director of Science Programs, Ecological Society of America, Member

Peter Frumhoff, Director of Science and Policy, Union of Concerned Scientists, Member

Kimberly Hall, Adjunct Assistant Professor, Department of Forestry, Michigan State University, Member

Lara Hansen, Founder, Chief Scientist, and Executive Director, EcoAdapt, Member

Lynn Helbrecht, Climate Change Coordinator, Western Association of Fish and Wildlife Agencies, Member

Larry Irwin, NCASI Fellow, National Council for Air and Stream Improvement, Inc., Member

Rick Johnson, Manager, Corporate Environmental Operations, Environmental Strategy & Policy Entergy, Inc., Alternate

Olivia LeDee, Policy and Planning, Division of Fish & Wildlife, Minnesota Department of Natural Resources, Member (pending DOI confirmation)

Noah Matson, Vice President for Climate Change and Natural Resources Adaptation, Defenders of Wildlife, Member

Richard Merrick, Chief Science Advisor, National Oceanic and Atmospheric Administration, Member

Berrien Moore, Vice President, Weather and Climate and Director, National Weather Center, University of Oklahoma, Member

Gary Morishima, Technical Advisor to the Chairman, Quinault Nation, Member

John O'Leary, State Wildlife Action Plan Coordinator, State of Massachusetts and the Northeast Association of Fish and Wildlife Agencies, Member

David Patte, Senior Advisor, Pacific region, U.S. Fish and Wildlife Service, Alternate

Bill Reeves, Chief of Biodiversity, Tennessee Wildlife Resources Agency, Alternate

Sarah Ryker, Co-Chair, Deputy Associate Director, U.S. Geological Survey, Member

Bruce Stein*, Director, Climate Change Adaptation, National Wildlife Federation, Member

Bradley Udall, Senior Water and Climate Research Scientist/Scholar, Colorado Water Institute, Colorado State University, Member

Paul Wagner, Senior Environmental Scientist, U.S. Army Corps of Engineers, Alternate

Leigh Welling, Chief, Climate Change Response Program, U.S. National Park Service, Alternate

Jeffrey Williams, Manager, Climate Consulting, Entergy, Inc., Member

**Participated via conference line, afternoon of September 18, 2014*

Northwest Climate Science Center and Partners

Gustavo Bisbal, Director, Northwest Climate Science Center

Nicole DeCrappeo, Research Coordinator, Northwest Climate Science Center

John Mankowski, Coordinator, North Pacific Landscape Conservation Cooperative

Phil Mote, University Director, Northwest Climate Science Center

Don Sampson, Executive Director, Portland State University Institute for Tribal Government

Jill Hardiman, Fisheries Biologist, USGS

National Climate Change and Wildlife Science Center

Douglas Beard, Chief, NCCWSC

Shawn Carter, Senior Scientist, NCCWSC

Emily Fort, Data and Information Manager, NCCWSC

Robin O'Malley, Policy and Partnership Coordinator, NCCWSC

Meridian Staff

Rianne BeCraft, Project Associate, Meridian Institute

Jeana Connaughton, Project Coordinator, Meridian Institute

Tim Mealey, Senior Partner, Meridian Institute

Jennifer Pratt Miles, Senior Mediator, Meridian Institute

Appendix B | Committee Membership List with Term Expirations

Co-Chairs

- David Behar, co-chair, Climate Program Director, San Francisco Public Utilities Commission / Water Utility Climate Alliance; Term expiration: 2016

- Matthew Larsen, Associate Director Climate and Land Use Change, U.S. Geological Survey *(Co-chair, May 2013-May 2014)*

- Sarah Ryker, acting co-chair, Deputy Associate Director, Climate and Land Use Change, U.S. Geological Survey; Term expiration: 2016

Academic

- Berrien Moore III, Vice President, Weather and Climate and Director, National Weather Center, University of Oklahoma (host to South Central CSC); Term expiration: 2016

- Bradley Udall, Senior Water and Climate Research Scientist/Scholar, Colorado Water Institute, Colorado State University (member of SW and North Central CSCs);
  Term expiration: 2015
  Alternate: Richard Palmer, Professor and Chair, Department of Civil and Environmental Engineering, University of Massachusetts/Amherst (host, NE CSC), University of Colorado

Business Interests

- Jeffrey Williams, Manager, Climate Consulting, Entergy, Inc.; Term expiration: 2015
  Alternate: Rick Johnson, Manager, Corporate Environmental Operations, Environmental Strategy & Policy, Entergy, Inc.

Federal Government

- Gabriela Chavarria, Science Advisor, U.S. Fish and Wildlife Service (*Member, May 2013-July 2014*); Term expiration: 2015
  Alternate: David Patte, acting member, Senior Advisor, Pacific region, U.S. Fish and Wildlife Service (*Acting Member, July-December 2014)*

- Herbert C. Frost, Associate Director, Natural Resource Stewardship and Science, U.S. National Park Service (*Member, May 2013-July 2014);* Term expiration: 2016
  Alternate: Leigh Welling, Chief, Climate Change Response Program, U.S. National Park Service

- William Hohenstein, Director, Climate Change Program Office, U.S. Department of Agriculture; Term expiration: 2016
  Alternate: David Cleaves, Climate Change Advisor to the Chief, U.S. Forest Service, U.S. Department of Agriculture

- Richard Merrick, Chief Science Advisor, National Oceanic and Atmospheric Administration, Fisheries; Term expiration: 2016
  Alternate: Adam Parris, RISA Program Manager, National Oceanic and Atmospheric Administration

- Jeffrey Peterson, Senior Advisor, Office of Water, U.S. Environmental Protection Agency; Term expiration: 2015
  Alternate: Britta Bierwagen, U.S. Environmental Protection Agency

- Robert Pietrowsky, Director, Water Resources Institute; Term expiration: 2015
  Alternates: Jeffrey Arnold, Senior Climate Scientist, U.S. Army Corps of Engineers
  Paul Wagner, Senior Environmental Scientist, U.S. Army Corps of Engineers

Individual Landowners

- Larry Irwin, NCASI Fellow, National Council for Air and Stream Improvement, Inc.; Term expiration: 2016
  Alternate: Ben Wigley, Mgr. Sustainable Forest Research, National Council for Air and Stream Improvement, Inc.

Non-Government Organizations

- Paul Beier, Regents' Professor, School of Forestry, Northern Arizona University, and Past President, Society for Conservation Biology; Term expiration: 2015
  Alternate: Malcolm Hunter, Libra Professor of Conservation Biology and Professor of Wildlife Ecology, Department of Wildlife Ecology, University of Maine (*Alternate, February-August 2014)*

- Clifford Duke, Director of Science Programs, Ecological Society of America; Term expiration: 2016

- Peter Frumhoff, Director of Science and Policy, Union of Concerned Scientists; Term expiration: 2015
  Alternate: Adam Markham, Director, Climate Impacts Initiative, Union of Concerned Scientists

- Kimberly Hall, Great Lakes Climate Change Ecologist, The Nature Conservancy; Term expiration: 2015
  Alternate: Chris Zganjar, Director of Application Analytics, The Nature Conservancy

- Lara Hansen, Founder, Chief Scientist, and Executive Director, EcoAdapt;
  Term expiration: 2015
  Alternate: Alessandra Score, Lead Scientist, EcoAdapt

- Noah Matson, Vice President for Climate Change and Natural Resources Adaptation, Defenders of Wildlife; Term expiration: 2016
  Alternate: Natalie Dubois, Defenders of Wildlife

- Bruce Stein, Director, Climate Change Adaptation, National Wildlife Federation;
  Term expiration: 2016
  Alternate: Douglas Inkley, National Wildlife Federation

State and Local Government

- Ed Carter, Director, Tennessee Wildlife Resources Agency and the Southeastern Association of Fish and Wildlife Agencies; Term expiration: 2016
  Alternate: Bill Reeves, Chief of Biodiversity, Tennessee Wildlife Resources Agency

- Lynn Helbrecht, Climate Change Coordinator, Department of Fish and Wildlife, Washington, and the Western Association of Fish and Wildlife Agencies;
  Term expiration: 2016
  Alternate: Amber Pairis, Assistant Secretary for Climate Change, California Natural Resources Agency

- John O'Leary, State Wildlife Action Plan Coordinator, State of Massachusetts and the Northeast Association of Fish and Wildlife Agencies; Term expiration: 2015
  Alternate, Karen Bennett, Landscape Conservation Coordinator, Delaware Division of Fish and Wildlife and the Northeast Association of Fish and Wildlife Agencies

- John Sullivan, Director, Science Services, Wisconsin Department of Natural Resources and the Midwest Association of Fish and Wildlife Agencies (*Member, May 2013-November 2014)*;
  Term expiration: 2015
  Alternate: Karl Martin, Chief, Wildlife and Forestry Research Section, Wisconsin Department of Natural Resources and the Midwest Association of Fish and Wildlife Agencies *(Alternate, May 2013-July 2014)*

Tribal

- Ann Marie Chischilly, Executive Director, Institute for Tribal Environmental Professionals (ITEP), Northern Arizona University; Term expiration: 2015
  Alternate: Susan Wotkyns, Climate Change Program Manager, Institute for Tribal Environmental Professionals (ITEP), Northern Arizona University

- Gary Morishima, Technical Advisor to the Chairman, Quinault Nation;
  Term expiration: 2016

Alternate: Robert Rohde, Principal Investigator, Karuk Tribe (Alternate, *February 2014-July 2014)*