Summary of Interviews Conducted for the Advisory Committee on Climate Change and Natural Resource Science (ACCCNRS)

August 23, 2013

Introduction

Meridian Institute conducted interviews with 24 members of the ACCCNRS to learn about their background, invite their suggestions on topics for Committee deliberations, and inform development of the agenda for the first Committee meeting in September 2013. A list of those interviewed is provided in Appendix A. Following is a summary of the input provided by Committee members. The summary is organized into four categories: Topics Suggested for Committee Briefings, Topics Suggested for Committee Deliberations, Examples of Strong Links between Decision Need and Science, and Process and Logistical Suggestions.

Topics Suggested for Committee Briefings

In addition to looking forward to briefings on the topics suggested by the NCCWSC, several Committee members suggested that it would be helpful to hear briefings on two topics at the first meeting: an overview of federal climate science programs/services, and an overview of the NCCWSC and CSCs.

- **Overview of the landscape of federal climate science programs/services** and the niche ACCCNRS fills within that landscape. Interviewees suggested that it would be helpful to hear updates on: National Climate Assessment and how it is structured/works; new USDA climate science program; NOAA RISA's; EPA Advisory Committee on Water Information Climate Change Subcommittee; LCCs and the LCC National Council; National Fish Wildlife and Plants Advisory Committee, etc. Invite suggestions for reducing redundancies between programs and fostering coordination between activities that are already underway.

- **Overview of the roles of the key parts of the system that the ACCCNRS will be most focused upon (NCCWSC and CSCs), how they relate to one another, how they relate to other institutions (e.g., states and tribes, LCCs, etc.) and how stakeholders can work with all of these institutions**. Some people understand the mechanics of the enterprise but it is not clear if everyone understands the larger vision. For example, it would be helpful to describe what actionable science looks like and what level of management is being targeted. It is confusing to portray the NCCWSC as a USGS entity and CSCs as DOI entities. Since

the NCCWSC, CSCs, and LCCs are all part of DOI, can't this be presented as a DOI initiative? Review what the CSCs are already accomplishing and how much variation there is across the CSCs. Share what process the NCCWSC and CSCs will use to identify regional and national science questions. Review the processes used by the states, tribes, and LCCs to identify and seek answers to science questions. Explain how CSCs will develop and share tools at regional and national levels, and how the NCCWSC and CSCs will identify gaps and work together to identify which CSC is best positioned to produce science to fill the gaps.

As part of the overview of the NCCWSC and CSCs and their progress to date, it will be helpful to explain how CSC staff are funded and **which funding sources are supporting production of which climate science research/products**. NCCWSC is funded for activities related to fish, wildlife and their ecosystems/habitats. CSCs focus on a broad range of natural and cultural resources. It will be helpful for the Committee to hear how requests for science needs outside the "fish, wildlife and their habitats" domain are being addressed, and which funding sources support such work.

Topics Suggested for Committee Deliberation

ACCCNRS members expressed appreciation for the work done by NCCWSC and CSCs to date and the opportunity to serve on the Committee, learn more about the NCCWSC and CSCs, interact with fellow Committee members, and provide recommendations to the Secretary of Interior on this important initiative. Interviewees were presented with a list of topics for Committee discussion and asked to indicate which topics were most important and whether there were additional issues that should be addressed. Following is a summary of Committee member feedback on this subject.

- **Committee Charter, scope, charge, and products** – Many Committee members said that the charter is clear and sufficient. A number of Committee members mentioned that they want to make sure their charge and scope are clear, and appreciate the opportunity to review this at the first meeting. To some, the scope set forth in the Charter seemed broad, and they would like more information to understand DOI's vision for the ACCCNRS and how the Department plans to implement that vision. For others, the press release publicly announcing ACCCNRS could be read to convey a broader charge than the one articulated in the charter; the press release referred to ACCCNRS as a "committee on adaptive science." Some asked to what extent the Committee is charged with the adaptation side of climate change. A suggestion was made for the Committee to look at both climate science and policy related to climate change, since policy can sometimes influence the direction of science. Some suggested that the Committee can help create new systems and principles to help share information and remove obstacles to coordination. Similar to the point raised

above, some said it is confusing to present NCCWSC as a USGS entity and CSCs as DOI entities, and asked if the Committee is advising two different agencies. It will be important to figure out whether and how the Committee can take the role of LCCs into consideration in offering advice to DOI/USGS, since they are an integral component of the larger system.

- **Actionable Science –** Many Committee members said ensuring that science products created by the CSCs and NCCWSC are usable and responsive to resource manager needs is the most important topic for the Committee to address. Committee members would like to discuss how to facilitate this, and identify examples where this is being done well, as well as best practices for developing management-relevant science. In addition, it will be important to characterize and develop strategies for reversing disincentives to developing actionable science. For example, new ways of funding science and new protocols for conducting scientific investigations may be needed to enable science providers to work with managers to identify the science questions to be addressed and deliver preliminary results as research is conducted, etc.

- **Operation of the NCCWSC and CSCs** – Although some Committee members said they were not yet in a position to comment on the effectiveness of the NCCWSC and CSCs, and looked forward to learning about them through the Committee, other Committee members offered initial feedback on the operations of the regional and national centers. Some said that the NCCWSC and CSCs are creating a good framework for climate change science and adaptation, and that the work of the national and regional centers allows DOI bureaus to do a better job of building climate adaptation into their work rather than having it as a separate piece of their work. Additionally, the NCCWSC and CSC network is one of the best-funded initiatives on climate change in the U.S., and therefore it has a unique opportunity to address questions about how to co-produce actionable science. Co-location of CSCs with NOAA RISAs was noted as a logical step that is fostering inter-agency coordination. Several interviewees said that more coordination across agencies doing climate science is needed. For example, it would be nice to see more coordination between the CSCs and USBoR's water initiatives, EPA Regions, NOAA Fishery Climate Centers, USACE IWR centers, and USDA. Similarly, several Committee members suggested increasing coordination with universities and other non-governmental partners working on climate science. For example, UW-Madison wants to work more with the CSCs.

  Interviewees noted that the NCCWSC and CSCs are producing useful climate science information and making it accessible online. Providing climate change information is an important federal role, since no one group or organization can cost-effectively develop their own data sets for climate science.

  Since re-organization of DOI and transfer of scientific resources to USGS in the 1990s, there has been tension between DOI bureaus. This is an obstacle to effective communication and coordination within DOI, and therefore an obstacle to effective operation of the CSCs and NCCWSC. The location of CSCs at universities seems to some degree to be mitigating this

tension, but there are concerns that this tension may impact the operations of the NCCWSC and CSCs in relation to the LCCs.

Interviewees also noted a tension between the more narrow focus of the NCCWSC and the broader CSC mission, especially as it relates to social, economic, and cultural factors.

It is important for the CSCs to work in a coordinated fashion and to be clear about which CSCs are working on issues that cross boundaries. The CSC Directors and other PI's have been meeting once and sometimes twice a year and this is very valuable. One issue the CSC Directors have discussed is the need for some standardization of approaches to science across the CSCs.

The funding cycle for CSCs has been choppy. For some CSCs, funding arrived four months late due to the sequester. Any time there are stop-and-go signals it poses a challenge.

The geographic area covered by the Northeast CSC is very large and this poses some challenges. It is difficult to give sufficient attention to the priorities of all the different parts of this broad and diverse geographic region. Some say there should be a Great Lakes CSC. Attending to diverse landscapes is also a challenge for the Southwest CSC.

One perception of the CSCs is that the scientists who are involved don't want to talk to scientists who are not ecologists, and that the desire for a single minded focus on ecological impacts will be problematic because there are broader and related needs.

Some said that CSCs seem to be focusing more heavily on science needs in their area of expertise and, secondarily, on LCC-identified science needs. Science priorities identified by states and other federal agencies seem to be less of a priority for CSCs.

Several Committee members mentioned that sometimes USGS and its academic partners wait until information is published to share it, and often that is too late for decision-maker needs.

- **Relationship between the NCCWSC, CSCs and LCCs** – While the ACCCNRS is focused on the NCCWSC and CSCs, several Committee members feel it is important to comment on the relationship with the LCCs, since they are primary partners of the CSCs and serve as a link to natural resource managers. It will also be helpful to explore opportunities for the ACCCNRS to engage with the National LCC Council.

  Interviewees conveyed that when the LCC network was first established, many understood its purpose was to address climate adaptation. However, many LCCs had more immediate needs, such as drought, fire, and invasive species. As a result, the science needs associated with these other management challenges are being addressed first, before vulnerability assessments are conducted.

LCCs were launched first and have been waiting for CSCs to become operational. Some have had to move in other directions to get the science they need. LCCs identify science needs for their landscape, and then they contract out to conduct the science, with CSCs, NGOs, and other scientists. Each year USFWS works with LCCs to identify national LCC needs and then issues RFPs to address those issues. CSCs, NGOs, and individual scientists are among those that apply. Some believe this may be a useful model for identifying national science needs for the NCCWSC and CSCs. Others expressed concern that it might create a competitive rather than collaborative environment regarding how LCC's science needs can best be met.

In some regions, relationships between CSCs and LCCs are strong and coordination is solid. In other regions, there should be more coordination between the CSCs and LCCs. The Pacific Islands, Alaska, and the Northeast are examples of where the CSC – LCC relationships are functional. The Northeast CSC works closely with the LCCs in its region and has co-funded projects with LCCs. The five LCCs in this region have collectively agreed on what the research topics should be and communicated this to the CSC.

Some CSCs have confused their own roles at LCC meetings. Some are not recognizing their role in working closely with the LCC and delivering the science in a manner that is mandated in the governing documents.

- **National science needs/plan** –It will be useful to have time for Committee members to provide input on the CSCs' and NCCWSC's approach to identifying national level science questions identified by resource managers/users, and how to incorporate traditional ecological knowledge (TEK) into the science being done by the CSCs and NCCWSC. Some Committee members noted a need for continued engagement between the national level science agenda and regional and local science plans to ensure coordination and reduce duplication. The importance of consistency across global and national models for downscaling was noted. A number of Committee members said that downscaling is sometimes overemphasized and has become a bit of a "holy grail." These members emphasized the need for a wider array of tools that are made available to decision-makers, including scenario planning, impact analysis, and vulnerability assessments (which includes analyses of sensitivity, exposure, and adaptive capacity).

  Interviewees offered the following topics as important national climate science questions:
  - water availability and water quality;
  - droughts and flooding;
  - fires;
  - sea level rise and storm surge;
  - endangered species;

  - the link between invasive species and climate change and how CC efforts link with groups working on invasive species, such as the Aquatic Noxious species TF, Invasive Species Council;
  - resource development;
  - adaptive capacity;
  - identifying knowledge gaps;
  - articulating the assumptions we're making about what climate change and its impacts look like (i.e. what future scenario we are planning toward and is it conditional or based on future policy decisions?);
  - identifying the underlying data sets, methodological tools that folks need to build climate it their management actions;
  - delivering national level climate data and scenarios (e.g. temperature, precipitation, etc.);
  - technology transfer and guidance on how to apply climate science;
  - how to maintain consistency in terms of the emissions scenarios (high/low) used for modeling climate impacts;
  - how to do individual species conservation in the face of changing species distribution; and
  - standardized methods for CSC science, for example a standardized approach to downscaling.

- **Monitoring** – Some suggest there is insufficient funding for CSCs and LCCs to do monitoring, and that their role should be to package monitoring data so that it is useful to decision-makers. Others feel that there is insufficient data to support decisions, and that LCCs should play a role in monitoring, or in traditionally neglected aspects of monitoring such as monitoring across sectors.

- **Partnerships –** Committee members asked several questions regarding partnerships. Who are the key stakeholders for the NCCWSC? CSCs? Who should the CSCs be reaching out to and communicating with besides the LCCs in their region? What might be the links between the local CSC advisory committees and the ACCCNRS? How are CSCs engaging partners who are not on their advisory committees?

  Interviewees said that some CSCs are not as visible as the LCCs in their region. Some Committee members noted that partners involved in CSCs see what climate science is being produced. More work is needed to link with partners who are not on the advisory bodies of the CSCs.

- **Evaluation –** Several interviewees said that the NCCWSC and CSCs are not far enough along to be formally evaluated, but it would be worthwhile for the Committee to do an initial assessment of what is working well and not working well, and to provide input on the approach to a formal evaluation down the line. It may be worth considering external evaluators. NOAA science centers have a model that may be applicable to the NCCWSC

and CSCs. The NOAA centers are evaluated by external panelists on a 5-year cycle. The goal is to maintain consistent and high quality of science across all regions.

Examples of Strong Links between Decision Need and Science

Committee members offered the following examples of programs or projects that effectively develop and deliver scientific information in response to management needs.

- **Cooperative Ecosystem Studies Unit (CESUs)** - The CESU system was created to provide research, technical, and educational assistance to federal agencies when they did not have the staff internally to get that expertise. For example, a small park without a hydrologist could go to CESU and get a hydrologist. It has worked well for NPS because academics want to work in national parks. In this system, academic and government partners come together to provide management relevant science. They involve managers from the beginning and invite them help guide the research. Working hand-in-hand ensures resource managers get the results they need. It also enables managers to get information along the way instead of waiting years until results are published.
- **The Colorado River Basin Water Supply and Demand Study** - From January 2010 to December 2012, the Bureau of Reclamation's Upper Colorado and Lower Colorado River Basin conducted a study in collaboration with representatives of the seven Colorado River Basin States to define the current and future imbalances of the Basin and the adjacent areas that receive Colorado River water. The study shows that the largest stress factor in potential Basin resource imbalance is reduced Colorado River inflows due to a warmer, drier climate rather than an increase in water consumption. Phase 1 of response to the study will be based on the investigations identified in the study and include the formation of three multi-stakeholder workgroups representing Federal, State, Tribal, agricultural, municipal, hydropower, environmental, and recreational interests.
- **Fish Habitat, Climate, and Land Use Change (FHCLC)** - The goal of FHCLC is to provide state and federal agencies, non-government organizations, and other stakeholders with GIS-based maps at national and regional scales that can be used as part of a decision support system to examine how fish habitat may change with climate and land use change over the next 30 years and how those changes could affect fish populations. Scientists from the USGS and eight partnering universities model anticipated changes in fish habitat using downscaled global climate change models to predict changes in water departure, hydrology, and land-use under different possible scenarios. The project will also involve working with the existing partnership-driven "National Fish Habitat Action Plan" (NFHAP) to link global climate change models and predicted land-use changes to the Nation's aquatic habitats.

- **EPA Science Advisory Board and EPA Board of Scientific Counselors** - Both bodies provide EPA with input on whether its science programs are providing useful information to EPA's staff who perform regulatory functions.
- **New England Governors and Eastern Canadian Premiers (NEG/ECP) regional climate change program -** Energy and environmental officials in the region developed the NEG/ECP Climate Change Action Plan (CCAP) that was adopted in 2001 to guide the region in reducing greenhouse gas emissions (GGE) and adapting to the effects of climate change. Currently, the NEG/ECP Climate Change Steering Committee (CCSC) is preparing an inventory of GHG emissions in the region to assess its progress in achieving the 2010 target to return GGE to 1990 levels by 2010 regionally, and a further reduction of 10% by 2020. The CCSC is establishing regional reduction targets for the period between 2020 and 2050 to facilitate regional planning. http://negc.org/main/?do=page&id=39
- **NOAA** – NOAA is really good at delivering their science to their target audiences. They tailor the information to both technical and public audiences. They do on the ground projects, webinars, and outreach to their users. They are involved in partnership work on the ground in coastal communities that they leverage those partnerships to share information. They develop tailored case studies that other communities can easily transfer to their own situation.
- **NOAA Fishery Climate Centers** – The Alaska Center is doing advanced climate modeling on how pollack stocks are affected by climate change in Seattle and Alaska. They are doing fishery forecasts for the next couple of years as well as long-term modeling (15-20 years) to allow industry to plan for the long-term. On the West coast
- **U.S. Integrated Ocean Observing System (IOOS)** – This NOAA-led, interagency system works to characterize, predict, and monitor coastal, ocean, and Great Lakes environments. IOOS operates buoys that collect real-time data that can detect acidified seawater, signaling the approach of cold, acidified seawater one to two days before it arrives in the sensitive coastal waters where larvae are cultivated at shellfish hatcheries in the Pacific Northwest. The data help hatchery managers schedule production when water quality is good and avoid wasting valuable energy and other resources when water quality is poor. With access to information about ocean conditions that oysters cannot tolerate, two local farms were able to adapt operations to increase their oyster harvest by 50% or more.
- **National Park Service (NPS) scenario planning** – The NPS is looking at different climate change scenarios and associated management planning approaches.
- **New York City Department of Environmental Protection (DEP) Climate Change Assessment and Action Plan** –Through this program, DEP works closely with leading scientists and engineers to project regional climate changes; assesses the impacts of an increased temperature on water systems; and identifies opportunities for meaningful change. Based on this work, DEP has begun to implement many programs that address global climate change and its projected

impacts on New York City's drinking water delivery, storm water management, and wastewater treatment systems.

- **South Florida Regional Climate Change Compact** - A five-year Southeast Florida Regional Climate Action Plan was collaboratively developed by the Southeast Florida Regional Climate Change Compact (Compact); Palm Beach, Broward, Miami-Dade, Monroe Counties; and their municipalities and partners. The Climate Action Plan released in October 2012 provided 110 action items to reduce greenhouse gas emissions (GHG) and adapt to local land impacts of climate change, focusing on: sustainable communities and transportation planning; natural systems, water supply, management and infrastructure; natural systems and agricultural; energy and fuel; risk reduction and emergency management; and outreach and public policy. The specific recommendations put forth in this plan were developed through a collaborative process involving nearly 100 subject matter experts from a host of professions representing the public and private sectors, area universities, and not-for-profit organizations.
- **SE Conservation Adaptation Strategy** – This strategy is currently being developed by The Southeastern Association of Fish and Wildlife Agencies (SEAFWA), the Southeast Natural Resources Leadership Group (SENRLG), the U.S. Fish and Wildlife Service, Landscape Conservation Cooperatives (LCCs), and partnerships like SARP and the Joint Ventures across the Southeast Region. The draft plan is expected to be completed in 2015 and will focus on developing a collaborative approach to ensure a future for fish and wildlife through expanded science capacity and more robust planning for land managers.
- **USDA Extension and Land Grant Universities** have valuable models for outreach to stakeholders
- **USGS Cooperative Research Units** - These were established to provide science information for management. We should consider what their role is vis-à-vis the CSCs and NCCWSC.
- **USACE information on sea level change** is being used by states affected by Hurricane Sandy to implement changes.
- **Vulnerability and Adaptation Index for Wetland Communities of the Great Lakes** - In 2006, Environment Canada, Fisheries and Oceans Canada, the University of Waterloo, and Snell & Cecile Environmental Research released a study on the responses of Great Lakes coastal wetland communities to historical and projected water level changes, and; human-directed adaptations to changing water levels – infrastructure (lake regulation and diking) and land use policy – to maintain ecosystem functions and values. Vulnerability indices and scores for vulnerability factors were used to categorize species of wetland vegetation, wetland-dependent breeding birds, and fish as low, moderate, and high risk groups to hydrologic and/or thermal changes. Four climate change scenarios were selected to represent future extremes in climate. Wetland modeling and stakeholder input for this project indicated that a high priority should be placed on land use planning and policy actions that

protect the natural processes which create wetlands and maintain their ability to adapt to varying water level conditions. Ten Planning Criteria and a Coastal Corridor Concept were developed as preliminary ideas proposed for the future protection of coastal areas.

In addition to these examples of science developed to meet a user need, some Committee members mentioned the need for basic education for Congressional staff and representatives and the public about climate science. NOAA is doing science resource briefings on the Hill to help staff understand these issues better. They also have dedicated individuals to explain both science and risk and uncertainty to the public.

Process Design and Logistical Suggestions

- It may be useful to have a half-day briefing on the NCCWSC and CSCs before the meeting for those who are not part of Interior.
- Have CSCs host Committee meetings so that over time the Committee meets in all regions.
- NOAA has meeting space in Silver Spring and College Park, Maryland, Colorado Springs and Boulder, Colorado, and Seattle, Washington. These spaces typically need to be reserved 3-4 months in advance.
- Strike a balance between participatory governance and getting things done. The ACCCNRS has the potential to collapse under its own weight. Clearly define the mission/charge and identify topics to be addressed based on that.
- Allow time for Committee members to learn about each other's climate science/management work and build relationships.
- Make sure Committee members understand that the Committee is advisory rather than operational, and that the DOI Secretary makes the final decisions.
- It is crucial to store collective information in one central site to coordinate people and action.
- It will be helpful to hear about lessons learned and on the ground examples.
- Collaborative groups are successful when they have a common goal.
- Make sure different perspectives are heard and that Committee members feel they are heard.
- Be as open as possible and encourage USGS staff not to take offense at suggestions.
- Have a well-designed process. Know which issues are important enough that consensus is needed, and which issues are more operational and do not require consensus.
- Ensure a balance of federal and non-federal members on subcommittees.
- Engage CEQ. They have tried to foster inter-agency coordination in the past.

Appendix A – List of ACCCNRS Members Interviewed

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

2. Paul Beier, President, Society for Conservation Biology

3. Ed Carter, Director, Tennessee Wildlife Resources Agency and the Southeastern Association of Fish and Wildlife Agencies

4. Gabriela Chavarria, Science Advisor and *Alternate*: David Patte, Senior Advisor, Pacific region, U.S. Fish and Wildlife Service

5. Ann Marie Chischilly, Executive Director, Institute for Tribal Environmental Professionals (ITEP)

6. Clifford Duke, Director of Science Programs, Ecological Society of America

7. Herbert C. Frost, Associate Director, Natural Resource Stewardship and Science

8. Peter Frumhoff, Director of Science and Policy, Union of Concerned Scientists

9. Kimberly Hall, Great Lakes Climate Change Ecologist, The Nature Conservancy

10. Lara Hansen, Founder, Chief Scientist, and Executive Director, EcoAdapt

11. Lynn Helbrecht, Climate Change Coordinator, Dept. of Fish and Wildlife, Washington, and the Western Association of Fish and Wildlife Agencies

12. William Hohenstein, Director, Climate Change Program Office

13. Larry Irwin, NCASI Fellow and *Alternate*: Ben Wigley, Mgr. Sustainable Forest Research, National Council for Air and Stream Improvement, Inc.

14. Noah Matson, Vice President for Climate Change and Natural Resources Adaptation

15. Richard Merrick, Chief Science Advisor, NOAA Fisheries

16. Berrien Moore, Vice President, Weather and Climate and Director National Weather Center and *Alternate*: Paul Risser, Chair and Chief Operating Officer, University Research Cabinet, University of Oklahoma (host to South Central CSC)

17. Gary Morishima, Technical Advisor to the Chairman, Quinault Nation

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

19. Jeffrey Peterson, Senior Advisor, Office of Water, U.S. Environmental Protection Agency

20. Robert Pietrowsky, Director, Water Resources Institute and *Alternate:* Paul Wagner, Senior Environmental Scientist, U.S. Army Corps of Engineers

21. Bruce Stein, Director, Climate Change Adaptation

22. John Sullivan, Director, Science Services and *Alternate:* Karl Martin, Chief, Wildlife and Forestry Research Section, Wisconsin Department of Natural Resources and the Midwest Association of Fish and Wildlife Agencies

23. Bradley Udall, Director of the Getches-Wilkinson Center for Natural Resources, Energy and the Environment, University of Colorado and *Alternate*: Richard Palmer, Professor and Chair, Department of Civil and Environmental Engineering, University of Massachusetts/Amherst (host, NE CSC), University of Colorado (member of SW and North Central CSCs)

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