

AMWA Comments Submitted via the online form for the information request by the USGCRP about the National Climate Assessment (June 15, 2015)

1 What scientific information on climate change impacts, and responses to these impacts would be most valuable for future reports?

- 1) On the watershed scale: improved understanding of changes in precipitation patterns; frequency and duration of floods and droughts.
- 2) Changes in the frequency, magnitude and duration of harmful algal blooms in surface waters.
- 3) On a national scale, changes to the energy sector and associated economic impacts.
- 4) Changes in agricultural practices (including changes in the location of suitable habitat for certain types of high value crops) and the potential changes that may be needed to existing subsidy and/or insurance programs.
- 5) Impacts to the hydrologic cycle due to warming, across time and spatial scales. Include discussions about why the impacts are happening and explicitly discuss the limitations in the PREDICTIVE CAPABILITIES of the different types of translational methods for looking at potential future changes and trends. Specifically, there is new work on the Colorado River suggesting the drought on the river is due to warming and not changes in precipitation. This will have immense consequences for the southwest and needs a thorough exploration.
- 6) For the decision support section and any discussion about future climate models and their potential use by decisionmakers:
 - a. Information and discussion about model capabilities and limitations about key variables of interest to different sectors.
Examples:
 - i. There is much more confidence in the direction of temperature change signal than other variables like precipitation change. It would be helpful for the future NCA's to explain/describe the physics behind why there is more confidence in temperature predictions than in precipitation predictions.
 - ii. Changes in extremes, such as intense precipitation events or longer droughts are not well modeled by GCMS however, this type of information is important to the applied/user community for near and long-term planning.
 - b. What can the models tell us and what do they not do very well? How does translation add to and take away from this?
 - c. Since climate information is highly uncertain and the range of projections is immensely broad (therefore resulting in a significant range of possible impacts), practitioners need support and guidance on how to prepare for a wide range of possible futures and deep uncertainty. A much more extensive section about why and ways to change planning processes away from deterministic thinking (in the long-term (20+yrs) especially) would be helpful. Describing the tools and methodologies available and how they have been used by others already to plan and make decisions under a new paradigm of a changing climate and complex,

multi-layered uncertainty. For examples of this type of work please see the Water Utility Climate Alliance papers on decision support (www.wucaonline.org), RAND Corporation's work with robust decision-making, and the University of Mass Amherst (Casey Brown) decision-scaling tool. Helping the applied sector understand ways to plan and the tools to use is critical to moving towards resilient decisions and climate adaptation. This is a very good resource for this type of information. In Colorado, two Climate Change reports have been developed by the Western Water Assessment (2007, 2014). This type of high quality, peer and practitioner reviewed synthesis is needed for every state and should inform the NCA.

- 7) One of the most informative aspects of the NCA is the overall synthesis of up-to-date national and regional climate studies.
- 8) It would be helpful for the NCA include information about the updates to national/federal floodplain maps and the connection with sea level rise.
- 9) It would be helpful for the report itself to include a greater recognition of how climate impacts may show up differently on a local level than is generally indicated for a region. Oftentimes the region may have a dominant narrative, but localized changes could be quite different. It is important to note this in the NCA – that localized impacts aren't as always as easy to quantify. For example, water supply challenges may be different for Portland, OR than for the rest of OR and that region because those areas rely less on snowpack than other parts of the region/state. Similarly, wildfire risk is different depending on what side of the mountains one is on in that state. This is just one example of many likely across the country. The point is, it's important to describe the local nuance within the regional impacts.

2. How can USGCRP most effectively communicate assessment findings?

- 1) Publish report. Seek to have report available/linked from existing federal, state agency websites and encourage associations/sector groups to link to and get the word out about the report (in other words, continue to do what you are doing and improve the reach via getting other organizations to publicize it too). Host a climate summit or workshop in conjunction with state or local organizations.
- 2) Webinar series – national, regional, and local. These can be facilitated by the groups such as state, local and sector association-based organizations.
- 3) USCGRP and its federal partners should present at more local and state-level meetings. (Ex - Colorado Water Congress meeting, state adaptation meetings).
- 4) It would be helpful for the report itself to include a greater recognition of how climate impacts may show up differently on a local level than is generally indicated for a region. Oftentimes the region may have a dominant narrative, but localized changes could be quite different. It is important to note this in the NCA – that localized impacts aren't as always as easy to quantify. For example, water supply challenges may be different for Portland, OR than for the rest of OR and that region because those areas rely less on snowpack than other parts of the region/state. Similarly, wildfire risk is different depending on what side of the mountains one is on in that area. This is just one example of many likely across the country. The point is, it's important to describe the local nuance

within the regional impacts.

3. How can the National Climate Assessment connect with other assessment efforts, such as those at the regional, state, tribal, and local levels?
 - 1) Continue to ensure that the NCA work coordinates with the latest global research (i.e., the IPCC <http://ipcc.ch/>)
 - 2) Continue to ensure that NCA work coordinates with the latest national and regional research occurring at federal agencies, RISAs, universities, research groups, and state and practitioner alliances and associations via the NCA-net and other outreach that may be specifically to these organizations (e.g., Association of Metropolitan Water Agencies sustainability committee, Water Utility Climate Alliance, Western Adaptation Alliance, Florida Climate Alliance, etc.). Increase focused collaboration – with these types of sophisticated practitioner/decisionmaker-based groups is important.
 - 3) Continue to ensure that the NCA is a document that synthesizes existing work rather than performs new science.
 - 4) With regard to synthesis, the NCA should also include an analysis of economic impacts and public health impacts associated with changes in climate and coordinate with the federal agencies doing this already, such as EPA, NOAA, etc. Once finalized, the NCA should include a link to the final ***USGCRP Report, “The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment.***
 - 5) Continue to grow the network of continuing assessment via state, local and association-based organizations.
 - 6) Systematically research and categorize who is doing what where with regard to updates to existing NCA report (Lean on the federal partners to do this). Provide information for practitioners about who they can work with or reach out to regarding gathering assessment information and how to plan infrastructure to adapt to this.