

“We’re all in the same canoe”: The rising voices of indigenous peoples in weather and climate science and policy

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Introduction

What are the elements of successful co-production of science and policy in the related fields of extreme weather and climate change? What lessons have been learned from over two decades of engaging indigenous peoples in weather and climate science and policy? What are the best practices and successful pathways for enhancing engagement in the future? These were some of the driving questions used to guide discussion at a recent workshop at the National Center for Atmospheric Research (NCAR) which convened experts on cross-cultural scientific engagement. Attendees included over 45 scientists, practitioners and students from diverse institutions across the United States including Alaska and the Pacific Islands.

The workshop had three primary objectives:

- 1) Identify lessons learned for, or barriers to, achieving successful and mutually productive scientific engagement by appraising the first-hand experiences of those who have been involved in cross-cultural efforts to integrate indigenous knowledge, understandings, and diverse perspectives in national and international climate and weather modeling and assessments;
- 2) Foster and support collaborations between experts on cross-cultural engagement and NCAR scientists, including formalizing an expert committee that can serve as a lasting bridge between NCAR and the target institutions, especially those serving underrepresented indigenous populations; and
- 3) Identify and recruit students from target institutions serving underrepresented populations for SOARS, GRAs, Student Assistants, Post Docs and other NCAR programs to work with NCAR scientists and enhance diversity at NCAR.

Workshop rationale

Many indigenous communities are the present-day carriers of seasoned cultural awareness of their environments. Attentiveness to environmental variability, shifts and trends has been recognized as an integral part of the life ways of the planet’s indigenous peoples. Local, long-term, community-based indigenous knowledge has offered valuable insights into environmental change due to accelerated climate variability, and complement broader-scale scientific research with local precision and nuance. Indigenous societies have over millennia developed elaborate strategies to adapt to unstable environments, and in some cases, are already actively adapting to early climate change impacts. While the transformations due to climate change are expected to be unprecedented, indigenous knowledge and adaptation strategies provide a crucial foundation for community-based adaptation measures that stretch beyond our current histories.

The recently released report entitled: *Weathering Uncertainty: Traditional Knowledge for Climate Change Assessment and Adaptation*¹ notes that: “In particular, the knowledge of local

¹ Nakashima, D.J., Galloway McLean, K., Thulstrup, H.D., Ramos Castillo, A. and Rubis, J.T. 2012.

and indigenous peoples – often referred to as local, indigenous or traditional knowledge – is increasingly recognized as an important source of climate knowledge and adaptation strategies... [M]any are expecting this knowledge to play a prominent role in climate science and in facilitating adaptation to climate variability and change.”

The report further notes that “(a)ppreciation by the western science community of indigenous understandings” has grown and developed over the past twenty years in climate and weather research and policy, “including in the US Global Change Research Program and ultimately the National Climate Assessment and IPCC.”² Two key points drawn from this international report recognize that:

1. A crucial challenge is to ensure that indigenous peoples are involved as key partners in the development of climate change research and adaptation plans; and
2. Collaboration between indigenous knowledge holders and mainstream scientific research is generating new co-produced knowledge relevant for effective adaptation action on the ground.

Bohensky and Maru (2011)³ report that despite an increasing trend worldwide of integrating indigenous and scientific knowledge, there is little institutional understanding of lessons learned, or what contributes to either successful or unsuccessful integration efforts. The proposed workshop will address this deficit and position NCAR as a significant institution fostering cross-cultural engagement through scientific collaborations and student recruitment from institutions serving indigenous populations such as tribal colleges. A dynamic and rewarding relationship already exists between NCAR and Haskell Indian Nations University.

Indigenous populations are considerably underrepresented in atmospheric sciences, decision making, and policy efforts. Between 2001 and 2009, just 13 PhDs were awarded nationally to Native American students in Earth, Atmospheric and Oceanic Sciences. Of the 787 PhDs awarded specifically in Atmospheric Sciences, 2 were awarded to Native American students. Across all disciplines, Native American students earned 3605 PhDs.⁴ These figures stand in stark contrast to the enormous energy and resource holdings of Native American tribes – which some estimates place as high as 5% of the U.S. oil, 10% of the gas reserves, 30 % of the low sulphur

Weathering Uncertainty: Traditional Knowledge for Climate Change Assessment and Adaptation. Paris, UNESCO, and Darwin, UNU, 100 pp.

² Indigenous knowledge was acknowledged in the Fourth Assessment Report (AR4) of the IPCC as ‘an invaluable basis for developing adaptation and natural resource management strategies in response to environmental and other forms of change’ (IPCC 2007). This recognition was reaffirmed at the IPCC 32nd Session (IPCC 2010a) and consideration of traditional and indigenous knowledge was included as a guiding principle for the Cancun Adaptation Framework (CAF) that was adopted by Parties at the 2010 United Nations Framework Convention on Climate Change (UNFCCC) Conference in Cancun (UNFCCC, 2010). The outline of the IPCC’s Working Group II contribution to the Fifth Assessment Report (AR5) includes local and traditional knowledge as a distinct topic within Chapter 12 on human security.

³ Bohensky, Erin and Yiheyis Maru. 2011. Indigenous knowledge, science, and resilience: what have we learned from a decade of international literature on “integration” *Ecology and Society*, 16(4) 6.

⁴ National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, 2001–09.

coal reserves, and 40 % of the privately held uranium deposits – and the huge stake Native American communities have in the energy future of the U.S.

Synopsis of major overlapping and interacting conclusions

- Ways of knowing and communicating are informed by cultural values, whether in scientific institutions or tribal contexts. We need to ensure that what we call co-production is actually that, not just in name but truly engaging different strengths from different knowledge systems to achieve a better understanding of a process or issue. We need to move beyond the model of “collect and measure” indigenous or local knowledge as if it were another physical object or process.
- Issues of equity must be addressed explicitly in the engagement of diverse ways of knowing so that one knowledge system is not prioritized or valued more highly than another. Power differentials between collaborators must be understood and acknowledged and addressed as appropriate. For example, collaborations with reservation communities should acknowledge long histories of oppression and prejudice.
- There are sets of rights and responsibilities associated all knowledge systems. For technical science this may be the standards of rigorous research and peer reviewed publication. For communities this may be specific cultural protocols and the understanding that community members who are responsible for their knowledge have the right to maintain control over whether, and if so, how it is shared or engaged by with others. In both cases, but especially concerning indigenous knowledge, building relationships of trust between knowledge holders and those who would like to engage with the knowledge is an essential part of the cultural protocol but does not guarantee access to the knowledge.
- Studies that seek to engage diverse knowledge systems, namely indigenous or local knowledge, must be designed carefully to address pragmatic concerns (e.g., transportation, data storage, participant compensation) and challenges to research processes that may arise from cultural protocols (e.g., investing in relationships can take many years and be well beyond the scope of usual project timelines), and facilitate iterative processes that allow for community input and revision continually or as frequently as possible (e.g., how are adaptation policies working?). Best practices for engagement should be recorded and made widely available.
- A native Science Foundation could be created that serves as a network of networks or broad infrastructure to facilitate the above practices. This Foundation could build knowledge and capacity within tribes, among tribes, and between tribal and non-tribal collaborators within and across multiple sectors. As a shared resource for tribal communities it would be a way of sharing knowledge and building capacities towards adaptation and resilience.
- “We’re all in the same canoe” – how can engagements between diverse ways of knowing be sustained in institutional interactions such as the IPCC and the National Climate Assessment to the benefit of people beyond specific places and communities?

Outcomes and action items

- 1) Summary article with key insights. The final article will be made widely available.
- 2) Video short of main messages for NCAR YouTube channel
- 3) New Research projects
 - a. Student research projects – Dan will lead the charge to grow the number of tribal student-designed projects in various opportunities and internships.
 - b. Additionally, all should check out and perhaps participate in the Thriving Earth Exchange. Powered by the American Geophysical Union, this is a new “platform for making a positive impact on the planet and society. Unique in its focus and ability to bring solution Seekers, scientist problem Solvers, and Sponsors/funders together, the Thriving Earth Exchange facilitates action to improve the sustainability of our planet.” Raj Pandya is a bridge between UCAR/NCAR and the Thriving Earth Exchange. See more at: <http://thrivingearthexchange.org/>
- 4) A letter to the NCA about the sustained assessment process – Eileen will lead the charge on a short letter to the NCA about the proposed sustained assessment process and how it will continue to grow the involvement of indigenous communities.
- 5) A network of networks – We talked about engaging a network of distributed institutions recognizing that we are now all in a new canoe! We are all on this journey to pursue problem-focused issues through respectful recognition of diverse ways of knowing. There are proposals currently being written on this.
- 6) Follow-up meetings to carry on specific sub-topics. Rising Voices 2 is being planned for summer 2014 to delve more deeply into issues of relocation due to climate change impacts.

Other proposed items:

- 7) Be in touch with each other! The email list to which I’ve sent this message includes all workshop participants (to the best of my ability – earlier versions had a few missing people). A HUGE thanks to Michael Mason for setting up a Facebook page for us – if you’re not on it let Michael or I know(or know someone else who would like to be on it). Please feel welcome to post thoughts, reflections, and new activities on the facebook page!
- 8) A story-telling effort – Julie Maldonado and Kalani expressed interest
- 9) K-12 education effort – Kyle Powys Whyte expressed interest