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Emily Therese Cloyd, NCA
Public Participation and
Engagement Coordinator
US Global Change Research Program Office
1717 Pennsylvania Ave., NW., Suite 250
Washington, DC 20006
Telephone: (202) 223-6262; Fax: (202) 223-3065
E-mail: ecloyd@usgcrp.gov

Re: Resource for Consideration by NCA Teams Addressing the Impacts of Climate Change on Native Communities

This letter is submitted on behalf of the *Native Communities and Climate Change* (NCCC) project of the University of Colorado Law School and the Cooperative Institute for Research in Environmental Science (CIRES), funded by the Western Water Assessment (WWA) and the National Integrated Drought Information System (NIDIS). One objective of the NCCC Project is to develop and maintain a centralized database that includes information about the existing and projected impacts of climate change on American Indian tribes and Alaska Native communities, tribal climate change response strategies and related planning efforts, and adaptation alternatives identified by other governmental and non-governmental entities that tribes may find useful. The NCCC Project's intention is that this database will support tribal climate change understanding and decisionmaking as well as serve as a useful resource for National Climate Assessment (NCA) Task Force author teams and other local, state, federal, and NGO decisionmakers working on these issues in partnership and cooperation with tribal governments and organizations.

Colorado Law initiated the database effort after a Tribal Climate Change Adaptation Planning & Inter-Governmental Coordination Workshop it convened with support from NIDIS and in coordination with the National Wildlife Federation Tribal Energy Program, WWA, and the Climate Assessment for the Southwest (CLIMAS) on October 5-6, 2010 in Boulder, Colorado. Approximately 40 individuals attended the workshop representing several Colorado Plateau tribes (Navajo Nation, Hopi Tribe, Hualapai Tribe, Zuni Tribe, and Jicarilla Apache Nation), tribal communities from the Pacific Northwest with experience developing climate change adaptation strategies (Tulalip Tribes, Swinomish Indian Community, and Quinault Nation), and

representatives from several federal agencies, inter-tribal organizations, environmental non-profit organizations, universities, and tribal colleges. The workshop participants generated a lengthy set of recommendations for further action (*see* Attachment 1 Workshop Report), and the online, searchable database of documents relevant to tribes and climate change is an initial attempt to catalog and assess existing efforts and outstanding needs. In June 2011, the NCCC Project launched the web-based, searchable database prototype at <http://www.tribesandclimatechange.org/database.php>. The database contains over 300 documents and is field- and keyword- searchable. We hope that it is a useful resource for the NCA's efforts to integrate impacts of climate change on native communities into regional, cross-cutting, and other Chapters.

I. The Importance of the NCA in Establishing a Baseline and Framework for Action

American Indian tribes have contributed very little to the causes of climate change, but for geographic, cultural, and demographic reasons, they stand to suffer disproportionately from its negative effects. Climate change threatens traditional fishing, hunting and gathering practices, results in the inundation of villages, impacts public health and economic opportunities, and increases pressure on reserved treaty rights. It is important that federal decisionmakers consider and address the impacts of climate change on tribal resources and treaty-reserved rights in their climate change and natural resource activities, including the NCA process. More broadly, the implementation of the federal trust responsibility to tribes must reflect and respond to changing climate, environmental and other factors in order to remain relevant, meaningful, and robust.

While there is an enormous amount of work to do to mitigate and adapt to climate change in the U.S., particularly in the absence of federal cap-and-trade legislation and largely uncoordinated efforts to develop effective approaches to adaptation, the NCA serves an important role in providing a substantive snapshot of impacts occurring around the country in terms that scientists and non-scientists can comprehend. It also can provide the factual basis for future efforts to address climate change and present the adaptation efforts underway by various federal agencies and inter-agency teams (like the Interagency Climate Change Adaptation Task Force and National Fish, Wildlife, and Plants Climate Adaptation Strategy) in a logical narrative. In addition, the NCA has the opportunity to help decisionmakers prioritize activities for immediate attention and funding, including projects on tribal lands.

Our research shows that to date, only two of the 565 federally recognized tribes (the Swinomish Indian Tribal Community and St. Regis Mohawk Tribe) have received federal funding to develop an Adaptation Plan (from the U.S. Department of Health & Human Services

Administration for Native Americans and the U.S. Environmental Protection Agency, respectively). While other tribes have received funding for related activities from agencies such as the U.S. EPA and U.S. Fish and Wildlife Service, the amount is small relative to acknowledged need and amount of land under tribal jurisdiction. For example, in his 2009 Secretarial Order 3289, Interior Secretary Ken Salazar established a department-wide approach to better understanding climate change and coordinating an effective response (Secretary of the Interior, 2009). The Order contains a provision specifically focused on recognizing the federal trust relationship between the Department of Interior and tribes and supporting the substantive participation of American Indians and Alaska Natives in deliberations on climate change-related mechanisms, agreements, rules, and regulations (Secretary of the Interior, 2009). The Order also created a climate change adaptation initiative, but insufficient funds have been allocated to enable full and effective tribal participation in any of these mandates (Pardilla, 2011).

Ideally, the NCA will not only document on the ground impacts from climate change and projections, but will also recommend improvements in the way that federal agencies involve tribes on climate change-related matters, including the provision of more substantial and consistent appropriations to support tribal involvement in these efforts. Indian tribes must be included from the outset as equal partners in discussions and decisionmaking if federal assessments and programs are to be effective.

II. NCA History of Addressing Tribal Issues

Created by the Global Change Research Act of 1990 (GCRA), the U.S. Global Change Research Program (GCRP) is intended to assist the federal government in understanding, assessing, predicting, and responding to human-induced and natural processes of global change. Pursuant to Section 2936 of the GCRA, the NCA is required to: integrate, evaluate, and interpret the findings of the GCRP; analyze the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and analyze current trends in global change, both human-induced and natural, and project major trends for the subsequent 25 to 100 years.

The first NCA published in 2000 included a substantial amount of information relevant to the impacts of climate change on tribes in Chapter 12: “Potential Consequences of Climate Variability and Change for Native Peoples and Homelands” (Houser et al., 2000). The Chapter examined the historical, geographical, climatological, ecological, and socioeconomic contexts that must be considered in forming adaptation policies. The report discussed how sustaining economic vitality on tribal lands will require thoughtful planning because many reservation

economies and tribal government program budgets depend heavily on agriculture, forest products, and tradition- and recreation- based tourism, which are likely to be affected as the climate shifts and warm extremes become more frequent (Houser et al., 2000). Moreover, it found that climate change is likely to negatively impact tribes' health and welfare, in part because tribal housing is typically more vulnerable to the prevailing climatic conditions than national average housing (Houser et al., 2000). The report also identified the need for stable water supplies and additional financial resources to address infrastructure issues (Houser et al., 2000). In addition, it found that sacred and historically significant sites, as well as cultural traditions, are likely to be affected by climate change (Houser et al., 2000). Much of this information remains useful and relevant today.

The second NCA published in 2009 mentioned tribal interests in several chapters, but not in as much depth (Karl et al., 2009). It would be very useful if the forthcoming report would provide an updated, in depth treatment of the impacts of climate change on native communities and address the concerns noted briefly below and more thoroughly analyzed in the documents contained in the NCCC Project database. From the initial information available from the NCA Task Force, it looks like this will be case, with impacts on tribal lands and resources addressed in both regional chapters and in a stand-alone, cross-cutting issues chapter.

III. Database Results on Tribal Climate Change Impacts & Activities

The NCCC Project database includes many documents addressing the current and projected impacts of climate change on tribal lands and resources across the U.S., some of which have been produced by tribes, tribal organizations, and other partners. The results indicate that many American Indian tribes are already experiencing and reporting impacts from climate change, but that they often have limited financial, institutional, and staff resources to undertake adaptation activities. This section of the report summarizes, by region, the kind of information that is available about the impacts of climate change on tribes and the general impacts of climate change on regions of interest.

A. Pacific Northwest

Research from the Climate Impacts Group at the University of Washington indicates that climate changes in the Pacific Northwest are creating warmer and drier conditions in the summer, warmer and wetter conditions in the winter, and more extremes and variability year round (Center for Science in the Earth System, et al., 2007). Due to these changes in temperature and water availability, the Pacific Northwest is experiencing rising sea-levels, impaired fisheries and aquatic habitats, shifting of seasons, changes in timing and volume of

river flows, potential flooding and droughts, increased fires, water quality contamination, an increase in pests, and loss or migration of plant and animal species, including notably salmon, due to climate change (McLean, K., 2010; MacKendrick, 2009; Parker et al., 2006; Lynn and Donoghue, 2010a; Peterson, 2008; Hanna, 2007; McNutt, 2010; Glick, et al., 2007; Lynn and Donoghue, 2010b; Swinomish Office of Planning and Community Development, 2010; Rose, 2010; and Intertribal Climate Change Working Group, 2009; Lekanof, D., 2011). These environmental changes pose risks to all communities, including American Indian tribes (Parker, et al., 2006). Climate change has the potential to negatively affect water resources, food availability, cultural resources, wildlife resources, timber and other industries, health, and housing (McLean, K., 2010; MacKendrick, 2009; Parker et al., 2006; Lynn and Donoghue, 2010a; Hanna, 2007; McNutt, 2010; Lynn and Donoghue, 2010b; Swinomish Office of Planning and Community Development, 2010; and Intertribal Climate Change Working Group, 2009).

In addition to generally-applicable climate change information, which will no doubt be covered very thoroughly in the upcoming assessment, the Northwest has climate change adaptation information produced by or relevant to tribes specifically. There are several relevant documents from the Northwest in the NCCC Project database that describe tribal climate change impacts, challenges, and solutions, including those that specifically address the Coquille Indian Tribe, the Swinomish Indian Tribal Community, Nez Perce Tribe, and the Lummi Nation. (Lynn and Donoghue, 2010a; Lynn and Donoghue, 2010b; Lynn and Donoghue, 2010c; Lynn and Donoghue, 2011). A few individual tribes have developed relevant documents; perhaps most comprehensive is the Swinomish Climate Change Initiative's "Impact Assessment Technical Report" and "Climate Adaptation Action Plan," which provide a detailed analysis of the impacts of climate change on the Swinomish Indian Tribal Community and possible response strategies (Swinomish Office of Planning and Community Development, 2009; Swinomish Office of Planning and Community Development, 2010).

The Swinomish initiative is a useful case study of one tribe's success in garnering tribal government support, federal government financial assistance, and regional government and academic institution support to create the first tribal climate change adaptation plan in existence (Swinomish Office of Planning and Community Development, 2010). The Quinault Indian Nation is the only other Tribe to date that has a climate adaptation plan (Intertribal Climate Change Working Group, 2009), but as far as we know, this plan is not publicly available. In addition to individual tribal efforts, several tribes and organizations worked together to develop "A Tribal White Paper on Climate Change Adaptation and Mitigation," which provides a insightful review of the risks, challenges and potential solutions related to the impacts of climate change on tribes (Intertribal Climate Change Working Group, 2009).

Other valuable resources include: “Climate Change and Pacific Rim Indigenous Nations,” “Climate Change and Coquille Indian Tribe: Planning for the Effects of Climate Change and Reducing Greenhouse Gas Emissions,” “Oregon Tribal Climate Change Project,” “Climate Change Impacts on Tribal Resources,” and “Native Communities and Climate Change: Protecting Tribal Resources as Part of National Climate Policy,” which has a section on the Northwest (Parker et al, 2006; Lynn and Donoghue, 2010a, Asgeirsson, 2010; Tulalip Natural Resources Department, undated; Hanna, 2007).

In addition, there are community and regional planning guidebooks for adaptation, such as “Energy Planning: A Guide for Northwest Indian Tribes,” which provides information energy efficiency and energy conservation-related adaptation possibilities (Northwest Sustainable Energy for Economic Development, 2009). Another useful guidebook is the “Tribal Wildfire Resource Guide,” which provides an overview of federal forest/fire policies and authorities, including federal fire planning programs and grant resources to help tribes develop or strengthen fire management programs. It also summarizes case studies from tribes around the U.S. actively engaged in planning or implementing fire management programs (Resource Innovations, University of Oregon, et al., 2006). “Climate Change Adaptation Planning for Cultural and Natural Resource Resilience: A Look at Planning for Climate Change in Two Nations in the Pacific Northwest U.S.” provides in depth case studies of the of Hoopa and Coquille Tribes’ efforts to address climate change impacts and risks, with a discussion of potential adaptation measures (MacKendrick, 2009). “Tribal Climate Change Adaptation Options: A Review of the Scientific Literature,” is a comprehensive document developed by the U.S. EPA Region X that summarizes documents available regarding climate change impacts and adaptation options (Rose, 2010). Other useful resources developed by the EPA include “Climate Change and the National Water Program: Tribal Consultation Part I, Part II, and Part III” and overviews of the potential impacts of climate change on water resources, including some information specifically relevant to tribes (EPA, 2010a, EPA 2010b, EPA 2010c).

The availability of information about climate change impacts on the Northwest and the relative strength of many Northwest tribes’ response may be attributed in part to the importance of fish and maintaining healthy fish habitat to the tribes and the shared interest in these resources that they have with neighboring landowners and governments (both in the U.S. and Canada). Tribes have formed the Northwest Indian Fisheries Commission and the Columbia River Indian Fisheries Commission and taken other action to assert their treaty fishing rights, which has served to help elevate their concerns and the development of solutions for many years.

B. Alaska

The Arctic is experiencing the most pronounced climate changes in the world, with average temperature rates increasing twice as fast as the global average (Rose, 2010; Alaska Department of Environmental Conservation, 2010; US Geological Survey National Research Program and Council of Athabascan Tribal Governments, 2011; US Global Change Research Program, 2009a; US Global Change Research Program, 1998; McLean, K., 2010). In the last 30 years alone, the average sea ice in the Arctic has declined by about 8%, an area as large as Texas and Arizona combined (Hanna, 2007). Projections indicate sea ice may decrease an additional 10-50% by 2100 (Hanna, 2007). To date, research shows average annual temperatures have already increased by 3.4°F and winters temperatures have increased by 6.3°F (Hanna, 2007). Due to temperature increases, the permafrost base has been thawing at a rate of about 1.6 inches per year since the early 1990s (Rose, 2010). Thawing of permafrost poses large potential threats to villages in Alaska because approximately 80% of the region has a permafrost land base, which holds the land together (US Army Corps of Engineers, 2009). With a reduction in permafrost, much of the land is beginning to subside and erode, and the problem is projected to increase in severity overtime (US Army Corps of Engineers, 2009). For instance, Alaska Native villages are losing their land-base through erosion and flooding at an alarming rate and eroding land along coasts and riverbanks is threatening the safety and infrastructural integrity of villages (US Geological Survey, 2010). Erosion in the village of Newtok, for example, is occurring at an estimated rate of 71 feet per year between 1957 and 2003 (US Army Corps of Engineers, 2006).

In 2003, a study by the Government Accountability Office (GAO) found that 184 of the 213 (about 86%) Native villages in Alaska were affected to some extent by flooding and erosion, with 31 villages facing imminent threats (US Army Corps of Engineers, 2009; Mittal, 2009). Of these 31 villages, 12 want to relocate, but are facing funding challenges (Mittal, 2009). As reported in "Alaska Native Villages: Limited Progress Has Been Made on Relocating Villages Threatened by Flooding and Erosion," relocation efforts have been stalled because there is no comprehensive, coordinated, and fully funded relocation program (Mittal, 2009). Also, few Alaska Native villages qualify for funding assistance from Federal Emergency Management Agency (FEMA) because they lack disaster mitigation plans and/or have not been declared federal disaster areas (Mittal, 2009). Due to extensive erosion, the villages Kivalina, Newtok, and Shishmaref are estimated to only have 10 to 15 years to relocate, but with estimated costs in the range of \$80 - 400 million each, the feasibility of relocation is in question (US Army Corps of Engineers, 2009; Mittal, 2009; Hanna, 2007).

In addition to temperature increases, sea ice melting, sea level rises, permafrost melting, erosion damage, flooding, and infrastructure damage, documents indicate that the following additional impacts of climate change in this region include shifts in seasons, increase in precipitation, increase in evaporation, reduced soil moisture, droughts, increase in fire frequency, increase storm frequency and intensity, wave and storm surges, melting glaciers, reduction in river, lake and groundwater quantity and quality, ocean acidification, algal blooms, risk to sanitation infrastructure from flooding and/or thawing permafrost, decreased drinking water quality, changes in marine and terrestrial habitat and species diversity and population numbers, increase in invasive species and insect outbreaks, shifting flora and fauna, reduced transportation routes, economic hardship, decline in health, and reduced overall safety (US Army Corps of Engineers, 2009; Mittal, 2009; Rose, 2010; Alaska Department of Environmental Conservation, 2010; US Geological Survey National Research Program and Council of Athabascan Tribal Governments, 2011; US Global Change Research Program, 2009a; Hanna, 2007; US Army Corps of Engineers, 2006; Alaska Native Tribal Health Consortium, 2009a; Alaska Native Tribal Health Consortium, 2009b; Alaska Native Tribal Health Consortium, 2010; McNutt, 2010; Research Needs Work Group, 2009; US Global Change Research Program, 1998; McLean, K., 2010).

Specific impacts to tribes include changes to species' migratory routes and breeding grounds, decreased availability of important plant and wildlife species, and greater travel distance for hunting and gathering, all affecting subsistence ways of life and food security (Hanna, 2007; US Geological Survey, 2010; McNutt, 2010; Mittal 2009; Alaska Department of Environmental Conservation, 2010; US Geological Survey National Research Program and Council of Athabascan Tribal Governments, 2011; McLean, K., 2010) Melting of ice food cellars also threatens food security (Alaska Native Tribal Health Consortium, 2009a). Changes to hunting practices and food storage, as well as loss of archaeological relevant sites due to inundation and loss of permafrost all would cause loss of traditional local knowledge and cultural resources (Alaska Department of Environmental Conservation, 2010; Hanna 2007; McNutt, 2010; Research Needs Work Group, 2009).

Although little has been done to assist the villages in imminent danger of erosion and flooding, the document "Recommendations on Research Needs Necessary to Implement an Alaska Climate Change Strategy" provides a summary of mitigation and adaptation strategies to address climate change impacts on economic activity, health, culture, natural resources and systems, and public infrastructure (Research Needs Work Group, 2009). The "US Geological Survey Activities Related to American Indians and Alaska Natives – Fiscal Years 2007 and 2008" is another useful resource that lists collaborative projects between Alaska native villages and

the USGS, in many cases highlighting the synergistic value of coupling traditional local knowledge with western scientific data collection and analysis (US Geological Survey, 2010).

C. Southwest

The primary issues of concern in the Southwest region are increasing temperatures, decreasing water supply, and drought conditions that have affected the region for over a decade, resulting in impacts to wildlife, public health, agricultural/grazing productivity, forestry, and other important activities (Thomas, et al., 2009; Governor's Drought Task Force for Arizona, 2004; US Global Change Research Program, 1998; Belnap, 2007; CLIMAS, et al., 2011; Rocky Mountain Climate Organization and Natural Resource Defense Council, 2008; The Nature Conservancy, 2010; Hanna, 2007; State of New Mexico Agency Technical Workgroup, 2005; McLean, K., 2010). "Water is, quite literally, the life blood of the Southwest" (State of New Mexico Agency Technical Workgroup, 2005). Documents in the database indicate that climate change is resulting in the following environmental impacts: seasonal shifts; less snowpack; less snowfall; earlier snowmelt; increase in seasonal floods; less precipitation; increased evapotranspiration; reduced streamflows; reduced reservoir levels; reduced groundwater; increased salinity; reduced water quality; reduced soil moisture; increased wildfires; loss of forests and other vegetative cover; decrease in wildlife and sensitive species; decrease in native fish species; increase in invasive species and pests; reduced carrying capacity for livestock and grazing; crop failure and reduction in agricultural productivity; increase in erosion; infrastructure damage from dust storms; highway closures; increase in air pollution; increased disease; and reduced overall health (Governor's Drought Task Force for Arizona, 2004; US Global Change Research Program, 1998; Belnap, 2007; CLIMAS, et al., 2011; Rocky Mountain Climate Organization and Natural Resource Defense Council, 2008; The Nature Conservancy, 2010; Hanna, 2007; State of New Mexico Agency Technical Workgroup, 2005; US Geological Survey, 2011; Navajo Nation Department of Water Resources, 2003; California Natural Resources Agency, 2009; Brittain, et al., 2011; Association of California Water Agencies, 2005; California Department of Water Resources, 2008; California Climate Change Research Center, 2006; McLean, K., 2010; Santa Clara Pueblo, 2008). In addition, there is concern that climate change will negatively impact cultural practices and decrease ceremonial resources (US Global Change Research Program, 1998; CLIMAS, et al., 2011; State of New Mexico Agency Technical Workgroup, 2005; California Natural Resources Agency, 2009; Brittain, et al., 2011; Torbit, S. 2008).

Wildfires are already a major problem in the Southwest and can destroy sacred cultural sites, traditional plants, forests, and important wildlife habitat (US Global Change Research Program, 1998). Another drought-related threat to tribal communities in parts of the Southwest is the increase in extent of sand dunes and magnitude of sandstorms, for example on the Navajo

Nation (Belnap, 2007; CLIMAS, et al., 2011; State of New Mexico Agency Technical Workgroup, 2005; US Geological Survey, 2011, Institute for Tribal Environmental Professionals, 2008). This increase in sand dunes can increase invasive species, reduce forage for wildlife and livestock, decrease air quality, negatively impact houses and other structures, and create transportation hazards (Belnap, 2007; US Geological Survey, 2011). Many scientists believe that these sandstorms may be contributing to dust deposition in the Colorado mountains, causing snowmelt to occur earlier than typical (Belnap, 2007; US Geological Survey, 2011).

California faces the additional challenge of sea level rise (California Natural Resources Agency, 2009; California Department of Water Resources, 2008; California Climate Change Research Center, 2006). In the last century, it is estimated that the sea level has already risen about seven inches, causing erosion, potential coastal storms and flooding, damage to infrastructure, salt water intrusion, decrease in water quality and supply, and other natural resources, such as marine life (California Natural Resources Agency, 2009; California Department of Water Resources, 2008; California Climate Change Research Center, 2006).

NCCC database documents available indicate that tribes in the region are particularly vulnerable to drought as many communities lack access to adequate sources of drinking water because they have unmet infrastructure needs, are located in remote areas, and face other socioeconomic challenges (Governor's Drought Task Force for Arizona, 2004; Navajo Nation Department of Water Resources, 2003; Navajo Nation Department of Water Resources, 2011). In addition, climate change promises to bring additional challenges to tribes working to negotiate and execute their water rights (CLIMAS et al., 2011; Hanna, 2007).

A recent workshop held in Flagstaff, Arizona, "Drought Preparedness for Tribes in the Four Corners Region" brought together several tribes to identify critical information and data needs of Tribes in the region and develop a knowledge network to help NIDIS establish an effective drought early warning information system and support drought risk management in the region (CLIMAS, et al., 2011). As is evident from the workshop report, several tribes are proactively engaged in preparing for drought and increasing monitoring, mitigation, and adaptation activities. To date, the Navajo, Hopi, Hualapai, Zuni, Southern Ute, and Northern Cheyenne tribes have developed drought plans (Navajo Nation Department of Water Resources, 2003; Hopi Tribe, undated; Hualapai Tribe, undated; Zuni Tribe, 2004; Beck Consulting, 2007). In addition, the Ute Mountain Ute tribe has developed a groundwater protection plan (Mountaintop Associates, Inc., 2004).

The extent to which these tribes have adequate resources to update these plans to reflect changing conditions or to implement the plans' recommendations is not known. Other useful

resources in the database for tribes in this region interested in developing adaptation strategies include the Swinomish Climate Change Initiative documents discussed above, “Pueblo of Jemez: Leading the Way to a Renewable Future,” and more general documents, including “Climate Action on Tribal Lands: A Community Based Approach,” “Addressing Environmental Issues for Future Generations of Native Americans in New Mexico,” Scanning the Conservation Horizon: A Guide to Climate Change Vulnerability Assessment,” “Constructing a Green Future: Sustainable and Energy Efficient Tribal Building Workshop,” and “Climate Change, Drought and Early Warning on Western Native Lands Workshop Report” (Sommer, 2011; Brittain, et al., 2011; Seven Generations, 2004; Glick, et al., 2011; Institute for Tribal Environmental Professional, et al., 2007; Collins et al., 2009).

D. Great Plains and Great Lakes

As with the Northwest, Alaska, and Southwest, temperature increases are projected to strain water resources and disrupt ecosystems in the Great Plains and Great Lakes regions (US Global Change Research Program, 1998; The Union of Concerned Scientists and The Ecological Society of America, 2003; Honor the Earth, 2008; US Global Change Research Program, 2009b; Fond du Lac Band of Lake Superior Chippewa, 2008; US Geological Survey, 2006; Central Great Plains Regional Assessment Group, 2010; US Global Change Research Program, 2009c; Pew Center on Global Climate Change, 2007). Documents publicly available on the web for this region and included in the NCCC Project database tend to focus on the Great Plains and Great Lakes regions generally as opposed to being specifically produced by, for, or about tribes and tribal organizations. Trends show increasing temperatures and shorter, warmer, and wetter winters, with longer, hotter, and drier summers, increased frequency and intensity of weather events, including floods and drought, and reduced groundwater recharge (US Global Change Research Program, 1998; The Union of Concerned Scientists and The Ecological Society of America, 2003; US Global Change Research Program, 2009b; Central Great Plains Regional Assessment Group, 2010; US Global Change Research Program, 2009c; Pew Center on Global Climate Change, 2007; McLean, K., 2010).

These changes in temperature and precipitation have important ramifications for the area’s natural resources and economy. Warmer temperatures cause less snowfall, a reduced lake ice season, decreased lake levels, warmer water temperatures, and increased stratification, oxygen depletion, dead zones, and accumulation of mercury and other contaminants, all of which negatively affect native fish species (US Global Change Research Program, 1998; The Union of Concerned Scientists and The Ecological Society of America, 2003; US Global Change Research Program, 2009b, Central Great Plains Regional Assessment Group, 2010; US Global Change Research Program, 2009c; McLean, K., 2010). Native cold water fisheries will decrease or

migrate north, and non-native warm water fish species and other invasive species will increase, displacing and out-competing other fish (US Global Change Research Program, 1998; The Union of Concerned Scientists and The Ecological Society of America, 2003; US Global Change Research Program, 2009b, Central Great Plains Regional Assessment Group, 2010; US Global Change Research Program, 2009c). Warmer temperatures are also predicted to cause shifts and decline of native forest habitat and species distribution, reduction in wetlands, important migratory corridors and nesting grounds for bird species, increased invasive species, insect and pest outbreaks, increased diseases in plants and animals, including moose and other game animals, and increased wildfires (US Global Change Research Program, 1998; The Union of Concerned Scientists and The Ecological Society of America, 2003; US Global Change Research Program, 2009b; Fond du Lac Band of Lake Superior Chippewa, 2008; US Geological Survey, 2006; Central Great Plains Regional Assessment Group, 2010; US Global Change Research Program, 2009c; McLean, K., 2010).

Climate change will also affect agricultural productivity in the region, both crops and livestock. In the Great Plains, dwindling groundwater supplies are already threatening the region's extensive agriculture (US Global Change Research Program, 2009b; Thomas, et al., 2009). Increased temperatures will stress both plants and animals, leaving them vulnerable to invasive and disease-carrying pests (US Global Change Research Program, 1998; The Union of Concerned Scientists and The Ecological Society of America, 2003; Honor the Earth, 2008; US Global Change Research Program, 2009b; Central Great Plains Regional Assessment Group, 2010; US Global Change Research Program, 2009c). As in other regions, climate change is expected to impact human health because of reduced water quality and quantity, reduced air quality, increased respiratory disease, increased heat waves, and higher incidences of insect and waterborne diseases (Center for Science in the Earth System, et al., 2007; US Global Change Research Program, 1998; The Union of Concerned Scientists and The Ecological Society of America, 2003; Honor the Earth, 2008; US Global Change Research Program, 2009b; Fond du Lac Band of Lake Superior Chippewa, 2008; US Geological Survey, 2006; Central Great Plains Regional Assessment Group, 2010; US Global Change Research Program, 2009c; Pew Center on Global Climate Change, 2007).

Tribes in the Great Plains and Great Lakes regions stand to be affected by all of the impacts of climate change discussed above. Their hunting, fishing, ranching, farming, and other economic activities that depend on natural resources will be vulnerable to climate change. In addition, climate change is also projected to decrease access to traditional plants, including wild rice and sugar maples, and decrease access to natural medicines and plants (US Global Change Research Program, 1998). Despite this reality, there is a current lack of widely available documents assessing the impacts of climate change specifically on the regions' tribes and tribal resources.

There is, however, quite a bit more information available about tribal climate change mitigation activities in this region, for example renewable energy development. The Great Plains has significant wind energy potential, and tribes have actively pursued opportunities to develop this source of energy (Pew Center on Global Climate Change, 2007; Gough, 2002; Lakota Enterprises, 2009; Garry, et al., 2009; Wall, D., 2008a; Wall, D., 2009). However, tribes and tribal advocates have faced serious obstacles to large-scale renewable development including up front capital costs, inability to take advantage of federal tax code incentives, and grid/inter-connection issues (Lakota Enterprises, 2009; Garry, et al., 2009). Lakota Solar Enterprises initiated the Tribal Lands Renewable Energy Project in 2002, and recently developed the Red Cloud Renewable Energy Center (RCREC). The RCREC has made great strides in tribal renewable energy education, awareness and development across the Great Plains, including providing ten reservations in seven Great Plains states with solar heating systems (Lakota Enterprises, 2009). In addition, the Intertribal Council on Utility Policy (COUP) was established in 1994 and was one of nine award winners out of 70 projects world-wide for the “World Clean Energy Award” in 2007 for their development of a wind generator on the Rosebud Sioux Reservation (Wall, D., 2008a).

Another document of note that originated in this area is the 2009 “Mystic Lake Declaration” drafted by tribal representatives who came together in Minnesota for a second “Native Peoples-Native Homelands Climate Change Workshop” (Honor the Earth, 2009). The Declaration synthesizes their perspectives and recommendations for how the U.S. should address climate change (Honor the Earth, 2009). While not specific to the Great Lakes or Great Plains region, this workshop and the first Native Peoples-Native Homelands Climate Change Workshop in 1998 addressed the impacts, concerns, and ideas of each region. The 1998 report contains a section from the breakout groups for both the Great Lakes and Great Plains and became the basis for Chapter 12 of the 2000 NCA (US Global Change Research Program, 1998).

E. Northeast and Southeast

Climate change studies and reports focused on the East highlight similar overall climate change concerns in this region--warming temperatures and alterations to seasonal precipitation cycles, including shorter, wetter winters and longer, drier summers (US Global Change Research Program, 1998; Passamaquoddy Tribe, undated; National Oceanic and Atmospheric Administration, 2010; Clean Air-Cool Planet, 2005; Pew Center on Global Climate Change, 2007; University of Maine, 2009; US Climate Change Science Program, 2009; Northeast Climate Impacts Assessment Team, 2007; Union of Concerned Scientists and The Ecological Society of America, 2001). Studies show that the result of these changes in temperature and precipitation is likely to be sea-level rise, increases in extreme weather, larger storm surges, increased

flooding, coastal inundation, increased erosion and subsidence, salt water intrusion, reduced water quality and quantity in freshwater systems, including aquifers and wetlands due to contamination and salt water intrusion, and wetland loss (US Global Change Research Program, 1998; Passamaquoddy Tribe, undated; Clean Air-Cool Planet, 2005; Pew Center on Global Climate Change, 2007; US Climate Change Science Program, 2009; Northeast Climate Impacts Assessment Team, 2007; Union of Concerned Scientists and The Ecological Society of America, 2001; McLean, K., 2010).

Climate change is also projected to cause heat waves and increase droughts and wildfires, which would negatively affect plants, animals, and human health (US Global Change Research Program, 1998; Passamaquoddy Tribe, undated; University of Maine, 2009; Northeast Climate Impacts Assessment Team, 2007; Union of Concerned Scientists and The Ecological Society of America, 2001). There are several potential repercussions to plant and animal species, including an overall decline and migration north, a decline of cold-water fisheries, an increase in forest pests and invasive species including mosquitos and ticks, an increase in deer, caribou, and moose disease, insect damage to plants and animals, and a decrease in forest products, including valuable resources such as black ash trees, birch, sweet grass, and maples (US Global Change Research Program, 1998; Passamaquoddy Tribe, undated; Clean Air-Cool Planet, 2005; Pew Center on Global Climate Change, 2007; University of Maine, 2009; US Climate Change Science Program, 2009; Northeast Climate Impacts Assessment Team, 2007; Union of Concerned Scientists and The Ecological Society of America, 2001; McLean, K., 2010). Human health impacts are exacerbated by insect and pathogen outbreaks, air pollution, a reduced subsistence food supply, including native fish, plants and wildlife, non-point source contamination, and contamination to food, such as fish and mercury (Wall, D., 2008b; US Global Change Research Program, 1998; Passamaquoddy Tribe, undated; University of Maine, 2009; Northeast Climate Impacts Assessment Team, 2007; Union of Concerned Scientists and The Ecological Society of America, 2001).

In our review of publicly available information about the impacts of climate change on the Eastern United States, we came across only a few that specifically discussed impacts on tribes in this region, spanning from Maine to southeast Texas. In one, Steve Crawford, Director of the Passamaquoddy Tribes' Environmental Department and chair of the Natural Resources Committee of the United South and Eastern Tribes (USET) cooperative, surveyed 25 Northeastern and Southern tribal environmental managers in 2008 to assess climate change impacts to their communities (Wall, D., 2008b; Passamaquoddy Tribe, undated). He found that they were aware of the issues, but few were actively implementing programs, conducting research or preparing for climate change due to dealing with other pressing issues (Wall, D., 2008b; Passamaquoddy Tribe, undated). Each of the six Nations of the Haudenosaunee

Confederacy has begun to address climate change impacts, through activities such as preserving a native food base by seed-banking and GIS mapping of their natural resources to protect and plan for the future (Wall, D., 2011) In addition, the Saint Regis Mohawk tribe was recently awarded funding from the U.S. Environmental Protection Agency (Region 2) to assess potential impacts of climate change on their cultural and environmental resources and to develop a climate change adaptation plan (Youngblood, J., 2011) .

We expect that there is a great deal more information available about tribal climate change efforts in this and the other regions that is simply not widely available at this time. Through efforts such as the NCCC Project database and Institute for Tribal Environmental Professionals climate change newsletter and website (<http://www4.nau.edu/tribalclimatechange>), we hope more of this information will be in circulation.

IV. Recommendations

In light of our survey of existing climate change information about tribes and climate change, we have the following recommendations for the NCA and related federal government efforts to assist tribal governments in assessing and adapting to climate change impacts. We hope that the forthcoming NCA includes a strong component devoted to how to address needs identified, including ways to:

1. Engage Indian tribes in federal programs and activities

The federal government has developed numerous climate change-related reports, initiatives, and programs, but could improve its engagement of tribal representatives in these processes and better incorporate tribal perspectives, knowledge, solutions, and support (financial and technical). Outreach methods must be effective and timely and can include outreach to tribal leaders, resource managers, networks, and organizations, including for example the following tribal organizations and partners:

- Affiliated Tribes of Northwest Indians (<http://www.atntribes.org/>)
- Alaska Center for Climate Assessment and Policy (ACCAP) (www.accap.uaf.edu)
- Alaska Native Tribe Health Consortium: Center for Climate and Health (<http://www.anthctoday.org/>)
- American Indian Alaska Native Climate Change Working Group (<http://aianclimatechange.com/>;
<http://www.haskell.edu/climate/index.html>)
- Bay Mills Community College (<http://www.bmcc.edu/>)
- Blackfeet Community College (<http://www.bfcc.org/>)

- Cankdeska Cikana Community College (<http://www.littlehoop.edu/content/>)
- Centre for Indigenous Climate Change Resources (<http://www.cier.ca/>)
- Chief Dull Knife College (<http://www.cdkc.edu/>)
- Climate Adaption Knowledge Exchange (<http://www.cakex.org/>)
- Climate Assessment for the Southwest (CLIMAS) (<http://www.climas.arizona.edu/>)
- Climate Decision Support Consortium (CDS) (<http://pnwclimate.org>)
- Climate Impacts Group at the University of Washington (<http://cses.washington.edu/cig/>)
- College of Menominee Nation (<http://www.menominee.edu/>)
- College of the Muscogee Nation (<http://www.mvsktc.org/>)
- Columbia River Intertribal Fish Commission (<http://www.critfc.org/>)
- Comanche Nation College (<http://www.cnc.cc.ok.us/>)
- Council for Energy Resource Tribes (<http://74.63.154.129/>)
- Dine College (<http://www.dinecollege.edu/>)
- D-Q University (<http://dquniversity.org/>)
- Fond du Lac Tribal and Community College (<http://www.fdlcc.edu/>)
- Fort Belknap College (<http://www.fbcc.edu/>)
- Fort Berthold Community College (<http://www.fortbertholdcc.edu/>)
- Fort Peck Community College (<http://www.fpcc.edu/>)
- Great Lakes Inter-tribal Council (<http://www.glitc.org/>)
- Haudenosaunee Environmental Task Force (<http://hetf.org/>)
- Haskell Indian Nations University (<http://www.haskell.edu/>)
- Honor the Earth (<http://www.honorearth.org/about-us>)
- Ilisagvik College (<http://www.ilisagvik.cc/>)
- Indigenous Peoples Climate Change Assessment (IPCCA) (www.ipcca.net/)
- Institute for American Indian Arts (<http://www.iaia.edu/>)
- Institute for Tribal Government at Portland State University (<http://www.tribalgov.pdx.edu/>)
- Institute for Tribal Environmental Professionals (<http://www4.nau.edu/itep/climatechange/>)
- Intertribal Agriculture Council (<http://www.indianaglink.com/>)
- Intertribal Council of Arizona (<http://www.itcaonline.com/>)
- Intertribal COUP (Council on Utility Policy) (<http://www.intertribalcoup.org/>)
- Intertribal Timber Council (<http://www.itcnet.org/>)
- Keweenaw Bay Ojibwa Community College (<http://www.kbocc.org/>)
- Lac Courte Oreilles Ojibwa Community College (<http://www.lco.edu/>)
- Leech Lake Tribal College (<http://lltc.edu/>)

- Little Big Horn College (<http://www.lbhc.edu/>)
- Little Priest Tribal College (<http://www.littlepriest.edu/>)
- Midwestern Regional Climate Center (<http://www.stateclimate.org/regional.php?region=midwestern>)
- National American Indian Housing Council (<http://www.naihc.net/>)
- National Association of Tribal Historic Preservation Officers (<http://www.nathpo.org/>)
- National Congress of American Indians (<http://www.ncai.org/>)
- National Tribal Environmental Council (<http://www.ntec.org/>)
- National Wildlife Federation Tribal Lands Program (<http://tribalclimate.org/>)
- Native American Rights Fund (<http://www.narf.org/>)
- Navajo Technical College (<http://www.navajotech.edu/>)
- Nebraska Indian Community College (<http://www.thenicc.edu/>)
- Northwest Indian College (<http://www.nwic.edu/>)
- Northwest Indian Fisheries Commission (<http://nwifc.org/>)
- Northwest Sustainable Energy for Economic Development (<http://www.nwseed.org/>)
- Oglala Lakota College (<http://www.olc.edu/>)
- Oregon Climate Change Integration Group (<http://www.oregon.gov/ENERGY/GBLWRM/CCIG.shtml>)
- Our Natural Resources (<http://www.ournaturalresources.org/>)
- Pacific Northwest Tribal Climate Change Network (<http://tribalclimate.uoregon.edu/network/>)
- PNW Climate Impacts Consortium – Northwest Climate Science Center (<http://pnwclimate.org/department-of-the-interior-climate-science-center>)
- Red Lake Nation College (<http://www.redlakenationcollege.org/>)
- Rocky Mountain Climate Organization (<http://www.rockymountainclimate.org/>)
- Saginaw Chippewa Tribal College (<http://www.sagchip.edu/>)
- Salish Kootenai College (<http://www.skc.edu/>)
- Sinte Gleska University (<http://www.sintegleska.edu/>)
- Sisseton Wahpeton College (<http://www.swc.tc/>)
- Sitting Bull College (<http://www.sittingbull.edu/>)
- Southwestern Indian Polytechnic Institute (<http://www.sipi.edu/>)
- Stone Child College (<http://www.stonechild.edu/>)
- Sustainable Northwest (<http://www.sustainablenorthwest.org/>)
- The Nature Conservancy (<http://www.nature.org/>)
- Tohono O’odham Community College (<http://www.tocc.cc.az.us/>)

- Turtle Mountain Community College (<http://www.turtle-mountain.cc.nd.us/>)
- United Tribes Technical College (<http://www.unitedtribestech.com/main.asp>)
- University of California, Santa Barbara Bren School Chumash Group Tribal Climate Action Project (<http://tribalclimateaction.org/index.html>)
- Western Water Assessment (<http://wwa.colorado.edu/>)
- White Earth Tribal Community College (<http://www.wetcc.org/>)
- Wind River Tribal College (<http://www.windrivertc.org/>)

2. Broaden climate change discussions to highlight economic, social, and cultural implications

It is important to ensure that climate change discussions and activities highlight the implications of climate change on daily life and resources of concern. If viewed strictly as an environmental issue, climate change may not attract the interest as it would if explained through the lens of impacts to water supplies, infrastructure, agricultural productivity, public health, and culturally significant resources. Climate change affects many facets of human life, and tribal decisionmakers and communities need information on the breadth and depth of the problem.

3. Create co-management opportunities with tribes

Adaptation will require unique and progressive land management strategies. As Indian tribes share borders with federal, state, and municipal lands, tribes should be active co-partners to manage lands—the cooperation of multiple stewards with shared interests can produce better results. Tribes can provide valuable traditional local knowledge to improve monitoring and planning programs. In addition, coordinating with tribes to facilitate data sharing and access will streamline data collection and monitoring, decrease potential redundancy in multiple regional, state, and federal research efforts, and improve access to available regional data.

4. Provide tribal outreach, education, and training opportunities

Providing tribal outreach, education, and training opportunities will increase capacity building and enable tribes to develop their own monitoring, mitigation, and adaptation plans. Improving education and outreach will also increase awareness within the community regarding the importance of climate change and its potential impacts on tribal lands, resources, and ways of life.

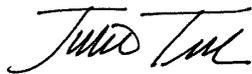
5. Increase Accessibility of Funding Opportunities

Many tribes have limited financial and technical capacity to prepare for climate change, and the funding they do receive is often for a short duration inadequate for long-term planning and response. We recommend providing tribes with a straightforward process for receiving funding that includes centralized and simplified explanations of eligibility and process requirements for different federal programs. For example, it would be valuable to have a website with links to all funding entities and grants, including grant eligibility and process requirements and any available resources to assist with proposal development and submission.

V. **Conclusion**

Climate change adaptation requires substantial technical and financial resources. Like many other jurisdictions in the U.S., Indian tribes do not currently possess the requisite resources to effectively assess and prepare for the impacts of climate change. While we recognize that the NCA does not in itself produce these resources through publication of its report every 4 years, our hope is that by including the best available information on the impacts of climate change on American Indians and Alaska Natives, the NCA will squarely place these issues on the agendas of federal decisionmakers and agency staff making funding and programmatic decision. Hopefully, the NCA will also be a valuable resource for tribes, inter-tribal organizations, and other partners looking to start or ramp up climate change-related efforts. In addition, the very process of convening author teams to craft the regional and cross-cutting chapters that include information specific to tribes and climate change may create powerful networks that can continue to work together to address these issues. We will continue to update the NCCC Project database with relevant resources, and hope that its contents are of use to you and your team members. Please do not hesitate to contact us with any questions or ideas for additional information that would be helpful.

Sincerely,



Julie Teel Simmonds, J.D.
Senior Research Fellow
University of Colorado Law School
Email: julie.simmonds@colorado.edu



Sabre Miel Duren, PhD Candidate
Graduate Research Assistant
University of Colorado, CIRES
Email: sabre.duren@colorado.edu

cc: bbennett@kiksapa.com
Susan.Wotkyns@nau.edu
mhiza@usgs.gov

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ATTACHMENT 1

**WORKSHOP REPORT
Tribal Climate Change Adaptation Planning
& Inter-Governmental Coordination Workshop
October 5-6, 2010**

**Tribal Climate Change Adaptation Planning
& Inter-Governmental Coordination Workshop
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WORKSHOP REPORT



This report was prepared by the University of Colorado Law School in collaboration with the National Integrated Drought Information System (NIDIS), Western Water Assessment (WWA), the Climate Assessment of the Southwest (CLIMAS), and National Wildlife Federation (NWF). The statements, findings, conclusions, and recommendations are those of the authors and do not reflect the views of any of the organizations who provided support.

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I. Introduction

In partnership with the University of Colorado Law School (Colorado Law), the National Wildlife Federation (NWF), the Western Water Assessment (WWA), and the Climate Assessment for the Southwest (CLIMAS), the National Integrated Drought Information System (NIDIS) hosted a Tribal Climate Change Adaptation Planning & Inter-Governmental Coordination Workshop on October 5-6, 2010 at the University of Colorado Law School in Boulder, Colorado. Approximately 40 individuals attended the workshop representing several Colorado Plateau tribes (Navajo Nation, Hopi Tribe, Hualapai Tribe, Zuni Tribe, and Jicarilla Apache Nation), tribal communities from the Pacific Northwest with experience developing climate change adaptation strategies (Tulalip Tribes, Swinomish Indian Community, and Quinault Nation), and representatives from several federal agencies, inter-tribal organizations, environmental non-profit organizations, universities, and tribal colleges (see Appendix 1 Participant List).

The overarching goal for the workshop was to explore climate change and drought response strategies that tribes are currently implementing in regions such as the Pacific Northwest and to investigate how interested tribes on the Colorado Plateau could tailor, implement, and expand upon these response approaches to address their unique priorities, in part through improved coordination with federal agencies and enhanced partnerships with non-profit organizations and academic institutions with law and policy expertise. The workshop built on results and needs identified at two previous NIDIS scoping workshops: a 2009 NIDIS Climate, Drought, and Early Warning on Western Native Lands Workshop (Jackson Hole, WY)¹ and a 2010 NIDIS Drought Preparedness for Tribes in the Four Corners Region Workshop (Flagstaff, AZ).² Both were designed to identify critical information and data needs of Tribes in the region and develop a knowledge network to help NIDIS establish an effective drought early warning information system and support drought risk management in the region.

The *Drought Preparedness for Tribes in the Four Corners Region* Report (issued August 29, 2011) provides a current summary of NIDIS' mission and its Early Warning Information System Pilot Projects (including the Four Corners pilot project, currently under development). The Report also provides an overview of the climate of the Southwest, drought conditions on the Colorado Plateau, and how drought is already impacting tribal resources and life in many ways - from reducing rangeland carrying capacity and diminishing numbers of culturally important plants to

¹ G. Collins, M. Hiza Redsteer, M. Hayes, M. Svoboda, D. Ferguson, R. Pulwarty, D. Kluck and C. Alvord. 2010. Climate, Drought, and Early Warning on Western Native Lands. Report from 2009 Jackson Workshop, available at http://www.drought.gov/imageserver/NIDIS/workshops/tribal/NIDIS_Jackson_Hole_Report.pdf.

² Ferguson, D.B., C. Alvord, M. Hiza Redsteer, C. McNutt, M. Hayes, M. Svoboda, and R. Pulwarty. 2011. Drought Preparedness for Tribes in the Four Corners Region. Report from April 2010 Workshop Tucson, AZ: Climate Assessment for the Southwest, available at <http://www.drought.gov/imageserver/NIDIS/workshops/tribal/Drought-Preparedness-Tribal-Lands-FoursCorners-2011-1.pdf>.

creating local water shortages and increasing wind-driven soil erosion events that impact homes and other infrastructure. These conditions and impacts are driving motivators for collaborative efforts by NIDIS to improve data gathering, needs assessment, inter-governmental communication, and policy responses to drought and climate change in this region. The impacts are only expected to worsen with projected warming in the region.

The October 2010 Boulder workshop sought to build on the informational foundation laid by the Jackson Hole and Flagstaff workshops, while expanding the groups represented to include additional disciplines, such as law and climate change policy and thus focus on additional aspects of climate change and drought preparedness on native lands. In particular, the agenda (see Appendix 2) was designed to:

- ⇒ Engage the participants on how to develop a tribal climate adaptation plan (financially, politically, and technically);
- ⇒ Connect tribal leaders and resource managers who have successfully developed and implemented adaptation strategies with those interested in doing so;
- ⇒ Communicate tribal climate adaptation needs to federal agencies;
- ⇒ Clarify support available for tribal adaptation planning;
- ⇒ Highlight laws and policies that compel or support federal action to help tribes respond to climate change (including the role of the federal trust responsibility); and
- ⇒ Identify and implement concrete next steps for increasing resources and support for adaptation-related efforts by Southwest tribes.

II. Workshop Summary

The 1.5-day workshop included a written exercise completed by the meeting participants at the workshop (see Appendix 3 for questions and responses) and plenary discussions broken into four sessions summarized below: (A) Lessons Learned from the Pacific Northwest; (B) Federal Trust Responsibility Legal Overview and Tools; (C) Obtaining and Using Tribal Climate Information; and (D) Recommendations for Action. NIDIS and Colorado Law delivered opening remarks that helped frame the workshop and raised the following broad themes, which pervaded the discussions that followed:

- ⇒ Effective adaptation planning is largely a regional or local undertaking, and tribes can and should play a leading role;
- ⇒ It is critical to empower tribes to develop and manage their own laws and resources—climate change adaptation activities must be tribally driven;
- ⇒ Greater collaboration between policymakers, scientists and experts in different disciplines (science, engineering, law and policy) would be very beneficial;

- ⇒ Pathways and feedback loops are needed between native voices/knowledge and decisionmakers/scientific assessments;
- ⇒ Traditional knowledge and expertise must be harnessed in conjunction with other scientific knowledge for effective adaptation approaches;
- ⇒ There is an absence or “black hole” of modeling and monitoring data on reservations;
- ⇒ Better information about the nature, rate, and importance of climate change impacts does not always lead to better decisions—we need to identify and overcome barriers to informed, responsive decisionmaking; and
- ⇒ Law can be both an opportunity and a barrier, but the bigger barrier is politics—even with treaty rights and trust obligations, the letter of the law is often not followed or enforced. It is nonetheless important to do more to clarify the role that federal agencies have with respect to carrying out legal obligations to tribes and natural resources.

The written exercise results (Appendix 3) also helped to frame the discussions by generating preliminary ideas about climate change adaptation priorities and strategies. A set of tailored questions was provided to Tribal Leadership and Natural Resource Managers, Non-governmental Organizations (NGOs), Non-Tribal Academic Institutions, Tribal College and University Representatives, and Federal Agency Representatives. Tribal Leadership and Natural Resource Managers listed extreme weather, energy supply issues, dust storms, species health, water rights, establishing achievable goals, compounded water scarcity, poverty and poor infrastructure as some of the key issues to address through adaptation planning and related activities. Among the response strategies they flagged as important to consider were focusing on water demand rather than simply supply, providing technical and financial support to tribal professionals, developing inter-tribal agreements, generating greater tribal media coverage of issues, involving tribal elders, securing funding support, and developing legal and political strategies.

When asked what opportunities they encounter that assist their tribes in addressing climate change-related concerns, participants’ answers varied from “very few” to data-sharing opportunities with agencies and organizations, focused federal, state, and tribal partnerships to protect specific sacred places, and technical assistance and trainings. Participants also listed barriers they have encountered, which included cultural taboos, bureaucracy, lack of federal coordination, “remoteness of the problem,” and lack of resources. When asked for suggestions on how adaptation efforts could be more responsive to tribal priorities, they included a need for a more focused approach that responds to tribal, regional, and watershed needs, basic data collection and sharing, an “indigenous diplomatic corps,” more publicity, more funding, and the inclusion of all stakeholders in discussions. Finally, their goals for the workshop included learning from others, sharing the importance of climate change for Native peoples with participants, sustaining momentum and “collective traditional thinking,” identifying resources for tribes, and understanding how to educate tribal leaders and community members about these issues.

Responses from the NGO, agency, and academic institution participants reflected many of the same concerns and objectives. They also included several calls for increasing strategic partnerships, determining how to continue efforts beyond workshops and meetings, ensuring that actions taken benefit tribes first and foremost, and increasing agency-tribal relations through internships, trainings, sabbaticals and other mechanisms.

A. Session 1: Lessons Learned from the Pacific Northwest

Several tribes in the Pacific Northwest have been at the forefront of tribal climate change adaptation planning and response. Representatives from the Tulalip Tribes of Washington and Swinomish Indian Tribal Community discussed the impacts they are experiencing to their landscapes and natural resources. They explained their approaches to addressing these impacts and highlighted recommendations that tribes in the Southwest region could find useful.

The Tulalip Tribes noted that they have witnessed many changes in their environment in recent years,³ including increases in average annual temperatures and earlier spring runoff that are affecting their economic, cultural and spiritual uses of natural resources. They explained that their very long history in the Puget Sound (through the recession of glaciers, growth of forests, and arrival of salmon in the basin) has provided them with valuable baseline environmental data, which Washington agencies and others have sought from them. In order to protect their natural resources from current and anticipated climate change impacts, the Tulalip Tribes are working to:

- ⇒ Strengthen the links between U.S. obligations and tribal culture and habitat;
- ⇒ Listen to elders, stories, and songs, and translate the information in these sources into scientific knowledge and understanding;
- ⇒ Use down-scaled climate projection data to generate more locally-relevant information to use in decisionmaking;
- ⇒ Promote sustainable energy approaches and watershed-based adaptation and ecosystem restoration to hold water, cool the land, and retain plants and animals;
- ⇒ Build coalitions to resolve conflicts between tribes and farmers/ranchers and work around common goals to get and keep water in the landscape;
- ⇒ Develop and test legal theories to protect their rights, including an “atmospheric public trust” and implied rights to access habitat that supports their treaty-protected rights to hunt, fish, and gather traditional resources; and

³ Tulalip Natural Resources Department, Climate Change Impacts on Tribal Resources, available at http://www.tulalip.nsn.us/pdf.docs/FINAL_CC_FLYER.pdf.

- ⇒ Look at multiple methods to sequester carbon⁴ and secure carbon credits through the voluntary market.

The Swinomish Indian Tribal Community described similar impacts to their natural and cultural resources. A 2006 flood event on the reservation and nearby town of La Connor helped catalyze the tribe to develop the Swinomish Climate Initiative, a comprehensive effort to examine the potential impacts of climate change and range of response strategies available. A Swinomish Indian Senate Proclamation⁵ on climate change paved the way for the tribe's development of an Impact Assessment Technical Report and Climate Action Plan, with support from the U.S. Department of Health & Human Services Administration for Native Americans. They are now working to ensure that the recommendations in these documents are implemented.⁶ They also described their Skagit Climate Science Consortium and Tribal Journey Water Quality Project initiatives, which illustrate the importance of partnerships and the use of traditional ecological knowledge in data gathering. Through these efforts, they are seeking to achieve excellence through partnership, science and culture.

The Swinomish representatives highlighted the following activities as critical to their success:

- ⇒ Maintaining relationships with state agencies, officials and representatives and engaging in partnerships of various types and at various levels.
- ⇒ Engaging tribal leaders by sitting down with them and tying climate change to every matter of governance they have to address, including infrastructure, water quality and quantity, energy, human health, treaty rights, fishing, hunting, gathering native plants for weaving and other uses, other cultural practices, and protecting their place-based, coastal society. This led to the Swinomish Senate Proclamation on climate change and was key to securing federal funding for adaptation.
- ⇒ Developing common ground with neighboring local governments, farmers, and institutions.
- ⇒ Developing a Climate Change Education and Awareness Group (CEAG) of Swinomish senators, youth, elders, and parents to help educate and involve the community in climate change and sustainability activities.⁷
- ⇒ Engaging in consistent outreach with constituents and partners through email, brownbag lunches, networking functions, newsletters and other outreach mechanisms to maintain momentum.

⁴ See also Northwest Indian Fisheries Commission, <http://nwifc.org/2011/03/tulalip-tribes-looking-at-climate-change-from-the-mountains-to-the-sea/>.

⁵ Swinomish Indian Senate Proclamation, available at http://www.swinomish.org/climate_change/Docs/Swinomish%20Climate%20Change%20Proclamation.pdf.

⁶ Swinomish Climate Initiative, see http://www.swinomish.org/climate_change/about.

⁷ See also Swinomish Tribe raising community awareness about climate change, available at <http://blogs.nwifc.org/climatechangesummit/2010/04/28/swinomish-tribe-raising-community-awareness-about-climate-change/>.

- ⇒ Focusing on adaptation as a way to identify and channel resources to fewer priorities, while continuing to research mitigation opportunities (which would be more feasible if there was a possibility of generating carbon credits or offsets that could help with financing).
- ⇒ Planning ahead for implementation funding to ensure that efforts do not stop after identification and analysis of the climate challenge (however, they have found few if any state or federal funding opportunities for implementing adaptation-related initiatives).

The Indigenous Peoples' Restoration Network (IPRN)⁸ provided helpful insight into the importance of gathering and disseminating the climate change experiences and responses of the Tulalip Tribes, Swinomish Indian Tribal Community, and other communities' to other tribes. IPRN has developed a tool for doing so—an indigenous web portal (the Indigenous Peoples' Biocultural and Climate Change Assessment Initiative (IPCCA)),⁹ where communities from around the world can share their experiences. The IPCCA has drafted a Conceptual Framework for its activities, which has two goals: (1) to provide the overall vision for assessing the impacts of climate change on indigenous peoples and building response strategies; and (2) to be useful as a practical tool to guide local and global assessments and provide common language for synthesis of results. IPRN envisioned the IPCCA as a counterpoint to Intergovernmental Panel on Climate Change (IPCC), noting that the IPCC has not adequately incorporated traditional local knowledge into its past assessment reports. IPRN noted that there is often a tension between western scientists and indigenous peoples who know their land, but the hope is that at some point, traditional knowledge and western science can come together to achieve synergistic benefits.

Resources Relevant to This Session:

The Institute for Tribal Environmental Professionals (ITEP), which attended the workshop, has developed several other useful resources for these purposes, including its Tribal Climate Change Newsletter, Tribal Climate Change Website, and Tribal Climate Change Adaptation Trainings.¹⁰ In addition, following the workshop, Colorado Law developed a Native Communities & Climate Change on-line, searchable database with funding from WWA and NIDIS. The database hosts a number of useful documents that address tribal climate change impacts and adaptation, including information announced in ITEP's newsletters. The prototype is available for review at <http://www.tribesandclimatechange.org/database.php>.

⁸ Indigenous Peoples' Restoration Network, available at <http://www.ser.org/iprn/>.

⁹ Biocultural and Climate Change Assessment Initiative, available at <http://ipcca.info/>.

¹⁰ ITEP Climate Change Program, available at <http://www4.nau.edu/itep/climatechange/>.

B. Session 2: Legal Overview and Tools

This session set out to address the following topics: the sources of the federal government’s trust responsibility to tribes in the areas of climate change, sustainable energy, and drought preparedness; laws, policies, and programs that support tribal adaptation efforts; and gaps in these programs that require improvement.

Colorado Law gave an overview of the trust responsibility, emphasizing that compelling agency action through the trust responsibility is a much more difficult proposition than using it to persuade agencies to act. When it comes to control over resources and sovereignty, tribes will maximize both by acting on them—the activities of the Northwest tribes provide some great examples. As illustrated in Figure 1, sources of the federal trust obligation to Tribes include:

- ⇒ The international law origins of federal Indian law. While it has colonialism embedded in it, it also has the upside of excluding states from having a government to government relationship with tribes;
- ⇒ The U.S. Constitution, both textually (in the Indian Commerce Clause) and in its overall structure; and
- ⇒ Federal treaties, statutes, regulations, and executive orders.

Figure 1. Sources of the federal trust responsibility (Krakoff 2010).

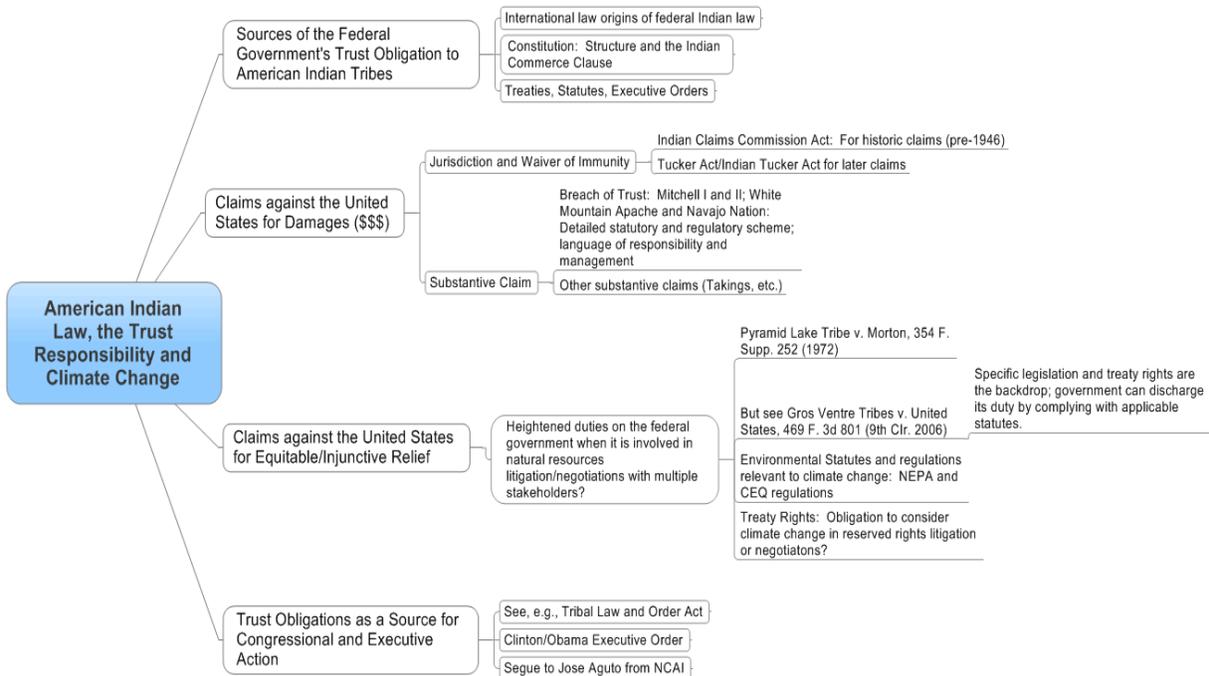


Figure 1 also illustrates what tribes can do with these legal authorities, responsibilities and relationships, including:

- ⇒ Sue the trustee for money damages. For this, tribes need a federal statute that provides jurisdiction, a waiver of sovereign immunity, and a substantive basis or “cause of action” for the claim. The U.S. Supreme Court has narrowly defined the parameters for a suit to enforce the trust obligation and requires a detailed and comprehensive legislative scheme where the U.S. government has exerted almost total control over tribal assets. (see, e.g. *Mitchell I*, *Mitchell II*, *White Mt. Apache v. U.S.*, and *Navajo Nation v. U.S.*)
- ⇒ Sue the trustee for equitable/injunctive relief. The federal government has a heightened obligation when it is involved in natural resources litigation or negotiations with multiple stakeholders (e.g., under the Clean Water Act, National Forest Management Act, and National Environmental Policy Act (NEPA)). However, recent court decisions are not very favorable. There was some good legal precedent for tribes receiving relief in decades past, including *Pyramid Lake Tribe v. Morton* (1972), but more recent decisions indicate that unless the statutes in question recognize a special relationship to tribes, agencies can meet their federal trust responsibility to tribes by meeting their statutory obligations generally. While that is the current law in the 9th Circuit, lawyers may still encourage tribes to bring these claims.
- ⇒ Use existing legal authorities to push agencies and Congress to do better. Tribes have power at the front end of negotiations, for example during NEPA scoping processes. There are other recent authorities including the 2010 Tribal Law and Order Act,¹¹ 2009 Department of Interior Secretarial Order 3289,¹² and President Obama’s 2009 Memorandum on Tribal Consultation¹³ that restate the powerful, alive nature of trust responsibility. These authorities can be used by tribal organizations like the National Congress of American Indians (NCAI) and partners like NWF to persuade Congress to enact additional statutory requirements and appropriate sufficient funding for existing requirements, as well as to urge agencies to better implement existing statutory obligations and regulations.
- ⇒ Develop other cooperative responses to climate change. For example, Appendix 4 contains a 2009 Memorandum Colorado Law developed for the NCAI that outlines examples of tribal government cooperation with local, state, national, international, and tribal governments and other non-governmental organizations to collectively address climate change.

¹¹ See U.S. Department of Justice summary, available at <http://www.justice.gov/tribal/tloa.html>.

¹² Secretarial Order 3289, Addressing the Impacts of Climate Change on America’s Water Land, and Other Natural and Cultural Resources (September 14, 2009), available at http://www.tribesandclimatechange.org/documents/nccc/nccc20110105_0060.pdf.

¹³ Memorandum on Tribal Consultation (November 5, 2009), available at http://www.tribesandclimatechange.org/documents/nccc/nccc20110510_302.pdf.

To explain the outlook for new statutory obligations, NCAI presented a brief climate change legislative “autopsy,” noting which of the introduced bills contained (1) Mitigation Measures - Clean Energy/Renewable Energy; (2) Mitigation Measures - Energy Efficiency (linked to adaptation); (3) Adaptation—Domestic (e.g. sea walls); and (4) Adaptation—Natural Resources. NCAI noted which bills contained these measures and which included tribes specifically in each of these categories. NCAI and the NWF pushed hard for tribal inclusion in the proposed legislation (particularly the Waxman-Markey House Bill). However, in light of the failure of all of the proposed climate change bills, the relevant question now is what to do in the absence of climate legislation, which has no current prospects. NCAI and NWF’s approach includes:

- ⇒ Encouraging the federal government to establish new programs and retrofit existing programs;
- ⇒ Working to make adaptation more attractive to fund at the federal level (it is a place-based, specialized, and very local effort);
- ⇒ Urging the new Congress to be receptive;
- ⇒ Working to increase the amount of natural resources, wildlife, energy, and other funding channeled to tribes, in part by working to get tribes recognized as eligible and covered under agency regulations (tribes often not eligible whereas states are); and
- ⇒ Working to formalize tribal—federal cooperation on natural resource issues, an area in which there are many uncoordinated agencies working on interrelated and overlapping issues (e.g. U.S. Fish and Wildlife Service, National Park Service, and United States Department of Agriculture). Several agencies have been receptive to this idea.

Below is a scheme NCAI proposed for the workshop participants to use in order to streamline working alliances. The next step is to populate the boxes with current information and encourage the workshop participants to work on the gaps.

Issue	Data	Representation	Capacity-Building	Federal Funding	Legislation	Legal Remedies	Best Practices
Domestic Adaptation—Energy Efficiency							
Domestic Adaptation--Water Infrastructure							
Domestic Adaptation--Transportation							
Natural Resource Adaptation--Ecosystems							
Natural Resource Adaptation—Coasts							
Natural Resource Adaptation--Regional							
Cross-Cutting—Traditional Knowledge							
Cross-Cutting-- Planning							
Cross-Cutting—Research							

NCAI's evaluation of current federal legal and policy measures demonstrated the difficulty and complexity of generating legal traction to implement widespread climate adaptation measures on tribal lands, but also outlined a collaborative strategy for moving forward.

C. Session 3: Obtaining and Using Tribal Climate Information

1. Federal Needs ↔ Tribal Needs

In this session, participants focused on how Colorado Plateau tribes can access support for adaptation planning and drought response, and how they can ensure that information about the impacts of climate change on tribal resources is effectively communicated to federal government and tribal decision-makers.

The Quinault Nation from the Pacific Northwest emphasized that it takes a lot of effort to get federal and state officials to understand and care about what tribes are experiencing. While acknowledging that a multi-generational plan is necessary, the Nation has taken an aggressive approach, including:

- ⇒ Adopting its own environmental policies, including a Blueback Initiative to protect spawning habitat;
- ⇒ Suing the federal government over mismanaging its timber obligations;
- ⇒ Conducting fact-finding efforts to study impacts on rivers, coastlines, and salmon runs; and
- ⇒ Communicating the data to tribal decision-makers in a way they can understand and relate to—including talking about natural resources, health, and sovereignty rather than “climate change,” highlighting where tribes are left out of funding and other opportunities, and using competition with neighboring tribes as a motivator for action.

Their primary piece of advice to the Southwest tribes was to search within their own nation to identify the resources that are threatened. This will provide motivation and drive in the community to become engaged about issues and make change.

The Desert Research Institute (DRI) discussed the importance of getting downscaled climate projection data to tribes in the Southwest and its efforts to work with the Navajo Nation and Diné College to develop a Climate Change Adaptation Plan for the Navajo Nation. DRI also emphasized the importance of “consensus system dynamic modeling” and incorporating traditional ecological knowledge to fill in data gaps. Input on cultural impacts can be gleaned through a community-based approach that involves talking with elders and conducting surveys

and focus groups. They hope that community and expert models can be melded through consensus. DRI also echoed that framing is very important—it is better to talk about resiliency than vulnerability.

Representatives from the U.S. Geological Survey (USGS), NIDIS, and the National Renewable Energy Laboratory (NREL)¹⁴ provided a federal perspective on information-sharing and communication with tribes. They noted that the information physical scientists have to offer is only really valuable when communicated through a social science lens. For example, in the Southwest, drought information is most useful when translated into impacts on the traditional growing of corn, forage, and other issues that are of primary importance in that region. The USGS and NIDIS are working to install basic monitoring systems in the Southwest to provide data necessary for early warning systems and impact analysis, including species shifts and impacts to subsistence living that might result from changing water availability. USGS noted it does not have an institutional framework to address tribal climate change issues, but this would be very useful, particularly as one of their new mission areas is Climate and Land Use Change. USGS also emphasized the need for an active and participatory model of adaptation planning where federal agencies engage with providers and users within the basin, understand existing practices, and comprehend and respond to unmet needs.

NREL specifically focused on the role of renewable and sustainable energy in adaptation, highlighting that they give millions of dollars each year in grants and technical assistance to tribes for renewable energy. The projects they support include strategic energy planning and helping tribes establish tribal utilities. In addition, the federal government administers an energy procurement program for federal agencies under which renewable energy is preferred, and renewable energy from Indian lands earns double credit. They noted that another federal lab, the National Energy Technology Lab (NETL), is exploring carbon sequestration opportunities in partnership with tribes and other entities.¹⁵

2. Colorado Plateau Efforts ↔ Other Regional Efforts

In this session, the panelists and participants tackled the question of how Colorado Plateau tribes and other entities working on climate change in the region might more effectively disseminate relevant data and developments, coordinate activities in the region, and identify and support priority adaptation activities.

The Zuni Tribe Water Resources Section shared that the Zuni have not thought about an adaptation plan and may never have one. The Zuni and other Southwest tribes have already in a sense adapted—they have a good deal of experience dealing with variability, but they have

¹⁴ See Tribal Energy Efficiency and Renewable Energy Development on Tribal Lands, <http://www.nrel.gov/docs/fy10osti/48815.pdf>.

¹⁵ See, e.g. http://www.netl.doe.gov/technologies/carbon_seq/infrastructure/rcsp/bcscsp.html.

insufficient resources to address current issues, let alone to prepare for projected impacts. He noted that there is a complex social-religious system around agriculture and water for the Zuni. There is a cultural taboo to even plan for drought—and that presents a challenge for public outreach. Water data is also a sensitive issue because of un-adjudicated water rights. The tribe does, however, have a Drought Contingency Plan, funded by the US Bureau of Reclamation (USBR), which is focused on mitigation. It is the only hazard mitigation plan they have, and there is much hope that it does more than sit on a shelf. Some of the challenges the Zuni indicated they face in implementing this Plan and expanding efforts to address climate change include: consistently collecting monitoring data (both from monitoring stations and Zuni precipitation, reservoir, spring and groundwater data) and updating drought indices; maintaining the NOAA and USGS stations that they already have; the lack of management structure and capacity; and the desire to avoid accepting short-term federal relief that increases dependence on government support for a “new” program (climate change/adaptation) that is really a re-packaging of existing issues and responsibilities. The Zuni do, however, have several opportunities to address climate change in some of their existing efforts, including their Zuni Heaven Wetland Restoration Project, Zuni Salt Lake litigation and related efforts, and Zuni Mountains Rio Nutria Ecosystem protection efforts.

The Tulalip Tribes, CLIMAS, Diné College, Haskell University, and NWF provided additional advice on regional coordination and are working to ensure data-driven decisionmaking, developing intern/sabbatical programs, and collecting and disseminating data and assistance to those who need it.

NWF identified 6 key areas they suggest working on to elevate tribal concerns:

- ⇒ Enhancing the limited funding the Department of Interior provides to tribes;
- ⇒ Getting more tribal leaders to D.C.;
- ⇒ Bringing tribal representatives from the Southwest to the Northwest to meet with EPA Region 10;
- ⇒ Trying to influence EPA multi-media state and tribal assistance grants (STAG) so that they address needs on the ground;¹⁶
- ⇒ Exploring the use of the annual Coast Salish gathering¹⁷ as another venue to continue this conversation; and
- ⇒ Establishing committees coming out of this meeting to deliver on what participants are asking for.

¹⁶ STAG, available at <http://www.epa.gov/oecaerth/state/grants/stag/index.html>.

¹⁷ Coast Salish Gathering, available at <http://www.coastsalishgathering.com/>.

III. Recommendations for Action

The first day of the workshop highlighted that adaptation is happening at multiple levels and is framed in different ways by different participants. In the Pacific Northwest, it is occurring through a lens of climate change adaptation. In the Southwest, it is also occurring, but through a lens of resource management and drought planning. Participants noted that either approach is strengthened by identification of a “focus resource,” such as fisheries/salmon, timber/forests, and water. In addition, efforts in both regions have struggled to develop the financial, technical, and institutional capacity to respond. The participants also observed that while regional communication and coordination is on the rise, there is vast room for improvement. Similarly, inter-agency efforts to coordinate federal activities are underway, but their success and ability to integrate local priorities into national decisionmaking remain to be seen.

To address these needs, the workshop participants spent the bulk of Day 2 synthesizing and expanding on recommendations that arose during the previous day’s discussions. The recommendations are grouped under four primary categories, all of which require continued collaboration for effective follow-through: (A) tribal water rights and other legal research; (B) coordination; (C) tribal climate narratives; (D) data gaps; and (E) renewable and sustainable energy. The extent to which these action items are implemented will depend on the follow up activities of the workshop participants and identification of funding.

A. Tribal Water Rights & Other Legal Research

Along with financial barriers, legal and political barriers impede efforts by tribes and their partners to address the impacts of climate change. Many of these center on the need to resolve water rights and to define and navigate the unique legal relationship between tribes and the federal government in the specific context of climate change adaptation. The workshop participants identified several concrete actions that could assist in addressing these issues.

Water Settlements Report & Website

One of the fundamental needs identified during the workshop was an accessible, comprehensive report on the current status of Indian water rights litigation and settlements. Without a clear understanding of the status of Indian water rights on the Colorado River and what that means for current and future allocations, the full implications of climate change on tribal resources in the Southwest are unknown. The Native American Rights Fund noted that it has a record of current and pending water rights litigation and settlements, so its resources would be an excellent starting point. In addition to providing needed baseline information, the report could serve as a tool for elevating water rights issues on the federal agenda, for seeking funds for tribes who currently cannot afford to pursue their water rights, and for engaging tribal leadership on issues surrounding tribal water rights, including climate change. Issues to resolve

before moving forward include identifying a lead, the geographic scope of the report, and how it will incorporate climate change issues. A report of this kind might be of interest to the National Climate Assessment (NCA) process, but meeting the 2013 deadlines would require rapid access to funding and staff resources.

Participants expressed that the report should:

- ⇒ Identify tribes that do not have adjudicated or settled water rights and those that do. For those that do, document to the extent possible:
 - How long it took;
 - How much it cost;
 - Key elements of the settlements; and
 - Other important details like actual allocation and usage.
- ⇒ Include any information available on the possible impacts of climate change on these rights and settlements.
- ⇒ Explain the role of states in water rights negotiations and climate adaptation planning.
- ⇒ Identify criteria for evaluating existing water settlements to help characterize whether tribes are actually benefiting now or will eventually benefit from agreements. Specific points of analysis that were mentioned include the issue of paper rights versus wet water and the ability to access state water law processes for tribal access to/use of water.

A related recommendation was to create a tribal water rights website.

Other Research Needs

- ⇒ Seek American Indian Law Clinic and other law student research assistants to research and create an inventory of existing laws that may be useful for clarifying statutory and regulatory obligations of federal agencies to tribes related to water rights and climate change adaptation. Identify statutory and regulatory language that needs to be “fixed” to ensure tribes are eligible to receive support and participate in climate change decisionmaking, bolstering equity arguments for tribal engagement.
- ⇒ Research what “adaptation law” looks like—in other words, how existing and emerging law will adjust (or not) to respond to “adaptation landscapes.”
- ⇒ Research and assess methods for securing financing for environmental efforts (such as voluntary carbon markets and payment for environmental services mechanisms)
- ⇒ Train non-regulatory federal managers on tribal ecological water rights issues, identifying legal and regulatory support for their interaction with and support of tribes.

B. Coordination (“Ordering the Tribal Climate Adaptation Universe”) Recommendations

These recommendations stem from a discussion led by NCAI that the workshop participants and other collaborators need a better, more organized and systemic way to share information across the group to reduce redundancy of efforts, flag new opportunities, and work to increase federal agency engagement of tribes on the national climate change research agenda.

Funding

- ⇒ Identify sources of funding for tribal adaptation planning, both those announced for that purpose and other sources that can be used for climate change adaptation activities.
- ⇒ Determine whether there are funds for bringing elders into the climate change adaptation conversation, for example with regard to traditional ecological knowledge and changing landscapes.

Tribal Adaptation/Water Working Group

- ⇒ Identify the existing organizations that serve as hubs/nodes of information and activity and sort out how to strategically link these groups, for example the ITEP, NCAI, NARF, IPRN, and Haskell University’s American Indian and Alaska Native Climate Change Working Group.
- ⇒ Form a tribal adaptation/water working group. This group could focus on issues including:
 - Ensuring tribes are utilized as experts in federal and state climate adaptation planning.
 - Developing a climate change adaptation-ready infrastructure for arid, semi-arid regions.
 - Assisting tribes to ensure that tribal adaptation planning is tribally driven.
 - Providing information to federal leadership regarding federal responsibilities they are not meeting.
 - Identifying ways to share and yet also protect indigenous adaptation technologies.
 - Developing mechanisms for engaging young students at tribal colleges in climate science/monitoring and policy.
 - Inviting agencies like the Bureau of Indian Affairs (BIA) to participate and request more agency assistance in the long-term monitoring of landscape changes.

Data Portal

- ⇒ Create a data portal for the Southwest and incorporate relevant information from the Tulalip Tribes database, ITEP, IPRN and others; consider developing regional databases, with linked nodes, that take on different tasks and have different purposes.

Better Representation at the Federal Level

Either through a tribal adaptation working group or individually, participants noted the importance of increasing tribal participation in key efforts, including:

- ⇒ Council on Environmental Quality (CEQ) decisionmaking. Workshop participants expressed a need for an Indian Desk within CEQ and also for CEQ to bring in tribes as “cooperating agencies” for example in NEPA processes (this could be a “relief valve” for federal agencies trying to better involve tribes but not knowing exactly how to go about it).
- ⇒ Department of Interior Climate Science Centers (CSCs) and Landscape Conservation Cooperatives (LCCs) activities. Tribes must be involved in the formation and implementation of both the CSCs and LCCs. There is the added need and challenge of developing mechanisms for ensuring all tribes who want to participate can and for conveying information to and from other tribes not at the table.
- ⇒ Bureau of Reclamation Colorado River Basin Study.

C. Tribal Climate Narratives

Many workshop participants including ITEP, ICOUP, NCAI, Haskell University, IPRN, and the Tulalip Tribes have been working to collect and disseminate tribal narratives about the impacts of climate change on tribal resources and practices. However, they identified several action items that would enhance their efforts, including:

- ⇒ Developing a plan for moving the narratives beyond this community to other audiences that need to hear these stories, including Congress, federal agency decision-makers, United Nations University (for future iterations of compendium on traditional local knowledge), tribal leadership, and tribal colleges that might be interested in developing student opportunities and curricula. This may include:
 - Communicating what climate change impacts really mean to communities in terms of impacts to natural resources, safety, health, infrastructure, and employment, and monetizing these impacts where possible for political use.
 - Preparing documents and other educational tools for tribal leadership that tie climate change impacts to every matter of governance they address and meeting with them about it.
 - Communicating climate impacts and science to various audiences through tribal community/resources/way of life stories.
 - Submitting stories to the IPCC effort and encouraging tribes to contribute to and participate in ITEP’s climate change programs, including developing and

publishing tribal profiles on ITEP's website and in its newsletter, attending adaptation planning training workshops, and participating on ITEP informational calls with adaptation experts.

D. Data Gaps

In addition to recommendations on legal, coordination, and communication needs and strategies, this workshop generated recommendations related to data gaps and challenges, many of which echo recommendations from the previous NIDIS workshops. They included:

- ⇒ Cultivating more Native American scientists with expertise in both traditional ecological knowledge and western scientific knowledge and how to use both.
- ⇒ Generating more data on reservations, which can in turn support funding proposals for additional research, monitoring, and response.
- ⇒ Improving and establishing more weather stations and allocating resources to maintain the stations, manage the data, review data quality, and make the data easily accessible to resource managers.
- ⇒ Assessing ways of addressing ecological shift starting to occur and anticipated to worsen, for example the effect of early snowmelt and runoff on fish species and the earlier emergence of some species.
- ⇒ Propagating species that can adapt to harsher conditions.
- ⇒ Training and hiring more technical staff for tribal departments.
- ⇒ Developing adaption wedges (to complement climate stabilization wedges).
- ⇒ Downscaling climate models to get more locally-relevant data for use by tribes. An extension of this is getting specific tribes data and tools that they need to address their own unique priorities and circumstances. Participants from the Hopi Tribe noted the multiple issues they are facing, from water contamination with arsenic and uranium and Colorado River water rights transfer questions to weather extremes (drought and flooding), and how they are seeking information about how to put it all together in the context of climate change. Their comments emphasized the need for focused assistance that is even finer-scale than regional information and tools.
- ⇒ Creating a concept paper to develop an Indigenous Science Foundation and asking tribes with significant financial resources to set aside \$2 million per year for 10 years.
- ⇒ Finding neutral voices to answer questions about misunderstood issues, including the practicality and cost of carbon sequestration, the environmental impacts of hydraulic fracturing for oil and gas extraction, and the effect of water supply projections on local resources.

E. Renewable & Sustainable Energy

Workshop participants identified renewable and sustainable energy measures as adaptation responses, with the following suggestions for action:

- ⇒ Assess the potential role of renewable/sustainable energy and other engineering solutions in tribal climate change adaptation, for example energy efficient housing construction and retrofits, water catchment systems, and other energy and water conservation measures.
- ⇒ Develop a template tribal housing and building code for sustainable, “future-proofed” homes.
- ⇒ Produce a report on the transmission challenges facing new renewable energy projects on tribal lands, for example on the Navajo Nation.
- ⇒ Circulate Colorado Law memo developed for ICoup on providing grid preference to tribal renewable energy projects.

IV. Post-Workshop Updates

Workshop participants have pursued some of the recommendations proposed above, several of which were highlighted in the August 2011 *Drought Preparedness for Tribes in the Four Corners Region* report,¹⁸ including a tribal leadership sign-on letter to the U.S. Department of Interior developed by NCAI and NWF requesting a substantial increase in funding to support tribal participation in the DOI Climate Change Initiative and Colorado Law’s development of a tribal climate change online, searchable database with support from Western Water Assessment (see prototype available for review at <http://www.tribesandclimatechange.org/database.php>). ITEP also released an Adaptation Planning Tool that is meant to serve as a template for tribes developing their own climate change adaptation plans. It is available as a word document from Susan.Wotkyns@nau.edu. With input from several other workshop participants, NWF released its report *Facing the Storm: Indian Tribes, Climate-Induced Weather Extremes and the Future for Indian Country*.¹⁹ In October, NCAI and Our Natural Resources (ONR) announced that they are working to recalibrate and re-energize tribal climate change efforts in the current political environment through consideration of a national tribal climate change strategy. In addition,

¹⁸ Ferguson, et al., Report from April 2010 Workshop Tucson, AZ: Climate Assessment for the Southwest, at 29, available at <http://www.drought.gov/imageserver/NIDIS/workshops/tribal/Drought-Preparedness-Tribal-Lands-FoursCorners-2011-1.pdf>.

¹⁹ NWF, *Facing the Storm: Indian Tribes, Climate-Induced Weather Extremes and the Future for Indian Country*, available at http://www.nwf.org/~media/PDFs/Global%20Warming/Reports/NWF_TribalLandsExtremeWeather_FINAL.ashx.

several tribes that participated in the workshop have pursued funding opportunities to support adaptation-related efforts.

To implement additional action items, workshop participants will need to work together to identify tribal priorities and pursue additional funding opportunities. In doing so, it will be critical to establish standards of performance and methods of evaluation for projects pursued to ensure they are consistent with tribal priorities and expectations and deliver clear benefits to tribes.

APPENDICES

1. Participant List
2. Agenda
3. Written Exercise Results
4. Colorado Law Memorandum for NCAI, Channels for a Cooperative Response to Climate Change (2009)

APPENDIX 1
Participant List

Participant List

**Tribal Climate Change Adaptation Planning
& Inter-Governmental Coordination Workshop**

October 5-6, 2010

University of Colorado Law School

Jose Aguto
Policy Advisor
National Congress of American Indians
Email: Jose_Aguto@NCAI.org

Alex Cabillo
Water Resource Manager
Hualapai
Email: acabillo@hotmail.com

Christina Alvord
Associate Scientist
NOAA-NIDIS
Email: christina.alvord@noaa.gov

Marnie Carroll
Director of Dine Energy Institute
Dine College
Email: mkcarroll@dinecollege.edu

Kirk Bemis
Hydrologist
Zuni Conservation Program
Email: kbemis@ashiwi.org

Karletta Chief
Desert Research Institute
Email: karletta.chief@dri.edu

Terry Battiest
Energy Renewal Specialist
Navajo Nation
Email: terryb@ntua.com

Kelsey C. Cody
M.S. 2011 Environmental Studies Program,
Water and Society
University of Colorado at Boulder
Email: kelsey.cody@gmail.com

Roman Bitsuie
Executive Director
Navajo-Hopi Land Commission Office,
Navajo Nation
Email: rbitsuie@yahoo.com

Daniel Cordalis
Research Associate, JD/PhD Candidate
NARF/CU Law & ENVS
Email: dcordalis@gmail.com

Breton Bruce
U.S. Geological Survey
Email: bbruce@usgs.gov

Gary Collins
Arapaho Tribal Liaison
Email: redcloud@wyoming.com

Karen Cozzetto
INSTAAR, CU Dept of Geology
Email: kcozzetto@colorado.edu

Kimberly Craven
Senior Project Manager, Tribal Energy
NREL
Email: Kimberly.Craven@nrel.gov

Dan Ferguson
Program Manager
Climate Assessment for the Southwest,
University of Arizona
Email: dferg@email.arizona.edu

Bob Gough
Secretary
Intertribal COUP
Email: gough.bob@gmail.com

Preston Hardison
Tulalip Tribes of Washington
Email: prestonh@comcast.net

Clayton Honyumtewa
Acting Manager, Department of Natural
Resources
Hopi Tribe
Email: chonyumtewa@hopi.nsn.us

Jason John
Hydrologist, Water Management Branch
Navajo Nation
Email: jasonjohn@navajo.org

Sarah Krakoff
Professor of Law
CU Law School
Email: sarah.krakoff@colorado.edu

Dennis Martinez
Co-Chair
Indigenous Peoples' Restoration Network
Email: iprn@snowcrest.net

Ouray Muskrat
Jicarilla Apache Water Operations
Email: geronimo_forever@hotmail.com

Dr. Roger Pulwarty
Director
National Integrated Drought Information
System
Email: roger.pulwarty@noaa.gov

Imtiaz Rangwala
Research Scientist
NOAA, Western Water Assessment
Email: Imtiaz.Rangwala@noaa.gov

James Rattling Leaf
Advisor for Science and Technology
Sinte Gleske University
Email: rattlingleaf@gmail.com

Fawn Sharp
President
Quinault Nation
Email: FSharp@quinault.org

Mark Squillace
Director, Professor of Law
NRLC, CU Law School
Email: Mark.Squillace@Colorado.EDU

Julie Teel
Senior Research Fellow
CEES, CU Law School
Email: julie.teel@colorado.edu

Veronica Tiller
Author and Editor
Jicarilla Apache
Email: vtiller99@comcast.net

Brad Udall
Director Western Water Assessment
Email: Bradley.Udall@Colorado.EDU

Dr. James Verdin
Deputy Director
National Integrated Drought Info System
U.S. Geologic Survey
Email: verdin@usgs.gov

Dr. Garrit Voggesser
Tribal Lands Program Manager
National Wildlife Federation
Email: Voggesser@nwf.org

Nicholas West
Candidate for J.D. 2012
Colorado Law
Email: nicholas.west@colorado.edu

Don Wharton
Senior Attorney
Native American Rights Fund
Email: wharton@narf.org

Dr. Daniel Wildcat
Working Group Convener
American Indian and Alaska Native Climate
Change Working Group
Email: dwildcat@sunflower.com

Myra Wilensky
Tribal Global Outreach Manager
National Wildlife Federation
Email: Wilensky@nwf.org

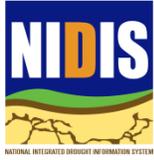
Terry Williams
Tulalip Tribes of Washington
Email: terrywilliams@aol.com

Eric Wood
U.S. Geologic Survey
Native American Tribal Liaison Team
Email: woodec@usgs.gov

Sue Wotkyns
Climate Change Program Manager
Institute for Tribal Environmental
Professionals
Email: susan.wotkyns@nau.edu

APPENDIX 2

Agenda



AGENDA

Tribal Climate Change Adaptation Planning & Inter-Governmental Coordination Workshop

October 5-6, 2010

University of Colorado Law School

Wolf Law Building, Room 300

Workshop Objectives:

- Engage the participants on how to develop a tribal climate adaptation plan (financially, politically, scientifically);
- Develop contacts between tribal leaders and resource managers who have successfully developed and implemented adaptation plans or are interested in doing so;
- Convey the message about tribal climate adaptation needs to federal agencies;
- Clarify support available for tribal adaptation planning;
- Highlight climate, energy, and drought policies that are relevant to tribal adaptation needs (including the role of the federal trust responsibility); and
- Identify concrete next steps (and commitments by attendees to implement these steps) for increasing resources and support for adaptation-related efforts by Southwest tribes.

Tuesday, October 5, 2010

7:30-8:45	Continental Breakfast (Boettcher Hall, ground floor of Wolf Law Building)
9:00-10:00 a.m.	Welcome (Colorado Law Dean David Getches) (Room 300) Opening Prayer Introductions
10:00-10:30 a.m.	Workshop Framing (Sarah Krakoff (Colorado Law) and Roger Pulwarty (NOAA)): <ul style="list-style-type: none"> • Overview of climate-related concerns, impacts, and adaptation plans as a response strategy • Summary of recommendations resulting from recent workshops and efforts to address these issues (including successes & gaps in follow-up) • Workshop Objectives in relation to above

Generous support for this workshop provided by NIDIS, Western Water Assessment, and the National Wildlife Federation

10:30-11:00 a.m.

Opening Written Exercise & Discussion (exercise circulated prior to meeting)

11:00 a.m.-12:30 p.m.

Panel Presentations & Facilitated Discussion:

(1) Lessons Learned from the NW: What are the key elements of an adaptation plan, how are they “brokered,” and how do you ensure adaptation plans will actually be implemented once developed. Who do you need to work with and how do you work with them?

- a. Debra Lekanoff (Swinomish Tribe) (20 min)
- b. Terry Williams and Preston Hardison (Tulalip Tribes) (20 min)
- c. Dennis Martinez (IPRN) (15 min)(sharing these and other adaptation experiences with other tribal communities)
- d. Facilitated Discussion to identify Concrete Actions for follow-up in the Southwest region (list of 5-10) (35 min)

12:30-1:30 p.m.

Lunch (Café, 2nd Floor Student Commons)

1:30-3:00 p.m.

(2) Legal Overview and Tools: What are the sources of the federal government’s trust responsibility to tribes in the areas of climate change, sustainable energy, and drought preparedness? What laws, policies, and programs support tribal adaptation efforts; and what are the gaps in these programs that require improvement?

- a. Sarah Krakoff (Colorado Law) (overview of federal-tribal relationship, federal trust responsibility) (20 min)
- b. Jose Aguto (NCAI) (federal legislative and executive update) (20 min)
- c. Facilitated Discussion to identify Concrete Actions for follow-up (list of 5-10) (50 min)

3:00-4:15 p.m.

(3) Obtaining and Using Tribal Climate Information:

a. Federal ↔ Tribal Needs: How can Colorado Plateau tribes access support available for adaptation planning and drought response, and how can they ensure that information about the impacts of climate change on tribal resources is effectively communicated to federal government decision-makers?

- o President Sharp (Quinault Nation perspective) (15 min)
- o Karletta Chief (Southwest perspective) (15 min)
- o Federal agency perspectives: Jim Verdin (NIDIS/USGS), Kimberly Craven (NREL), Eric Wood (USGS) (15 min)
- o Facilitated Discussion to identify Concrete Actions for follow-up (list of 5-10) (30 min)

4:15-5:30 p.m.

b. Colorado Plateau Tribes ↔ Other Regional Efforts: How might

Generous support for this workshop provided by NIDIS, Western Water Assessment, and the National Wildlife Federation

	<p>Colorado Plateau tribes and other entities working on climate change in the region more effectively disseminate relevant data and developments, coordinate activities in the region, and identify and support priority adaptation activities?</p> <ul style="list-style-type: none"> ○ Kirk Bemis (Zuni Tribe) (Southwest perspective) (15 min) ○ Terry Williams (Tulalip Tribes) (Northwest perspective) (15 min) ○ Agencies, universities/colleges and NGO perspectives: Dan Ferguson (CLIMAS), Marnie Carroll (Dine College), Dan Wildcat (Haskell Indian University), and Garrit Voggeser (NWF) (20 min) ○ Facilitated Discussion to identify Concrete Actions for follow-up (list of 5-10) (25 min)
5:30-7:30 p.m.	<p>Reception (sponsored by the National Wildlife Federation)</p> <ul style="list-style-type: none"> ○ Wolf Law Building, 4th Floor (Colloquium Room)

Wednesday, October 6, 2010

7:30-8:45	Continental Breakfast (Boettcher Hall, ground floor of Wolf Law Building)
9:00-9:30 a.m.	Facilitator's Report from Day 1 (Professor Krakoff (Colorado Law))
9:30-10:30 a.m.	Group discussion/revision of Concrete Actions identified on Day 1 (Julie Teel (Colorado Law))
10:30 a.m.-12:30 p.m.	<p>Commitments from attendees to follow-up on Concrete Actions</p> <ul style="list-style-type: none"> ○ Organizations in attendance ○ Universities/colleges in attendance ○ Federal agencies in attendance ○ Tribes in attendance
12:30 p.m.	Adjournment/informal hike in Chautauqua for interested participants

Generous support for this workshop provided by NIDIS, Western Water Assessment, and the National Wildlife Federation

APPENDIX 3
Written Exercise Results

**Tribal Climate Change Adaptation Planning
& Inter-Governmental Coordination Workshop
October 5-6, 2010
Written Exercise & Responses**

Instructions: As a way to gather your initial ideas about climate change adaptation priorities and strategies, we request that you select and answer one of the four categories of questions below. Blank sheets are provided for your responses. Please feel free to email your answers to julie.teel@colorado.edu if you would like to complete your answers before the workshop. We will also have ½ hour allocated on Tuesday to finishing the exercise and discussing preliminary responses received.

Written Exercise for Tribal Leadership & Natural Resource Managers

(1) In addressing current or predicted climate change impacts to tribal resources through adaptation planning and related activities,

(a) What 5 issues/impacts are key to address?

- Indirect impacts from human responses
- Unwise development/growth/Land Use planning
- Drought
- Ice storms and extreme and erratic weather
- Energy supply issues
- High winds
- Extreme weather
- Fire
- Ecosystem disruption
- Human health
- Animal/species health
- Erosion
- Dust storms, migration of sand dunes
- Compounding preexisting water scarcity
- Compounding preexisting poverty and poor infrastructure
- Livestock/farming
- Changing vegetation
- Water rights
- Sacred sites
- Water quality
- Air quality
- Traditional uses and understanding
- Education and awareness
- Conservation and efficiency
- Coordination and cooperation
- Focusing less on fiscal concerns

- Lack of information and understanding
- Insufficient data networks and no funding
- Remind Indian people that they are the original environmentalists
- Setting goals that are achievable
- DOI responsiveness to request for federal negotiating teams

(b) What 3 response strategies are important to include?

- Change mind/perspective
- Focus more on water demand than supply
- Integrate “climate change” work with current work
- Tribes to be more assertive
- Tribal professionals supported
- Tribal elders
- Financing projects (e.g., bonds)
- Greater dissemination of information in tribal media
- More discussion and visibility for Indian people at conferences, etc., to regain position as those in harmony with nature
- Drought monitoring
- Revegetation
- Intertribal agreements
- Coordination with federal agencies
- Reduce reliance on fossil fuels and shift to renewables that do not consume water
- Construct sustainable resilient homes
- Build out local water storage/rainwater capture
- Legal options and regulatory approaches
- Political strategies
- Funding support
- Funding and support for demonstration projects

(c) What opportunities have you encountered that can assist your tribe in addressing climate change-related concerns?

- Data sharing
- Water rights settlement to restore sacred wetlands
- Proactive federal and state measures to help protect sacred lake
- Coordinated tribal, state and federal effort to monitor watershed for endangered fish
- Establishment of tribal codes and laws
- Technical assistance from CLIMAS
- Very few...
- Written a book on the Apache that addresses Indians as environmentalists
- Trainings that Intertribal COUP has put on w/ funding from DOI OIEED
- Coup’s work with WAPA to develop tribally owned wind
- Renewable energy development
- Establishment of 2 SNOTEL sites at Navajo. NWS installed an additional weather station in the area.

(d) What barriers to addressing climate change-related concerns have you experienced?

- Cultural taboos
- Others not adapting to current climate extremes
- Limited resources
- Today's problems
- Insufficient awareness, remoteness of the problem
- Non-Indian attributes, policies and lack of understanding
- Paperwork, bureaucracy, deadlines, coordination
- Lack of support and understanding from tribal council
- Rural utility policies
- Federal "stove piped" approaches
- Political: no climate legislation, federal and state obstacles
- Traditional mining operations
- Federal programs are ineffective and do not interface well with tribal programs
- Lack of federal inter-agency coordination

(2) What 3 ways could adaptation discussions and efforts (e.g. planning, funding) be more responsive to current tribal priorities?

- Focus on issues of today that will also be critical in the future
- Focus on tribal/region/watershed specific needs
- Focus on basic data collection
- Form an indigenous diplomatic corps
- More monitoring devices for all natural resources
- More publicity about issues throughout Indian country
- All agencies should include climate change in their national policies
- Funding
- Include all stakeholders in discussions
- Continual data sharing
- Legislation needed
- Clarity on goals and objectives
- Streamline federal policy and process initiatives
- Funding for basic quality of life for families living off the grid

(3) What do you hope to gain from this Workshop?

- Learn from others' activities
- Understanding of workshop participants of importance of climate change for Native peoples and their lands
- Spur support for a Tribal climate accord
- Sustain momentum and collective traditional thinking to develop a suitable mindset for the future

- Data and references that would assist tribes in planning for land use and resources development
- Networking
- Understand how to educate tribal council members
- Information and a sense of this how this narrow approach confined to academia and well-funded environmental groups can be shared or deciphered for Indian people
- Support for changing agency (e.g. ESA) priorities
- Planning support for landscape and hydro policies
- Assistance from NOAA, et al
- Funding assistance to implement strategies at Hualapai

Written Exercise for NGO and Non-Tribal Academic Institution Representatives

(1) How has your institution successfully worked with tribes and tribal organizations on issues relating to climate change and/or natural resource management and planning?

- ITEP has nearly 20 years of experience providing trainings, tech assistance, etc. Air quality is the biggest program. Began work on climate change in last few years.
- NWF Tribal lands program has partnered with NTEC, NCAI and NARF to influence federal climate legislation provisions.
- NWF has also worked at the agency/administrative level, hosting a lunch before the White House Tribal Nations summit, meeting with Interior officials, providing testimony, etc.
- NCAI tribal natural resource strategy
- Legislative efforts in Congress
- NCAI PRC research on NR, CC, Green jobs
- Collaboration with administration (CEQ) on tribal CC inclusion
- Programmatic funding for capacity building
- Addressing tribal exclusion from NR programs

(2) Name 3 ways your institution could improve its efforts to work with tribes and tribal organizations on issues relating to climate change and/or natural resource management and planning?

- Funding would improve efforts
- Collaboration with other agencies
- Collaboration with tribes, intertribal orgs, and other entities
- Acquiring new funding
- Having a repository of information, guidance, and other documents
- Uniting tribes and tribal orgs in feasible interest groups
- Greater coordination with other organizations to make the argument for tribal CC adaptation funding

(3) What do you hope to gain from this Workshop?

- Learn what tribes and tribal orgs are doing re: adaptation planning and find ways to work together.
- That the workshop provides a closer foundation and collaboration to assist tribes with NR adaptation efforts. That there are next steps and commitments from participants, such as funding and capacity building. A commitment for follow-up so that the workshop itself is not the only accomplishment.
- Strategic partnerships and increased collaboration
- At conclusion, establish a framework for collaboration
- Continuation of this group annually

Written Exercise for Tribal College and University (TCU) Representatives

(1) How has your institution/program successfully worked with other universities and organizations (tribal and non-tribal) on natural resource management and climate change issues?

- MOU's and MOA's w/ orgs and agencies
- Curriculum development and articulation between 2yr and 4yr programs.
- PhD researchers and graduate students working with Diné college interns on research projects
- Water quality and quantity
- Phytoremediation
- Honor the Earth
- Indigenous Women's Network
- ITEP
- NNEPA , NN Water Resources, NNIRB
- Tribal Climate Change Working Group
- NASA
- USGS
- Sabbatical with a TCU

(2) Do you structure programs to address concerns of specific tribes in/beyond your region? If so, how do you engage tribal communities?

- Yes, Haskell is an intertribal institution serving Nations from the lower 48 and Alaska Villages. UN of Indian education.
- Dine works with Navajo, Hopi and potentially nearby tribes only due to size of region and lack of resources.

(3) What 3 pieces of advice would you give non-tribal academic institutions who would like to establish a working relationship with other TCU's and/or regional tribal communities?

- Listen; let TC/U's talk; you listen!
- Relationships built on respect and equality
- Invest in TC/U's: they bring indigenous knowledge and relationships
- Develop GENUINE partnerships and collaborations
- Prove through behavior you can be trusted
- The tribe should benefit the most from any partnership
- Spend time with the tribal people

(4) What do you hope to gain from this Workshop?

- Promote establishment of tribal/American Indian nations Science Foundation driven by traditional ecological knowledge.
- Progress on legal issues
- More monitoring
- Sharing of knowledge on arid land rainwater catchment systems
- Student intern placements with agencies
- Enhanced training for interns on climate change monitoring systems

Written Exercise for Federal Agency Representatives

(1) How has your agency successfully worked with tribes on issues relating to climate change and/or natural resource management and planning?

- USGS, primary earth science agency, has numerous collaborative projects with tribal entities. Monitor and investigate water and bio resources on reservations, training and capacity building efforts. USGS is non-regulatory so strives to remain objective by avoiding policy advocacy.
- NOAA has struggled with its role in working with tribes and other agencies. Work has often not gone much beyond checking off the "to do" list in terms of tribal inclusion. Need more direction and clarification of trust obligation to tribes, scope, and depth.

(2) List 3 ways your agency could improve its efforts to work with tribes on issues relating to climate change and/or natural resource management and planning?

- Improve visibility with tribes; enter into collaborative agreements with Indian nations, help fill in black hole of monitoring
- NOAA could identify regional projects that also fulfill needs of tribal lands.

(3) List 3 ways tribes, tribal organizations, and others working in the field could help elevate tribal concerns, priorities and needs related to climate change to agency decisionmakers?

- Actively include USGS in discussions related to climate change monitoring. USGS has offices in every state; hard to know what is going on everywhere, but please invite us.
- Communicate to USGS about what questions tribes need answered.
- NOAA could engage with important tribal research partners and stakeholders; identify key personnel; develop long-term working relationships

(4) What do you hope to gain from this Workshop?

- To learn! To understand issues and concerns on tribal lands
- To make connections
- To further goal of having federal agencies understand importance of follow-up and trust. Lack of coordination and follow-up by agencies defeats goals of tribal trust and buy-in.

APPENDIX 4

Colorado Law Memorandum for NCAI, Channels for a Cooperative Response to Climate Change (2009)

**DRAFT PAPER PREPARED BY THE UNIVERSITY OF COLORADO LAW SCHOOL
FOR NCAI**

Channels for a Cooperative Response to Climate Change

The existing and projected impacts of climate change uniquely affect indigenous groups around the world. Consistent with this, Native American tribes are among the communities most sensitive to climate change in North America.¹ Tribal communities have distinct cultural connections to their land and resources, and some communities depend on these resources for survival. For example, salmon populations in the Pacific Northwest, upon which many tribes rely for subsistence, have dramatically declined in the past decade.² Impacts of climate change, such as reduced mountain snowpack, earlier snowmelt, rising ocean temperatures and changed stream flow patterns, will create additional strains on salmon and, in turn, tribal communities.³ Another well known example is the plight of Alaska Native villages such as the Inuit village of Shishmaref, which faces evacuation because its infrastructure, homes, and water system are compromised by erosion.⁴ Across tribal communities, climate change broadly threatens tribal natural resources—animals protected by traditional hunting and fishing rights, lands of established reservation, and water reserved to tribes.⁵

In order to address these impacts effectively, tribal governments must find channels to protect natural resources and adapt to the changing climate. Among the strategies that tribes may adopt, tribal governments may want to partner with other governments. In particular, tribes can form cooperative relationships with non-governmental community groups; local, state, federal, and international governments; and other tribes to protect themselves and the broader community from global warming. Addressing the global impacts of climate change is a task of enormous magnitude, yet it is important to develop cooperative relationships to mitigate and adapt to climate change before catastrophes arise.⁶ This paper outlines examples of tribal government cooperation to manage natural resources with local, state, national, international, and tribal governments and opportunities to apply these models collectively to address climate change.

¹ Cordalis, Daniel & Dean B. Saugee, *The Effects of Climate Change on American Indian and Alaska Native Tribes* 22 NAT. RES. & ENV'T. 45, 45 (2008).

² *Id.*

³ *Id.*

⁴ *Id.* at 47; Alan Parker et. al, CLIMATE CHANGE AND PACIFIC RIM INDIGENOUS NATIONS 26 (Northwest Indian Applied Research Institute 2006).

⁵ Jonathan M. Hanna, NATIVE COMMUNITIES AND CLIMATE CHANGE: PROTECTING TRIBAL RESOURCES AS PART OF NATIONAL CLIMATE POLICY EXECUTIVE SUMMARY 3-4 (Natural Resources Law Center at the University of Colorado Law School 2007), http://www.colorado.edu/law/centers/nrlc/publications/Climate_Report_Exec_Summary.pdf.

⁶ Jacqueline Pietsch, *UN Chief Urges Leaders Over Climate Change*, THE SYDNEY MORNING HERALD, Sept. 2, 2009, available at <http://news.smh.com.au/breaking-news-world/un-chief-urges-leaders-over-climate-change-20090902-f8iu.html>; Zlotán Grossman, *Indigenous Nations' Responses to Climate Change*, 32 AM. INDIAN CULTURE AND RES. J. 5, 12 (2008), available at <http://academic.evergreen.edu/g/grossmaz/Indigenous%20Nations%27%20Responses.pdf>.

Local Governments

Community Alliances

Shared territorial identity often unites traditionally disparate groups to combat a common threat.⁷ For decades, tribal governments and local non-tribal communities have formed alliances to protect natural resources common to the territory of both groups.⁸ For example, in the late 1970s the Black Hills Alliance, a group of about thirty cowboys, Native Americans, and environmental activists joined forces to prevent uranium mining in the Black Hills area.⁹ Similarly the BHA facilitated the enactment of a statewide initiative to prevent low-level radioactive waste dumping in the Black Hills.¹⁰ Similarly, in Wisconsin, the Mole Lake Chippewa, Lac du Flambeau Tribe, Menominee Nation, and non-Indian residents of local towns formed the NiiJii Enterprise Community, which provided a unified opposition to mining development that would threaten regional water, fish, and plant resources.¹¹

Tribal governments can use shared territorial identity to form alliances with local communities who share a common threat from climate change. Cooperation at the local level is an efficient means to directly mitigate climate change and prepare adaptation strategies. Although climate change is a global problem, local governments can more effectively tailor climate change mitigation and adaptation strategies to the unique climate change impacts that will affect people in a particular region.¹² Furthermore, the most valuable tools to adapt to a changing climate, such as food, water, shelter, and power, are found at a local level.¹³ Alliances between Native Americans and local rural communities provide a tool for strengthened financial, political, and popular support for change, particularly when relations between tribal and non-Indian governments remain strained.¹⁴ Therefore, local alliances are an important channel for tribal governments to reduce their immediate contribution to climate change, protect natural resources, and develop climate change adaptation strategies.

Tribal-local government agreements

Many tribes have developed natural resource management agreements with city, municipal, and county governments. Much like alliances with local communities, tribal-local government agreements are often a response to a threatened, shared resource. For example, the Shakopee Mdewakanton Sioux Community of Minnesota entered into a cooperative agreement

⁷ Grossman, *supra* note 6, at 25.

⁸ Zoltán Grossman, *Unlikely Alliances: Treaty Conflicts and Environmental Cooperation Between Native Americans and Rural White Communities*, 29 AM. INDIAN CULTURE AND RES. J. 21, 22-3 (2005), available at <http://academic.evergreen.edu/g/grossmaz/Unlikely%20Alliances.pdf>.

⁹ *Id.* at 31

¹⁰ Charles Ray, *Bucking the Trends: Black Hills crusader Marvin Kammerer*, HIGH COUNTRY NEWS, <http://www.hcn.org/issues/283/15021>.

¹¹ Al Gedicks & Zoltán Grossman, *Defending a Common Home: Native/non-Native Alliances against Mining Corporations in Wisconsin*, http://www.idrc.ca/en/ev-64531-201-1-DO_TOPIC.html.

¹² Center for Science in the Earth System et al, PREPARING FOR CLIMATE CHANGE: A GUIDEBOOK FOR LOCAL, REGIONAL, AND STATE GOVERNMENTS 27 (2007), <http://www.icleiusa.org/action-center/planning/adaptation-guidebook>.

¹³ Grossman, *supra* note 6, at 12

¹⁴ Grossman, *supra* note 6 at 31 (citing North Dakota Advisory Committee, NATIVE AMERICANS IN SOUTH DAKOTA: AN EROSION OF CONFIDENCE IN THE JUSTICE SYSTEM (2000), www.usccr.gov/pubs/sac/sd0300/main.htm).

with the city of Prior Lake in 2003 that enables the two governments to link water supply systems during emergencies.¹⁵

Tribal governments have also formed agreements with local governments to mitigate local contributions to global warming. For example, the Makah tribe is a member of a consortium that manages the Makah Bay Offshore Wave Energy Project, which transforms ocean waves into electricity for the county public utility district.¹⁶ Similarly, the Olympia city government entered into an agreement with the Nisqually Indian Tribe to develop a new regional water source that is more sustainable and less susceptible to contamination.¹⁷ Tribal governments can also use agreements with local governments to adapt to impacts of global warming. For example, tribal and local governments can develop joint land use plans that specifically respond to the effects of climate change, such as building wave barriers in order to prevent the erosion of coastal shores due to rising sea levels.¹⁸ Furthermore, tribal governments can seek to expand existing tribal-local government agreements that jointly provide emergency services to manage crises created by climate change.¹⁹

Like agreements with local communities, tribal-local government agreements are an effective tool to mitigate immediate contributions to global warming and provide a tailored response to unique, localized climate change impacts. However, in order to create an effective intergovernmental response to climate change, tribes must ensure that the agreements are legally binding and enforceable. Therefore, tribal governments must consider the limitations to tribal-local government agreements, discussed below. Furthermore, tribal governments must recognize and appreciate the scope of local climate change responses. While climate change is a global issue, which local alliances and local intergovernmental agreements may lack the power to resolve, cooperation at the local level provides a more customized response to climate change than broad federal or international policies.²⁰

State Governments

Tribal-state cooperation

Tribal and state governments have started to form partnerships to confront climate change. For example, in June 2009, leaders of the twelve federally recognized Native American tribes and the Michigan governor signed an accord to reduce greenhouse gasses.²¹ Pursuant to the

¹⁵ Shakopee Mdewakanton Sioux Community, *Local Government Agreements*, <http://www.shakopedakota.org/4cooperation.html> (the Water Supply Interconnect is an agreement entered into between the Shakopee Mdewakanton Sioux Community and the City of Prior Lake in 2003) (last visited Sept. 9, 2009).

¹⁶ Grossman, *supra* note 6, at 13.

¹⁷ Cynthia Iyall, *City, tribe team up on clean water project* ENVIRONMENTAL OUTLOOK (June 26, 2008), available at <http://www.djc.com/news/en/11202008.html>; *Plan for water helps future* THE OLYMPIAN (May 20, 2008), available at <http://www.wa-trust.org/PDFs/Media%20Relations%20Workshop%20Materials/2008-05-20%20The%20Olympian%20-%20Plan%20for%20water%20helps%20future.pdf>.

¹⁸ Grossman, *supra* note 6, at 13.

¹⁹ Grossman, *supra* note 6, at 14.

²⁰ Center for Science in the Earth System et al, *supra* note ** at 27.

²¹ Saginaw Chippewa Indian Tribe of Michigan, *Governor Granholm and Michigan tribes Sign Accord to Reduce Greenhouse Gasses* (June 12, 2009), <http://www.sagchip.org/council/events/2009/2009-0611-Tribal-StateSummit-ClimateAccord/2009-0611-Tribal-StateSummit.htm> (the accord was signed by Governor Jennifer Granholm and tribal leaders from the Bay Hills Indian Community, Grand Traverse Band of Ottawa and Chippewa Indians, Hannahville Indian Community, Keweenaw Bay Indian Community, Lac Vieux Desert Band of Lake Superior Chippewa, Little River Band of Ottawa Indians, Little Traverse Bay Bands of Odawa Indians, Match-E-Be-Nash-She-Wish Band of Potawatomi Indians, Nottawaseppi Huron Band of Potawatomi Indians, Pokagon Band of

accord, biannual Tribal-State Climate Change Forums will provide an opportunity for tribal and state leaders to share information and develop joint analysis and action plans to confront climate change.²² The climate change accord was modeled after existing tribal-state government agreements in Michigan. The Accord directly parallels a 2004 intergovernmental accord, ratified by a gubernatorial Executive Order, which mandated biannual meetings between tribal and state government representatives in order to establish a joint strategy to Great Lakes ecosystem preservation and restoration.²³

Much like in Michigan, many tribal and state governments have a history of cooperative agreements regarding issues of shared concern, including natural resource management. For example, the Centennial Accord, entered into by the State of Washington and federally recognized tribes in 1989, formalized a commitment to broad, ongoing tribal-state relations.²⁴ The Accord requires the head of each state government agency to develop procedures to establish a working relationship with tribal governments and a mechanism of accountability to ensure continuation of that relationship.²⁵ For example, at the Centennial Accord meeting twenty tribes and the Washington Department of Ecology entered into the Operational Protocol that established the Ecology-Tribal Environmental Council.²⁶ The ETEC, chaired by a leader of a signatory tribe and the Department of Ecology Director, meets quarterly to develop collaborative strategies to environmental issues of shared concern.²⁷ Similarly, the Washington State Department of Agriculture maintains an executive-level liaison from a signatory tribe who serves as an intermediary between state and tribal governments in order to coordinate protection of agricultural and natural resources.²⁸ Although the Accord does not demand environmental cooperation, in effect it creates a scheme of tribal-state co-management of natural resources.

For almost four decades state and tribal governments have entered into agreements specifically regarding the co-management of natural resources both within and beyond tribal reservation boundaries. For example, the Leech Lake Band of Chippewa and the state of Minnesota negotiated an agreement that exempted the tribe from state hunting, fishing, trapping,

Potawatomi Indians, Saginaw Chippewa Indian Tribe, Sault Ste. Marie Tribe of Chippewa Indians); INTERGOVERNMENTAL ACCORD BETWEEN THE TRIBAL LEADERS OF THE FEDERALLY RECOGNIZED INDIAN TRIBES IN MICHIGAN AND THE GOVERNOR OF THE STATE OF MICHIGAN TO ADDRESS THE CRUCIAL ISSUE OF CLIMATE CHANGE 2 (June 11, 2009), <http://www.sagchip.org/council/events/2009/2009-0611-Tribal-StateSummit-ClimateAccord/images/2009-06-09-UnsignedClimateAccordCopy.PDF>.

²² INTERGOVERNMENTAL ACCORD BETWEEN THE TRIBAL LEADERS OF THE FEDERALLY RECOGNIZED INDIAN TRIBES IN MICHIGAN AND THE GOVERNOR OF THE STATE OF MICHIGAN TO ADDRESS THE CRUCIAL ISSUE OF CLIMATE CHANGE 1 (June 11, 2009), <http://www.sagchip.org/council/events/2009/2009-0611-Tribal-StateSummit-ClimateAccord/images/2009-06-09-UnsignedClimateAccordCopy.PDF>.

²³ Heidi Hanson, *Governor, Tribal Leaders Sign Accord on Water; Executive Directive Issued on Tribal, State Relations* (May 12, 2004), <http://www.michigan.gov/gov/0,1607,7-168--92818--,00.html> (last visited Sept. 9, 2009); Office of the Governor, *Executive Directive No. 2004-5*, http://www.michigan.gov/gov/0,1607,7-168-21975_22515-92821--,00.html (last visited Sept. 13, 2009) (a 2002 accord, which called for annual meetings between the governor and tribal leaders from Michigan's federally recognized tribes established the initial framework for formal tribal-state government collaboration in Michigan).

²⁴ Governors Office of Indian Affairs, *Centennial Accord between the Federally Recognized Indian Tribes in Washington State and the State of Washington*, <http://www.goia.wa.gov/Government-to-Government/Data/CentennialAccord.htm>. (hereinafter Centennial Accord).

²⁵ *Id.*

²⁶ Office of the Governor, Governor's Office of Indian Affairs, 2007 Centennial Accord Agency Highlights 15 (2007), <http://www.goia.wa.gov/News/AgencyHighlights.pdf>.

²⁷ *Id.* at 15

²⁸ *Id.* at 1

and wild rice gathering regulations on the reservation.²⁹ Pursuant to the agreement the state adopted a program that allowed the tribe to collect licensing fees paid by non-Indians hunting and fishing on the reservation and the tribe adopted a conservation code that prohibited commercial fishing by tribal members.³⁰ The agreement was initially entered as a consent agreement by a federal court and subsequently ratified by the Minnesota legislature.³¹ The state of Minnesota later negotiated a similar agreement with the Fond du Lac, Grand Portage, and Bois Forte Bands of Chippewa Indians, which reimbursed the tribes to abstain from exercising treaty rights and required the tribe to adopt a tribal conservation code with approval from the Minnesota Department of Natural Resources.³²

Benefits of tribal-state government cooperation

Much like local governments, state governments can more effectively address specific impacts of climate change on the local level. In addition, tribal-state government agreements resolve conflicts without litigation (or sometimes in the wake of it), increase efficiency, and broaden support. Tribal-state government agreements resolve problems, such as diminishment of natural resources caused by climate change, that cross tribal, county, or state borders and create jurisdictional problems.³³ Therefore, tribal-state government agreements can limit costly and time-consuming litigation that arises from jurisdictional disputes.³⁴ In addition, such agreements allow for a more efficient use of resources by both tribal and local governments, as parties to the agreement can share resources and limit expenses by reducing administrative costs.³⁵ As a result of pooled resources, parties to the agreements have increased access to information and technology.³⁶ Cooperative agreements can also increase funding allocated to a particular issue, not only by pooling tribal and local or state resources, but also by increasing influence for federal funding.³⁷ Therefore, tribes can use the framework of existing intergovernmental agreements and natural resources co-management agreements as a foundation to address current contributions to climate change on the state level and develop responses to long-term climate change impacts. However, tribes must be cognizant of the limited scope of tribal-state government agreements.

Limitations of tribal-local government and tribal-state government cooperative agreement

Tribes that choose to address climate change through cooperative agreements with local and state governments may negotiate an agreement in the form of an advisory agreement, memorandum of agreement, memorandum of understanding, contract, or compact.³⁸ However, a cooperative agreement or compact, intergovernmental agreements that resolve disputes of overlapping jurisdiction and determine substantive issues, are viewed as the most legally binding

²⁹ Kari Krogseng, *Minnesota v. Mille Lacs Band of Chippewa Indians* 27 *ECOLOGY L.Q.* 771, 792 (2000).

³⁰ *Id.*

³¹ *Id.*, See Minn. Stat. §§ 97.151, 97.155 (1986); Minn. Stat. § 97.431 (1984).

³² *Id.* at 792, n. 137.

³³ Ezra Rosser, *Caution, Cooperative Agreements, and the Actual State of Things: A Reply to Professor Fletcher*, 42 *TULSA L. REV.* 57, 65 (2006).

³⁴ Joel H. Mack & Gwyn Goodson Timms, *Cooperative Agreements: Government to Government Relations to Foster Reservation Business Development* 20 *Pepp. L. Rev.* 1295, 1305-06 (1993)/

³⁵ *Id.* at 1307.

³⁶ *Id.*; slide

³⁷ Rosser, *supra* note ***, at 65.

³⁸ Note, *Intergovernmental Compacts in native American Law: Models For Expanded Usage*, 112 *HARV. L. REV.* 922, 929 (1999)

of these agreements.³⁹ Due to a lack of judicial precedent, it is unclear if courts will enforce tribal intergovernmental agreements under contract law.⁴⁰ However, so long as threshold enabling legislation and constitutional requirements, discussed below, are satisfied, properly drafted cooperative agreements should be legally enforceable.⁴¹

In order to draft a legally enforceable cooperative agreement, threshold requirements must be met. Tribal and state governments must both waive sovereign immunity from legal actions that may arise from the cooperative agreement.⁴² Furthermore, both the tribal and state government should consent to be bound by the cooperative agreement.⁴³ In addition, the cooperative agreement must not violate constitutional or statutory requirements. The Supreme Court has routinely held that, pursuant to the Supremacy Clause, comprehensive federal legislation in a particular area of law preempts state jurisdiction over tribal land.⁴⁴ Therefore, tribal-state cooperative agreements should expressly state that the agreement is not intended to conflict with federal law and include a severance clause that allows for severance of any provision of the agreement that is preempted by federal law.⁴⁵ Narrowly drafted cooperative agreements are less likely to be invalidated due to preemption by federal law, and tribes can utilize model cooperative agreements in order to guide the drafting of such agreements.⁴⁶ Furthermore, contracts between tribal and local or state government generally require federal government authorization. In order to be binding, contracts to which a tribal government is a party and are binding for more than seven years must be approved by the Secretary of the Interior.⁴⁷ However, when an intertribal agreement involves certain environmental issues covered by statute, such as the Clean Air and Clean Water Acts, Safe Drinking Water Act, and CERCLA, an existing federal statute may provide the requisite authority for tribal-state government agreement.⁴⁸

In order to ensure that the tribal-state government agreement is legally enforceable, tribal governments must verify that these threshold requirements are met. In addition, before entering into a cooperative agreement with a state government, a state should recognize the sovereign authority of a tribe so that it is clear from the onset that tribes will not be subject to broad state jurisdiction as a result of the agreement.⁴⁹

³⁹ See *id.* at 934; Mack & Gwyn, *supra* note **, at 1305.

⁴⁰ Mack & Gwyn, *supra* note **, at 1305.

⁴¹ *Id.*

⁴² Mack & Gwyn, *supra* note **, at 1311-12 (Generally, tribal governments enjoy immunity from lawsuits similar to other governmental bodies, but tribal sovereign immunity can be waived by the tribal government or abolished by clear Congressional action. Although federal law requires tribes to secure secretarial or Congressional consent before waiving sovereign immunity in matters that affect tribal trust property, the U.S. Attorney General has held that this federal law does not apply to tribal contracts with the government. 25 U.S.C. § 81; 18 Op. Att’y Gen’l 181, 183 (1985)).

⁴³ *Id.* at 1314 (state governments can enact enabling statutes that empower particular agencies or government officials to form cooperative agreements with tribal governments. Similarly, tribal governments can adopt an enabling statute or receive a grant from the tribe’s governing body).

⁴⁴ *Id.* at 1314-15. {See Memorandum Section II}

⁴⁵ *Id.* at 1315

⁴⁶ *Id.* at 1314 (model tribal-state agreements are available from the Institute of Tribal Environmental Professionals at <http://www.zendergroup.org/docs/moamou.pdf>).

⁴⁷ 25 U.S.C. §81-85; *Id.* at 1315.

⁴⁸ *Id.* at 1319 (Congress amended the Clean Water Act, Clean Air Act, Safe Drinking Water Act, and CERCLA so that tribes are treated as states, further discussed in “Federal Government” section below).

⁴⁹ *Id.* at 1310

However, even a legally enforceable cooperative agreement about climate change response has limitations. The Supreme Court has not yet held that local or state governments can bind their citizens to tribal jurisdiction.⁵⁰ {See Memorandum Section II} In addition, natural resources cooperative agreements often do not provide opportunities for intergovernmental collaboration for all tribes, as these agreements are generally limited to federally recognized tribes.⁵¹ Therefore, intergovernmental agreements exclude tribes who have lost federal recognition and tribes who have yet to receive federal recognition from tribal-state coordination. Despite these limitations, properly drafted cooperative agreements can provide an opportunity for a localized response to climate change mitigation and adaptation.

Federal Government

Cooperative agreements and federal statutes establish tribal-federal government natural resources co-management in Indian country. Tribal governments can expand upon existing agreements and statutes to facilitate a federal response to climate change that takes into account the disparate impacts climate change will have on tribes. However, tribal governments have additional justifications for increased protection from the impacts of climate change on tribes, particularly the diminishment of natural resources in Indian country. The Supreme Court has held that Native American tribes retain ownership of natural resources on tribal lands.⁵² Although the federal government has ultimate authority over resources on Indian lands held in trust, current federal laws and policies support tribal management of natural resources.⁵³ For example, some federal statutes allow tribes to administer environmental regulatory programs on tribal lands.⁵⁴ Therefore, tribal governments could argue that, as a whole, laws governing tribal resources should allow for broad protection of tribal resources, including those threatened by climate change. In addition, tribes may find support for collaborative federal government response to climate change through tribal treaty rights and the federal trust relationship. Although courts are unlikely to compel the federal government to protect tribes from climate change impacts, the prospect of litigation to uphold tribal treaty rights or enforce the federal trust relationship may cause the federal government to actively collaborate with tribes to address climate change.⁵⁵

Federal, state, and tribal governments have formed agreements for the co-management of natural resources. For example, the Alaska Eskimo Whaling Commission signed cooperative agreements with the National Oceanic and Atmospheric Administration that allows Inupiat and Yup'ik whaling captains the primary responsibility for the adoption and enforcement of whaling regulations by tribal members.⁵⁶ Similarly, the Confederated Tribes of the Grand Ronde of Oregon signed agreements with the Forest Service and the Bureau of Land Management that

⁵⁰ Rosser, *supra* note **, at 61; See *Nevada v. Hicks*, 533 U.S. 353, 372 (2001).

⁵¹ See Centennial Accord, *supra* note ***.

⁵² See James L. Huffman, *The Federal Role in Water Resource Management*, 17 N.Y.U. ENVTL. L.J. 669 at 676 (2008); *United States v. Shoshone Tribe*, 304 U.S. 111 (1938).

⁵³ Robert T. Anderson et. al., *AMERICAN INDIAN LAW CASES AND COMMENTARY* 590 (Thomson West 2008).

⁵⁴ *Id.* at 594 (discussing the Clean Air Act and Clean Water Act).

⁵⁵ See Jonathan M. Hanna, *NATIVE COMMUNITIES AND CLIMATE CHANGE: PROTECTING TRIBAL RESOURCES AS PART OF NATIONAL CLIMATE POLICY* 28 (Natural Resources Law Center at the University of Colorado Law School 2007), http://www.colorado.edu/Law/centers/nrlc/publications/ClimateChangeReport-FINAL%20_9.16.07_.pdf.

⁵⁶ Honorable Eric Smith, *Some Thoughts on Comanagement* 4 *Hastings W. -NW. J. ENVTL. L. & POL'Y* 1, 2 (1997).

allows the tribe to draft resource management plans and participate in the implementation of federal agency programs.⁵⁷

Tribal and federal governments have also begun to cooperate to address climate change, particularly mitigation of current contributions to climate change. For example, the federal government, through the Bureau of Indian Affairs, provided funding for two Federal Energy Regulatory Commission projects that will test wind power generation on the Passamaquoddy reservation in Maine.⁵⁸ Similarly, the Olympic Coast National Marine Sanctuary, which is managed by tribes, the state of Washington, and National Oceanic and Atmospheric Administration, established enhanced cooperation between tribal governments and federal agencies in order to protect against the impacts of projected rising sea levels as a result of climate change.⁵⁹

Federal statutes also provide for protection of natural resources, especially water and air, by tribal governments. Congress recognizes tribes-as-states (TAS) status in multiple environmental laws enforced by the Environmental Protection Agency.⁶⁰ TAS allows the EPA to treat tribal governments as states when tribes can perform regulatory and enforcement authority comparable to that of state governments.⁶¹ Although TAS status allows tribal governments to protect tribal natural resources, the regulatory authority provided to tribes with TAS status is generally limited to the protection of air and water quality from threats that are “very close, very big, very nasty.”⁶² The current federal statutes that allow EPA recognition of TAS are the Clean Water Act, Clean Air Act, Safe Drinking Water Act, and the Comprehensive Environmental Response, Compensation, and Liability Act.⁶³ While these environmental statutes allow tribes to assert jurisdiction over non-Indians in Indian country, they do not allow tribes to regulate distant activities that may directly damage natural resources on tribal lands.⁶⁴ However, tribal governments could seek to expand TAS to allow tribes to protect impacts on more tribal natural resources from more distant sources.⁶⁵

Protection of Native American treaty rights precludes federal action that adversely affects treaty rights, such as construction or competing uses that interfere with treaty fishing rights.⁶⁶ Tribes in the Pacific Northwest utilized court rulings that upheld traditional treaty rights to facilitate negotiations with state agencies that led to tribal-state natural resources co-management

⁵⁷ Royster & Blumm, *supra* note **, at 197 (citing Courtney Thompson, *Tribes Taking On New Role in Managing Public Lands* THE OREGONIAN A1 (June 15, 1999); See Memorandum of Understanding between the Confederated Tribes of the Grande Ronde Community of Oregon and the USDA Forest Service-Wilamette National Forest for Coordination of Natural and Heritage Resources Management Issues Art. III § C (Jan. 27, 2000), available at <http://www.fs.fed.us/r6/willamette/manage/opalcreek/reference/otherdocuments/tribalmoudocument.pdf>.

⁵⁸ Institute for Tribal Environmental Professionals, *Tribes & Climate Change: Northeast Region*, <http://www4.nau.edu/tribalclimatechange/tribes/northeast.asp>.

⁵⁹ Grossman, *supra* note 6, at 16.

⁶⁰ Grossman, *supra* note 6, at 14; Judith V. Royster & Michael C. Blumm, NATIVE AMERICAN NATURAL RESOURCES LAW: CASES AND MATERIALS 228 (Carolina Academic Press 2002).

⁶¹ Grossman, *supra* note 6, at 14

⁶² *Id.* at

⁶³ Mack & Gwyn, *supra* note **, at 1319.

⁶⁴ Anderson, *supra* note ***, at 606 (citing Final Rule, 56 Fed. Reg. at 64, 877 (quoting *Montana v. United States*, 450 U.S. 544, 566)).

⁶⁵ *Indigenous Nations' Responses to Climate Change* at 15.

⁶⁶ Anderson, *supra* note ***, at 640 (citing *Muckleshoot Indian Tribe v. Hall*, 698 F. Supp. 1504 (W.D. Wash. 1988); *Northwest Sea Farms v. Army Corporation. of Engineers*, 931 F. Supp. 1515 (W.D. Wash. 1996)). u

schemes.⁶⁷ Similarly, tribal governments could use treaty rights to natural resources as a tool to facilitate increased federal government cooperation in the protection of tribal natural resources reduced by climate change. However, exercising tribal treaty rights to facilitate federal government cooperation with tribes may require costly litigation. Furthermore, courts may find limited legal support for a government duty to act in order to protect tribal treaty rights to natural resources.⁶⁸ Some courts have found that rights to natural resources created by a treaty do not include the right to have that natural resource “protected from man-made despoliation.”⁶⁹ Therefore, treaties do not impose upon a state a duty to refrain from reducing or allowing the reduction of the natural resource. In addition, tribal treaty rights to hunt, fish, and gather resources are place based rights, attached to reservation locations and usual and accustomed areas on public lands. Should climate change result in a further decrease in subsistence plants and animals from these areas, tribes will lose legally protected rights to these resources.⁷⁰ Even if treaty rights to these resources were expanded beyond reservation borders, access to the plants and animals would not be easily accessible to tribes who depend on these resources.⁷¹

The federal government has a unique trust relationship with tribes that stems from federal control of tribal property and establishes enforceable fiduciary duties,⁷² and this may also provide incentive for the federal government to enter into agreements with tribes. The federal trust relationship results from historic obligations to protect tribal lands and self-government.⁷³ This trust relationship can give rise to a fiduciary relationship, which stems from federal control or management of tribal assets created by comprehensive statutes or regulations.⁷⁴ The trust relationship has been compared to a common law trust relationship, with the federal government as the trustee, the tribes as beneficiaries, and natural resources managed by the federal governments as the trust corpus.⁷⁵ Therefore, tribes have utilized the trust relationship to protect tribal natural resources on a local level.⁷⁶ Similarly, tribes may utilize the federal trust relationship to facilitate cooperative tribal-federal government climate change strategies.

Inter-tribal Government Cooperation

Inter-tribal government cooperation can be an effective tool for natural resource management and climate change response. The political sovereignty of federally recognized Native American tribes allows tribes to develop individual models to manage natural resources and confront climate change. Furthermore, tribal governments can aggregate individual tribal experiences to create problem-solving strategies that reflect the unique needs of Native Americans. Such intergovernmental cooperation is not threatened by the bureaucracy or interest

⁶⁷ Grossman, *supra* note 6, at 16 (as a result of the Boldt II decision, which recognized tribal treaty rights to fish on reservation and usual and accustomed lands, tribes obtained leverage to negotiate with state agencies and develop co-management regimes in which tribes had management authority over natural resources).***

⁶⁸ *United States v. Washington* 759 F.2d 1353 at 1355 (9th Cir. 1985).

⁶⁹ *Id.*

⁷⁰ Tulalip Natural Resources Department, *Climate Change Impacts on Tribal Resources*, <http://www.tulalip.nsn.us/pdf.docs/FINAL%20CC%20FLYER.pdf>.

⁷¹ *Id.*

⁷² Royster & Blumm, *supra* note **, at 300 (citing *Cherokee Nation v. Georgia*, 30 U.S. 1, 17 (1831)); See *United States v. Mitchell*, 463 U.S. 206 (1983).

⁷³ *Id.*

⁷⁴ *Id.* (citing *United States v. Mitchell*, 463 U.S. 206 (1983)).

⁷⁵ *Dep't of Int. v. Klamath Water Users Protective Asps'*, 532 U.S. 1, 11 (2001) (citing *U.S. v. Mitchell*, 436 U.S. 206).

⁷⁶ *South Florida Water Management District v. Miccosukee Tribe of Indians*, 541 U.S. 95 (2004).

group resistance that often accompanies agreements with local, state, or the federal government.⁷⁷ More specifically, tribal intergovernmental collaboration can serve as an aggregator of traditional ecological knowledge. Traditional ecological knowledge is an understanding of the environment possessed by tribes and based on their unique, firsthand experiences with the land. Inter-tribal governmental organizations can provide a broad collection of tools, which tribal governments use to develop an effective climate change mitigation and adaptation plan.⁷⁸

Tribal governments often collaborate to manage natural resources common to the tribes. The Great Lakes Indian Fish and Wildlife Commission formed to coordinate inter-tribal communication about management, treaty rights, and litigation related to fish and wildlife in the Great Lakes.⁷⁹ GLIFWC consists of one representative from each tribe and provides support, guidance, and a collective strategy for tribal management and preservation of wildlife resources in the Great Lakes Area.⁸⁰ The Northwest Indian Fisheries Commission developed in response to the *Boldt II* decision, which upheld the rights of tribal governments to manage natural resources with the state both on tribal land and usual and accustomed areas.⁸¹ The NWIFC is composed of representatives of twenty member states and serves as a collective *mechanism* for tribal natural resources management guidance, administration, and political organization.⁸²

Recognizing the distinct impacts of climate change on Native Americans, tribal intergovernmental collaboration has begun to address the reduction of current contributions and adaptation to climate change. Tribal collaboration on climate change occurs in a variety of arenas, from open forum discussions to established international organizations. For example, in December 2006 the Tribal Lands Climate Conference was hosted by the Cocopah Tribe to provide an open forum for tribal leaders to discuss proactive responses to climate change.⁸³

Similarly, international tribal intergovernmental coordination, outside of the established international system of sovereign states, is a means by which tribal governments can establish an effective presence on the international climate change stage.⁸⁴ For example, the United League of Indian Nations, an organization of indigenous governments from the United States, Canada, Australia, and New Zealand, identify a response to the urgent threat of climate change as one of four primary areas of tribal intergovernmental cooperation.⁸⁵ The Treaty of Indigenous Nations commits the signatories to research collaboration on environmental issues “that impact indigenous homelands including baseline studies and socio-economics assessments that consider the cultural, social and sustainable uses of indigenous peoples’ territories and resources.”⁸⁶ The ULIN provides a model for tribal intergovernmental cooperation, which responds to climate change by sharing information, connecting tribal youth, training indigenous groups to respond to

⁷⁷ Grossman, *supra* note 6, at 21.

⁷⁸ (Brody, 1982; Goodman, 1990; Hiss, 1991; Gallagher, 1993; Basso, 1996; Bordewich, 1996)

⁷⁹ Constitution of the Great Lakes Indian Fish and Wildlife Commission, http://www.glifwc.org/about/glifwc_constitution.html.

⁸⁰ *Id.* at art. II, § B.

⁸¹ *U.S. v. Washington*, 384 F. Supp. 312, 341 (W.D. Wash. 1974); Northwest Indian Fisheries Commission, *About Us*, <http://www.nwifc.org/about-us/>.

⁸² Northwest Indian Fisheries Commission, *About Us*, <http://www.nwifc.org/about-us/>.

⁸³ Terra Daily, *More Than 50 Tribes Convene on Global Warming Impacts*, (December 6, 2006), http://www.terradaily.com/reports/More_Than_50_Tribes_Convene_on_Global_Warming_Impacts_999.html.

⁸⁴ Grossman, *supra* note 6, at 20-1

⁸⁵ Grossman, *supra* note 6, at 5, 7.

⁸⁶ United League of Indigenous Nations Treaty 2, Aug. 1, 2007, available at <http://www.indigenousnations.treaty.org/UnitedLeagueTreatyAdopted.pdf>.

impacts of climate change, developing mechanisms to ensure access to necessary food, water, and power.⁸⁷

Tribal governments can use inter-tribal collaboration as a means to address climate change impacts that uniquely impact tribes. Longstanding inter-tribal resources management collaboration and developing climate change associations serve as a model for a collaborative response to climate change. Not only do inter-tribal partnerships provide a response to climate change more tailored to protect tribal natural resources, homelands, and communities, but such collaboration also provides a strengthened, united alliance to influence the response to climate change taken by local, state, federal, and international governments.⁸⁸

International Bodies

Generally, tribes occupy a non-state status as Observers in international forums and negotiations. The status of tribes in international negotiations creates limitations on the impact tribes have on international climate change negotiations and agreements. Indigenous nations have been granted heightened participant status in certain international forums and negotiations, including the United Nations Permanent Forum on Indigenous Issues, United Nations Convention on Biological Diversity, and the Treaty on Persistent Organic Pollutants. However, tribal governments have not been granted participant status equivalent to nation-states in a United Nations forum, particularly not in the United Nations Framework Convention on Climate Change.

The Permanent Forum on Indigenous Issues is the only international body of the United Nations with indigenous individuals as members and the “highest level body in which indigenous leaders can participate without NGO credentials.”⁸⁹ The Permanent Forum was established, by a United Nations Economic and Social Council resolution in 2000, to act as an advisory body to the Council.⁹⁰ The resolution requires the Permanent Forum to discuss economic and social development, culture, the environment, education, health and human rights issues that pertain to indigenous populations.⁹¹ Furthermore, through the Council, the Permanent Forum provides recommendations on indigenous issues to other bodies of the United Nations.⁹²

Beyond the Permanent Forum, tribes have also been granted heightened status in international negotiations. The Convention on Biological Diversity and the Stockholm Convention on Persistent Organic Pollutants involved direct input from indigenous nations. During negotiations of the Convention on Biological Diversity, the Secretariat established an Advisory Group/Steering Committee that represents the interests of indigenous populations in order to compile a report of traditional knowledge relevant to biological diversity.⁹³ In addition,

⁸⁷ Grossman, *supra* note 6, at 9.

⁸⁸ See Grossman, *supra* note 6, at 20.

⁸⁹ Indian Law Resources Center, *UN and OAS: How tribes can Ensure their Human Rights are Recognized and Protected*, http://www.indianlaw.org/enews/april08/un_oas_opps (last visited August 31, 2009); See also United Nations Permanent Forum on Indigenous Issues, *About Us/Mandate*, http://www.un.org/esa/socdev/unpfii/en/about_us.html (last visited August 31, 2009).

⁹⁰ Establishment of a Permanent Forum on Indigenous Issues, ECONOMIC AND SOCIAL COUNCIL RES. 2000/22 45th Plenary Sess. (July 28, 2000), available at <http://www.un.org/documents/ecosoc/dec/2000/edec2000-inf2-add2.pdf>.

⁹¹ *Id.*; See United Nations Permanent Forum on Indigenous Issues, *Structure within ECOSOC*, <http://www.un.org/esa/socdev/unpfii/en/structure.html>; See United Nations Permanent Forum on Indigenous Issues, *About Us/Mandate* http://www.un.org/esa/socdev/unpfii/en/about_us.html.

⁹² See United Nations Permanent Forum on Indigenous Issues, *About Us/Mandate* http://www.un.org/esa/socdev/unpfii/en/about_us.html.

⁹³ Convention on Biological Diversity, *General Information*, <http://www.cbd.int/traditional/general.shtml>.

indigenous individuals directly participated in negotiations of the Convention on Biological Diversity as members of informal contact and friends of the chair groups.⁹⁴ Furthermore, the Convention on Biological Diversity provided financial support to enable indigenous groups to effectively participate in Convention meetings.⁹⁵ Similarly, the Convention on Persistent Organic Pollutants involved direct participation by the Inuit Circumpolar Conference and fellow organizations representing Arctic indigenous peoples.⁹⁶ {See Memorandum Section III}

The primary international climate change forum is the United Nations Framework Convention on Climate change. Indigenous groups have not participated in international climate change negotiations as recognized, sovereign governments.⁹⁷ Rather, indigenous people participate as Observers in the UNFCCC. In order to gain Observer status in UN negotiations, indigenous people must be nominated by an NGO which is accredited by the UNFCCC.⁹⁸ Indigenous peoples, represented by nongovernmental organizations, have participated in the UNFCCC since 1998.⁹⁹ Similarly, indigenous peoples' organizations (IPO's) have participated in climate change negotiations with the UNFCCC since 2001, but IPOs do not actively participate in Conference of the Parties, the decision making body of the UNFCCC.¹⁰⁰

Despite requests by indigenous nations and nongovernmental organizations for special status in the UNFCCC sessions, indigenous groups do not have special status in the chief international climate change forum.¹⁰¹ Yet indigenous groups have both public and legal support for heightened participant status in the UNFCCC. UN General Assembly President Miguel d'Escoto Brockmann urged the participation of indigenous people at every stage of the UN Framework Convention on Climate Change.¹⁰² In addition, tribes have cited international laws that support heightened participant status in international negotiations, including the UN Convention on Elimination of All Forms of Racial Discrimination. However, should the United Nations not allow participant status to tribes for climate change negotiations, tribes can use the Conventions on Biological Diversity and Persistent Organic Pollutants as models to seek a lesser degree of participation in international climate change negotiations. With the assistance of inter-tribal organizations and NGOs that support heightened participation by indigenous peoples, tribal governments may be able to secure more direct channels to participation in the UNFCCC.

Although the impacts of climate change disparately impact Native American tribes, there are countless channels for a cooperative response to climate change between tribal, local, state, federal, and international governments. Expanding on the success of prior collaboration with

⁹⁴ Convention on Biological Diversity, *General Information*, <http://www.cbd.int/traditional/general.shtml> (last viewed August 31, 2009).

⁹⁵ Convention on Biological Diversity, *General Information*, <http://www.cbd.int/traditional/general.shtml> (last viewed August 31, 2009).

⁹⁶ Laura Meszaros, *The Arctic and International Agreements* GRID-ARENDA POLAR ENVIRONMENT TIMES (Oct. 2003) Ahttp://www.grida.no/_res/site/File/publications/environment-times/poltimesp10.pdf (last visited Sept. 8, 2009) (the ICC was formed in 1977 as an institution that represents Inuits living in Alaska, Canada, Greenland, and the Chukotka of Russia.).

⁹⁷ Grossman, *supra* note 6, at 19-20.

⁹⁸ Email from Grace T. Balawag, Tebtebba, (August 25, 2009 at 6:50 MST) (on file with author).

⁹⁹ Grossman, *supra* note 6, at 19.

¹⁰⁰ Mirjam Macchi, INDIGENOUS AND TRADITIONAL PEOPLES AND CLIMATE CHANGE ISSUES PAPER (International Union for Conservation of Nature 2009), http://cmsdata.iucn.org/downloads/indigenous_peoples_climate_change.pdf.

¹⁰¹ *Id.*

¹⁰² Stephen Leahy, *ENVIRONMENT: Indigenous People Demand Greater Role in Climate Debate* INTER PRESS SERVICE NEWS AGENCY (Apr. 20, 2009), <http://ipsnews.net/news.asp?idnews=46561>.

each level of government, tribal governments can start to develop a response to climate change that effectively addresses the impacts of climate change on tribal natural resources and survival. Although no one intergovernmental cooperative arrangement will alleviate the injuries to tribal natural resources caused by climate change, tribal governments can develop intergovernmental relationships to develop the most comprehensive climate change mitigation and adaptation strategy.