

Tribal Climate Change Webinar Series

June-July 2013

Hosted by
Institute for Tribal Environmental Professionals
Northern Arizona University
<http://www4.nau.edu/itep/>



Tribal Climate Change Webinar Series

- June 13: Climate Change—What it is and why it's important
- June 18: Indicators of Climate Change
- June 25: Climate Change Impacts on Tribes
- July 12: Climate Change Outreach and Education

For more information about the webinars:

http://www4.nau.edu/itep/climatechange/tcc_webinars.asp

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For more information about ITEP, please visit our website:

<http://www4.nau.edu/itep/>

Impacts of Climate Change on Tribal, Indigenous, and Native Lands and Resources

Tribal Climate Change Webinar, June 25, 2013

- T.M. Bull Bennett, Kiksapa Consulting
- Nancy Maynard, National Aeronautics and Space Administration
- Patricia Cochran, Alaska Native Science Commission
- Kathy Lynn, Pacific Northwest Tribal Climate Change Project, University of Oregon
- Sue Wotkyns, Institute for Tribal Environmental Professionals, Northern Arizona University

Acknowledgements

- Indigenous communities across the western hemisphere
- Tribal Input Technical Team
- 2013 National Climate Assessment Chapter Author Team

Convening Lead Authors

- T.M. Bull Bennett, Kiksapa Consulting
- Nancy G. Maynard, National Aeronautics and Space Administration

Lead Authors

- Patricia Cochran, Alaska Native Science Commission
- Bob Gough, Intertribal Council On Utility Policy
- Kathy Lynn, University of Oregon
- Garrit Voggeser, National Wildlife Federation
- Susan Wotkyns, Northern Arizona University

Presentation overview

- USGCRP and the 2013 National Climate Assessment
- *Climatic Change* Special Issue
- Background about tribes
- Traditional Knowledge (TK)
- Forests, fires, and food
- Water
- Changes in the Arctic
- Relocation
- How to get involved

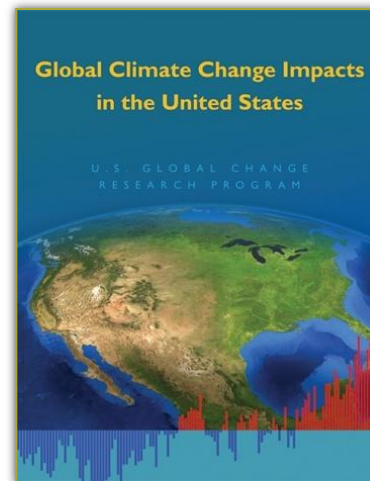
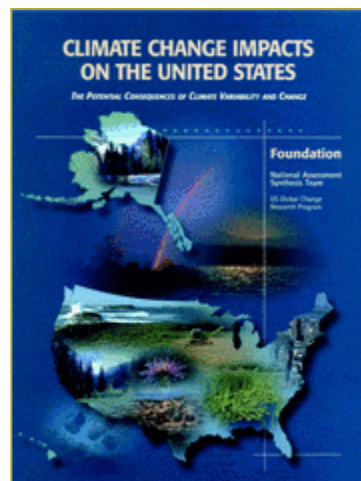
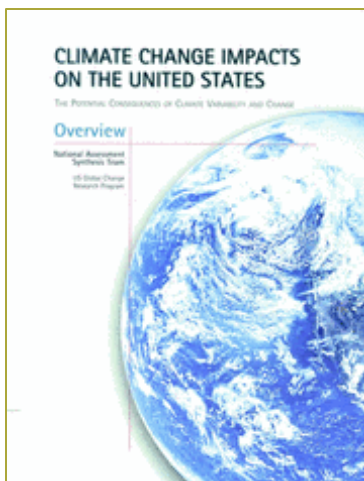


US Global Change Research Program

GCRA Mandate:

“To provide for development and coordination of a comprehensive and integrated United States **Research Program which will assist the Nation and the world to understand, assess, predict, and respond** to human-induced and natural processes of global change.”

Produces National Climate Assessment reports every 4 years



Outline for the 2013 NCA Report

- Introduction/Letter to the American People
- Executive Summary: Report Findings
- Introduction (approach to sustained scientific assessment, including scenarios, indicators, engagement, etc.)
- The scientific basis for climate change
- Sectors and sectoral cross-cuts
- Regions and biogeographical cross-cuts
- Decision support, mitigation and adaptation
- Agenda for climate change science
- The NCA sustained assessment process
- Appendices
- Commonly Asked Questions
- Expanded Climate Science Info

2013 NCA chapter on tribes

Ch. 12: Impacts of Climate Change on Tribal, Indigenous, and Native Lands and Resources

- 5 Key Messages / Findings
- Cross Sectoral in Nature
- Described the base of evidence used
- Identified New Information and Remaining Uncertainties
- Assessment of Confidence Based on the Evidence

The draft 2013 National Climate Assessment report is available at:

<http://ncadac.globalchange.gov/>

Final version will be available in early 2014

Climatic Change

Special issue : Climate Change and Indigenous Peoples in the United States: Impacts, Experiences and Actions

- 13 articles
- Online issue available soon! Some individual articles already available
- <http://link.springer.com/journal/10584>



Background about tribes

- 566 federally recognized tribes; other indigenous groups
- 5.2 million American Indians and Alaska Natives
- 56 million acres in lower 48; in AK, 44 million acres held by Alaska Native Corporations
- Reservations – most are small, often remote or isolated
- Adverse socioeconomic conditions – extreme poverty, substandard housing, health/community services, food, infrastructure, transportation, education, employment, plus high cost of fuels
- Close relationships with land and environment



Traditional Knowledge (TK)

- “...cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed through generations by cultural transmission, about the relationships of living things (including humans) with one another and with their environment”
- All that is known about the world about us and how to apply that knowledge in relation to those beings that share the world
- Important information source for understanding climate change and developing natural resource management and climate adaptation strategies



Traditional Knowledge (TK)

- Language, ceremonies, cultures, practices and food sources evolved in places. Wisdom and knowledge of native people reside in songs, dances, art, language, music
- People, plants and animals are relatives, not resources
- Method of recording historic weather and climate variability and impacts
- TK can inform indigenous and non-indigenous understanding of climate impacts and adaptation strategies, but there must be clear protection of TK
- TK is threatened by loss of elders (knowledge keepers), language, culture and cultural identities, ceremonies, sense of place, all our relations



Forests, Fires, and Food

- Impacts on forests and ecosystems
 - effects on culturally important plants and animals
 - effects on tribal sovereignty, culture, and economies
- Species loss and shifts in ranges
- Loss of biodiversity
- Increase in invasive species



Forests, Fires, and Food

- Bark beetle damage to forests
- Warmer, drier, longer fire seasons
- Increased fuel load
- Increased risk of wildfires
- Increased frequency/intensity of large wildfires
- Wildfire → threat to homes, safety, economies, culturally important species, medicinal plants, traditional foods, cultural sites



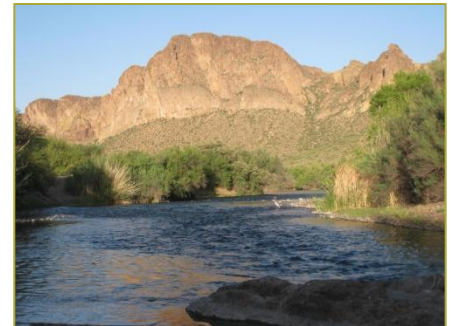
Forests, Fires, and Food

- Dependence on local plant and animal species for food (“traditional foods”), medicines, ceremonies, community, economic health
 - ex: seals, fish, shellfish, bison, bear, caribou, walrus, moose, deer, wild rice, cottonwood trees, and more...
 - CC affects availability, tribal access to, and health of these resources → threatens tribal customs, cultures, identities



Water

- Decreases in water quantity and quality, caused by variety of factors including climate change → effects on drinking water supplies, food, cultures, ceremonies, and traditional ways of life
- Vulnerabilities and adaptive capacities exacerbated by land-use policies, political marginalization, legal issues associated w/tribal water rights, poor socioeconomic conditions



Water

- Colorado Plateau
 - drought, long-term decreases in snowfall
 - decline in surface water features
 - sand dune mobilization
 - impacts on agriculture and livestock
 - loss of springs and medicinal and culturally important plants
 - impacts on drinking water supply



Water

- Northwest – tribal treaty rights to traditional territories and resources affected by reduced rainfall/snowpack, melting glaciers, rising temperatures, shifts in ocean currents
- Hawaii – shorter rainy season, increasing intensity of storms and flooding, rainfall pattern becoming unpredictable
- Alaska – permafrost thaw → damage to water infrastructure → water quality, quantity, availability



Changes in the Arctic

- Decreasing sea ice thickness and extent
- More extreme weather and severe storms
- Changes in seasonal ice melt/freeze of lakes and rivers, water temperature, flooding patterns, erosion, and snowfall timing and type
- Changes in species ranges
- Changes in feeding, resting, breeding, and denning habitats for arctic animals important as subsistence foods (polar bears, walrus, seals)



Source of photos: P. Cochran

Changes in the Arctic

- Injury from extreme/unpredictable weather, thinning sea ice
- Changing snow and ice conditions for predictable/safe hunting, fishing, herding
- Malnutrition/food insecurity from lack of access to subsistence foods
- Contamination of food/water
 - Increases in infectious diseases
- Loss of culture and traditional livelihood
→ increasing economic, mental and social problems



Source: of photos P. Cochran

Changes in the Arctic

- Permafrost thaw
- Erosion, flooding
- Destruction of infrastructure, homes, buildings, roads
- > 30 Alaska Native villages need to be relocated
- Public health issues due to damaged infrastructure
 - Loss of clean water, saltwater intrusion, sewage contamination
- Food insecurity – thawing of ice cellars used for subsistence food storage – increasing dependence on “store-bought” food



Source: P. Cochran

Relocation

- CC impacts forcing relocation of entire tribal communities in AK, Louisiana, Pacific islands, other coastal locations
- Coastal AK Native Villages (example: Newtok)
 - Decreased sea ice, thawing permafrost, increased storm intensity → erosion. Loss of basic necessities and infrastructure
 - Relocation impeded by existing federal and state statutes and regulations, absence of authority and governance structure to facilitate relocation



Newtok, AK. Source: AK Dept. of Environmental Conservation



Kivalina, AK. Source: State of Alaska



Shishmaref, AK. Source: Shishmaref Erosion and Relocation Commission

Relocation

- Coastal Louisiana tribal communities
 - Sea level rise, saltwater intrusion, erosion and land loss
- Pacific Island communities
 - Sea level rise and storm surges



Source: NOAA

Impediments to relocation:

- US lacks institutional framework to relocate entire communities
- Government agencies lack legal authority and technical, organizational, and financial capacity to implement relocation processes

What Can You Do?

- Learn about climate change
- Sign up for ITEP's Tribal Climate Change Newsletter
- Get involved with tribal climate change networks and initiatives
- Educate your tribal leadership and community about climate change
- Work with your tribe to reduce greenhouse gases in the atmosphere (mitigation) and to prepare/plan/adapt to climate change impacts (adaptation)
- Get involved with the National Climate Assessment, read the reports, provide input to future reports
- Contact USGCRP, Regional Climate Science Centers, Landscape Conservation Cooperatives

Questions?

Please type them into the Chat Box

The webinar presentation will be archived at:
http://www4.nau.edu/itep/climatechange/tcc_webinars.asp

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