



The National Climate Assessment: an Update on the Tribal Chapter

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Garrit Voggesser**

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<http://assessment.globalchange.gov>



Convening Lead Authors and Lead Authors: Climate Impacts on Tribal Lands and Resources

Convening Lead Authors:

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Discussion Overview

Assessment Overview

Where have we been?

Where are we now?

Chapter Content: Key Vulnerabilities

Timeline

Get involved!

Questions

Global Change Research Act (1990), Section 106

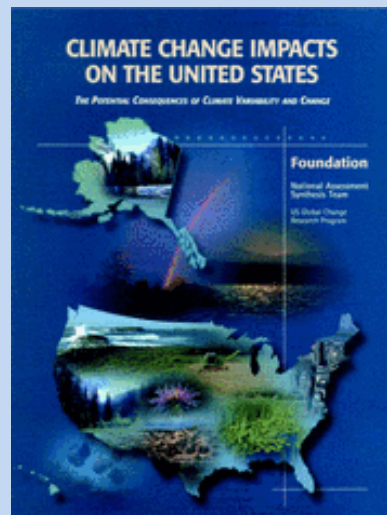
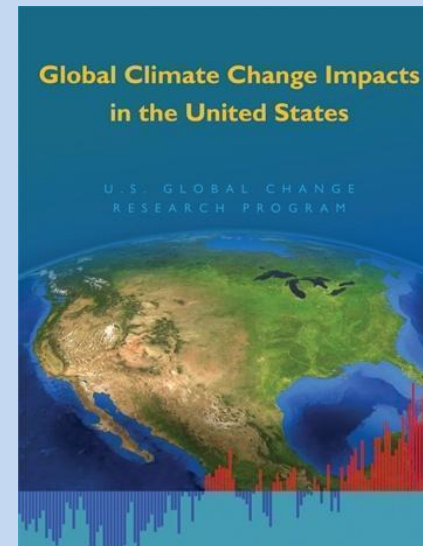
- **...not less frequently than every 4 years**, the Council... shall prepare... an assessment which –
 - integrates, evaluates, and interprets the findings of the Program and discusses the scientific uncertainties associated with such findings;
 - analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and
 - analyzes current trends in global change, both human- induced and natural, and projects major trends for the subsequent 25 to 100 years.

Previous National Climate Assessments

Climate Change Impacts on the United States (2000)



Climate Change Impacts in the United States (2009)



Target date for next NCA:
2013

NCA Goal and Vision

- The overarching **goal** is to *enhance the ability of the United States to anticipate, mitigate and adapt to changes in the global environment.*
- The **vision** is to *advance an inclusive, broad-based, and sustained process for assessing and communicating scientific knowledge of the impacts, risks and vulnerabilities associated with a changing global climate in support of decision-making across the United States.*

Products of the NCA

- Periodic report or reports to Congress
- Dynamic **web-based** data and products
- Regional, sectoral and institutional **adaptation and assessment capacity**
- **Methodologies** for conducting assessments at multiple scales
- **Ongoing national evaluations** of changes in climate trends, impacts and risks
- Process **documentation**
- **Communications and information** products

Outline for 2013 Report: Major Sections

- The scientific basis for climate change
- Sectors and sectoral cross-cuts
- Regions and biogeographical cross-cuts
- Mitigation and adaptation
- Agenda for climate change science
- The NCA long-term process

Sectors

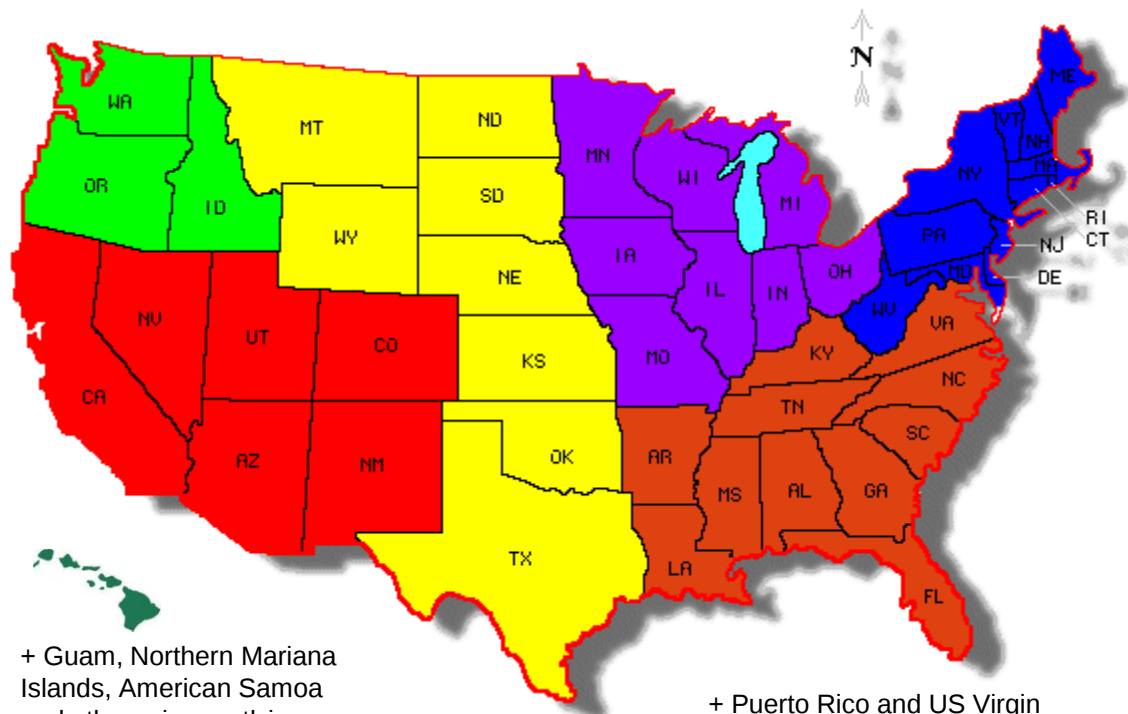
- Water resources
- Energy supply and use
- Transportation
- Agriculture
- Forestry
- Ecosystems and biodiversity
- Human health

Sectoral Cross-Cuts

- Water, energy, and land use
- Urban/infrastructure/vulnerability
- Impacts of climate change on tribal, indigenous, and native lands and resources
- Land use and land cover change
- Rural communities, agriculture, and development
- Impacts on biogeochemical cycles

Where Have we Been?

- Northeast
- Southeast and Caribbean
- Midwest
- Great Plains
- Northwest
- Southwest
- Alaska and Arctic
- Hawaii and Pacific Islands



+ Guam, Northern Mariana Islands, American Samoa and other minor outlying islands

+ Puerto Rico and US Virgin Islands

250+ Technical Inputs from
Indian Country!!!

Where are we now?

- Synthesized content from over 250 technical inputs (March – April, 2012)
- Identified Key Vulnerabilities from Technical Inputs (April, 2012)
- Submitted Chapter Outline to NCA (April, 2012)
- Developing Zero-Order Draft of Chapter (May, 2012)
- Solicit Feedback on Zero-Order Draft (May 21, 2012)
- [Submit First Draft \(June 1, 2012\)](#)

Chapter Content

Introduction

Key Vulnerabilities

- Traditional Knowledge
- Sea Ice and Permafrost
- Community Relocation
- Water
- Forests, Ecosystems and Wildfire
- Food Security, Subsistence and First Foods

Adaptation Strategies

Mitigation: Energy and Housing

*Knowledge Gaps and Research Priorities

*Sustained Assessment

*Conclusions and Key Findings

Key Vulnerability: Traditional Knowledge

- Traditional Knowledge (TK) defined from an indigenous perspective underscoring relationship to all things. Based on thousands of years of interaction with the environment
- Emphasize Language, Culture, Ceremonies, Ways of Life, and Sense of Place as critical elements in TK
- Resources viewed as relatives, we interact with them accordingly.
- Native Peoples observing changes to homelands and once reliable TK is becoming increasingly unreliable with the changes
- TK important for adaptation and, if applied with western science, can provide robust information for sustainability

Key Vulnerability: Arctic Sea Ice

- Arctic is connected to the rest of the world; what happens elsewhere impacts the Arctic and the Native way of life
- Irreversible environmental impacts expected in the Arctic
- Changes in wind velocity, direction and temperature altering Arctic sea ice, thus impacting hunting and fishing.
- Storms and storm surge becoming more destructive
- Thinning sea ice and earlier break up disrupting the Arctic food chain, and altering wildlife community dynamics at multiple scales.
- Observed changes in species community health and increasing extinction probabilities in some species.
- Depleting access to traditional food sources negatively impact Arctic peoples.

Key Vulnerability: Permafrost

- 73% of Alaskan landscape vulnerable to permafrost thaw
- Melting permafrost will significantly alter infrastructure, costing billions in renovations and new construction.
- Melting permafrost will significantly impact carbon and methane management potentially further exacerbating GHG emissions.
- Thawing permafrost is altering wildlife habitat due to landscape wetness
- Thawing permafrost is impacting access to water, water quality and sanitation.
- Adaptions should include infrastructure that can withstand permafrost degradation

Key Vulnerability: Community Relocation

- Storm surge, coastal erosion, permafrost degradation, extreme events and sea level inundation are forcing entire communities to relocate
 - Relocation leads to increased financial, social and cultural impoverishment, risk losing ancestral land / traditional hunting, fishing and burial grounds.
 - Losing access to potable water and sanitation infrastructure
 - Changing environments forcing people to change livelihoods and diets
 - No institutional framework exists for relocation of entire communities due to climate impacts. Climate Refugees.
- Need new governance institutions for climate induced relocation.
- Limitations impeding relocation efforts.

Key Vulnerability: Water

Water—viewed as sacred by many tribes. Particularly valued where it's scarce, such as in the Southwest.

Changes in water availability and quality

•Impacts on:

- drinking water supplies
- culture—loss of plants used for ceremonies
- health—loss of medicinal plants
- agriculture and livestock, traditional foods, salmon

Need for drought and climate monitoring, drought planning

Infrastructure needs

Water rights—linked to vulnerability and adaptive capacity of tribes. Water rights status varies among tribes.

Key Vulnerability: Forests, Ecosystems and Wildfire

- Shifts in species ranges, changes in ecosystems, loss of biodiversity
 - Impacts on culturally important plant and animal species--affecting tribal subsistence, culture and economy
 - Impacts on medicinal plants
- Invasive species, bark beetle damage to forests
- Increased risk of wildfires
 - Impacts on homes, culturally important species and traditional foods, economy, wildlife habitat, cultural sites

Need for a robust federal-tribal relationship, particularly when shifts affect treaty rights and tribal lands and resources held in trust.

Key Vulnerability: Food Security, Subsistence and First Foods

Climate change is threatening traditional foods, which provide sustenance, cultural, religious, economic, medicinal, and community health resource to tribes.

- Changes in species distribution, habitats

- Impacts on:

 - Fish, shellfish, marine mammals

 - Berries

 - Wild Rice

- Impacts on agriculture, livestock

Shift from traditional lifestyle/diet contributes to health problems such as chronic illness and nutrition.

Adaptation Strategies

To maintain their life ways, cultural practices and traditional activities, tribes will need to find ways to adapt to the impacts of climate change.

- Indigenous adaptation strategies (international, northern communities)
- Adaptation planning
 - Tribes are generally behind states and local governments
 - Swinomish Indian Tribal Community
 - Some tribes in process of developing adaptation plans/incorporating climate change into existing plans; majority of tribes haven't begun

Mitigation - Energy and Housing

Energy—tribal energy programs

- Energy efficiency
- Renewable Energy—wind, geothermal and solar

Housing

- Tribal housing is vulnerable to weather extremes and natural disasters
- Critical need for almost half a million safe, healthy, and affordable homes
- Straw bale homes--low energy, high performance buildings, very resistant to high winds, tornadoes, earthquakes and fire, risk for mold and mildew due to water has been reduced
- Need to build tribal capacity to meet housing needs

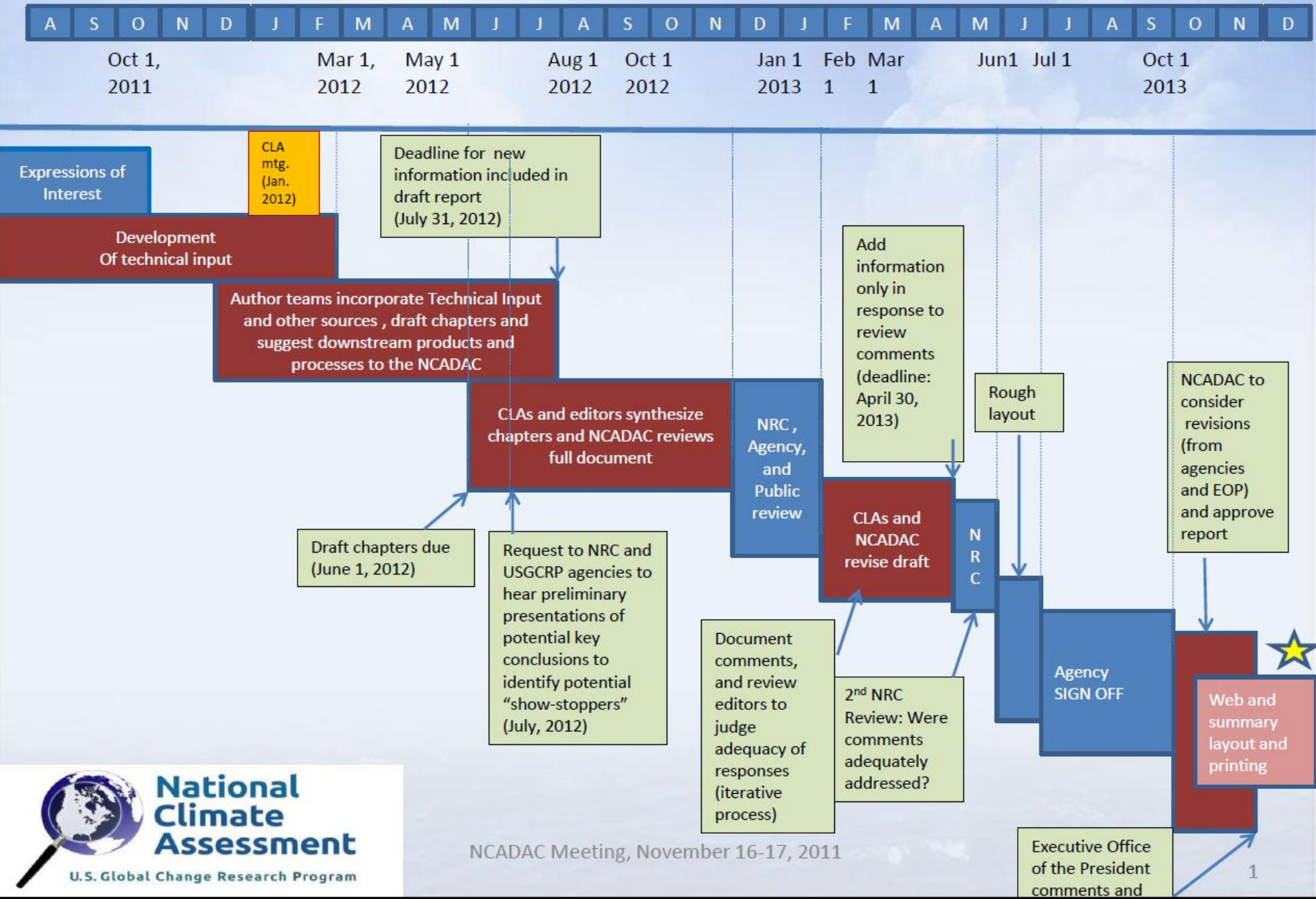
Still Under Development

Knowledge Gaps and Research Priorities

Sustained Assessment

Conclusions and Key Findings

2013 Report Production Timeline



Get Involved!!!!

- Short window for informal review on Zero-Order Draft of the Tribal Chapter
- Go to <http://kiksapa.com/>
- Download 2 documents: Zero-Order Draft and NCA Tribal Chapter Comment Form
- Complete the Comment Form
- Email completed Comment Form to:
ncatribal@gmail.com
- All Comments are Due COB on May 21st !!!
- Please review for content only!!! All grammar, format and syntax will be corrected before submission on June 1.

Go to: Kiksapa.com/home

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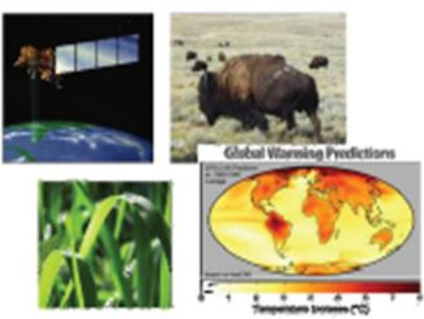


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(Pronounced: "Keek sah pah," – meaning: to council; to advise – Lakota)
We provide assistance in areas including management, environmental science research and monitoring, climate change planning and adaptation, institutional planning, geospatial technologies (GIS, Remote Sensing), science education, and special education services.

Kiksapa leverages its extensive science, technology, planning, and educational experiences along with its broad network of seasoned technical professionals. The result is a consulting team ready to enhance your program effectiveness and enterprise value.

Kiksapa is proud to be recognized by its clients for high ethical standards, superior performance, and quality services. Its creative and innovative solutions are designed to improve your institutions performance today and into the 21st Century.



Global Warming Predictions

Temperature Increase (°C)

[National Climate Assessment - Tribal Chapter Comment Form](#): Please download and use this form to comment on the zero order draft of the National Climate Assessment Tribal Chapter.

[December, 2011 Webinar on Tribal participation in the National Climate Assessment](#)

[Important information about the NASA Tribal Colleges and Universities Programs](#)

We are getting ready for the 2012 NASA Summer Research Experience for Undergraduates starting on June 11, 2012. Please go to the Nasa REU pages to see More.

[NASA Kiksapa Summer REU Website](#)

If you have any questions or comments please contact Kathi Bennett:

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[Where to look for Kiksapa](#)

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Questions and Comments

For more information on the National Climate Assessment, please visit

<http://assessment.globalchange.gov>