



Part 2: Why Conduct a Climate Change Vulnerability Assessment?

Thursday, November 01, 2018

11am-12:15pm (*pacific*)

ITEP's Climate Change Webinar Series

2.0 Advanced Topics in Adaptation



Three Webinars-

- | | |
|-------------------|--|
| July 26 | Part 1: Why Conduct a Climate Change Vulnerability Assessment?
archived link- http://www7.nau.edu/itep/main/tcc/Training/Webinars_2018 |
| November 1 | Part 2: Why Conduct a Climate Change Vulnerability Assessment? |
| January | Tribal Climate Adaptation Planning |

Participants will gain-

- ❖ Better understanding of why and how to act now to adapt to climate change
- ❖ An appreciation for the role of vulnerability assessments in the adaptation process
- ❖ Increased knowledge of how to enhance local resilience and overcome modern challenges related to climate change

Today's Panelists



Gerald Wagner, Director of the Blackfeet Environmental Office. Led Blackfeet Nation's first ever climate adaptation planning initiative and recently received the Association of Fish and Wildlife Agencies Climate Leadership Award for Natural Resources.



Anna Palmer, MSES, Research Faculty, Earth & Ecosystem Science- Desert Research Institute. Conducted the first large scale Vulnerability Assessment to support Native American communities influenced by drought and climate change in Western North America for the Native Waters on Arid Lands project.



Derek Kauneckis, PhD., Associate Professor, Voinovich School of Leadership and Public Affairs- Ohio University. Research in institutional analysis, public policy, resilience theory and collaborative governance. Principal Investigator for the Native Waters on Arid Lands Project.

Today's information and training session will provide an in-depth look into vulnerability concepts.

Hands On Vulnerability Assessment Training Workshop

Native Waters on Arid Lands Tribal Summit 2018

- Took place at the Tribal Summit- Reno NV October 17-18, 2018
- Facilitators worked with participants to identify key factors contributing to vulnerability and organized them into a VA framework.

- Could bring a focused training session like this to you!



Sponsoring Agencies



Partnering Institutions

Part 1 Webinar Reflection and Next Steps



Comments from Part 1

1. Tribal representation was missing.
2. More specific examples of Vulnerability Assessments.
3. Technical training and tutorials for using climate data would be helpful.

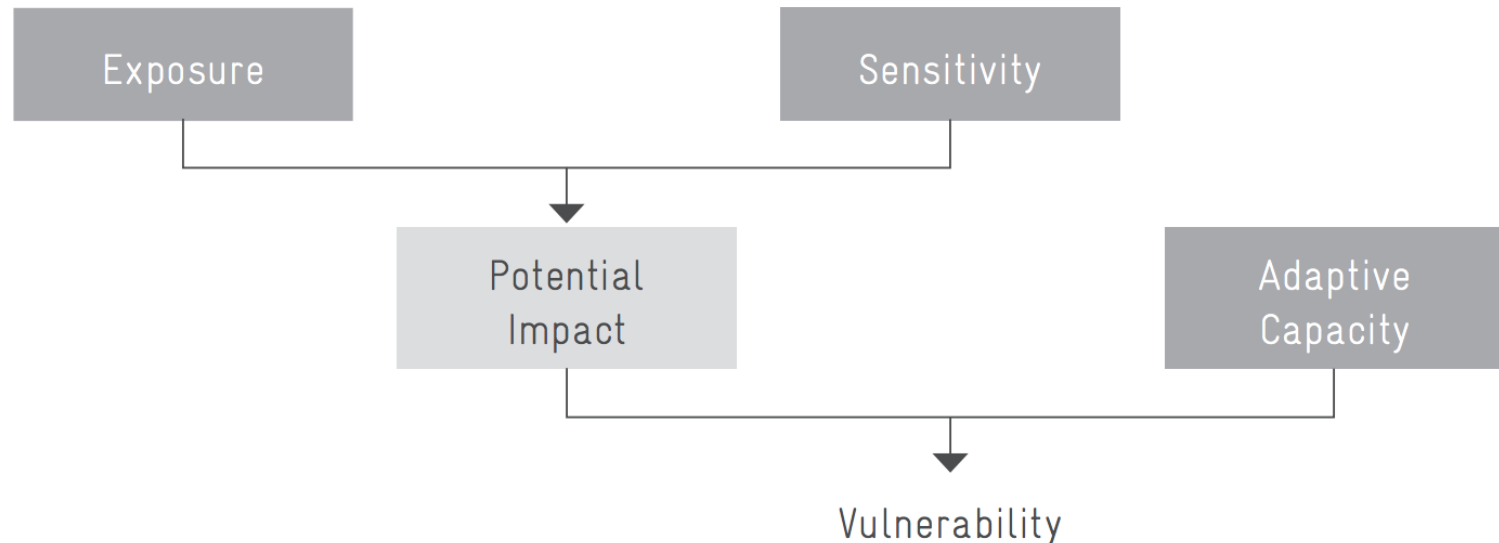
Today's Webinar Will

- ✦ Highlight two examples of effective vulnerability assessments.
- ✦ Walk through climate adaptation and planning resources.
- ✦ Discuss successes, challenges and barriers to implementation of the Blackfeet Climate Adaptation Plan.

Vulnerability Review from Part 1



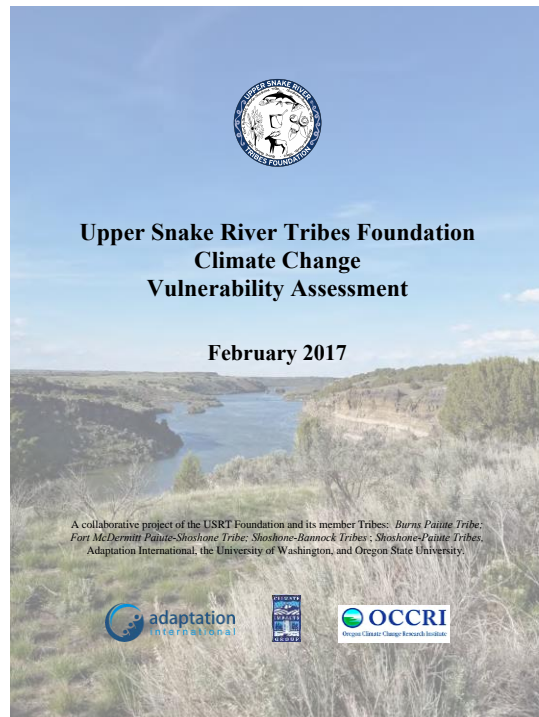
- ✦ A tool for synthesizing information on biophysical conditions, community assets, social characteristics and other locally important factors
- ✦ A framework and iterative process for examining vulnerabilities and evaluating potential interventions
- ✦ Fundamental support for other planning efforts.



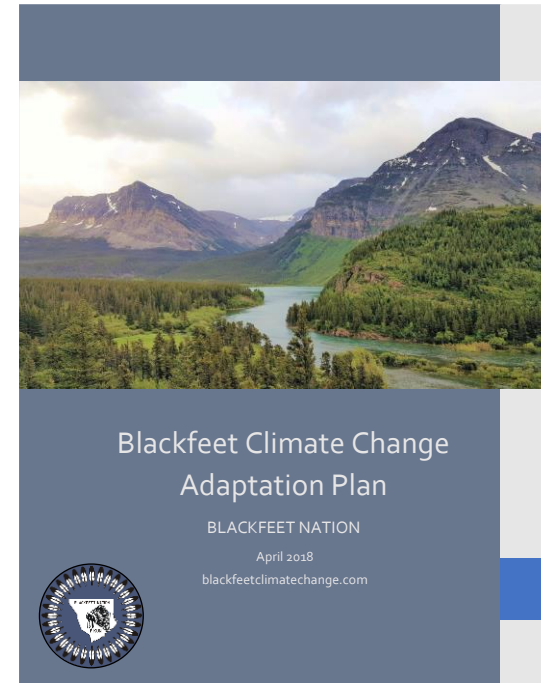
Examples of Plans Effectively Implemented by Tribes



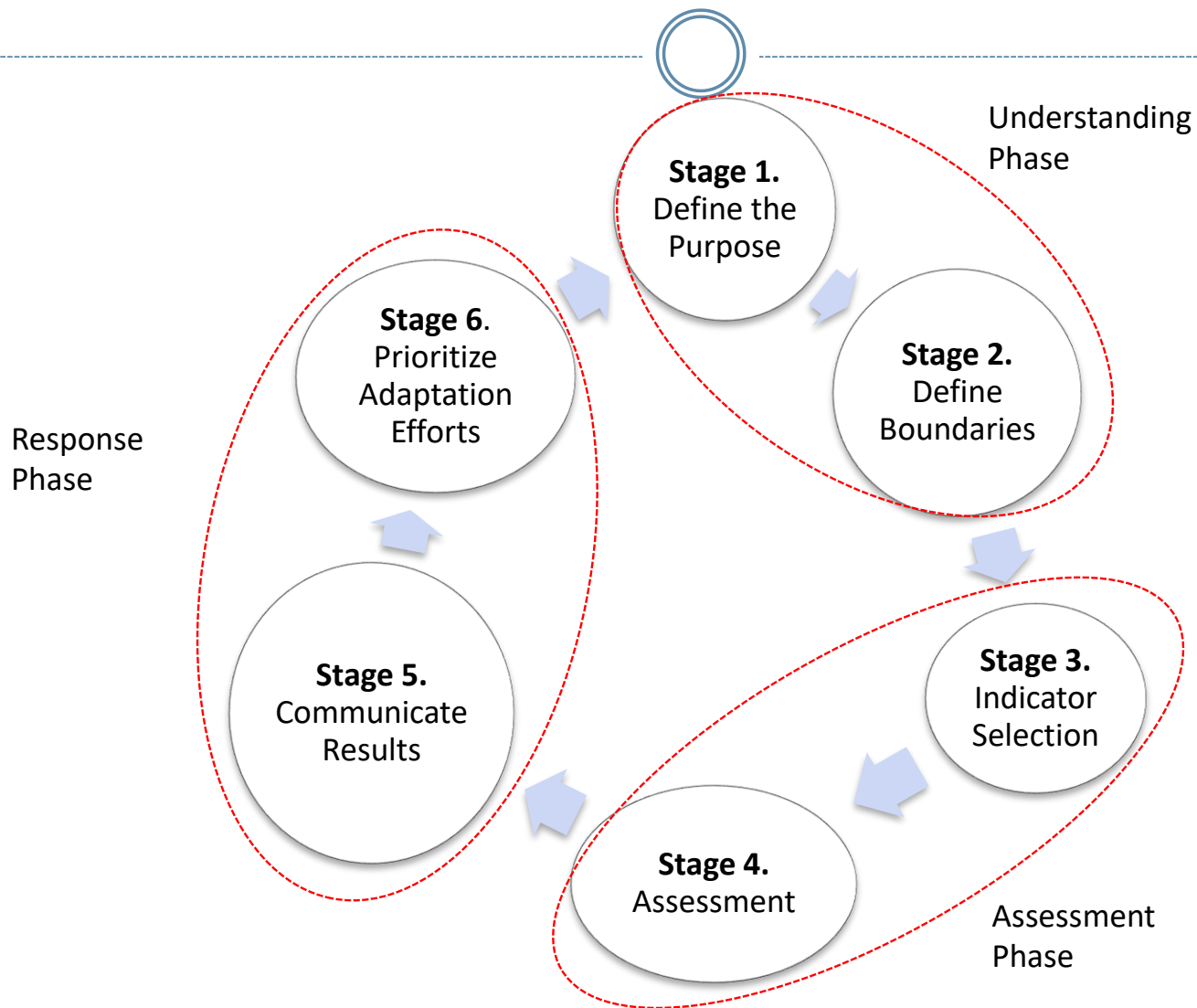
Upper Snake River Tribes Vulnerability Assessment



Blackfeet Climate Adaptation Plan



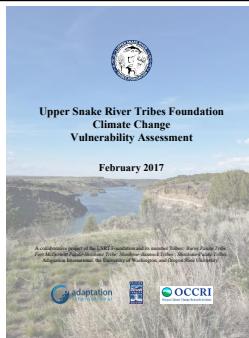
Vulnerability Assessment Stages



Stage 1. Define the Purpose

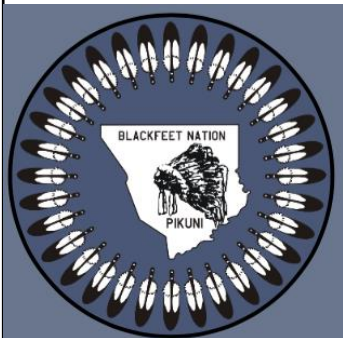
Steps – Formulate **questions** to be answered by the assessment

What do we want to know and why?



Upper Snake River Tribes

- How will climate change effect species, habitats, and resources that are important and valuable to USRT member tribes?






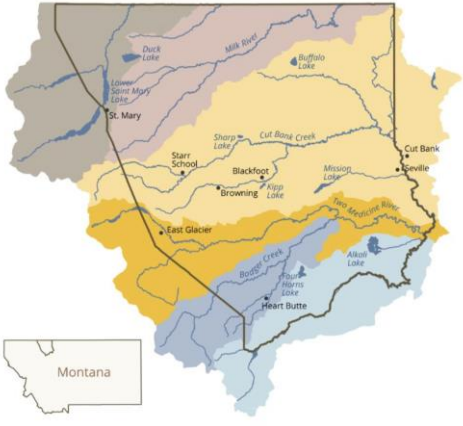
Blackfeet Nation

- What are the impacts of climate change on human health and natural resources?
- How can we integrate climate change into current and future government planning efforts?

Stage 2. Set Boundaries


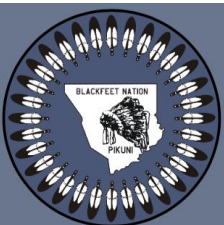
Step 1. Set the Boundary

Step 2. Define General Approach

	Boundary	General Approach
 <p>Upper Snake River Tribes</p>	 <p>Upper Snake River Watershed</p> <ul style="list-style-type: none"> - Burns Paiute Tribe - Fort-McDermitt Shoshone Tribe - Shoshone-Bannock Tribes of the Fort Hall Reservation - Shoshone-Paiute Tribes of the Duck Valley Reservation 	<p>Bottom-Up</p> <p>Integrated Assessment</p> <p>Natural Resources</p>
 <p>Blackfeet Nation</p>	 <p>Sector Specific</p>	<p>Bottom-Up</p> <p>Integrated Assessment</p> <p>Comprehensive</p>

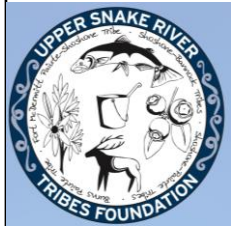
Stage 3&4. Indicator Selection

Assessment Phase

	Indicators	Data sources
 <p>Upper Snake River Tribes</p>	<p>climate change factors</p> <ul style="list-style-type: none"> -Temperature, -Declining Snowpack, -Precipitation, -Changes in Streamflow, -Changes to hydrology, -Wildfire risk 	<p>Oregon Climate Change Research Institute</p>
 <p>Blackfeet Nation</p>	<p>Social Demographic Sector Specific</p> <ul style="list-style-type: none"> - Agriculture - Human Health - Cultural Resources - Land and Range - Fish - Water - Forestry - Wildlife 	<p>IPCC, National Climatic Assessment, Montana Climate Assessment</p>

Stage 5&6. Communicate and Adapt

Response Phase



Upper Snake
River Tribes

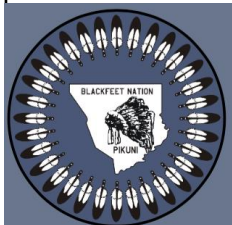
Communicate Results

Common Name	Taxon	2050s RCP4.5	2050s RCP8.5	2080s RCP4.5	2080s RCP 8.5
Columbia Spotted Frog	Amphibian	HV	EV	EV	EV
Bull Trout	Fish	EV	EV	EV	EV
Chinook Salmon	Fish	EV	EV	EV	EV
Redband Trout	Fish	EV	EV	EV	EV
Steelhead	Fish	EV	EV	EV	EV
Golden Eagle	Bird	LV	LV	LV	LV
American Beaver	Mammal	LV	LV	LV	LV
Black-tailed Jackrabbit	Mammal	MV	HV	HV	HV
Elk	Mammal	MV	HV	HV	HV
Mule Deer	Mammal	LV	MV	MV	MV
Big Sagebrush	Plant	MV	HV	HV	HV
Black Cottonwood	Plant	LV	MV	MV	MV
Chokecherry	Plant	LV	LV	LV	LV
Geyer's Willow	Plant	LV	LV	LV	LV
Quaking Aspen	Plant	LV	MV	MV	MV
Redoier Dogwood	Plant	LV	LV	LV	LV

Prioritize Adaptation

Provides information for a natural resources managers.

First step to a climate adaptation plan.



Blackfeet
Nation

RISK	VULNERABILITY	
	HIGHER	LOWER
HIGHER RISK	HIGHER PRIORITY	MEDIUM PRIORITY
LOWER RISK	MEDIUM PRIORITY	LOWER PRIORITY

For each sector the plan describes adaptations.

First step to an integrated resources management plan.

NatureServe CCVI Tool

[Donate](#)[Sign Up!](#)[About Us](#)[Support Us](#)[News & Events](#)[Login](#)

Biodiversity
Science



Conservation
Tools &
Services



NatureServe
Network

[HOME](#) / [CONSERVATION TOOLS](#) / [DATA, MAPS & TOOLS](#)

CONSERVATION TOOLS

NatureServe Learning
Center

Standards & Methods

Data, Maps & Tools

Why NatureServe Data?

Expert Services

Projects

USER MENU

Login

Your Profile

Email Subscriptions

Climate Change Vulnerability Index

Overview

The NatureServe **Climate Change Vulnerability Index** identifies plant and animal species that are particularly vulnerable to the effects of climate change. Using the Index, you apply readily available information about a species' natural history, distribution and landscape circumstances to predict whether it will likely suffer a range contraction and/or population reductions due to climate change. You can use the Index as part of a variety of analyses, including assessing the relative risk of species listed in State Wildlife Action Plans or part of any



The American pika thrives in the cooler temperatures and alpine vegetation of rocky slopes near the tops of mountains. As temperatures rise, the pika is forced to move farther up the mountain —constricting its natural range and crowding into

[Download the Index](#)

[Learn More](#)

Related Publications

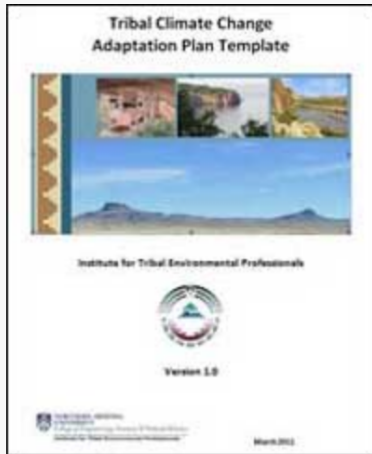
- **Rapid assessment of plant and animal vulnerability to climate change**
- **Vulnerability of At-risk Species to Climate Change in New York**
- **IUCN SSC Guidelines for Assessing Species' Vulnerability to Climate Change. Version 1.0**
- **The Vulnerability of Provincially Rare Species (Species-at-Risk) to Climate Change in the Lake Simcoe Watershed, Ontario, Canada**
- **Using the NatureServe Climate Change Vulnerability Index: A Nevada Case Study**

<http://www.natureserve.org/conservation-tools/climate-change-vulnerability-index>

ITEP's Adaptation Planning Toolkit



Climate Change Resources



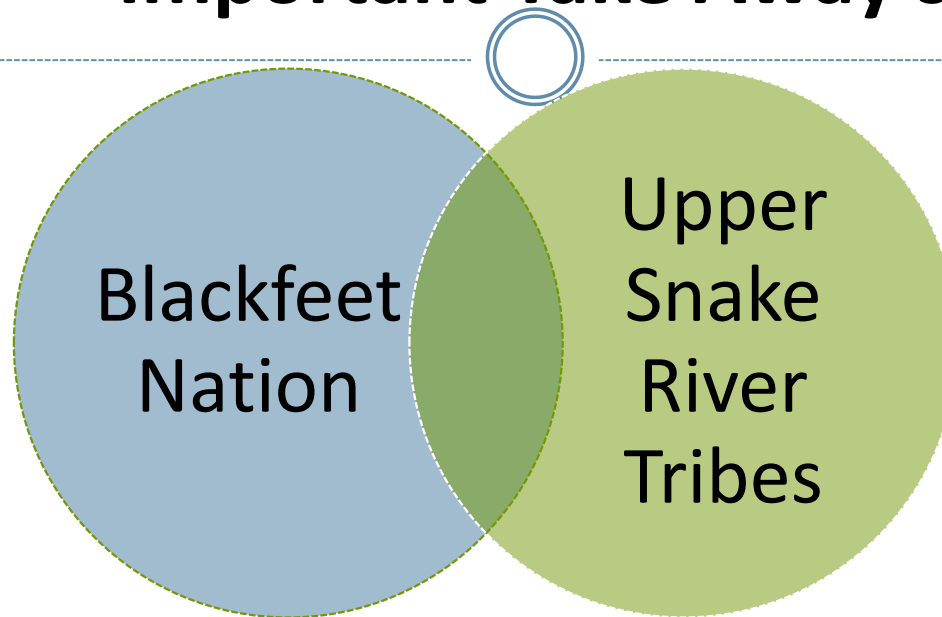
Adaptation Planning Tool Kit

This "toolkit" is a collection of templates and other resources developed by the Institute for Tribal Environmental Professionals (ITEP) to assist tribes in their climate change adaptation planning process. The materials provided are not "one-size-fits-all" solutions, and users are encouraged to modify the materials to better represent the needs and priorities of their own tribe. The primary users of these materials will be the tribe's climate change working group.

1. [Adaptation Planning Background Material \[docx\]](#)
2. [Checklist \[doc\]](#)
3. [Template: Tribal Climate Change Adaptation Planning Guide \[docx\]](#)
4. [Template: Tribal Resolution for a Climate Change Adaptation Initiative \[doc\]](#)
5. [Worksheet: Adaptation Planning \[doc\]](#)
6. [Spreadsheet: Adaptation Planning \[xls\]](#)
7. [Template: Tribal Climate Change Adaptation Plan \[doc\]](#)
8. [Guides and Tools for Climate Change Adaptation Planning \[xlsx\]](#)
9. [Example Tribal Climate Change Assessments and Plans \[xlsx\]](#)

➤ [Toolkit \[zip\]](#)

Important Take Away's



Focus	8 Sectors, Human Health	Natural Resources
Funding	Bureau of Indian Affairs, Great Northern Landscape Conservation Cooperative, National Indian Health Grant	Bureau of Indian Affairs, Environmental Protection Agency tribal adaptation grant
Tools Used	ITEP's Adaptation Toolkit	NatureServes CCVI
Primary Author	Blackfeet Employees in each sector	Adaptation International
Climate Data	Montana Climate Assessment	Localized climate projections
First Step to	Integrated Resources Management Plan	Climate Adaptation Plan

Thesis Research - Climate Change Vulnerability Assessment



Practical Application

- Offer a theoretical foundation (literature review).
- Highlight that VA's are a practical first step to climate adaptation planning.
- Formal tool for monitoring and informing adaptation strategies.
- Provide resources to assist in brainstorming.

Thesis Document

<http://www7.nau.edu/itep/main/tcc/docs/Training/Palmer,%20Anna%20Accepted%20Thesis.pdf>

Thesis Data

https://docs.google.com/spreadsheets/d/1YB8Y4i6E0xTgc_ZYKc08kEUFCGsAEKyFzckdKLoEL0w/edit?usp=sharing

Thesis Defense

<https://www.dropbox.com/sh/k7958rc7ybrtw2l/AABZim4woxuiDSngumEBO59Ua?dl=0>

Useful Link

<http://www.iav-mapping.net/CARAVAN/CARAVAN.html>

Resources- Info Tribal Climate Adaptation Plans



- <https://tribalclimateguide.uoregon.edu/adaptation-plans>



- <https://www.dropbox.com/sh/luf0z796jxyxwhc/AACl-dfYKJ0V7H4EeayUDKXla?dl=0>



- <https://cig.uw.edu/resources/tribal-vulnerability-assessment-resources/how-can-tribes-fund-climate-change-work/>

Resources- Climate Adaptation and Planning



- <https://nativewaters-aridlands.com/resources/adaptation/>

- <https://www.globalchange.gov/browse/federal-adaptation-resources/natural-resources>

- **BIA Tribal Climate Resilience Program**
The Bureau of Indian Affairs (BIA) is the lead agency in charge of supporting tribes as they address challenges related to climate change. The Tribal Climate Resilience Program (TCRP) provides tribes with funding for trainings and adaptation projects, technical support, and youth engagement programs.
- **BIA Tribal Climate Resilience Resource Guide**
A fantastic online hub of climate resilience information and resources that are available for tribes. Topics include: Training, planning, TEK/TKS, youth, tribes, regions, agencies and funding. Produced by the Bureau of Indian Affairs.
- **ITEP Climate Change Program**
The Institute for Tribal Environmental Professionals (ITEP) Climate Change Program provides support for tribes that are preparing for or currently contending with climate change impacts, including trainings, reports, fact sheets and information on funding for climate adaptation projects
- **SKOPE (Synthesizing Knowledge of Past Environments)**
An online resource for paleoenvironmental data and models. This decision-support tool enables scholars to easily discover, explore, visualize, and synthesize knowledge of environments in the recent or remote past.
- **Tribal Adaptation Plans: Examples**
Learn how other tribal nations in the United States are preparing for climate change by exploring this list of existing adaptation plans. Produced by the [Native Nations Climate Adaptation Program](#) (NNCAP) at the University of Arizona.
- **Tribal Climate Change Guide**
From University of Oregon's [Tribal Climate Change Project](#), this guide contains up-to-date information on funding opportunities, sample climate change adaptation plans, listings of disaster resources and more.



Resources- Climate Resilience Toolkit



- <https://toolkit.climate.gov/#climate-explorer>
- <https://toolkit.climate.gov/topics/water/water-resources-dashboard>
- https://climate-explorer.nemac.org/?tp=g_b¢er=-10297495.2,3114624.1&zoom=4&p=L&bl=b_a&scales=time:20090108233342.0:20140106214356.0,ytd-prcp:0.0:33.2

Weblinks- Climate Data



ClimateWizard

- <http://climatewizard.org/>



- <http://www.cpc.ncep.noaa.gov/>

COLLEGE OF THE ENVIRONMENT
UNIVERSITY of WASHINGTON



- <https://climate.northwestknowledge.net/NWTOOLBOX/tribalProjections.php>



Climate Data –Where to Get it

Climate Data Additional Handout

Will be made available
online

I. The North American Drought Atlas (NADA)- The North American Drought Atlas is the best source for understanding moisture variability over the last 2,000 years. It allows you compare and contextualize various drought events in terms of the 1000-year drought variability in any area across the continent.

Pros- Can view the drought conditions for any given year, as well as seasonal drought for the summer months of June July and August.

Cons- Difficult to manipulate and downscale to create local averages. Data comes as a netCDF (Network Common Data Format) .nc file. Data is not yet available after 2006.

Link-<http://drought.memphis.edu/NADA/Default.aspx>

II. PRISM Climate Group-This data platform from the Oregon State University PRISM Climate Group gives monthly temperature and precipitations values going between 1895-2016.

Pros- Allows you to download raw data and manipulate how you wish for monthly precipitation and temperature trends. Can be manipulated in Excel.

Cons-Does not provide projections, historical data only.

Link-<http://www.prism.oregonstate.edu/>

III. USGS Regional Climate Change Viewer-This tool from the USGS allows you to view historical and projected changes in temperature, soil moisture, growing days, and evapotranspiration, downscaled to the intra-state regional level. Allows you to view projected changes through 2100 in an interactive map interface. Can view and download associated data as well as daily and monthly time series graphs for your own use.

Pros- Interactive interface, allows you to view projections and difference with historical data “at a glance”. Allows you to download raw data and manipulate how you wish in Excel. Gives projected changes based on a variety of climate modeling methodologies.

Cons- Cannot get downscaled projections or historical data beyond the intra-state region scale (e.g. Diamond-Monitor Valley).

Link- <http://regclim.coas.oregonstate.edu/visualization/rccv/hydrology/index.html4>

IV NEMAC Climate Explorer-This tool from the National Environmental Modeling and Analysis Center allows you to view historical climate data for a given region or locality. Additionally, it allows you to generate maps and visualizations for a wide variety of climate stressors (e.g. drought, flooding, etc.) to generate information that is of use to you for your specific areas of concern.

Pros- Allows you to create tailored visualizations of your specific climate stressors.

Cons- Does not allow you to download the data you are using. Does not give projections.

Link- <https://climate-explorer.nemac.org/>

V. LOCA Downscaled Climate Projections-This tool from the Scripps Institute of Oceanography allows you to view downscaled climate projections up to the year 2100 for the CAL-ADAPT area, which includes California and Nevada.

Pros- Allows you to get local downscaled precipitation and temperature projections for your specific area of interest. Allow you to download data as a CSV for Excel, or a JSON for ArcGIS.

Cons- Applicable for California and Nevada-based tribes only.

Link- <http://cal-adapt.org/data/loca/>



BLACKFEET NATION

Climate Adaptation Plan



1. What was your motivation?
2. Why did you focus on human health?
3. How long did it take to complete?
4. How did you overcome time/capacity gaps?
5. What approach did you take for integrating Blackfeet's traditional cultural knowledge into an assessment process that is dominantly used in western based science?



Blackfeet Nation Environmental Director Receives 2018 Climate Adaptation Leadership Award for Natural Resources

As part of the NIHBS [Climate Ready Tribes Initiative](https://blackfeetclimateexchange.com/), NIHBS funds three Tribes to conduct local climate health work. One of these Tribes is Blackfeet Nation in northern Montana. Mr. Gerald Wagner, Director of the Blackfeet Environmental Office and pictured right in the image, was recently an honored recipient of the 2018 Climate Adaptation Leadership Award for Natural Resources Award, in the Tribal Government Category, at the Association of Fish and Wildlife Agencies Annual Meeting. This award, established in 2016, recognizes exemplary leadership by individuals, agencies, businesses and other organizations to reduce impacts and advance adaptation of the nation's vital natural resources and the many people who depend on them in a changing world. "This award recognizes the critical contributions that are made towards safeguarding our Nation's fish and wildlife in a changing climate," stated Virgil Moore, President of the Association of Fish and Wildlife Agencies and Director of Idaho Fish and Game. "This year's awardees have done outstanding work and we are thrilled to recognize these important efforts."

<https://blackfeetclimateexchange.com/>



Contact Information



Gerald Wagner, Director of the Blackfeet Environmental Office.

E: gwagner@3rivers.net

T: 406-338-7421



Anna Palmer, MSES, Research Faculty, Earth & Ecosystem Science- Desert Research Institute.

E: anna.palmer@dri.edu

T: 845-721-5221



Derek Kauneckis, PhD., Associate Professor, Voinovich School of Leadership and Public Affairs- Ohio University.

E: kaunecki@ohio.edu

T: 775-313-1416

Thank you for joining us!

Have a nice day!

Webinar will be available: http://www7.nau.edu/itep/main/tcc/Training/Webinars_2018