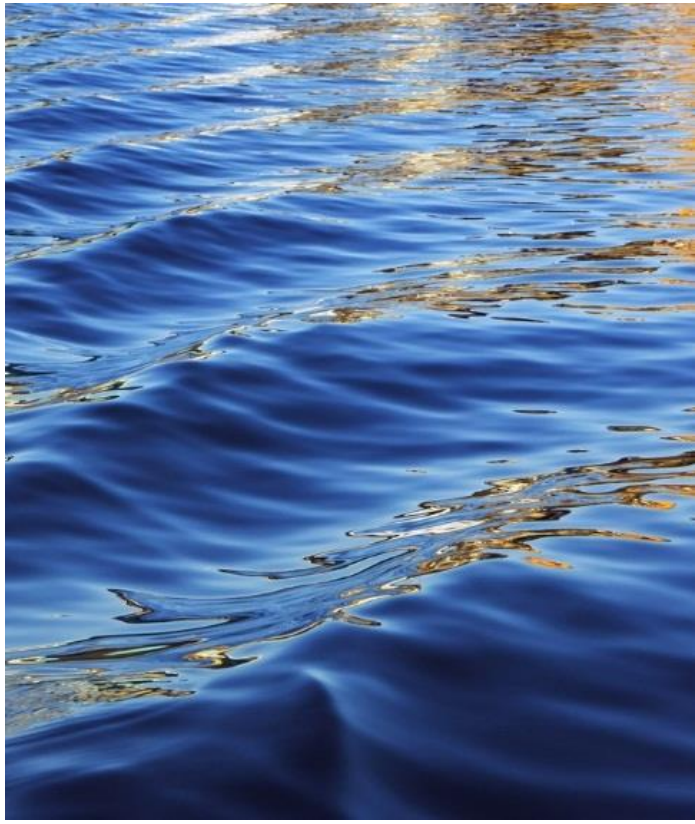
TRIBAL CLIMATE HEALTH PROJECT

Vulnerability Assessments: Part 2

Tribal Climate and Health Adaptation Webinar #5



Since Last Webinar

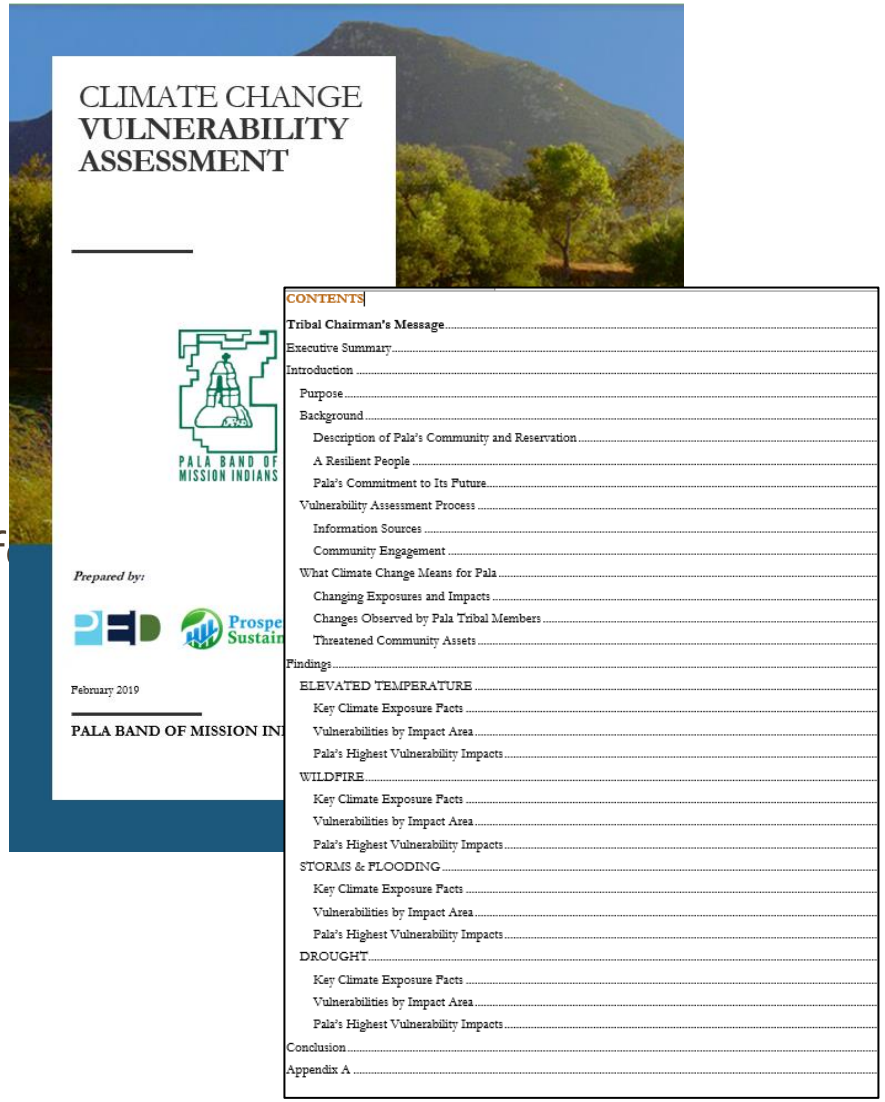
Suggested actions

- Attend the technical assistance meeting for your cohort
- Consider how to gain early support and participation in your adaptation planning process (e.g. resolution, list stakeholders f your planning team)

Suggested reading (complete before next webinar)

Scan one:

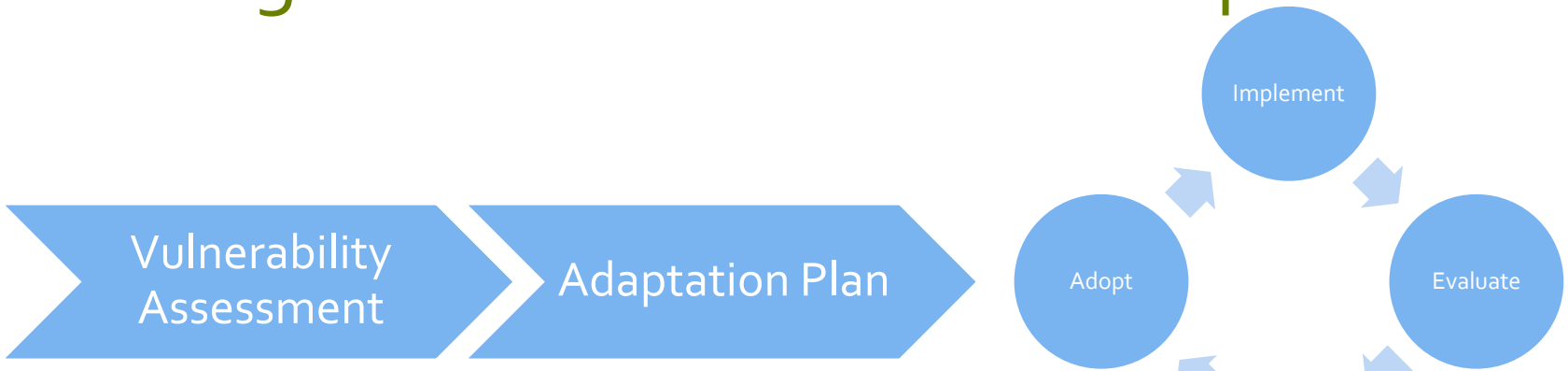
- Pala Band of Mission Indians Climate Change Vulnerability Assessment
- Blackfeet Climate Change Adaptation Plan
- Climate Change in Kiana, Alaska: Strategies for Community Health



Chat Discussion:

What did you read about that surprised you? What did you like about the structure? What types of information sources were referenced?

Assessing Health Vulnerabilities: Steps & Tools



Steps

1. Determine Objectives and Scope
2. Engage the Community
3. Identify Key Indicators
4. Gather and Analyze Information
5. Prioritize Vulnerabilities
6. Synthesize and Present Results

Companion Tools

- Resource Clearinghouse
- Input Gathering templates
- **Exposures, Impacts, and Strategies Inventory (EISI) tool**
- Report templates
- Resolution templates
- Public information samples

Assessing Health Vulnerabilities

Steps

1. Determine Objectives and Scope
2. Engage the Community
3. **Identify Key Indicators**
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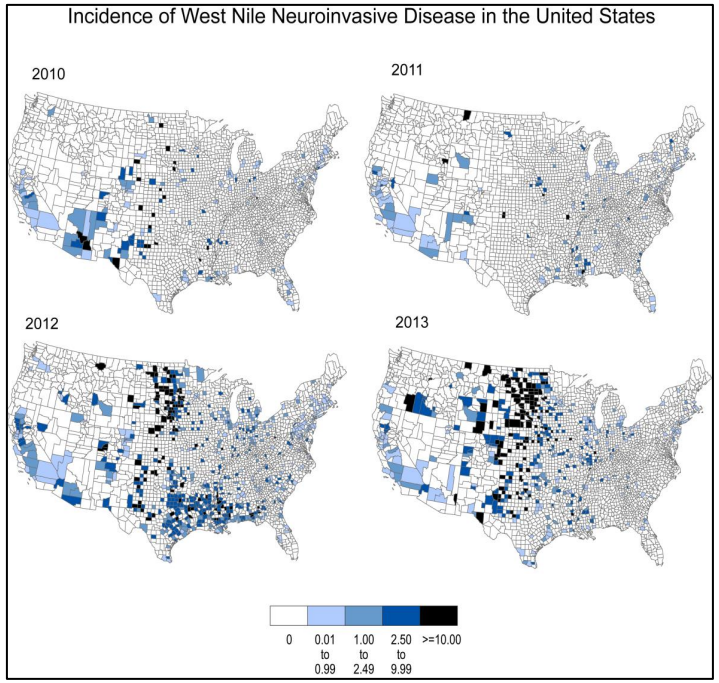
Step 3. Identify Key Indicators

- **Exposure and secondary exposure indicators**
- **Impact indicators – including health**
- **Population sensitivity and adaptive capacity (moderating factors)**

TCHP's Exposures, Impacts, and Strategies Inventory (EISI) tool can help



Chat Discussion:

What climate indicators are you tracking?

Adaptation Planning Tool – Exposures, Impacts, and Strategies Inventory (EISI) tool (Updated October 2, 2019 BETA VERSION). This is a draft of a customizable companion tool that can support communities that are conducting adaptation planning. Information and data sources are compiled and organized to present information needed at several decision-making steps to help your community prepare to take the most effective actions. We are continuing to build functionality and improve information. The latest update includes more indicators and data sources (national and California specific). Please send questions or comments to ahacker@prospersustainably.com.

Survey Template – Climate Vulnerability Experiences and Priorities Survey for gathering initial community input. If you have a Google account, you can use this link to create and save a copy of this template to customize for your tribe.

Sample Reports – Pala Band of Mission Indians Climate Change Vulnerability Assessment and Climate Change Adaptation Plan. These reports incorporate health impacts and strategies. This Word version allows others to modify for their own community.

Fact Sheets – Pala Band of Mission Indian produced the following fact sheets to help their community understand high-risk climate exposures and how to recognize and prepare for climate threats:

- **Extreme Heat (Elevated Temperatures)**
- **Wildfires**
- **Flooding and Storms**
- **Drought**

Other Relevant Training Materials not Produced by the Tribal Climate Health Project

Tribal Resolution Template –ITEP's Tribal Climate Change Resolution Template

AutoSave Off | EISI Template_BETA_Tribal Climate Health Project _version 100219 - Excel | Search | Angela Hacker AH

File Home Insert Page Layout Formulas Data Review View Help Power Pivot | Share | Comments

Paste | Cut | Copy | Format Painter | Clipboard | Calibri 11 | B I U | Font | Wrap Text | Merge & Center | Alignment | General | $ % | Number | Conditional Formatting | Format as Table | Cell Styles | Styles | Insert | Delete | Format | Cells | AutoSum | Fill | Clear | Sort & Filter | Find & Select | Editing | Ideas

B67 | Water: shortage/supply and distribution disruption

1. EVALUATE SEVERITY AND LIKELIHOOD OF EXPOSURES TO COMMUNITIES (NATIONAL AND CA)

Exposure	Secondary Exposure (if applicable)	Regions at Greatest Risk				Exposure Indicators	National Data Sources		CA Data Sources		Data Findings	Exposure Risk Level			
						Annual mean concentration of PM2.5 (ave of quarterly means µ/m3), with percentile (vs other census tracts)				HPI				Chart; map; table	Basel
Drought	Worsened air quality: dust particulate matter		x		x	PM2.5 -% Days above regulatory standard (County)	CDC - NEPHT	CDC - NEPHT	CDC - NEPHT	CDC - NEPHT				Chart; map; table	Histo Basel
Drought	Vectors: mosquitos		x		x	West Nile Virus-carrying mosquito surveillence - Non-human WNV actvitiy (State)		CDC - WNV		CDC - WNV				Map	Basel
Drought	Vectors: forest pests		x		x	Forest vector surveillence - Bark beatles	USFS/USDA	USFS/USDA	USFS/USDA	USFS/USDA				Map	Basel
						Water pathogens - Nitrates in Community Water Systems (County)	CDC - NEPHT	CDC - NEPHT	CDC - NEPHT	CDC - NEPHT				Chart; map; table	Histo Basel
						Water exposure outbreaks (State)	CDC NORS	CDC NORS	CDC NORS	CDC NORS				Map; Table; Chart	Histo Basel
						Incidents of water contaminated by waste/chemicals during storm									
						Drinking water contaminants (CA percentile) (Census tract)			CalEnviro					Map; Table	Basel
						Impaired water bodies (CA percentile) (Census tract)			CalEnviro					Map; Table	Basel
						Observed water quality									
Drought	Water: contamination		x		x	Drinking water violations (County)		RWJF		RWJF				Table; map	Basel
Drought	Water: shortage/supply and distribution disruption		x		x	Well production (meter reads) or other water level observations									

Instructions | 1. Evaluate Exposures | 2 & 4. Evaluate & Track Impacts | 2.B Pop Sens_Adapt Cap | 3. Evaluate Strategi ...

Assessing Health Vulnerabilities

Steps

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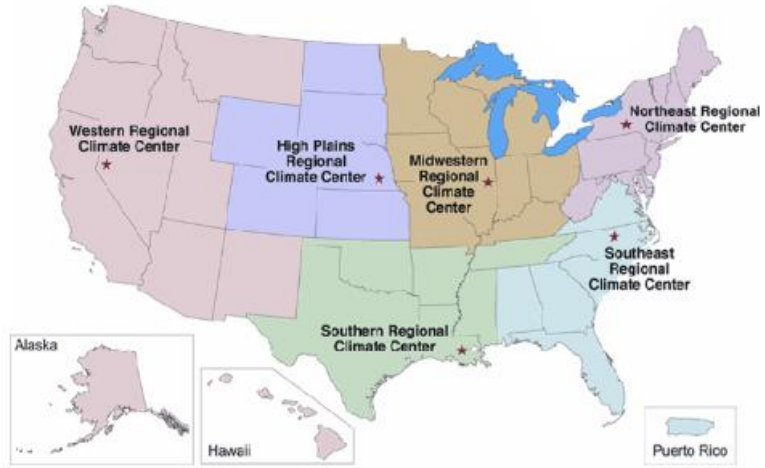
4. **Gather and Analyze Information**
5. Prioritize Vulnerabilities

Step 4. Gather and Analyze Information

- Find the best data to tell the story
- Look for historical, baseline and projected information on each indicator (identified in step 3) that is ***as location-specific as possible***.
  - Precalculated and visualized are easier to use

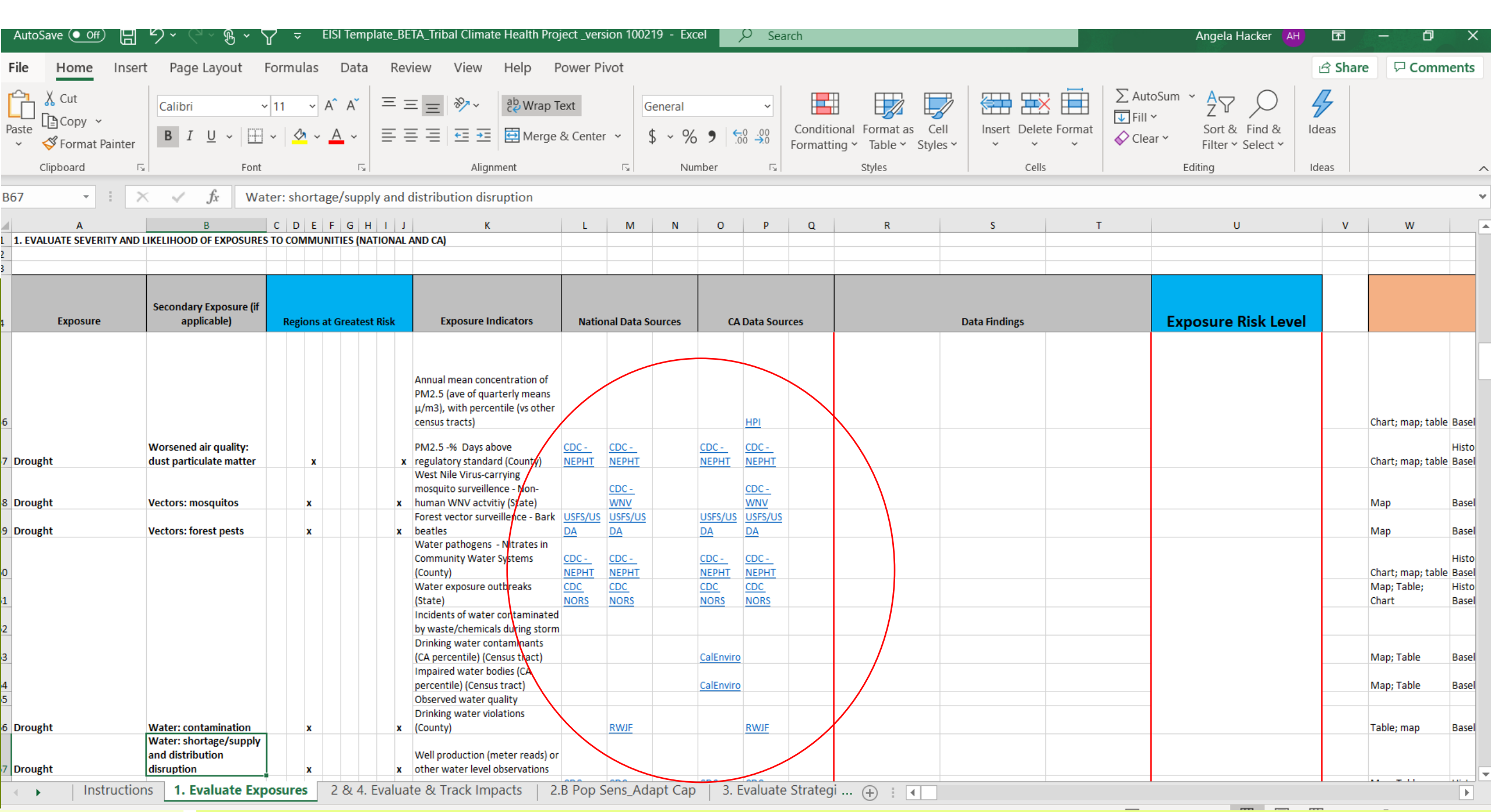
- Information sources vary widely:
  - Technical assistance – e.g. Regional Climate Centers, Universities, Tribal Epidemiology Centers, State or local health departments
  - Local, State and National reports
  - Local observations and traditional knowledges
  - National/regional databases

TCHP's Exposures, Impacts, and Strategies Inventory (EISI) tool can help – provides national and California-specific data sources



Chat Discussion:

What information sources have you used for your tribe?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EISI Template_BETA_Tribal Climate Health Project _version 100219 - Excel
Search
Angela Hacker AH
File Home Insert Page Layout Formulas Data Review View Help Power Pivot
Share Comments
Cut Copy Format Painter Paste
Calibri 11
Wrap Text
Merge & Center
General
Conditional Formatting
Format as Table
Cell Styles
Insert Delete Format
AutoSum Fill Clear
Sort & Filter
Find & Select
Ideas
Clipboard Font Alignment Number Styles Cells Editing Ideas
B67
Water: shortage/supply and distribution disruption
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Exposure
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Data Findings
Exposure Risk Level
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HPI
Chart; map; table
Drought
Worsened air quality: dust particulate matter
x
x
PM2.5 -% Days above regulatory standard (County)
CDC - NEPHT
CDC - NEPHT
CDC - NEPHT
CDC - NEPHT
Chart; map; table
Drought
Vectors: mosquitos
x
x
West Nile Virus-carrying mosquito surveillence - Non-human WNV actvitiy (State)
CDC - WNV
CDC - WNV
Map
Drought
Vectors: forest pests
x
x
Forest vector surveillence - Bark beatles
USFS/USDA
USFS/USDA
USFS/USDA
USFS/USDA
Map
Water pathogens - Nitrates in Community Water Systems (County)
CDC - NEPHT
CDC - NEPHT
CDC - NEPHT
CDC - NEPHT
Chart; map; table
Water exposure outbreaks (State)
CDC NORS
CDC NORS
CDC NORS
CDC NORS
Map; Table; Chart
Incidents of water contaminated by waste/chemicals during storm
Drinking water contaminants (CA percentile) (Census tract)
CalEnviro
Map; Table
Impaired water bodies (CA percentile) (Census tract)
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Instructions
1. Evaluate Exposures
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2.B Pop Sens_Adapt Cap
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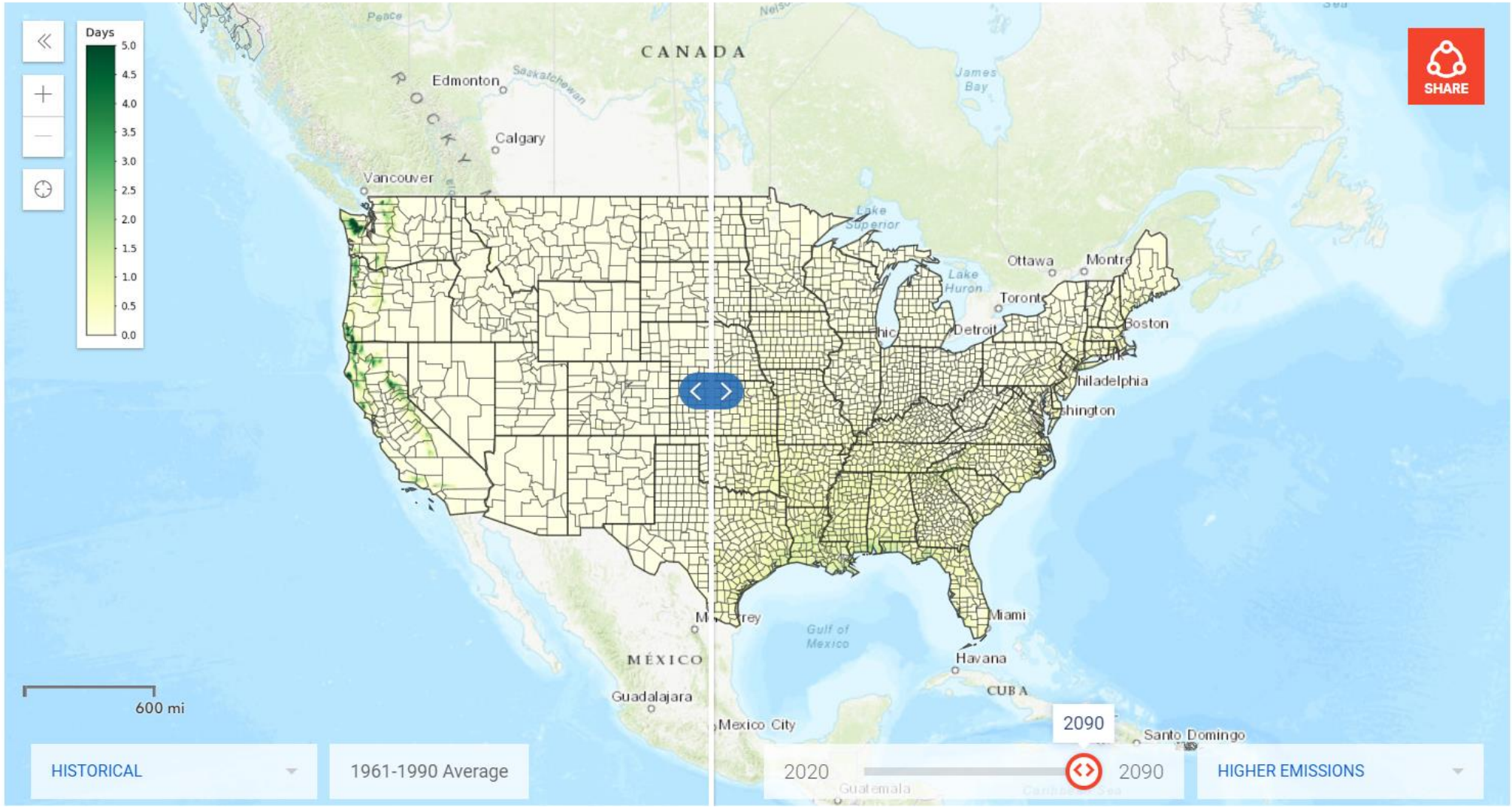
U.S. Climate Resilience Toolkit

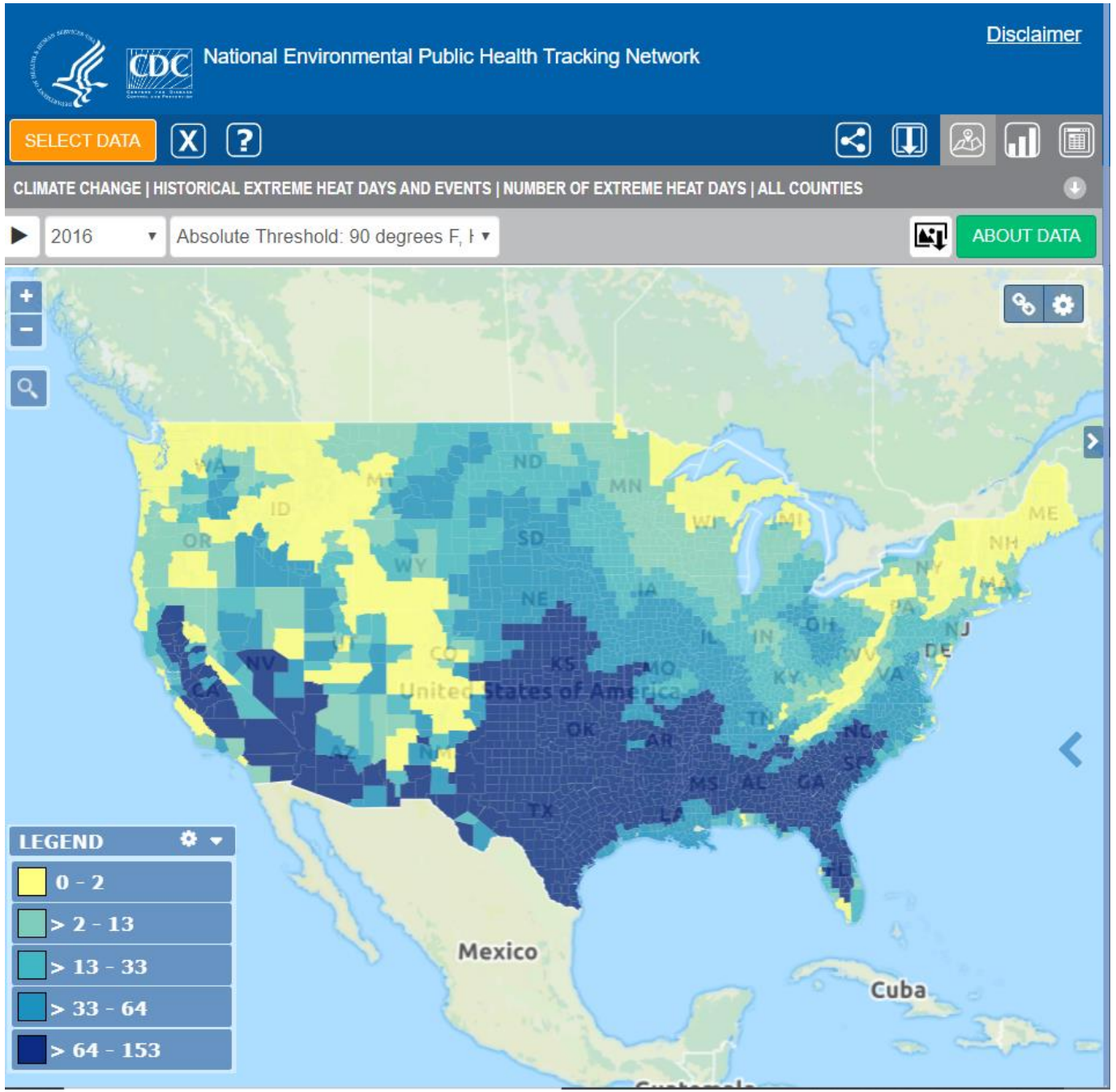
Menu | Home | Variable | Days w/ > 3 in | Tour This Page | About | Definitions | FAQ | Credits

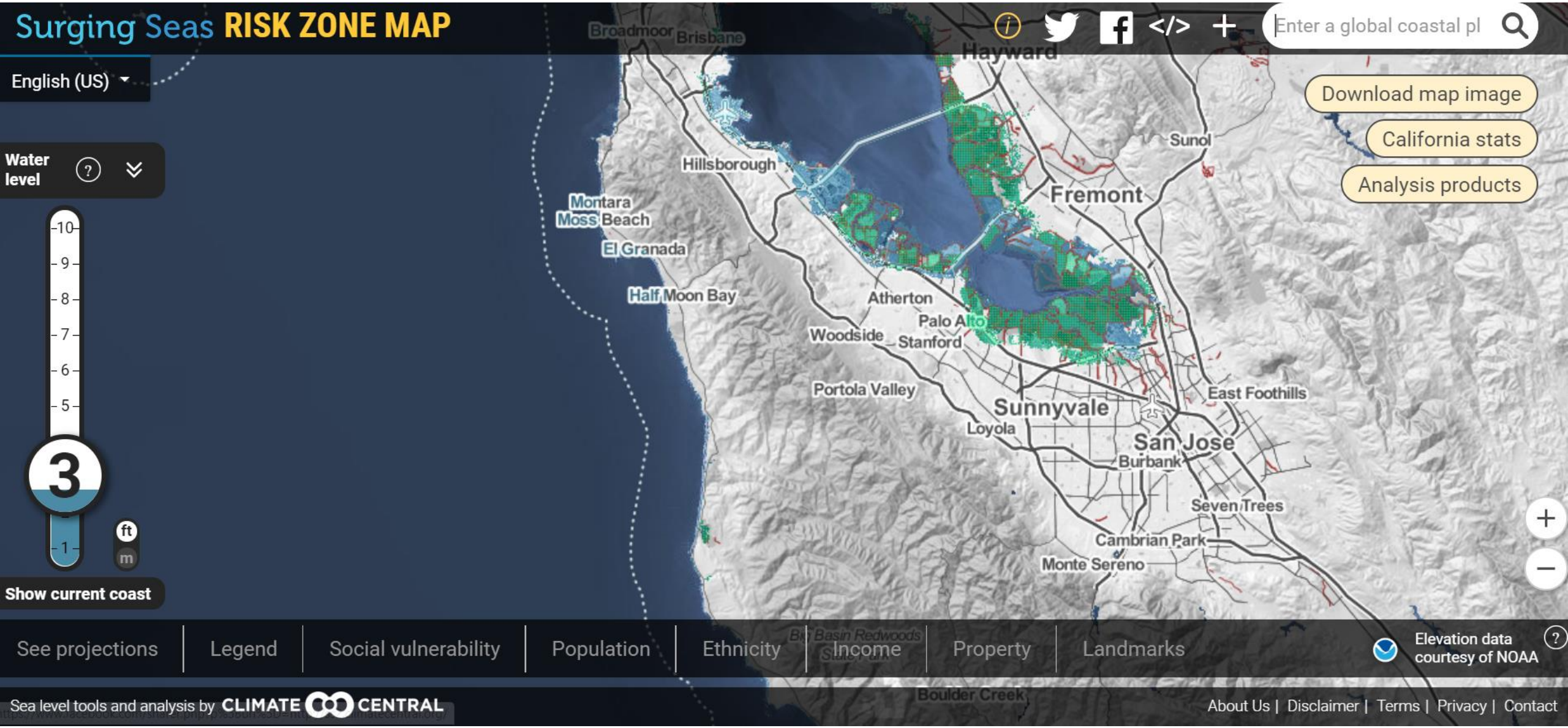
Zoom to location

Days w/ > 3 in

About Days w/ > 3 in




National Environmental Public Health Tracking Network
Disclaimer
SELECT DATA
CLIMATE CHANGE | HISTORICAL EXTREME HEAT DAYS AND EVENTS | NUMBER OF EXTREME HEAT DAYS | ALL COUNTIES
2016
Absolute Threshold: 90 degrees F, I
ABOUT DATA
LEGEND
0 - 2
> 2 - 13
> 13 - 33
> 33 - 64
> 64 - 153
Mexico
Cuba


Surging Seas RISK ZONE MAP
English (US)
Water level
10
9
8
7
6
5
3
1
ft
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Show current coast
Enter a global coastal pl
Download map image
California stats
Analysis products
Broadmoor
Brisbane
Hayward
Sunol
Hillsborough
Fremont
Montara
Moss Beach
El Granada
Half Moon Bay
Atherton
Palo Alto
Woodside
Stanford
Portola Valley
East Foothills
Sunnyvale
Loyola
San Jose
Burbank
Seven Trees
Cambrian Park
Monte Sereno
Boulder Creek
See projections
Legend
Social vulnerability
Population
Ethnicity
Income
Property
Landmarks
Elevation data courtesy of NOAA
Sea level tools and analysis by CLIMATE CENTRAL
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temperate.io/indicators

Dashboard | Climate data | Prosper Sustainably

There are 433 days left in your free trial. Keep making progress on your city's adaptation plan and upgrade your plan. Upgrade

Climate data for Santa Barbara County, CA

You can use this page to look at temperature and precipitation data from two popular climate datasets: NASA NEX-GDDP or LOCA. See datasets for more information.

For brevity, "temperature" refers to surface air temperature and "historic" refers to 1950-2006. The indicators below come from the Climate Change API.

Top hazards

All calculations shown on the Hazards use the average of the projections for the years 2025-2035. Select individual indicators to see more projections.

- Air-borne disease
- Avalanche
- Changed seasonal patterns
- Coastal flooding
  0.6ft higher ocean levels
- Cyclone (Hurricane / Typhoon)
- Drought
  -0.17 fewer dry spells each year

Ask an expert

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

A-Z Index

Search

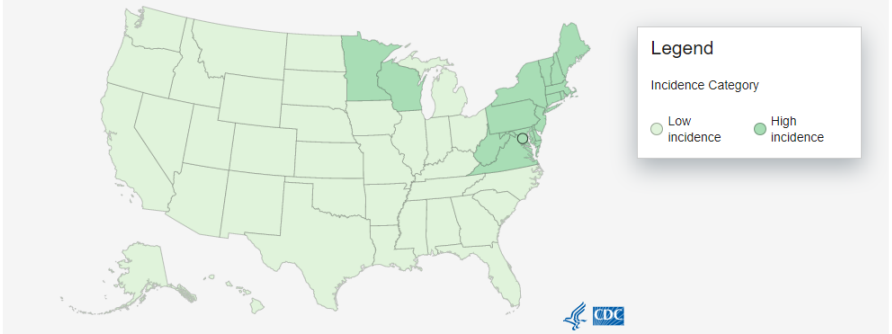
Lyme Disease

CDC > Lyme Disease Home > Data and surveillance > Recent surveillance data

- Lyme Disease Home
- Preventing tick bites
- Tick removal and testing
- Transmission
- Signs and symptoms
- Diagnosis and testing
- Treatment
- Data and surveillance
  - How many people get Lyme disease?
  - Recent surveillance data
    - Lyme disease maps: Most recent year
    - Lyme disease charts and figures: Most recent year
    - Lyme disease data tables: Most

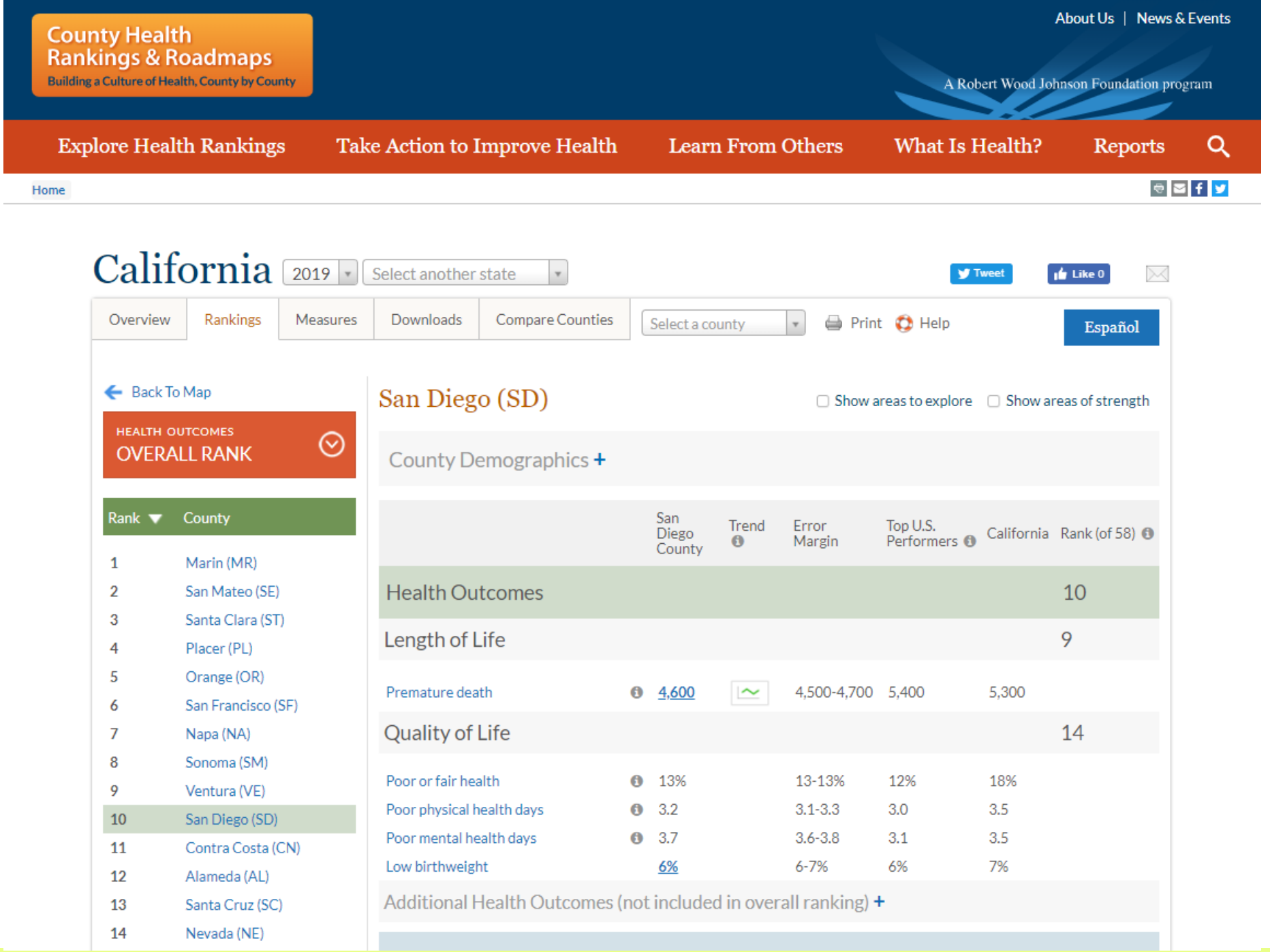
Lyme Disease Maps: Most Recent Year

Map of Lyme disease incidence* categories – United States 2017

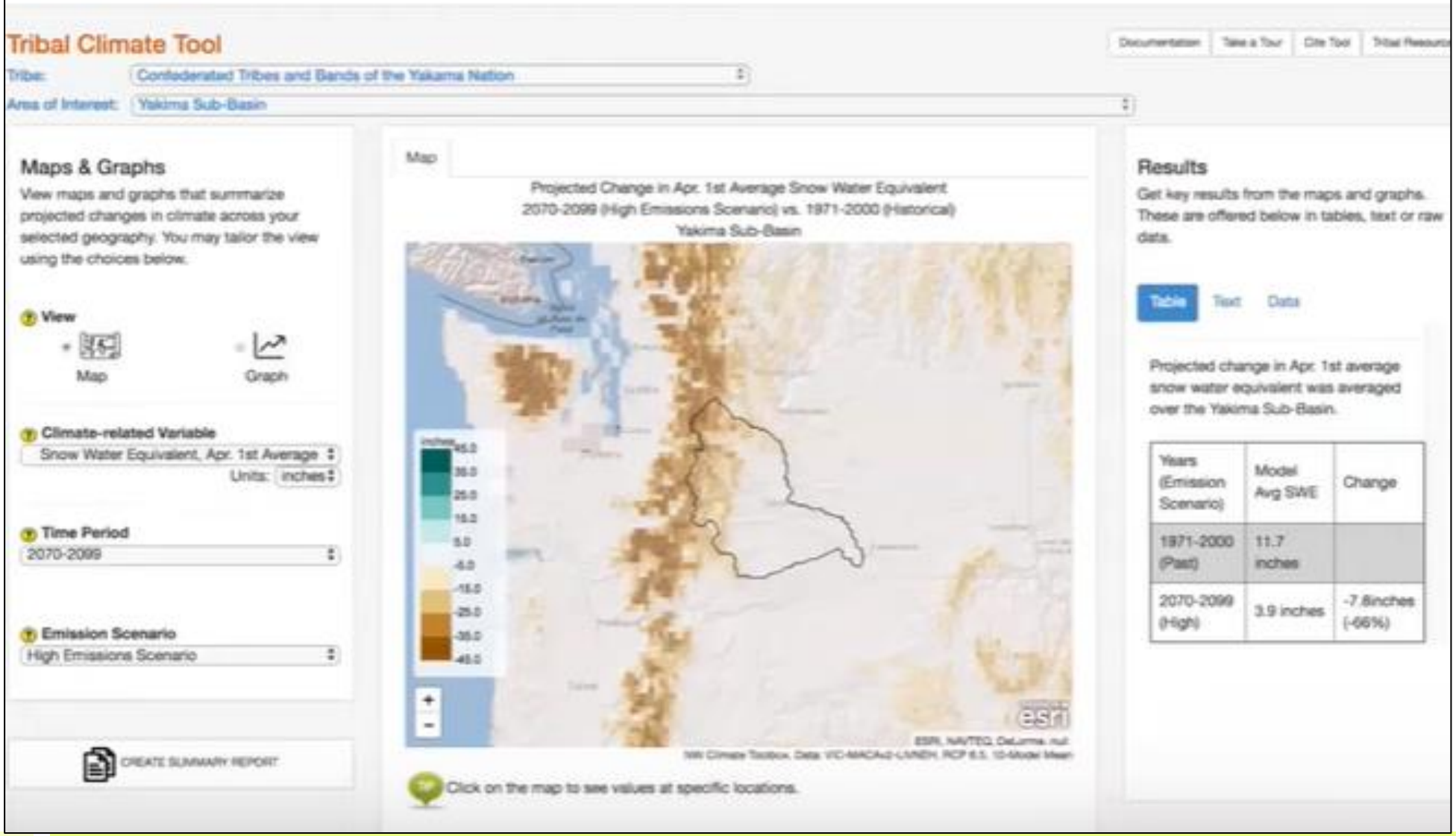


Data Table

Location	Incidence category	2017 Confirmed	2017 Probable	2017 Incidence	Incidence 3-year av...
Alabama	Low incidence	25	16	0.5	0.4
Alaska	Low incidence	8	2	1.1	0.7
Arizona	Low incidence	18	10	0.3	0.2
Arkansas	Low incidence	2	4	0.1	0

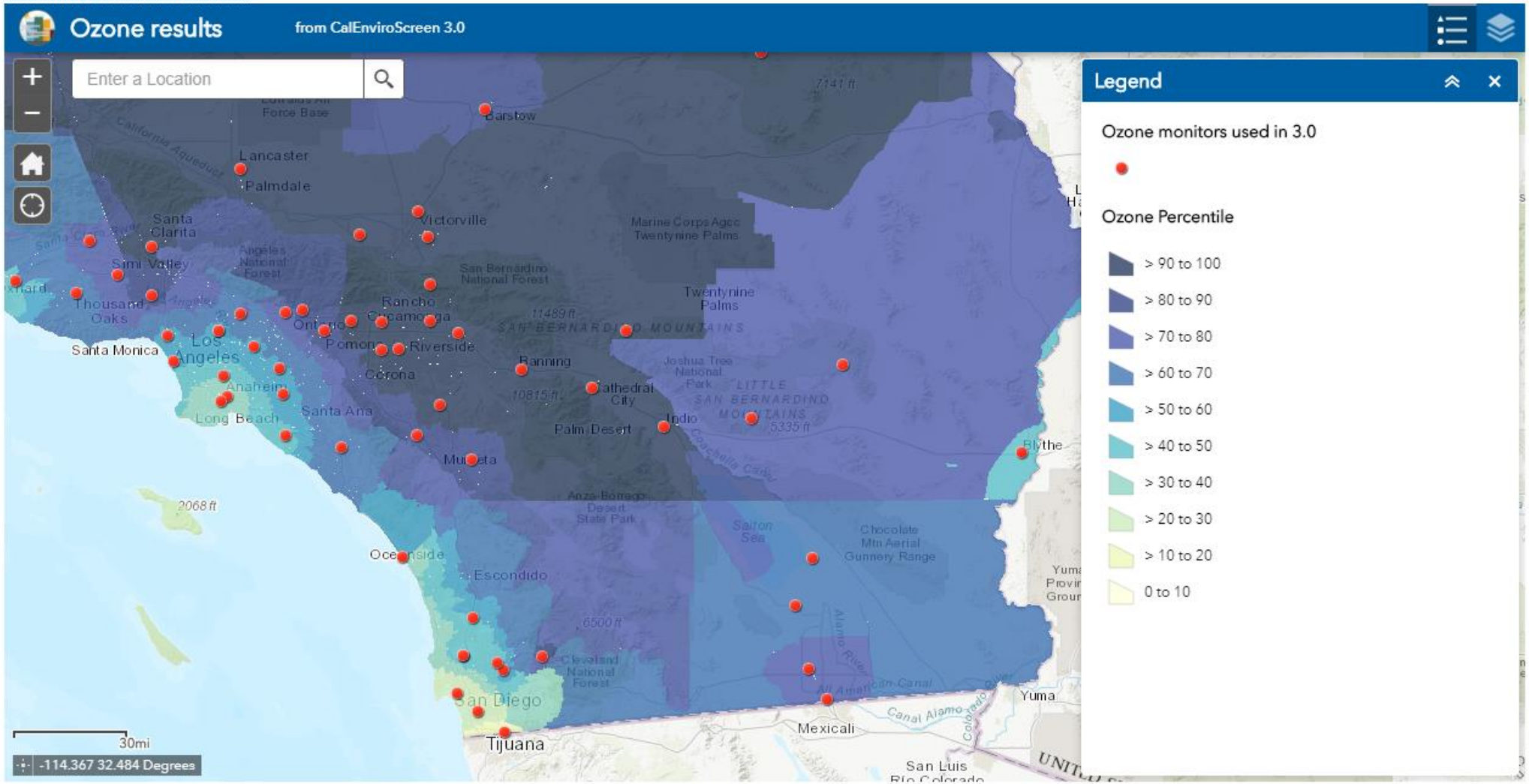

County Health Rankings & Roadmaps
Building a Culture of Health, County by County
About Us | News & Events
A Robert Wood Johnson Foundation program
Explore Health Rankings
Take Action to Improve Health
Learn From Others
What Is Health?
Reports
Home
California
2019
Select another state
Tweet
Like 0
Overview
Rankings
Measures
Downloads
Compare Counties
Select a county
Print
Help
Español
Back To Map
HEALTH OUTCOMES
OVERALL RANK
Rank
County
1 Marin (MR)
2 San Mateo (SE)
3 Santa Clara (ST)
4 Placer (PL)
5 Orange (OR)
6 San Francisco (SF)
7 Napa (NA)
8 Sonoma (SM)
9 Ventura (VE)
10 San Diego (SD)
11 Contra Costa (CN)
12 Alameda (AL)
13 Santa Cruz (SC)
14 Nevada (NE)
San Diego (SD)
Show areas to explore
Show areas of strength
County Demographics +
San Diego County
Trend
Error Margin
Top U.S. Performers
California
Rank (of 58)
Health Outcomes 10
Length of Life 9
Premature death 4,600 4,500-4,700 5,400 5,300
Quality of Life 14
Poor or fair health 13% 13-13% 12% 18%
Poor physical health days 3.2 3.1-3.3 3.0 3.5
Poor mental health days 3.7 3.6-3.8 3.1 3.5
Low birthweight 6% 6-7% 6% 7%
Additional Health Outcomes (not included in overall ranking) +

Tribal Climate Tool:
Climate summaries tailored to tribes



CalEnviroScreen 3.0 Ozone Map

Click to open in a new window

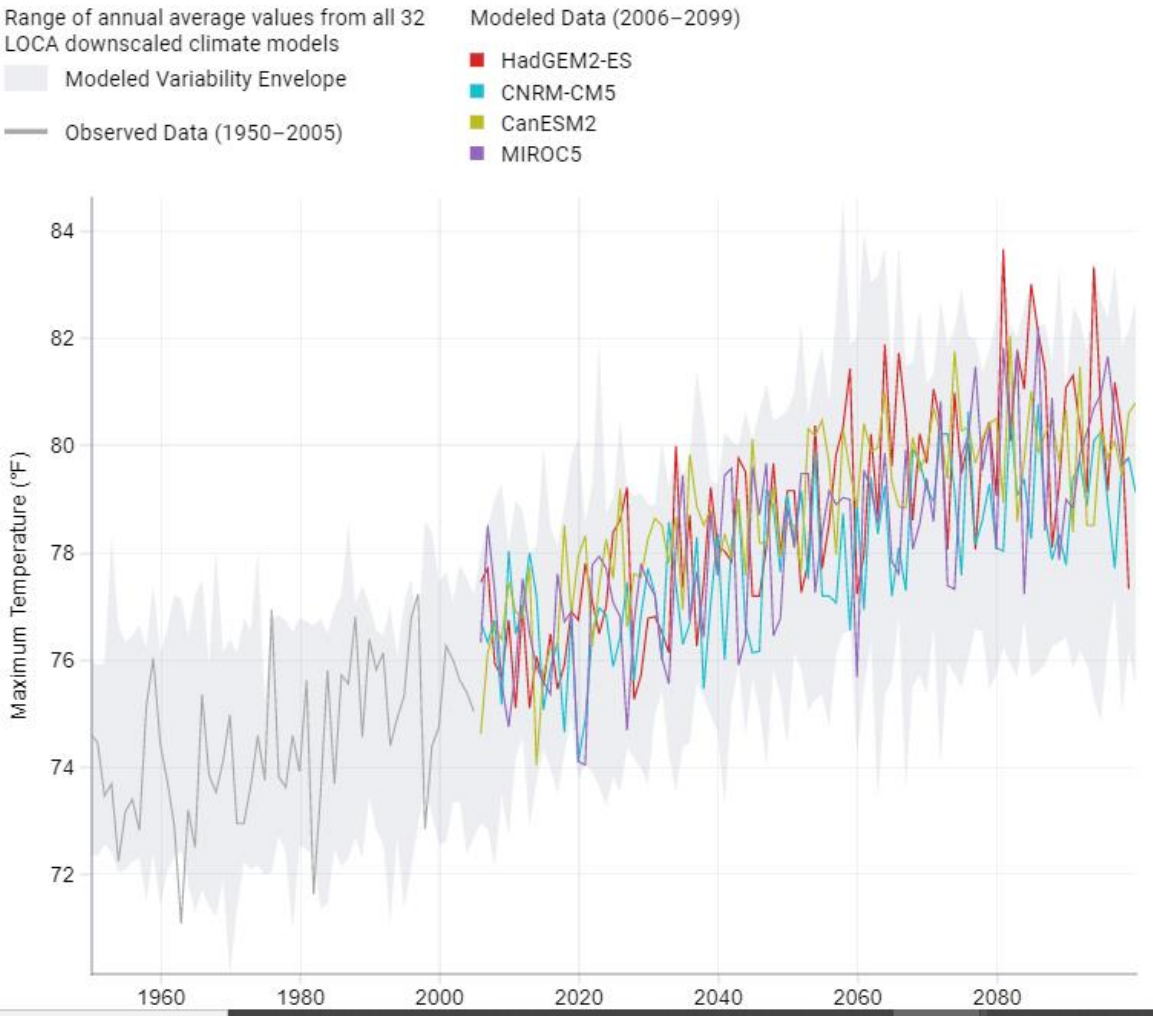


Save Chart Download Data

Maximum Temperature

Grid Cell (38.59375, -121.46875)

Emissions peak around 2040, then decline (RCP 4.5)



SCENARIOS

RCP 4.5
Emissions peak around 2040, then decline

RCP 8.5
Emissions continue to rise strongly through 2050 and plateau around 2100

QUICK STATS

Historical Annual Mean for 1961–1990

74.2°F Observed

Modeled Projected Annual Mean for 2070–2099

79.8°F

Change Location

Assessing Health Vulnerabilities

Steps

1. Determine Objectives and Scope
2. Engage the Community
3. Identify Key Indicators
4. Gather and Analyze Information
5. **Prioritize Vulnerabilities**
6. **Synthesize and Present Results**

Step 5. Prioritize Vulnerabilities

- Determine who will rank (high, medium, low)
- Establish criteria to evaluate
- Use all indicator data to make ranking decisions
- Factor in whether the impact will affect community assets ranked as highly important to protect

TCHP's Exposures, Impacts, and Strategies Inventory (EISI) tool can help

RISK	LIKELIHOOD		
CONSEQUENCES	HIGH	MEDIUM	LOW
HIGH	HIGH	MEDIUM-HIGH	MEDIUM
MEDIUM	MEDIUM-HIGH	MEDIUM	MEDIUM-LOW
LOW	MEDIUM	MEDIUM-LOW	LOW

Figure 5 Risk Assessment Matrix. The Institute for Tribal Environmental Professionals risk matrix is a product of likelihood and consequences.[6]

VULNERABILITY =

EXPOSURE RISK +
IMPACT RISK (TO VALUED ASSETS) +
POPULATION SENSITIVITY -
ADAPTIVE CAPACITY

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Step 5. Prioritize Vulnerabilities

Example:

Exposure: Heat (severity and likelihood)
Risk = High

Impact: Heat-related illness (severity and likelihood) to physical health of residents and visitors (high priority)
Risk = High

Moderating Factors:

- Adaptive capacity: e.g. Households with air conditioning, cooling centers, areas covered with tree canopy; access to health services
  = Medium
- Population sensitivity: e.g. Population old/young/underlying conditions/obese; urban heat island index
  = Medium

RISK	LIKELIHOOD		
CONSEQUENCES	HIGH	MEDIUM	LOW
HIGH	HIGH	MEDIUM-HIGH	MEDIUM
MEDIUM	MEDIUM-HIGH	MEDIUM	MEDIUM-LOW
LOW	MEDIUM	MEDIUM-LOW	LOW

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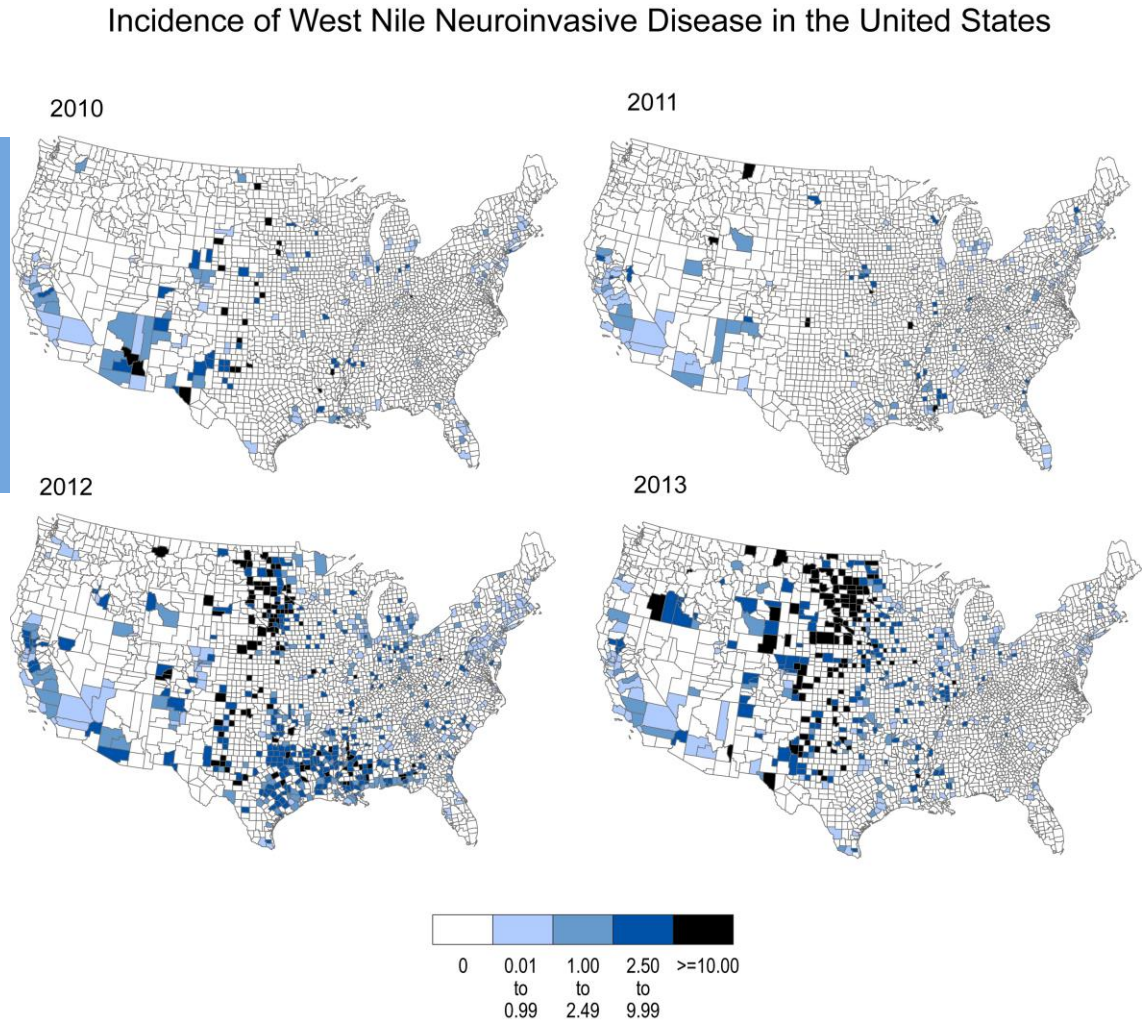
ADAPTIVE CAPACITY

Your Exposures and Health Impacts - Exercise

Individual Exercise:

1. Collect exposure data for your area and evaluate exposure risk
2. Collect health impact data for your area and evaluate vulnerability



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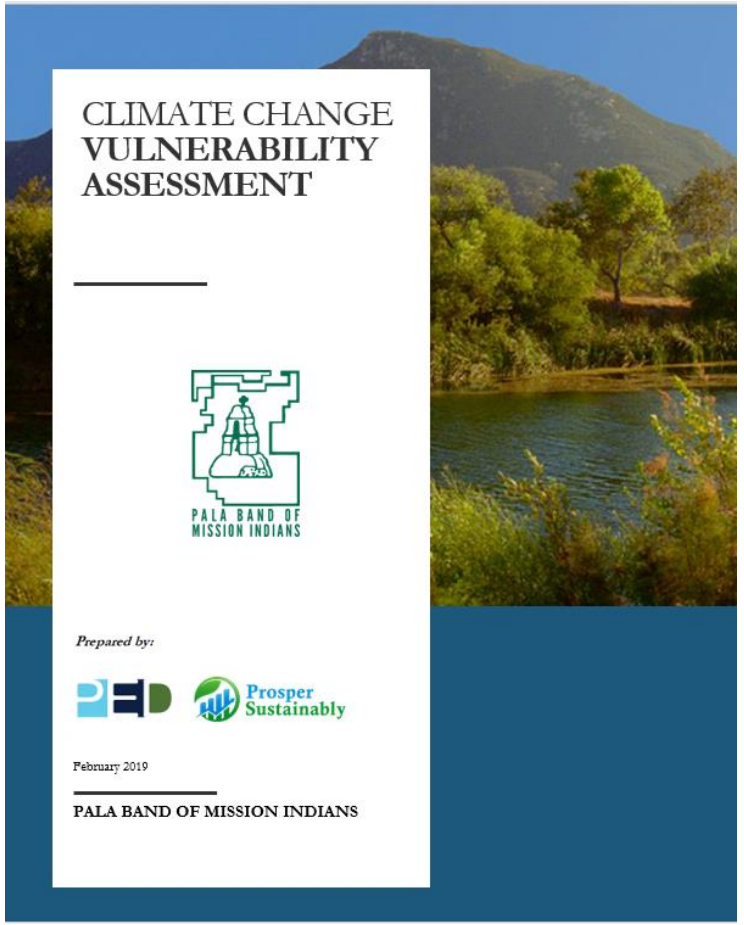
Step 6. Synthesize and Present Results *(Optional)*

- Incorporate visuals, stories and quotes to make the document compelling to community members and decision makers
- Consider how to use and protect propriety traditional knowledge information
- Present report to decision-makers and seek direction and resources to complete adaptation plan

TCHP's Vulnerability Assessment template can help



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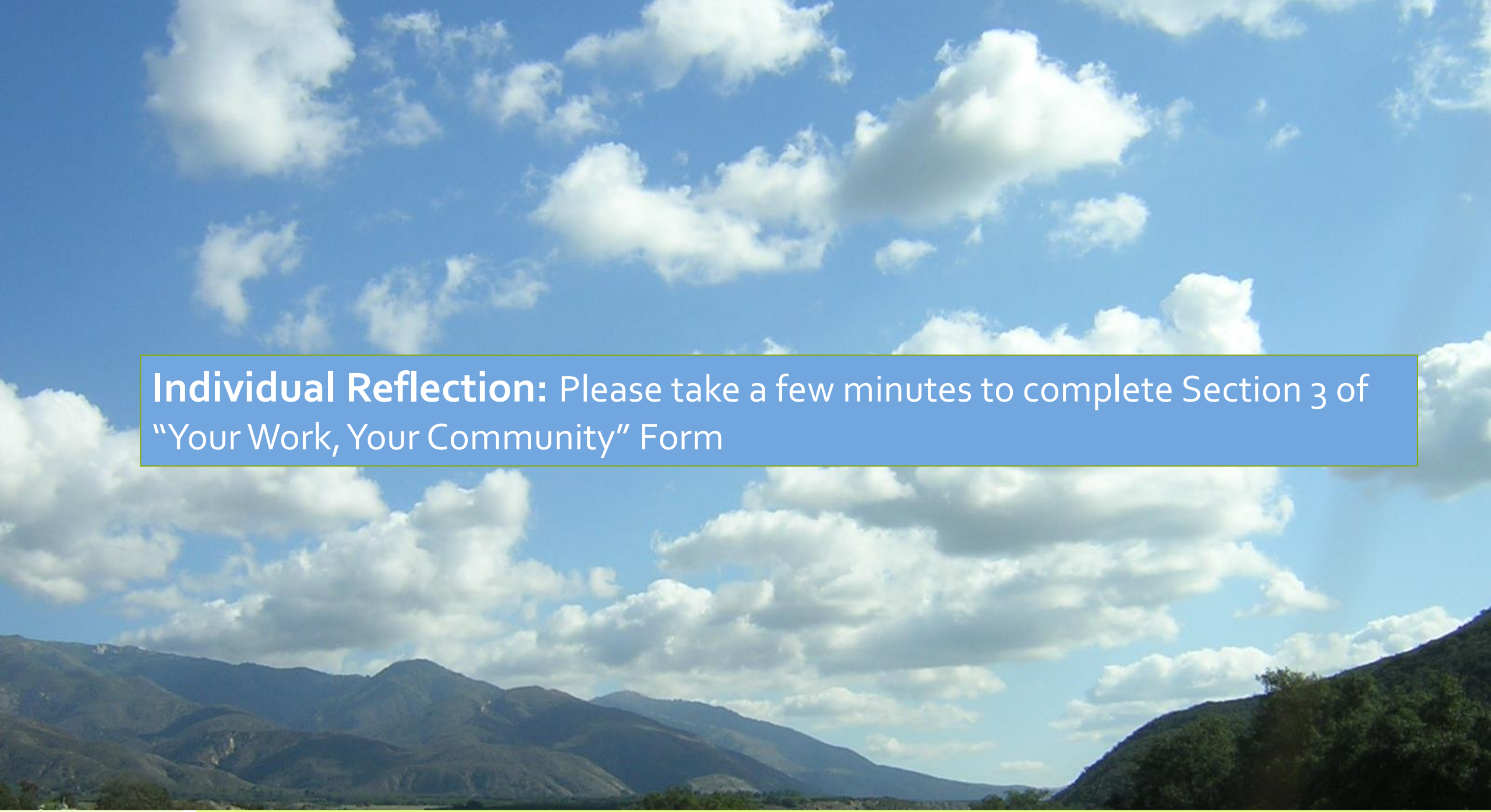

Individual Reflection: Please take a few minutes to complete Section 3 of "Your Work, Your Community" Form

Wrapping Up

Thank you for being part of our training community!

Suggested reading (complete before next webinar)

- Oregon Climate and Health Resilience Plan

Next webinar:

June , 2020 (10AM PST / 1PM EST)

Adaptation Plans Part 1 (Module 4)

*Featuring Guest Speaker

Questions?

Assessing Your Vulnerabilities – Key Resources

Guidance

- Oregon Climate Change Research Institute - Tribal Climate Adaptation Guidebook (Steps 1, 2 and 3)
- International Tribal Environmental Professionals - Adaptation Planning Toolkit
- US Climate Resiliency Toolkit
  - Tribal National Topic
- CDC: Accessing Health Vulnerability to Climate Change: A Guide for Health Departments
- CDC Community Health Needs Assessment
- U.S. Center for Disease Control and Prevention: Building Resilience Against Climate Effects (BRACE)
- IPCC – Chapter 11: Human Health: Impacts, Adaptation, and Co-benefits
- ITEP Webinar (2018)

Tools and Templates

- TCHP - Exposures, Impacts, Strategies Inventory (EISI) tool – Beta Version
- TCHP - Pala Vulnerability Assessment Sample
- TCHP - Climate Vulnerability Experiences and Priorities Survey Template
- TCHP – Blog: "Data Sources to Assess TribalClimate and Health Data"
- TCHP – Resources Clearinghouse
- CDPH – Template for Assessment of Local Climate Mitigation, Adaptation, and Resilience
- International Tribal Environmental Professionals – Resolution Template

Examples

- NIHB - Tribal Climate Champions: Spotlight on Gila River Indian Community
- US Dept of Energy - Makah Tribal Engagement
- UW Climate Impacts Group - Makah Interview
- Swinonmish Indigenous Health Indicators video
- Shoshone-Bannock Tribe video
- Collville Tribes Climate Change Page
- Oregon State Health Authority – Climate and health video

Tribal Vulnerability Assessments

- Pala Vulnerability Assessment
- Community Observations on Climate Change: Nashagak River Trip Report
- Climate Change Vulnerability of Native Americans in the Southwest
- Puyallup Climate Change Impact Assessment
- Upper Snake River Watershed: Climate Change Vulnerability Assessment
- Swinomish Climate Change Initiative Impact Assessment Technical Report
- Jamestown S'Klallam Tribe: *Climate Vulnerability Assessment and Adaptation Plan*
- Karuk Tribe Climate Vulnerability Assessment