The National Drought Mitigation Center & The U.S. Drought Monitor

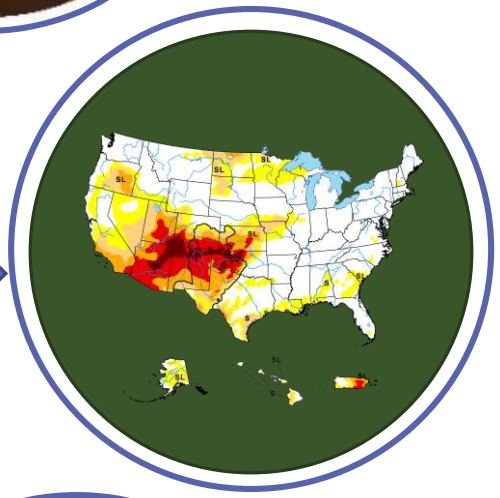
Deborah Bathke, NDMC & Aaron Jacobs, NWS

Southeast Alaska Drought Workshop

Juneau, Alaska

May 7, 2019

Objectives

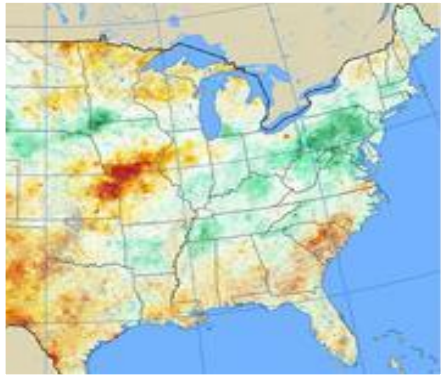


The National Drought Mitigation Center (NDMC)

Planning

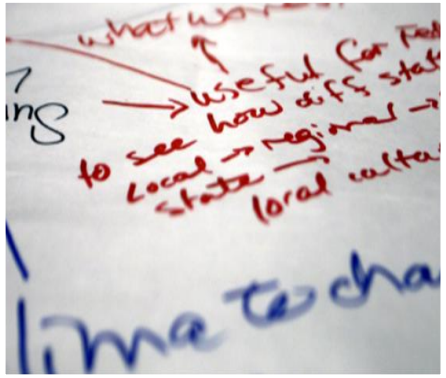
Increases ability to cope

Monitoring



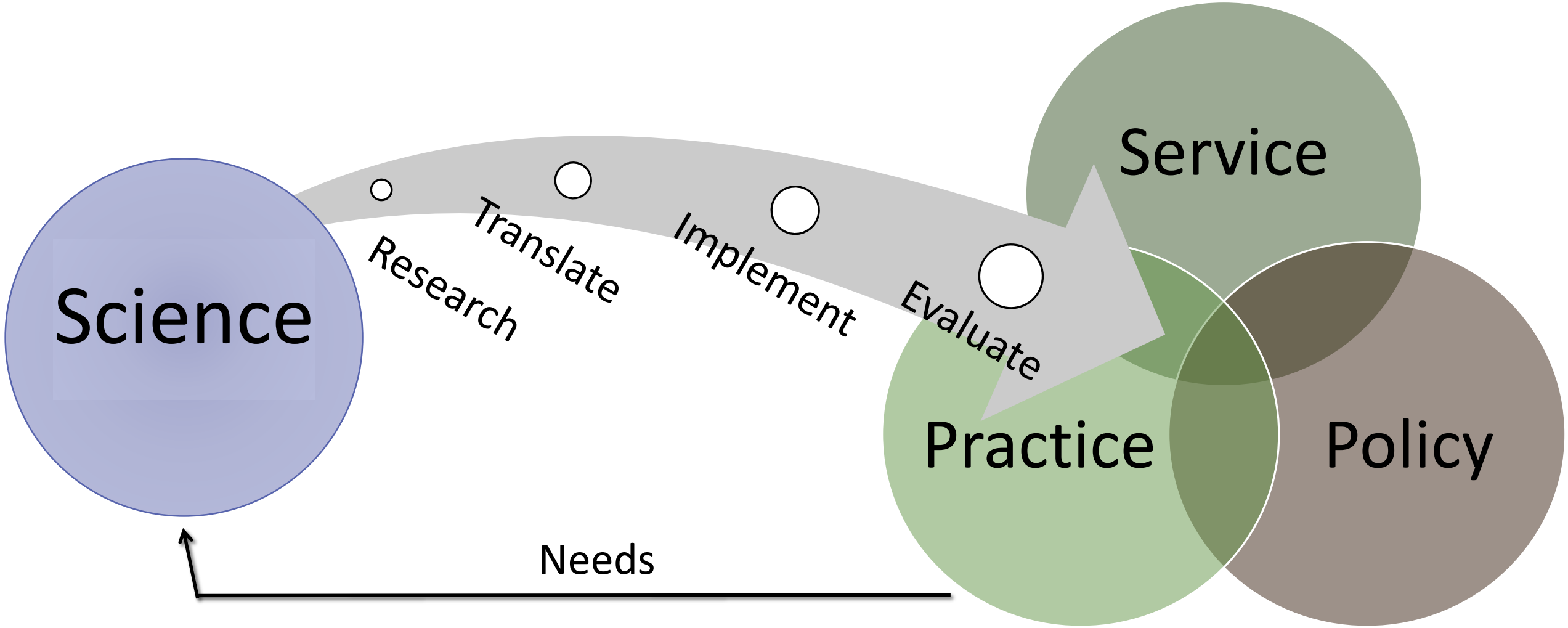
Provides the foundation for proactive management

Education



Helps translate science into practice

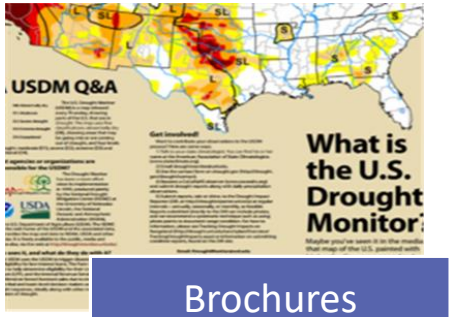
Help Build Drought Resilience



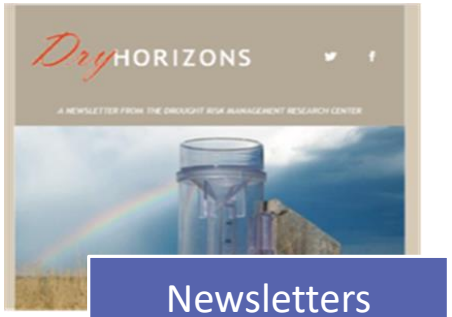
Science into Action

Invited Talks

Displays



Brochures



Newsletters

Training Workshops

Webinars

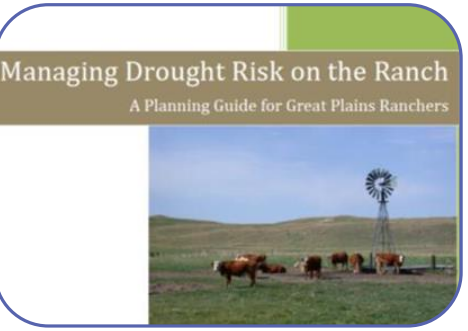
Tutorials

Games

Kid's Activities

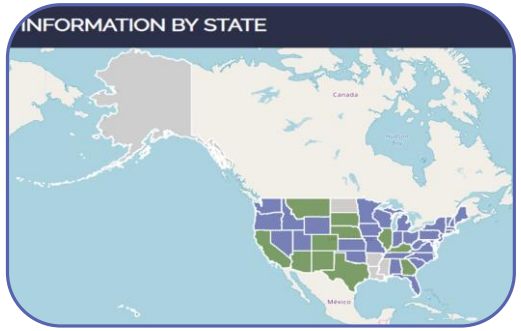
Education & Outreach

Managing Drought Risk on the Ranch

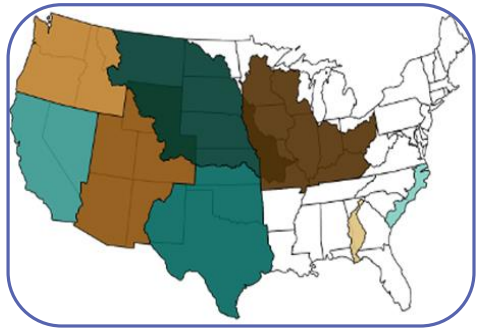


Drought Ready Communities

State Drought Plans



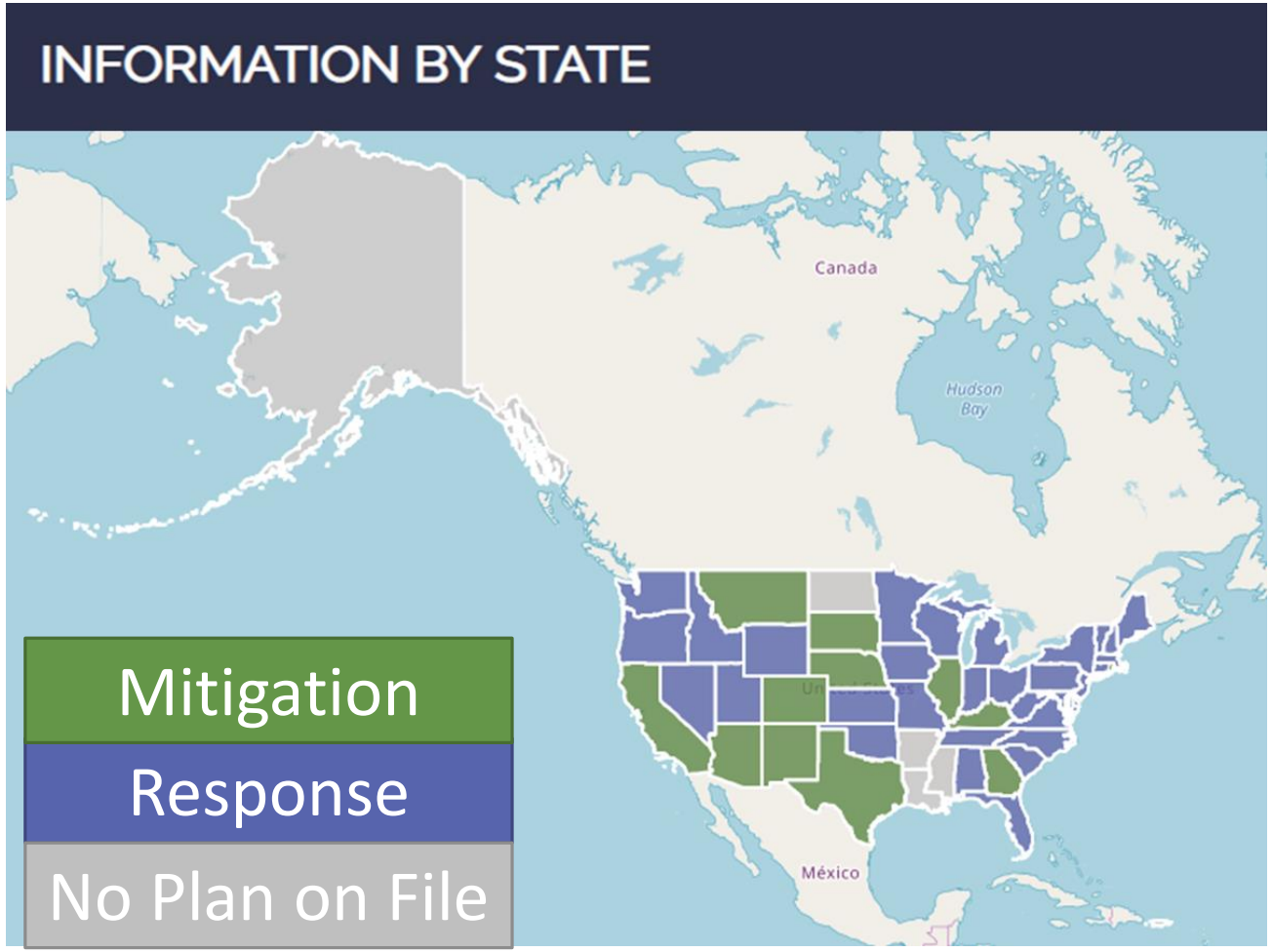
Regional Drought Early Warning Systems



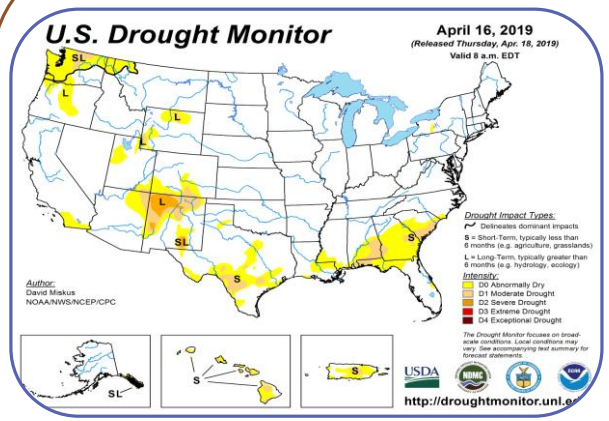
NDMC International Activities

Individual → Local → State → Regional → International

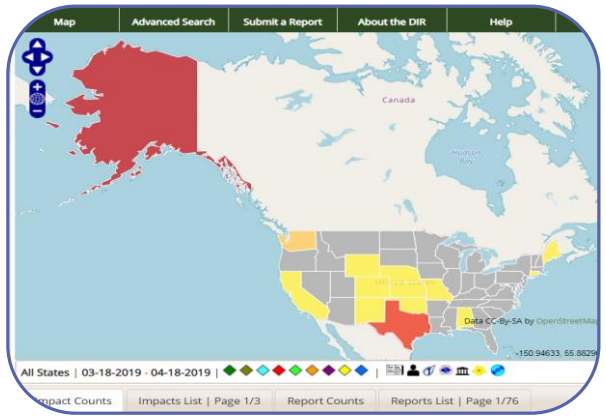
Planning information & resources at all scales



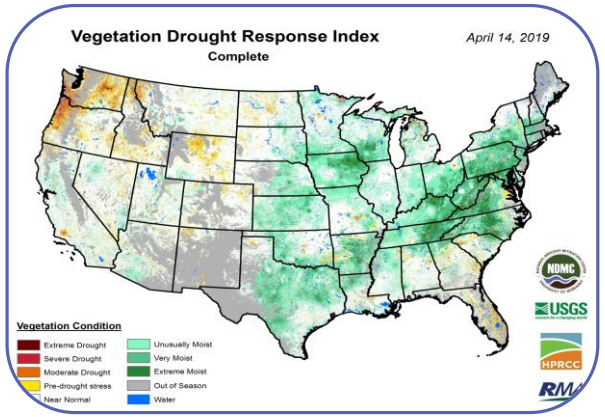
Drought Plan Status



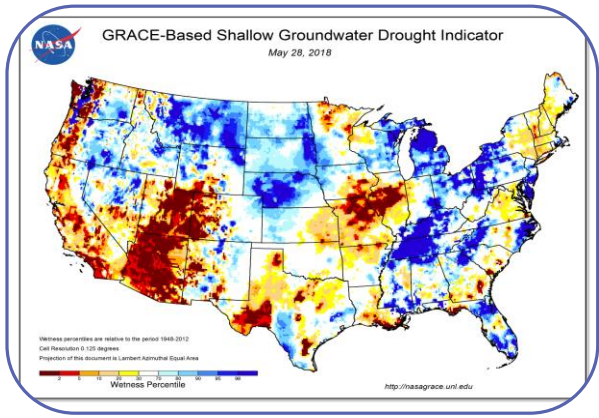
U.S. Drought Monitor



Drought Impact Reporter



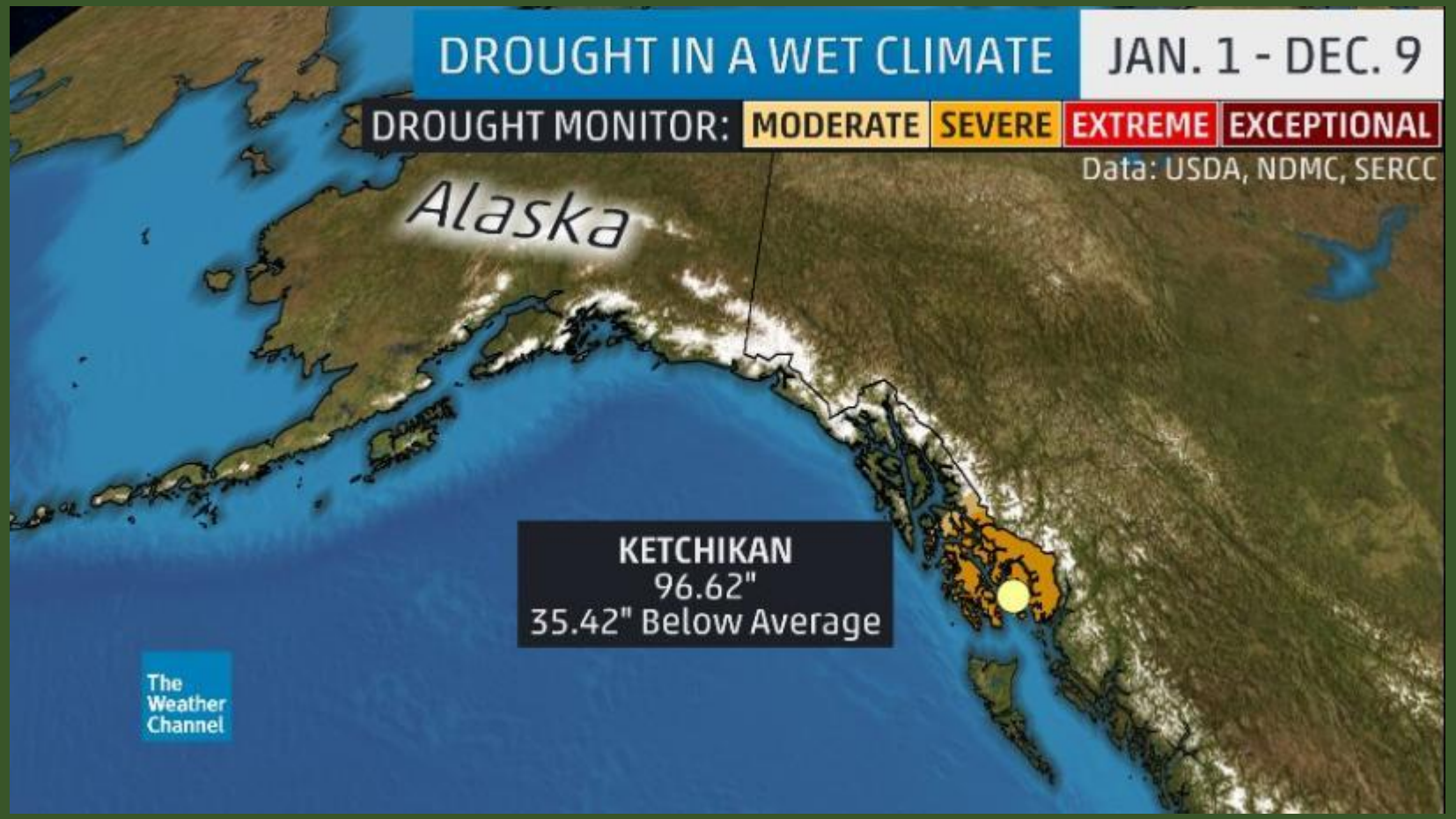
VegDRI & Quick DRI



Satellite-based Groundwater & Soil Moisture

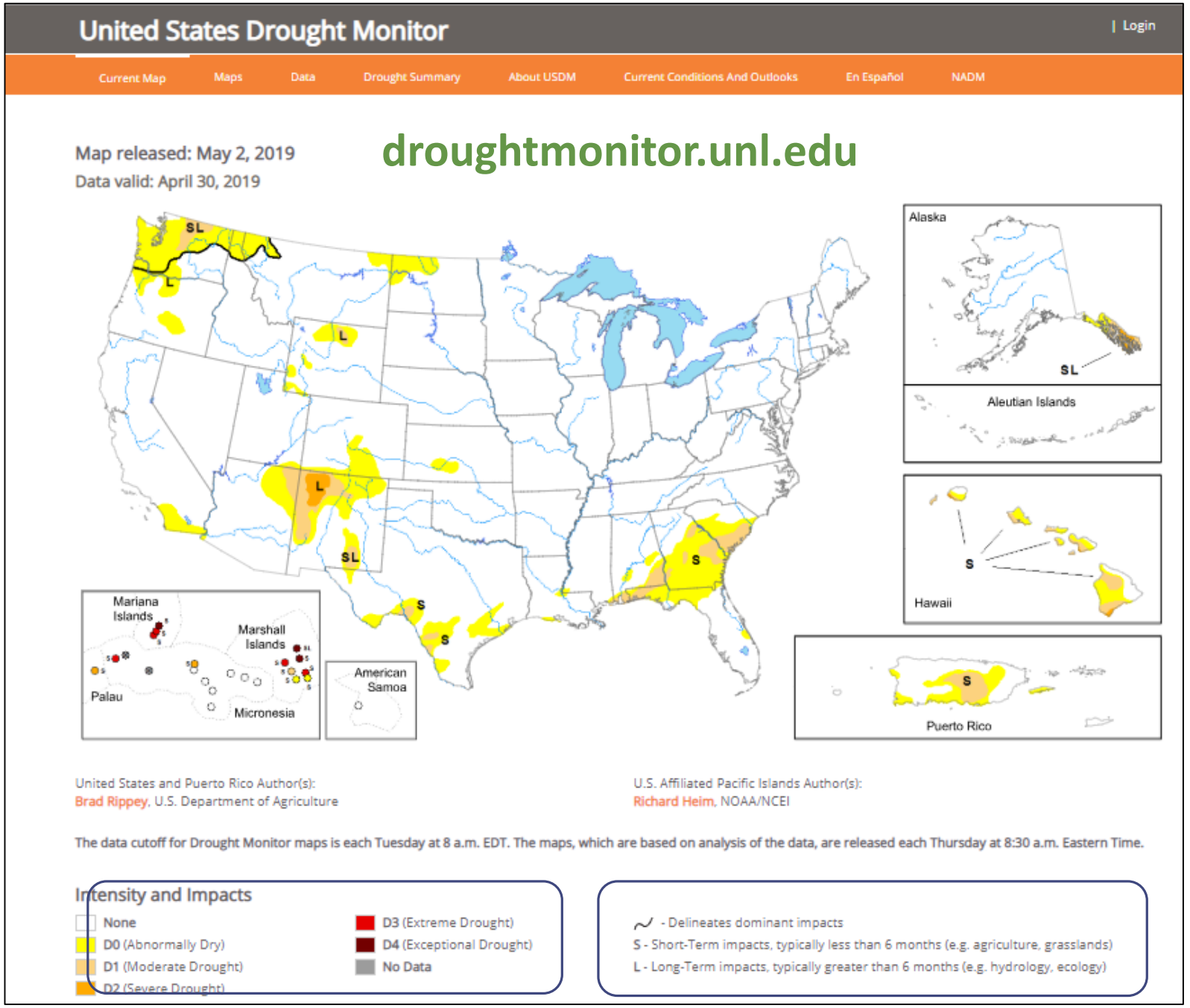
Monitoring tools to assess conditions & trigger action

The U.S. Drought Monitor (USDM)



Takeaway #1

The map synthesizes a lot of information.



Not Drought

None

D0 Abnormally Dry

Drought

D1 Moderate Drought

D2 Severe Drought

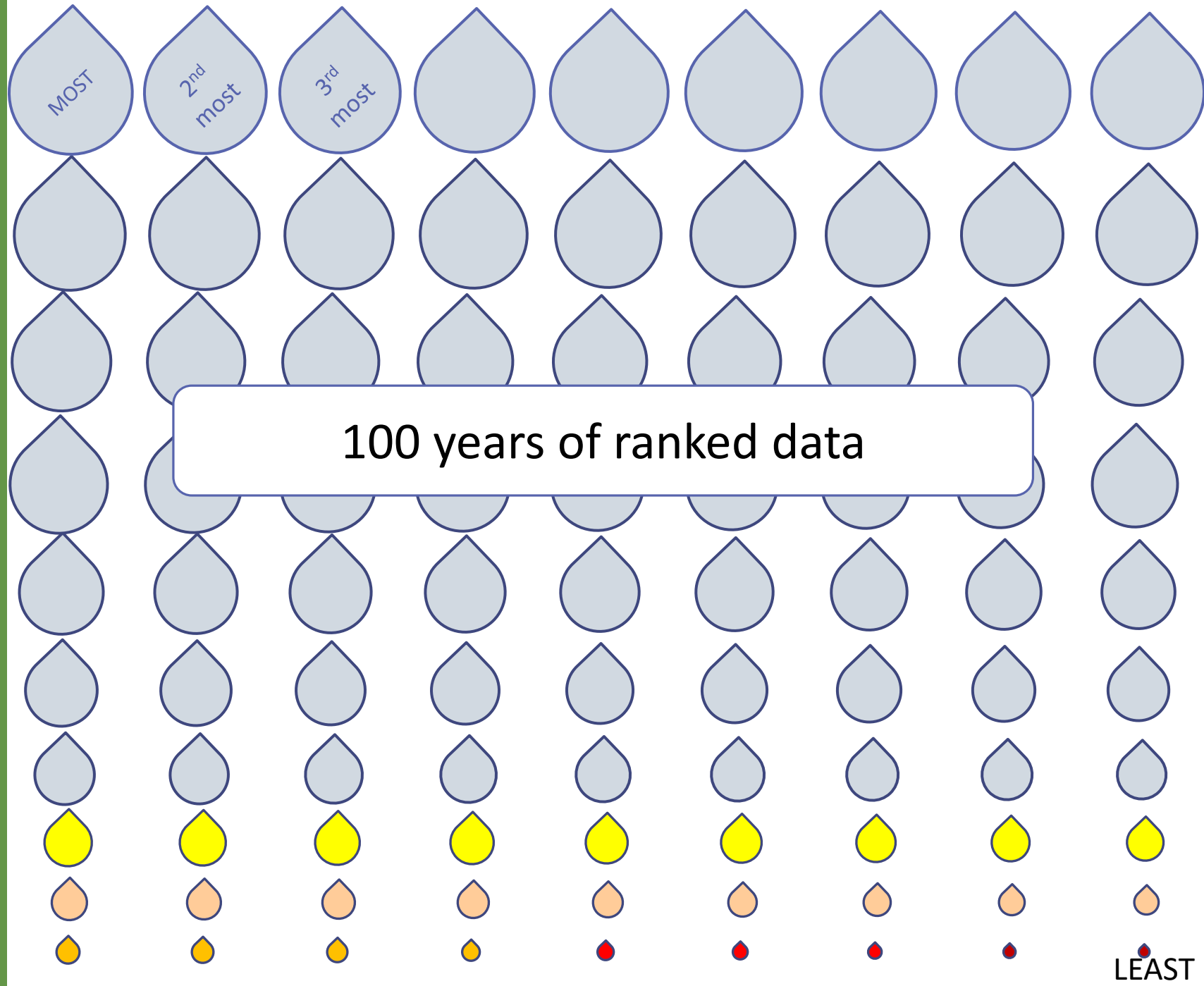
D3 Extreme Drought

D4 Exceptional Drought

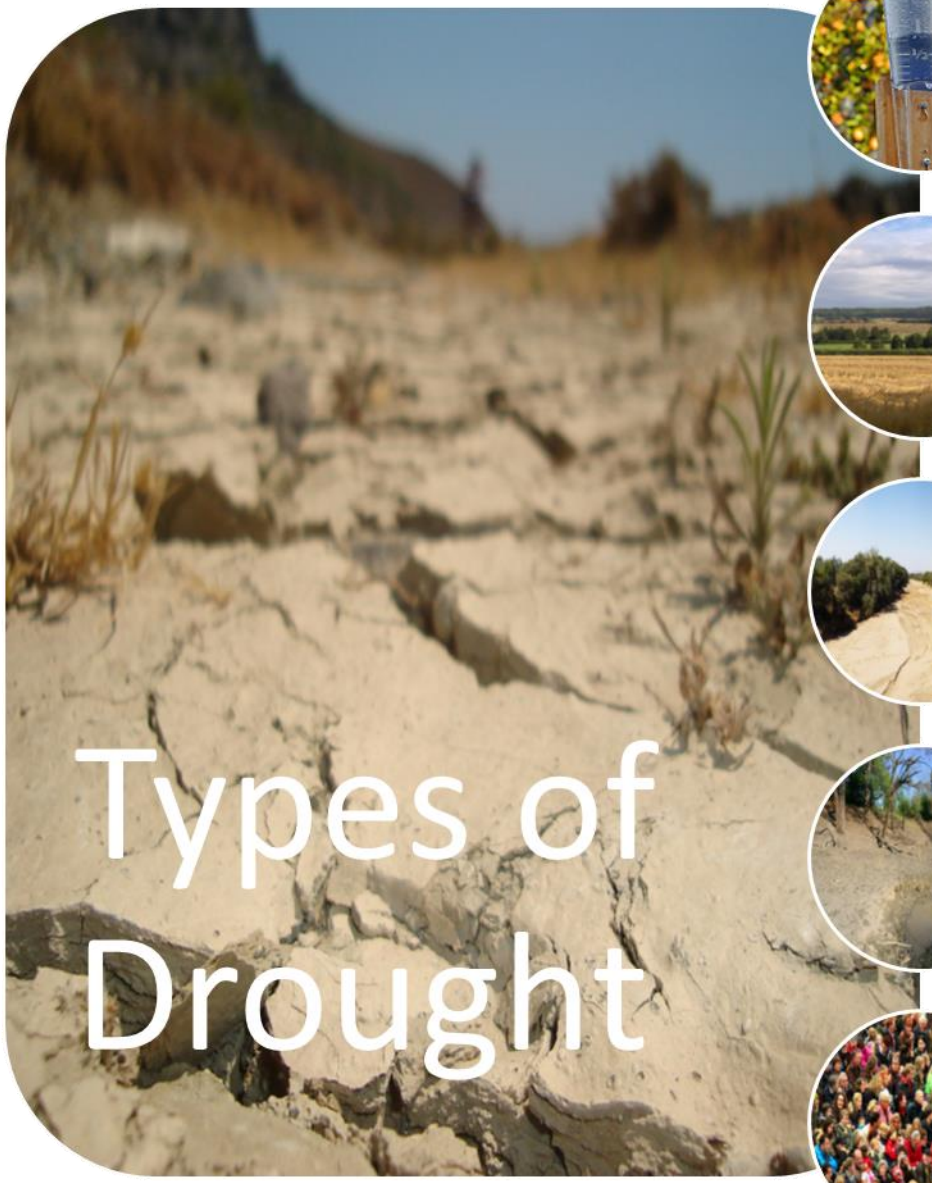
Map colors indicate drought intensity

Intensity is based on historical likelihood

			Percentile
	D0	Abnormally Dry	21-30
	D1	Moderate Drought	11-20
	D2	Severe Drought	6-10
	D3	Extreme Drought	3 - 5
	D4	Exceptional Drought	1 - 2



Map strives to represent different perspectives



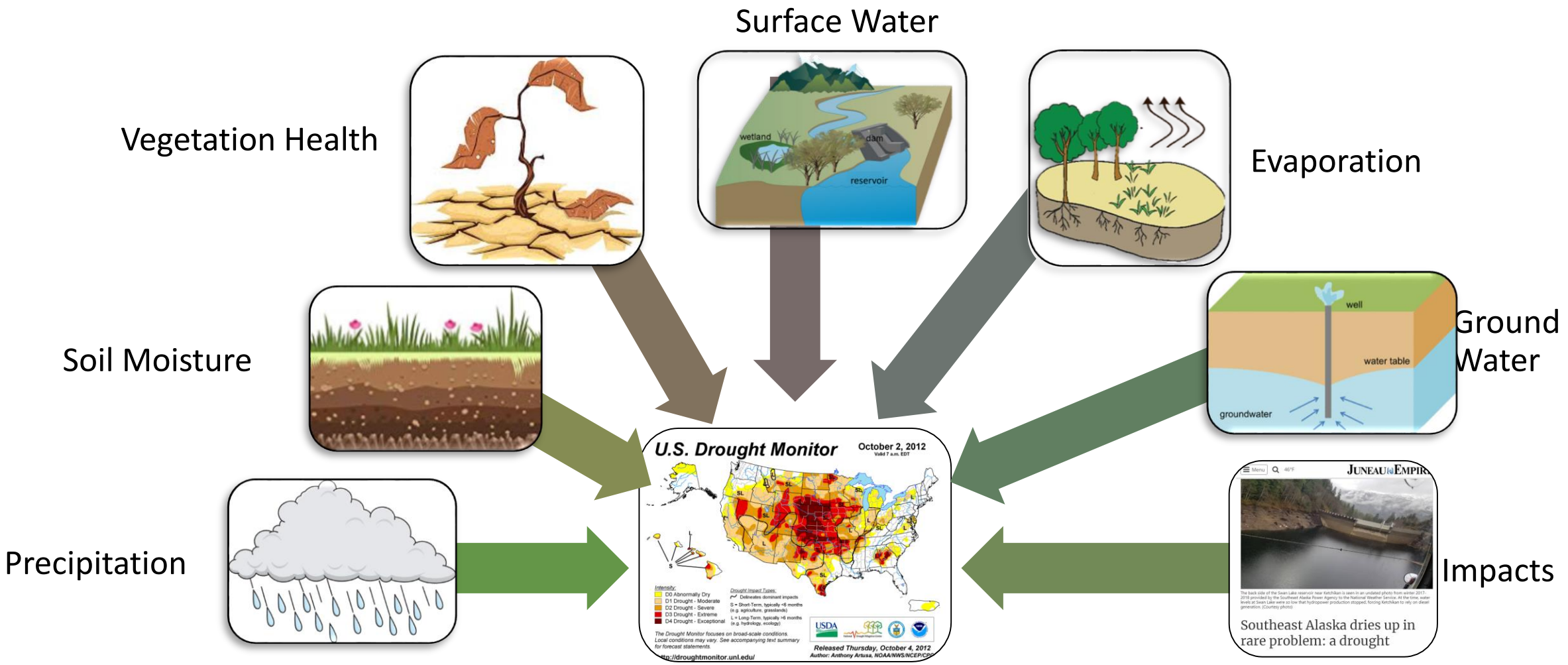
Meteorological

Agricultural

Hydrological

Ecological

Socio-economic



Perspectives captured by incorporating multiple types of data

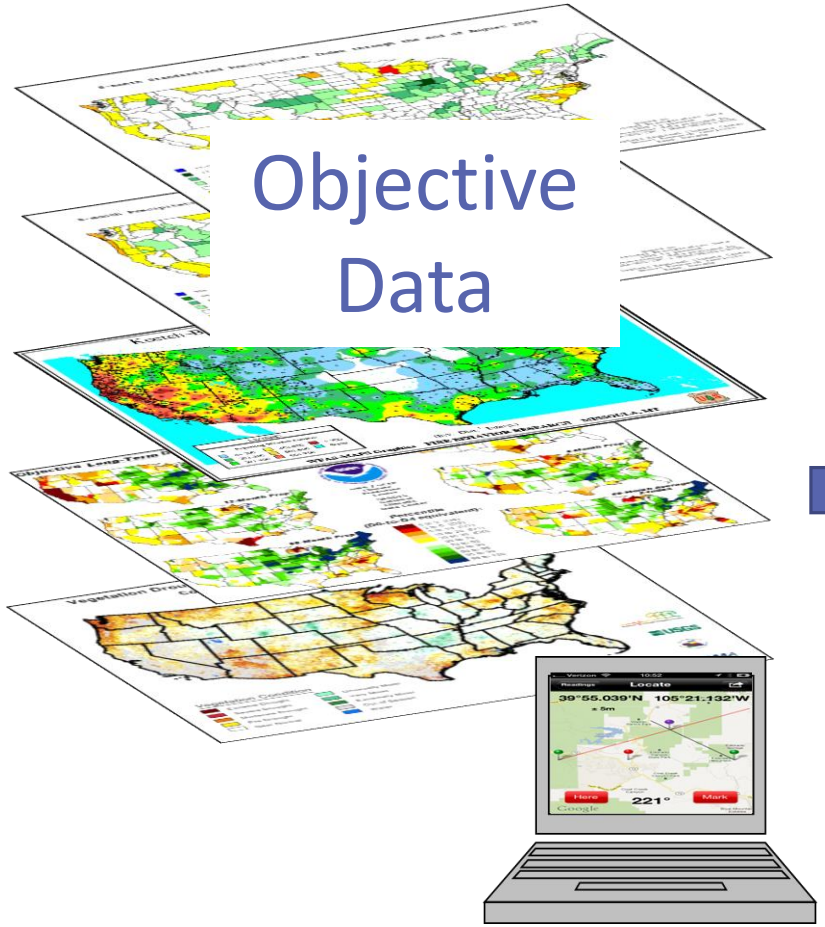
S = short term
typically < 6 months

separates drought timescales

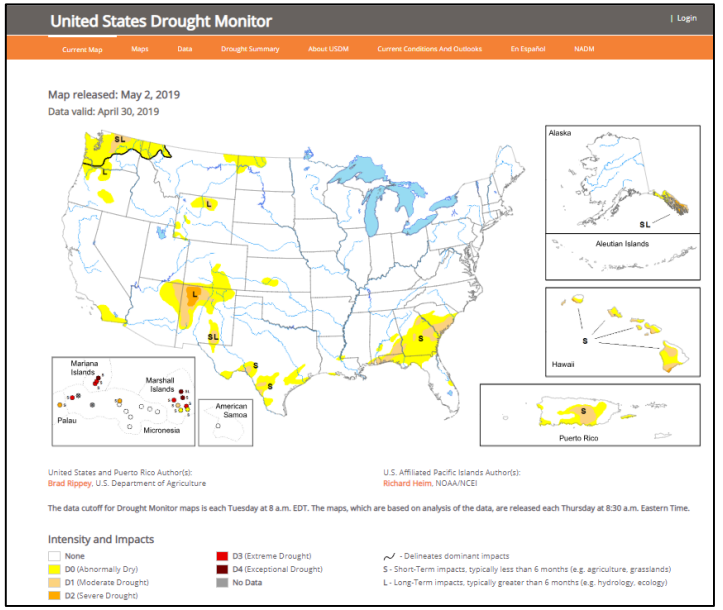
L = long term,
typically > 6 months

Map depicts short- and long-term conditions

Length evaluated by examining a range of timescales



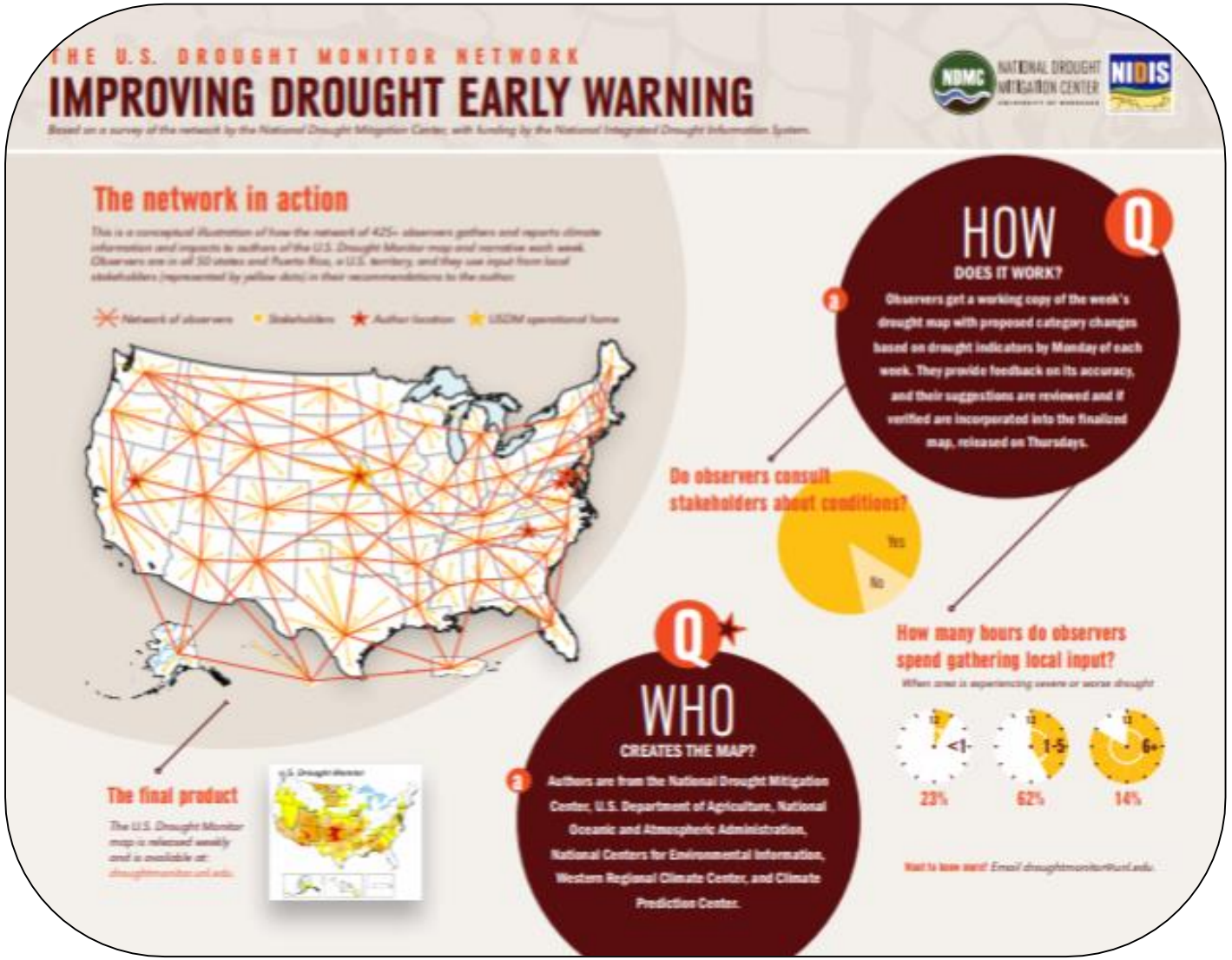
Subjective
Expertise



Map results from a convergence of evidence

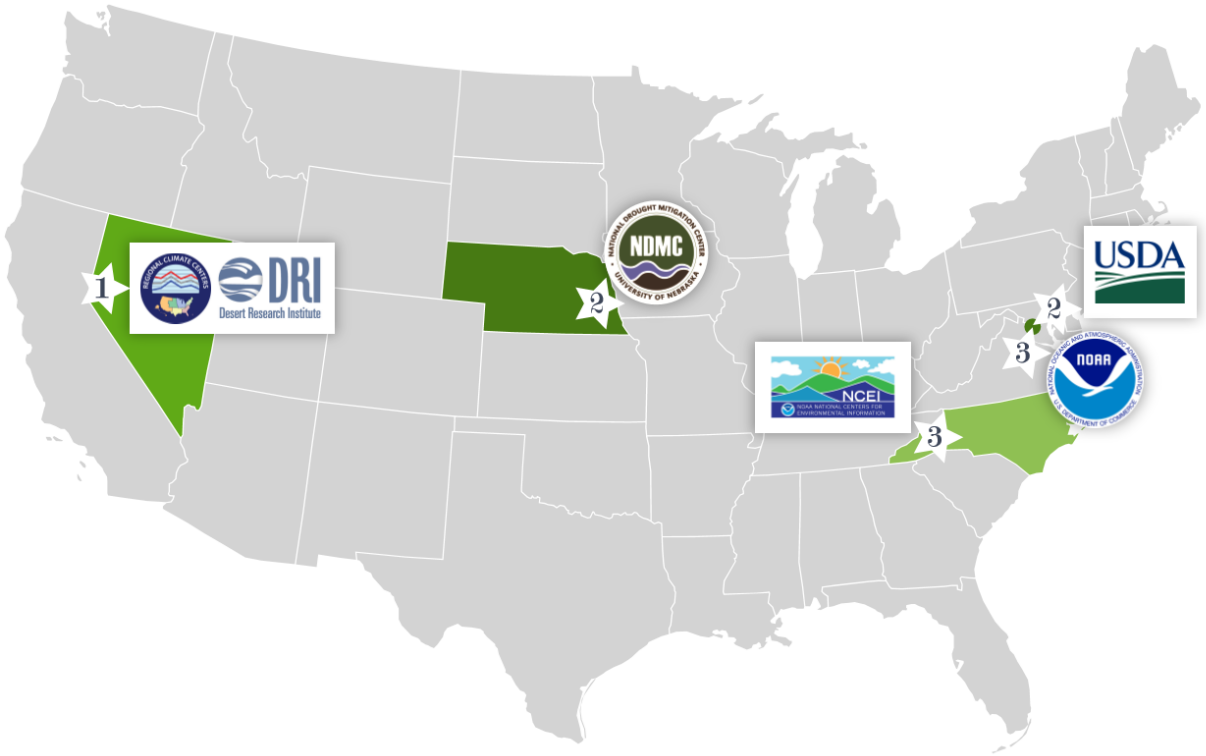
Takeaway #2

The map is a participatory process

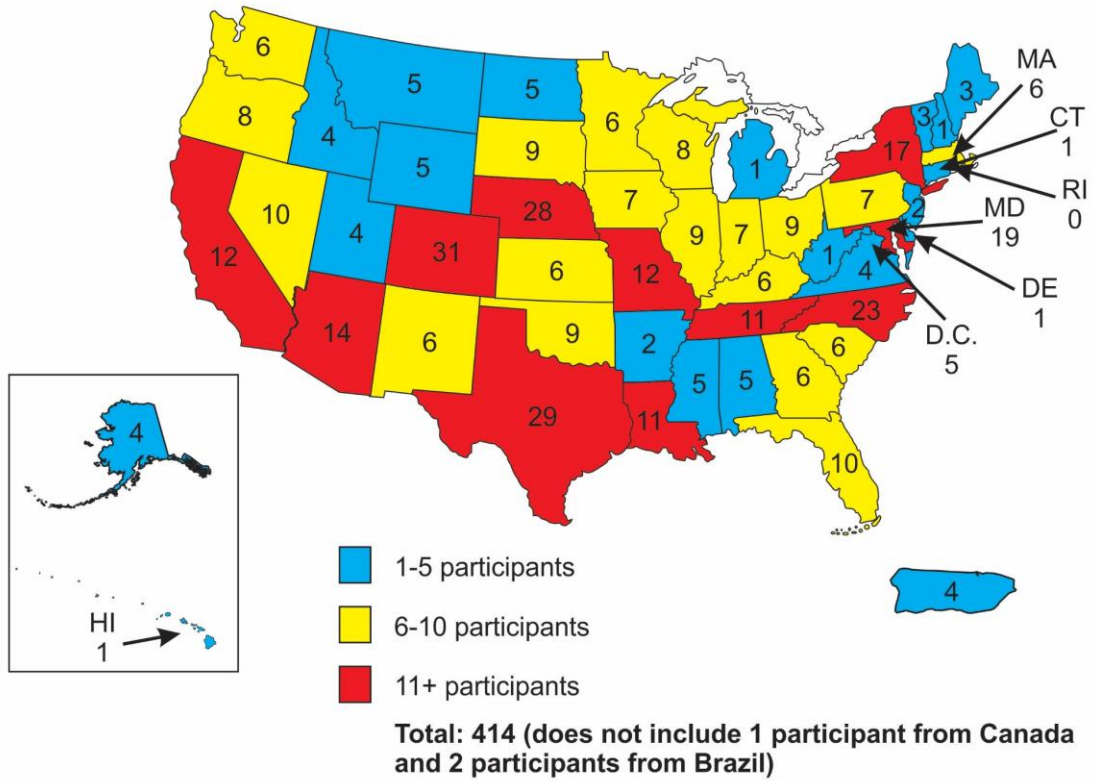


Partners collaborate on map standards & methodology

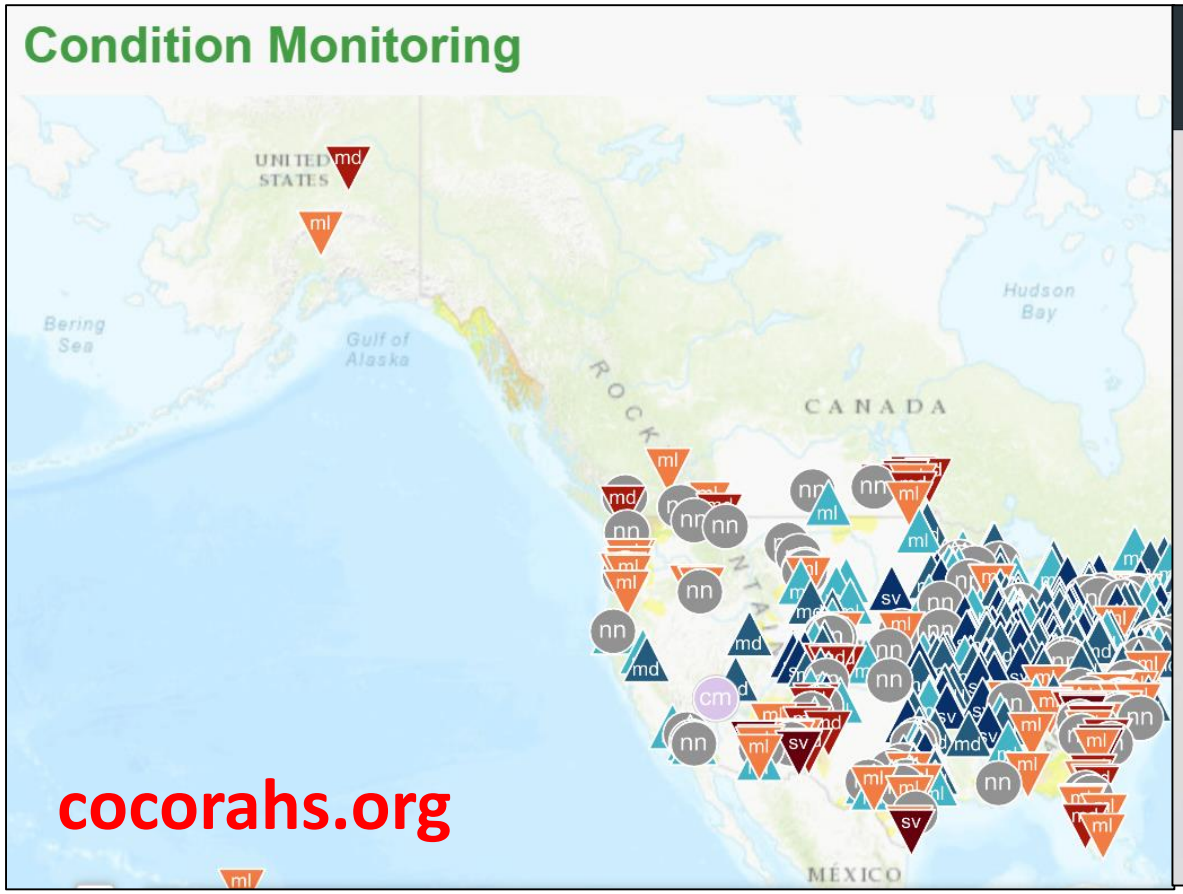
USDM Authors

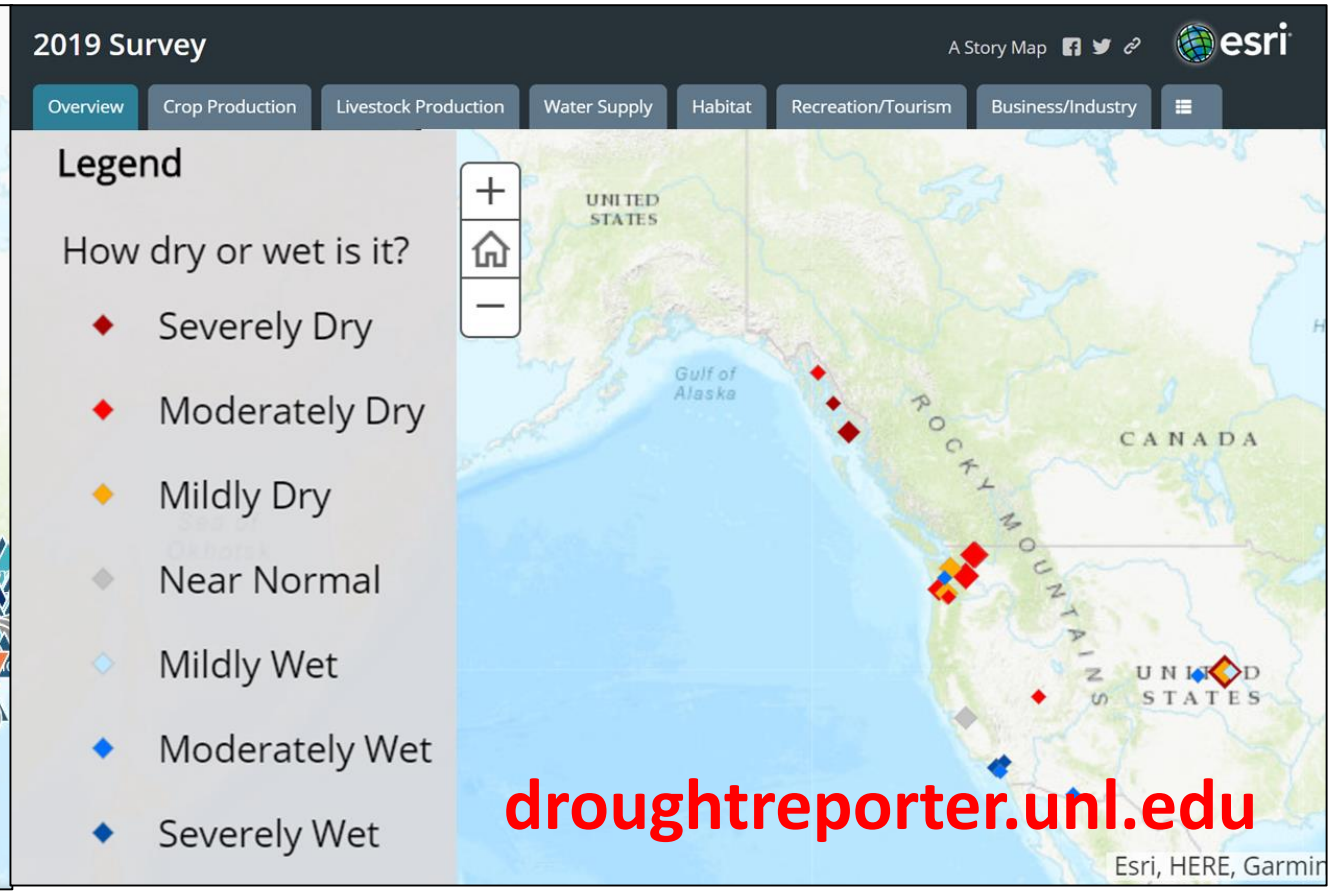


Local Experts



Authors interpret data & involve local experts in discussion



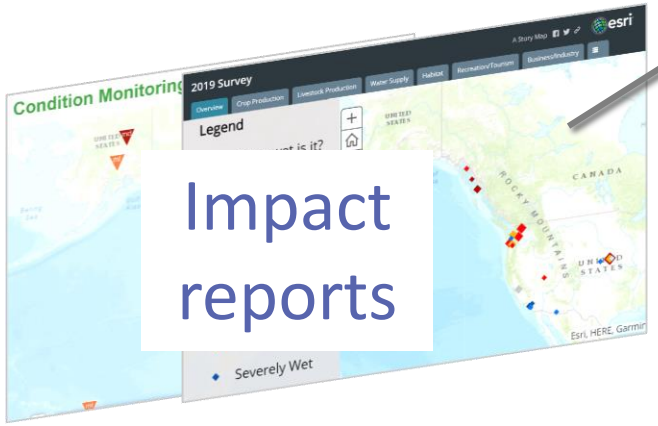


The public reports impacts to provide information on the effects of drought

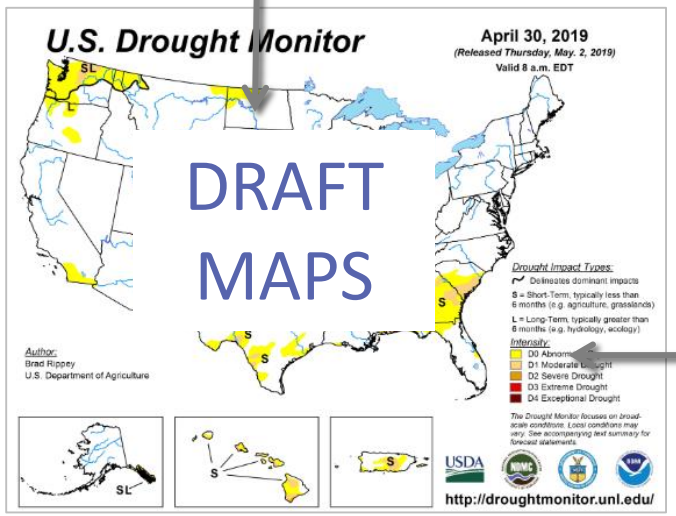
USDM
Convergence of Evidence

Objective data

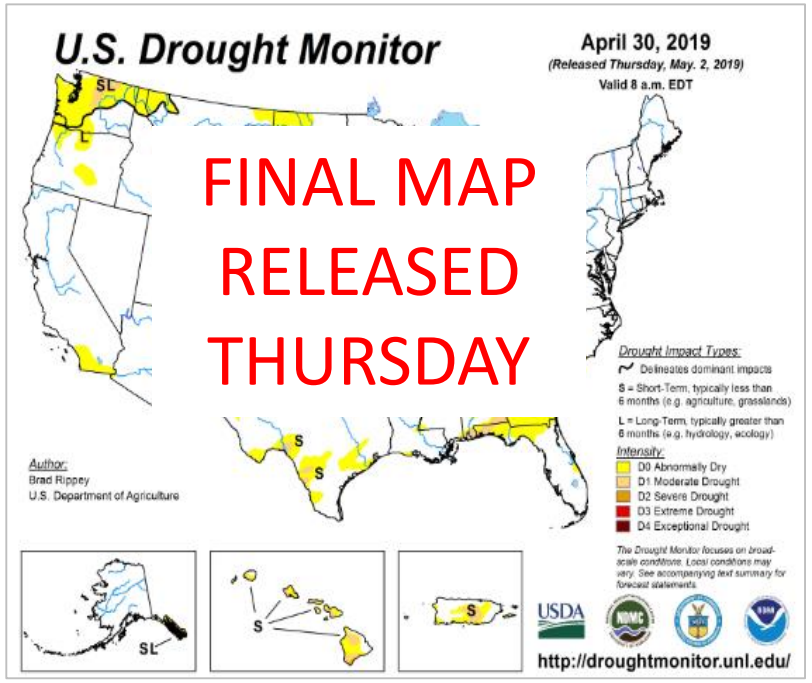
Author



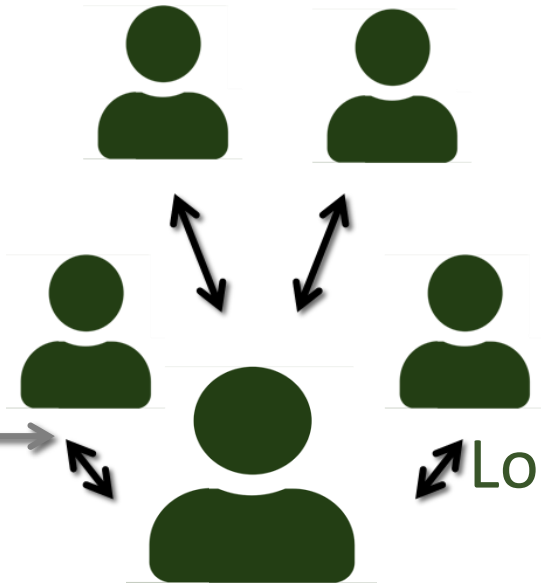
Impact reports



DRAFT MAPS

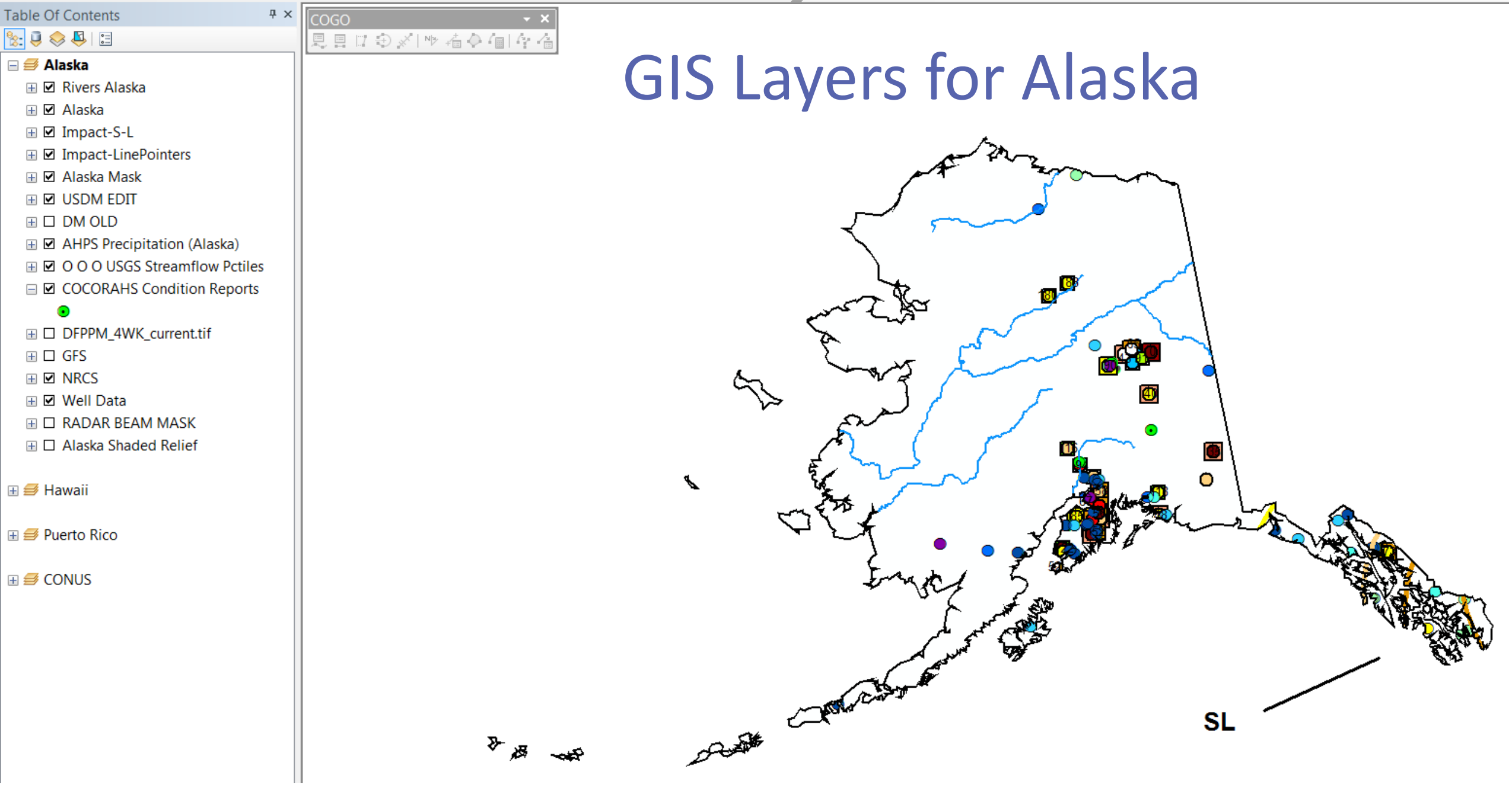


FINAL MAP RELEASED THURSDAY



Local experts

GIS Layers for Alaska



Air quality affected by diesel power generation in southeast Alaska
Dates of Impact: 2019-04-04 to unknown
Affected Area(s): Ketchikan Gateway Borough, AK, Ketchikan, AK, Wrangell-Petersburg Census Area, AK, Petersburg, AK, Wrangell, AK

Higher than normal fire activity near Juneau, Alaska
Dates of Impact: 2019-04-01 to unknown
Affected Area(s): Juneau City and Borough, AK, Juneau, AK

Public emergency, more diesel generators in Ketchikan, Alaska
Dates of Impact: 2019-03-21 to unknown
Affected Area(s): Ketchikan Gateway Borough, AK, Ketchikan, AK

Diesel surcharge delayed implementation of electric rate increase in Ketchikan, Alaska
Dates of Impact: 2019-03-07 to 2019-10-01
Affected Area(s): Ketchikan Gateway Borough, AK, Ketchikan, AK

Low water supplies threaten hatchery near Petersburg, Alaska
Dates of Impact: 2019-03-02 to 2019-04-21
Affected Area(s): Wrangell-Petersburg Census Area, AK, Petersburg, AK

Diesel replacing hydropower in several Alaska cities
Dates of Impact: 2019-02-28 to 2019-03-29
Affected Area(s): Ketchikan Gateway Borough, AK, Ketchikan, AK, Wrangell-Petersburg Census Area, AK, Petersburg, AK, Wrangell, AK

Reservoir water too warm for salmon fry in Juneau, Alaska
Dates of Impact: 2019-01-15 to 2019-03-02
Affected Area(s): Juneau City and Borough, AK, Juneau, AK

Higher electricity rates in Juneau, Alaska
Dates of Impact: 2018-12-17 to 2019-06-30
Affected Area(s): Juneau City and Borough, AK, Juneau, AK

Drought impacts in southeast Alaska
Dates of Impact: 2018-10-08 to 2018-10-11
Affected Area(s): Prince of Wales-Outer Ketchikan Census Area, AK, Metlakatla, AK

Surplus power interrupted in Juneau, Alaska
Dates of Impact: 2018-09-28 to 2019-04-01
Affected Area(s): Juneau City and Borough, AK, Juneau, AK

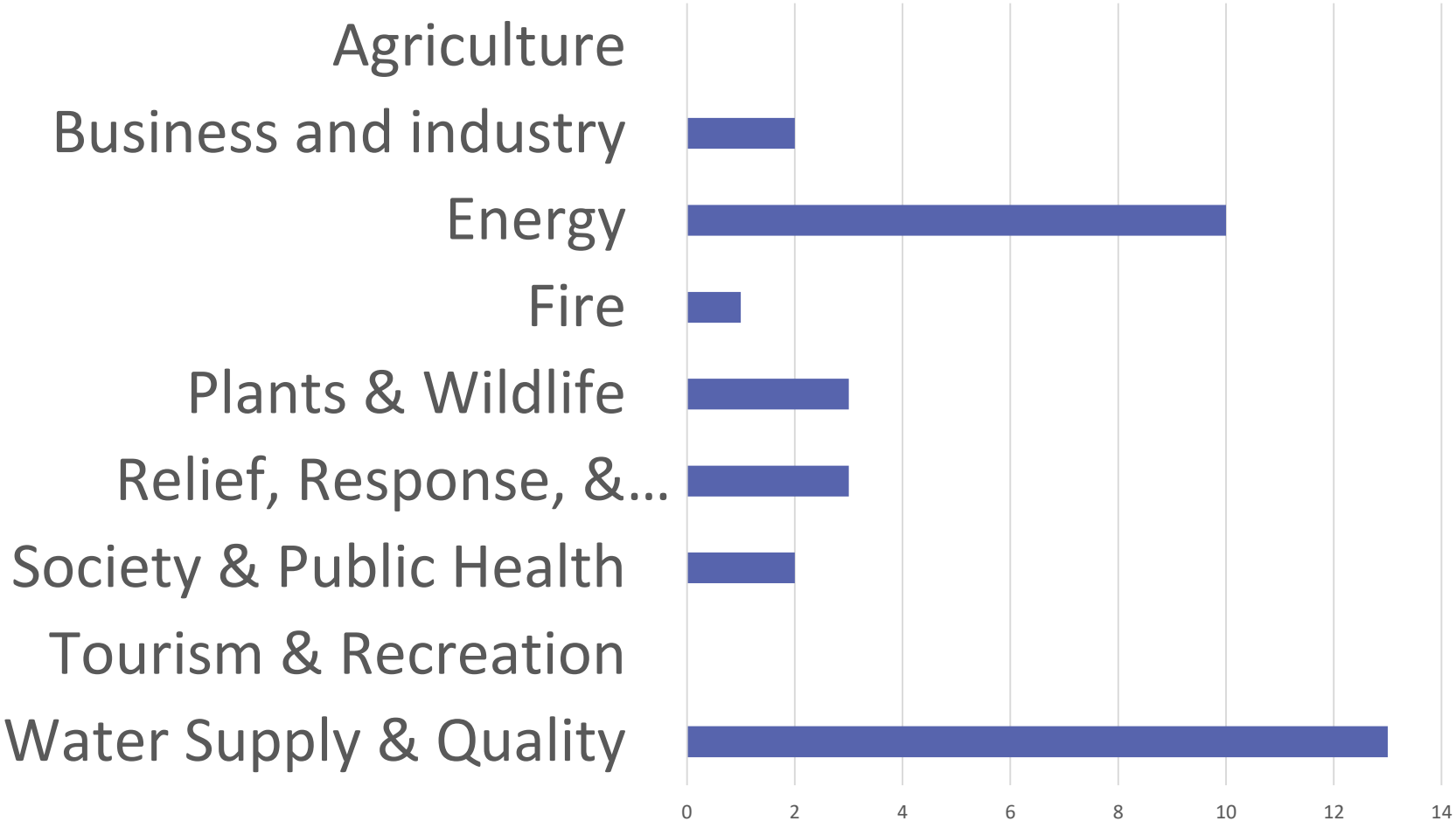
Ketchikan, Alaska relying on diesel powered generators, hydropower
Dates of Impact: 2018-08-31 to 2019-04-15
Affected Area(s): Ketchikan Gateway Borough, AK, Ketchikan, AK

Alternate energy source in use on Prince of Wales Island, Alaska
Dates of Impact: 2018-07-26 to unknown
Affected Area(s): Prince of Wales-Outer Ketchikan Census Area, AK

Metlakatla, Alaska relying on alternate power source
Dates of Impact: 2018-01-01 to 2018-12-07
Affected Area(s): Prince of Wales-Outer Ketchikan Census Area, AK, Metlakatla, AK

Dry weather impeding hydropower production in Ketchikan, Alaska
Dates of Impact: 2016-12-29 to unknown
Affected Area(s): Ketchikan Gateway Borough, AK, Ketchikan, AK, Wrangell-Petersburg Census Area, AK, Petersburg, AK

SE AK Drought Impacts



droughtreporter.unl.edu

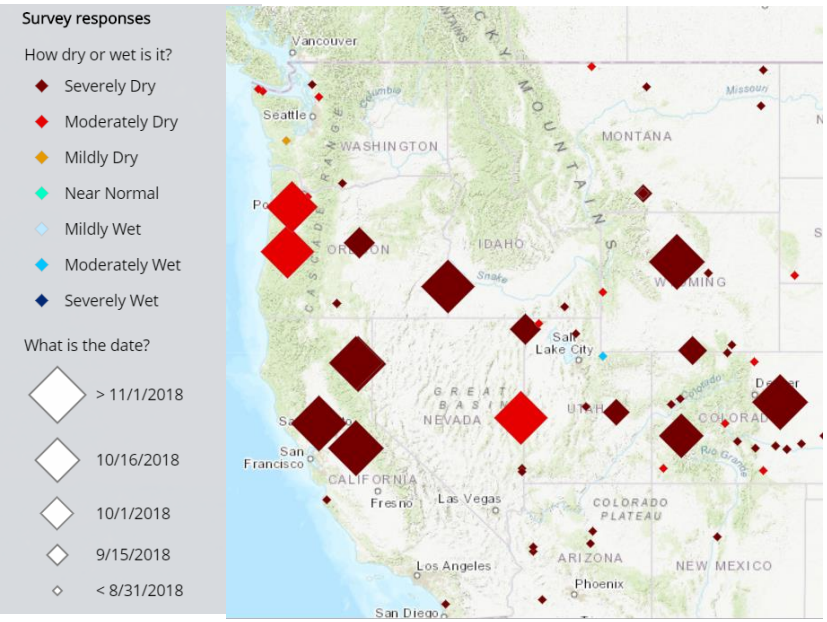
Providing Input into the USDM

LOCAL CONTACTS

- Join the USDM listserv
- Contact Aaron Jacobs

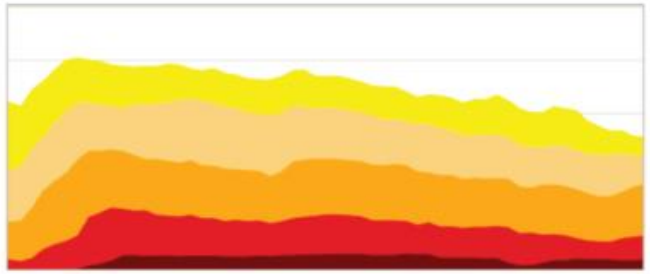
cocorahs.org

Droughtreporter.unl.edu



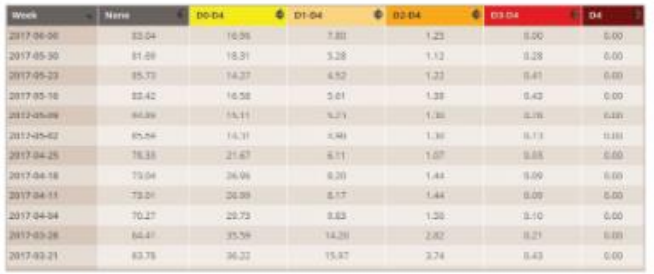
Takeway #3

It’s more than just a map



Time Series

View a graph of the U.S. Drought Monitor statistics for a chosen area.



Tabular Data Archive

View the U.S. Drought Monitor data in tabular format for a selected area.

GIS Data Files

Get GIS data files for each week including shapefiles, kmz, wms and more.

Data Download

Download U.S. Drought Monitor statistics.

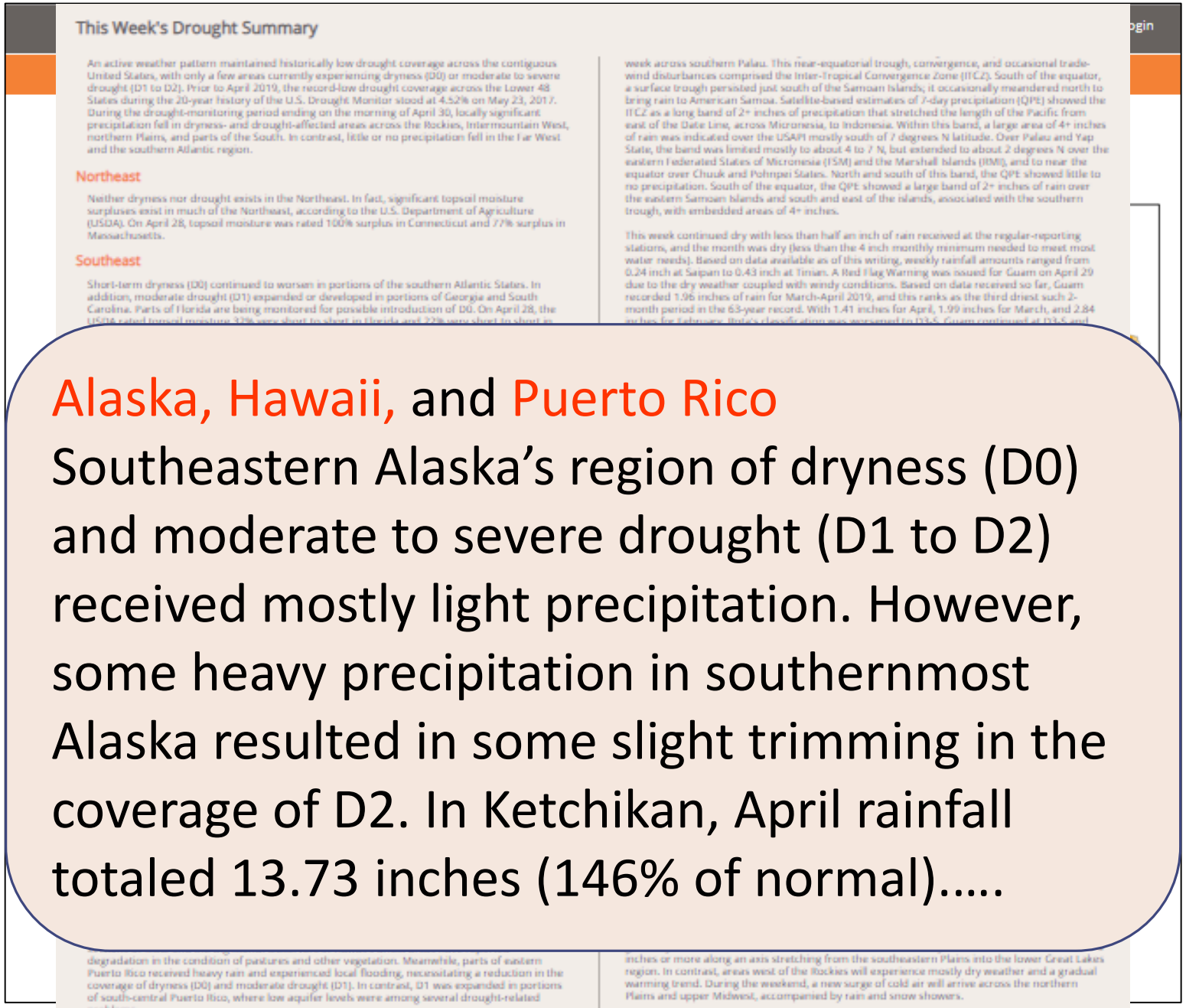
Metadata

Information about the GIS data and other U.S. Drought Monitor data file formats.

FSA Eligibility Tool

Tool to determine if an area qualifies for disaster payments from the Farm Service Agency.

A narrative explains any changes



This Week's Drought Summary

An active weather pattern maintained historically low drought coverage across the contiguous United States, with only a few areas currently experiencing dryness (D0) or moderate to severe drought (D1 to D2). Prior to April 2019, the record-low drought coverage across the Lower 48 States during the 20-year history of the U.S. Drought Monitor stood at 4.52% on May 23, 2017. During the drought-monitoring period ending on the morning of April 30, locally significant precipitation fell in dryness- and drought-affected areas across the Rockies, Intermountain West, northern Plains, and parts of the South. In contrast, little or no precipitation fell in the Far West and the southern Atlantic region.

Northeast

Neither dryness nor drought exists in the Northeast. In fact, significant topsoil moisture surpluses exist in much of the Northeast, according to the U.S. Department of Agriculture (USDA). On April 28, topsoil moisture was rated 100% surplus in Connecticut and 77% surplus in Massachusetts.

Southeast

Short-term dryness (D0) continued to worsen in portions of the southern Atlantic States. In addition, moderate drought (D1) expanded or developed in portions of Georgia and South Carolina. Parts of Florida are being monitored for possible introduction of D0. On April 28, the USDA rated topsoil moisture 33% very short to short in Florida and 22% very short to short in

week across southern Palau. This near-equatorial trough, convergence, and occasional trade-wind disturbances comprised the Inter-Tropical Convergence Zone (ITCZ). South of the equator, a surface trough persisted just south of the Samoan Islands; it occasionally meandered north to bring rain to American Samoa. Satellite-based estimates of 7-day precipitation (QPE) showed the ITCZ as a long band of 2+ inches of precipitation that stretched the length of the Pacific from east of the Date Line, across Micronesia, to Indonesia. Within this band, a large area of 4+ inches of rain was indicated over the USAPI mostly south of 7 degrees N latitude. Over Palau and Yap State, the band was limited mostly to about 4 to 7 N, but extended to about 2 degrees N over the eastern Federated States of Micronesia (FSM) and the Marshall Islands (RMI), and to near the equator over Chuuk and Pohnpei States. North and south of this band, the QPE showed little to no precipitation. South of the equator, the QPE showed a large band of 2+ inches of rain over the eastern Samoan Islands and south and east of the islands, associated with the southern trough, with embedded areas of 4+ inches.

This week continued dry with less than half an inch of rain received at the regular-reporting stations, and the month was dry (less than the 4 inch monthly minimum needed to meet most water needs). Based on data available as of this writing, weekly rainfall amounts ranged from 0.24 inch at Saipan to 0.43 inch at Tinian. A Red Flag Warning was issued for Guam on April 29 due to the dry weather coupled with windy conditions. Based on data received so far, Guam recorded 1.96 inches of rain for March-April 2019, and this ranks as the third driest such 2-month period in the 63-year record. With 1.41 inches for April, 1.99 inches for March, and 2.84 inches for February, Guam's classification was recovered to D3-S. Guam continued at D3-S and

degradation in the condition of pastures and other vegetation. Meanwhile, parts of eastern Puerto Rico received heavy rain and experienced local flooding, necessitating a reduction in the coverage of dryness (D0) and moderate drought (D1). In contrast, D1 was expanded in portions of south-central Puerto Rico, where low aquifer levels were among several drought-related problems.

Pacific Islands

The overall weather pattern changed little during this USDM week (4/24/19-4/30/19). Dry trade winds blowing out of the North Pacific subtropical ridge (North Pacific High) inhibited precipitation across northern portions of Micronesia. As these faster trade winds encountered

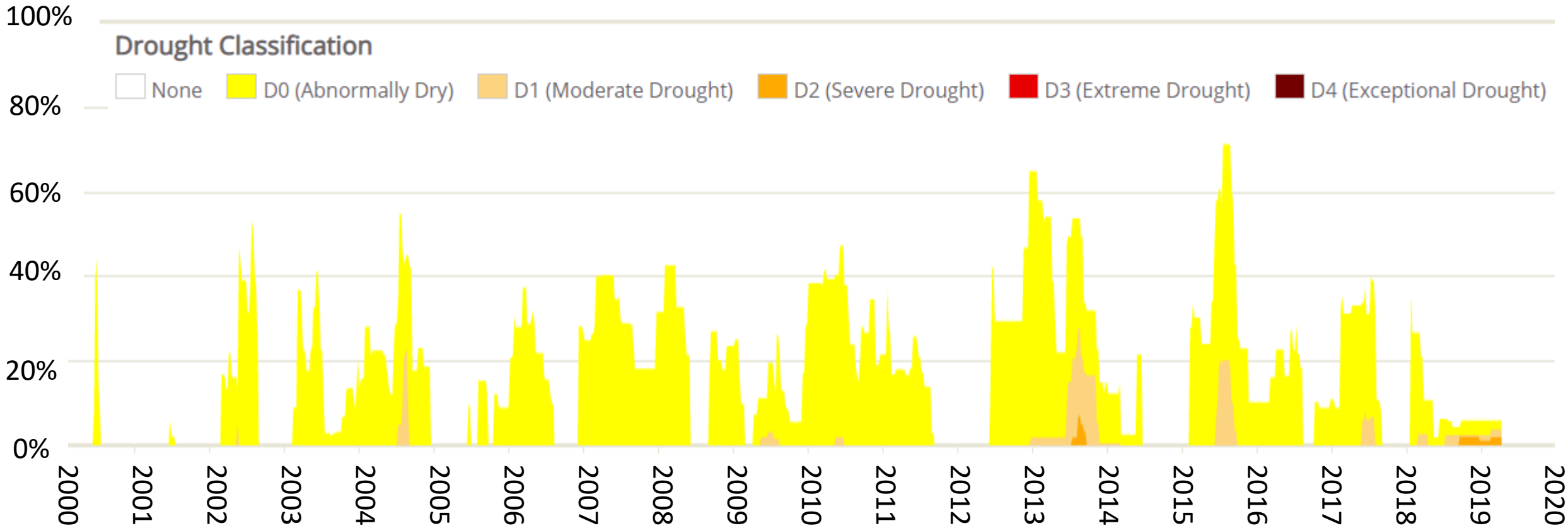
inches or more along an axis stretching from the southeastern Plains into the lower Great Lakes region. In contrast, areas west of the Rockies will experience mostly dry weather and a gradual warming trend. During the weekend, a new surge of cold air will arrive across the northern Plains and upper Midwest, accompanied by rain and snow showers.

The NWS 6- to 10-day outlook for May 7 - 11 calls for the likelihood of wetter-than-normal weather nearly nationwide. Below-normal precipitation should be limited to northern California and the Pacific Northwest. Meanwhile, warmer-than-normal conditions across the Southeast and the Far West should contrast with below-normal temperatures in most other regions, including a large area stretching from the Southwest into large sections of the Rockies, Plains, and upper Midwest.

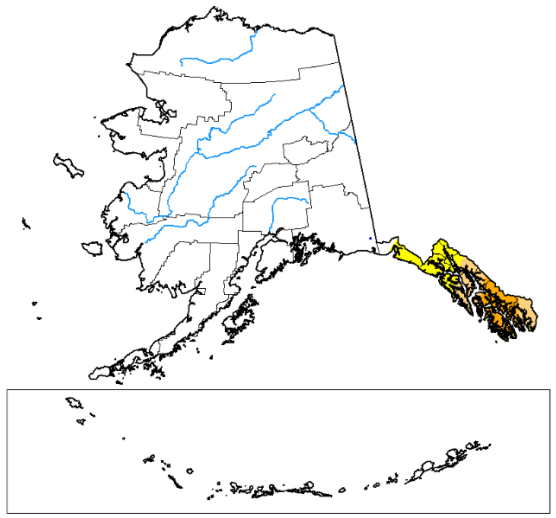
Alaska, Hawaii, and Puerto Rico

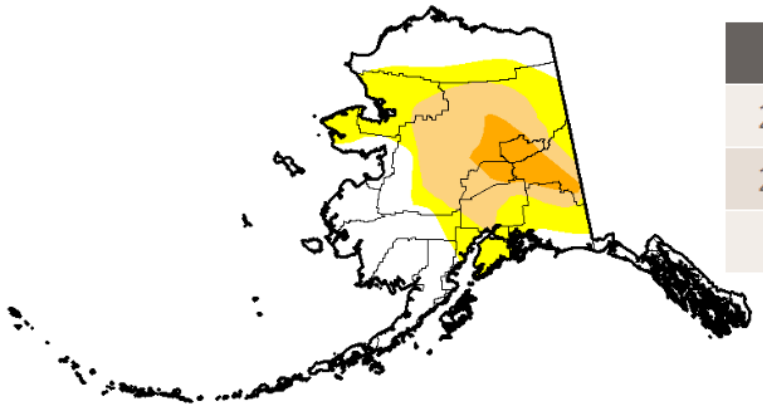
Southeastern Alaska's region of dryness (D0) and moderate to severe drought (D1 to D2) received mostly light precipitation. However, some heavy precipitation in southernmost Alaska resulted in some slight trimming in the coverage of D2. In Ketchikan, April rainfall totaled 13.73 inches (146% of normal).....

Alaska Percent Area



Timeseries provides a history





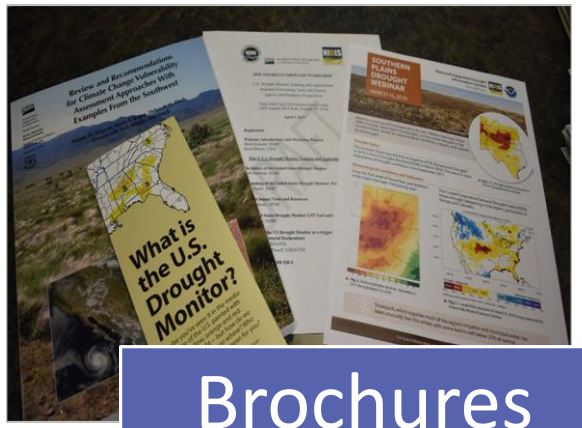
Percent Area

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
2019-04-30	94.17	5.83	3.74	1.69	0.00	0.00	11
2013-08-27	46.42	53.58	27.66	6.98	0.00	0.00	88
Change	-47.75	47.75	23.92	5.29	0.00	0.00	77

Population

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
2019-04-30	620,589	68,104	50,802	12,624	0	0	11
2013-08-27	130,991	557,703	168,219	93,553	0	0	88
Change	-489598	489599	117417	80929	0	0	77

Tutorials



Brochures

Webinars

Media

Workshops

Additional information

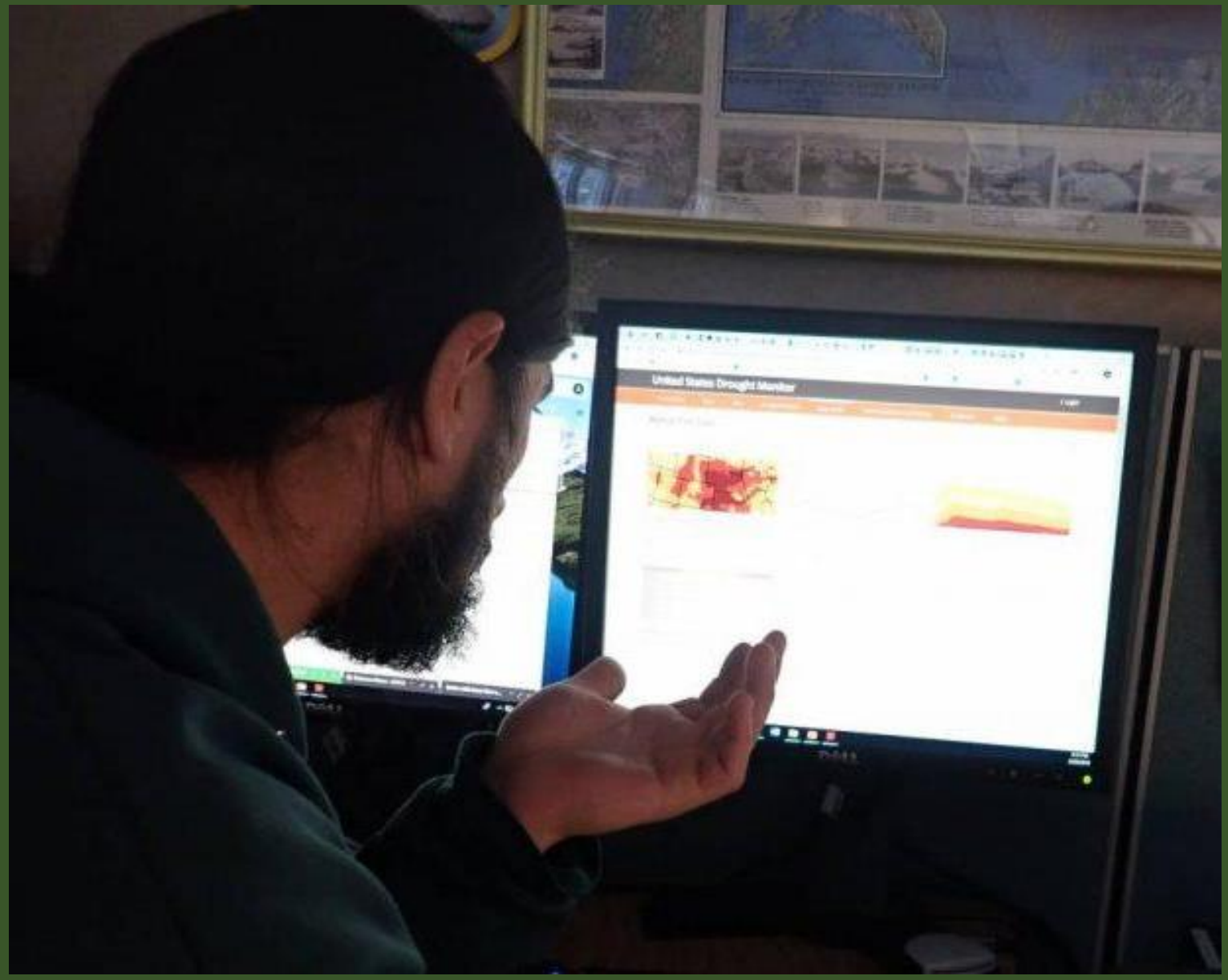
Drought is a normal part of climate

No single agency is in charge of monitoring drought

USDM is increasingly used for federal programs

Why participate?

The Local Process



Southeast Alaska Local Drought Monitor(DM) Contact: Aaron Jacobs

(Senior Service Hydrologist/Meteorologist NOAA National Weather Service in Juneau)

- Look at current and past rainfall/snow data (weekly/monthly)
- Determines if there are deficits for drought impacts.
- Reach out to community's hydro power companies for impacts.
- Reach out to ADF&G about fisheries issues.
- Search for news articles
- Make drought category(D0-D4) recommendations to DM author.

- ***HOW CAN YOU IMPROVE/HELP THIS PROCESS????***

How to improve SEAK drought impact reporting
&
What type of information is needed

- Use the **Drought Reporter** to pass on impacts.
- Send email to local DM contact
- Call local DM contact

- Reservoir levels compare to rule curve
- Water restrictions/conservation
- Use of diesel power (how much: intermittent/full time)
- Low stream flows
- Fisheries (Fish kills, hatcheries impacts, other?)
- Forest/ecology impacts
- Impacts from low snowpack (winter sports)

National Weather Service
Weather-Ready Nation(WRN)
Ambassador Initiative

What is it?

- Formally recognize NOAA partners who are improving the nation's *readiness, responsiveness, and overall resilience* against extreme weather, ***water***, and climate events.
- The WRN Ambassador initiative helps unify the efforts across government, native, non-profits, academia, and private industry toward making the nation more ready, responsive, and resilient against extreme environmental hazards.
- Weather-Ready Nation(WRN) is a strategic outcome where society's response should be equal to the risk from all extreme weather, water, and climate hazards.

National Weather Service
Weather-Ready Nation(WRN)
Ambassador Initiative

Why be a part of this?

- Building a Weather-Ready Nation requires more than government **alone**. We must involve everyone in an effort to move people – and society – toward heeding warnings, taking action, and influencing their circles of family, friends, and social network to act appropriately.
- WRN Ambassadors: Serve a pivotal role in affecting societal change & inspire others to be better informed and prepared, helping to minimize or even avoid the impacts of these natural disasters **(drought)**
- Engage with NOAA NWS personnel on potential collaboration opportunities **(Southeast Alaska drought)**
- How to sign up: go to https://www.weather.gov/wrn/amb-tou

DROUGHT.UNL.EDU e | ndmc@unl.edu /NationalDroughtMitigationCenter @droughtcenter

Deborah Bathke
dbathke2@unl.edu

Aaron Jacobs
aaron.jacobs@noaa.gov