



Colorado Drought

Middle School Hazard Lesson

Setting the Stage



Impacts of drought on the Colorado River in the Southwest U.S.
Photo Credit: USGS <https://pubs.usgs.gov/fs/2004/3062/>

Driving Question:

What can we learn from past drought events to prepare for future drought?

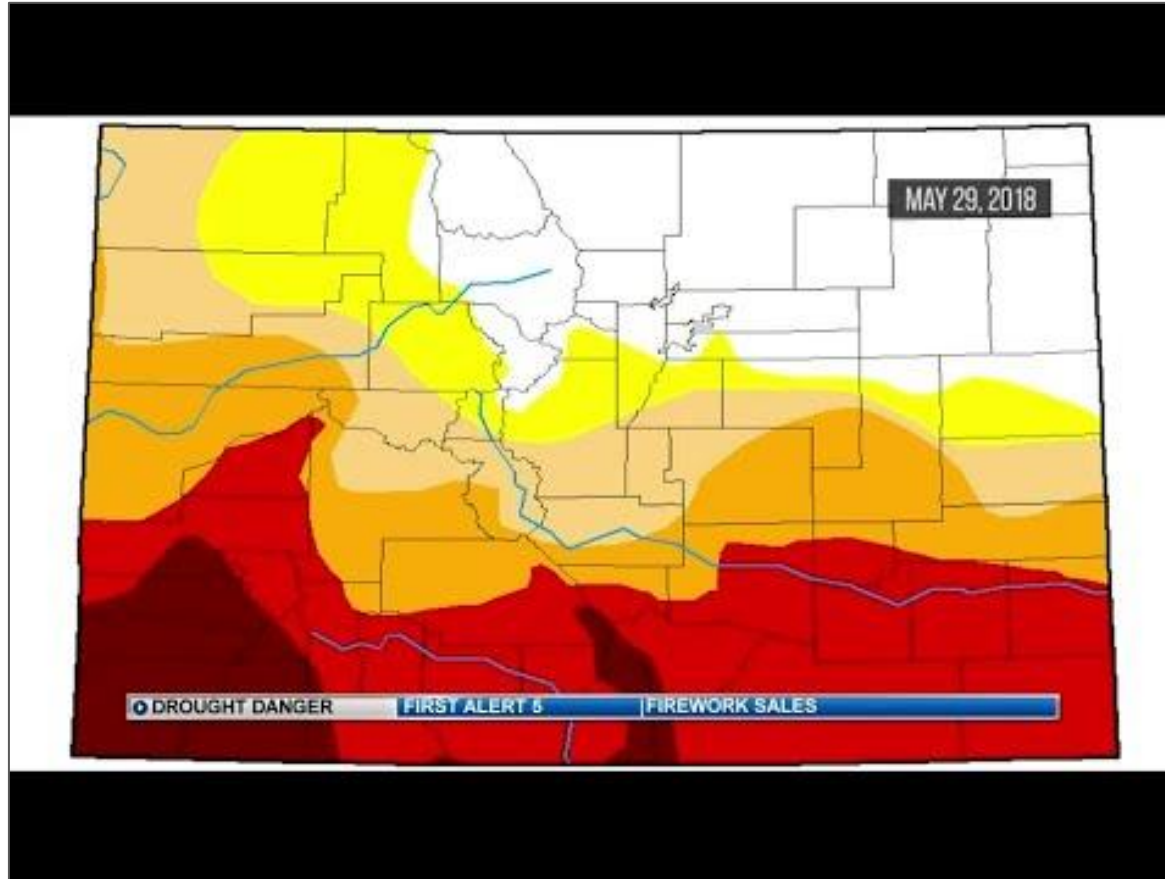
Learning Goals:

- Analyze drought data to identify patterns of drought history and risk in Colorado.
- Communicate information about the causes and effects of drought in your community. Explain what community members should do in response to a drought.

Part 1: Drought, wildfire, and weather: What's the connection in Colorado?

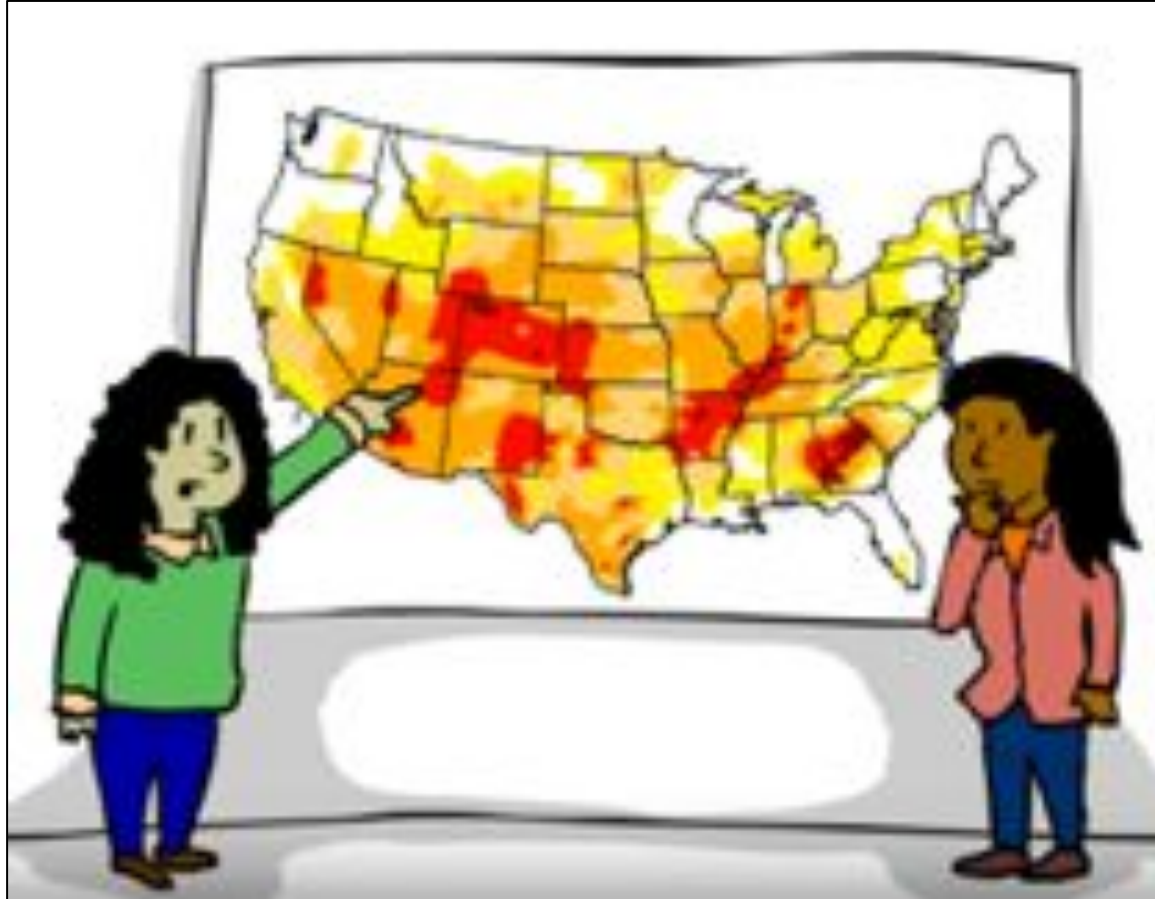
KWL Chart	
What I K now	
What I W onder	
What I L earned (Activity 3)	

Drought, wildfire, and weather: What's the connection in Colorado?



Watch: [Drought News Clip](#)

Drought, wildfire, and weather: What's the connection in Colorado?



Watch: [Assessing Drought in the United States](#)

Drought Categories

Category	Description	Possible Impacts
D0	Abnormally Dry	<p>Going into drought:</p> <ul style="list-style-type: none"> short-term dryness slowing planting, growth of crops or pastures <p>Coming out of drought:</p> <ul style="list-style-type: none"> some lingering water deficits pastures or crops not fully recovered
D1	Moderate Drought	<ul style="list-style-type: none"> Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary water-use restrictions requested
D2	Severe Drought	<ul style="list-style-type: none"> Crop or pasture losses likely Water shortages common Water restrictions imposed
D3	Extreme Drought	<ul style="list-style-type: none"> Major crop/pasture losses Widespread water shortages or restrictions
D4	Exceptional Drought	<ul style="list-style-type: none"> Exceptional and widespread crop/pasture losses Shortages of water in reservoirs, streams, and wells creating water emergencies

[United States Drought Monitor Drought Classification](https://cires.colorado.edu/outreach/)

Drought, wildfire, and weather: What's the connection in Colorado?

KWL Chart	
What I K now	
What I W onder	
What I L earned (Activity 3)	

Jigsaw Station 1: Drought Causes and Impacts



What is drought?

Weather Climate | water drought wildfires

SHARE



Droughts differ from most other natural hazards because of their gradual onset and accumulation of impacts over months, seasons, and even years.

Drought is a deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people. Drought is different from aridity, which is a permanent feature of climate in regions where low precipitation is the norm, as in a desert.

Read: NOAA [Drought in America: Slow moving, far reaching](#)

Jigsaw Station 1: Drought Causes and Impacts

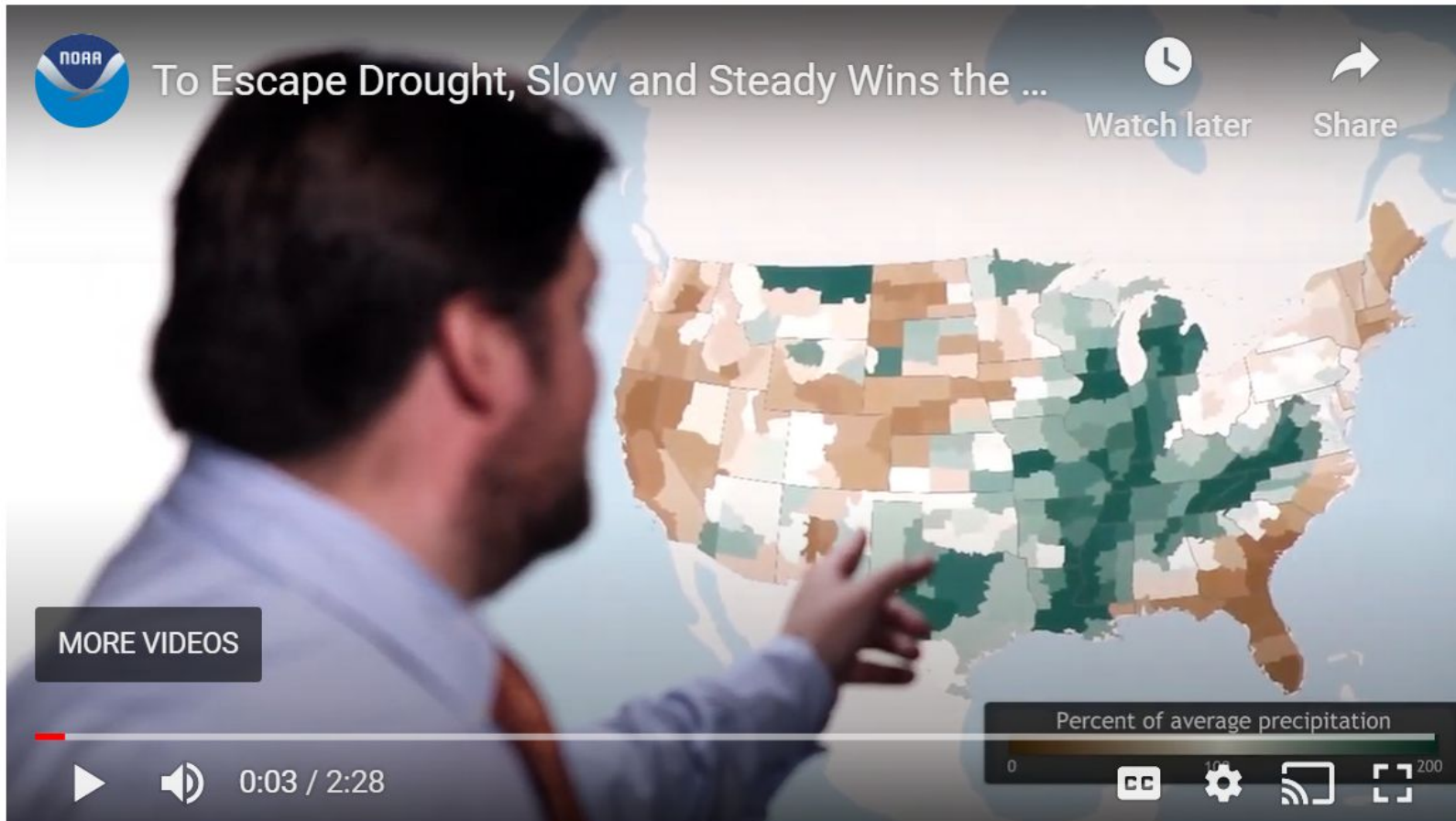
A lack of essential rains can devastate crops, pastures, and ecosystems while severe heat waves that often accompany summer droughts can increase demands for energy and water resources, heighten wildfire risks, and contribute to a wide range of human health impacts. Drought ranks as the second most common type of billion-dollar weather disaster over the past three decades, surpassed only by tropical storms/hurricanes.

In addition to the toll it places on the economy, drought also affects the environment and society. Plants, animals and fish depend on water, just as people do. Drought can shrink their food supplies and damage their habitats. Sometimes this damage is only temporary, and other times it is irreversible.

Drought can also affect people's health and safety. Examples of drought impacts on society include crop or farmed animal loss, anxiety or depression about economic losses, conflicts among individuals, communities or even countries when there is not enough water, reduced incomes, fewer recreational activities, higher incidence of heat stroke, and even loss of human life.

Read: NOAA [Drought in America: Slow moving, far reaching](#)

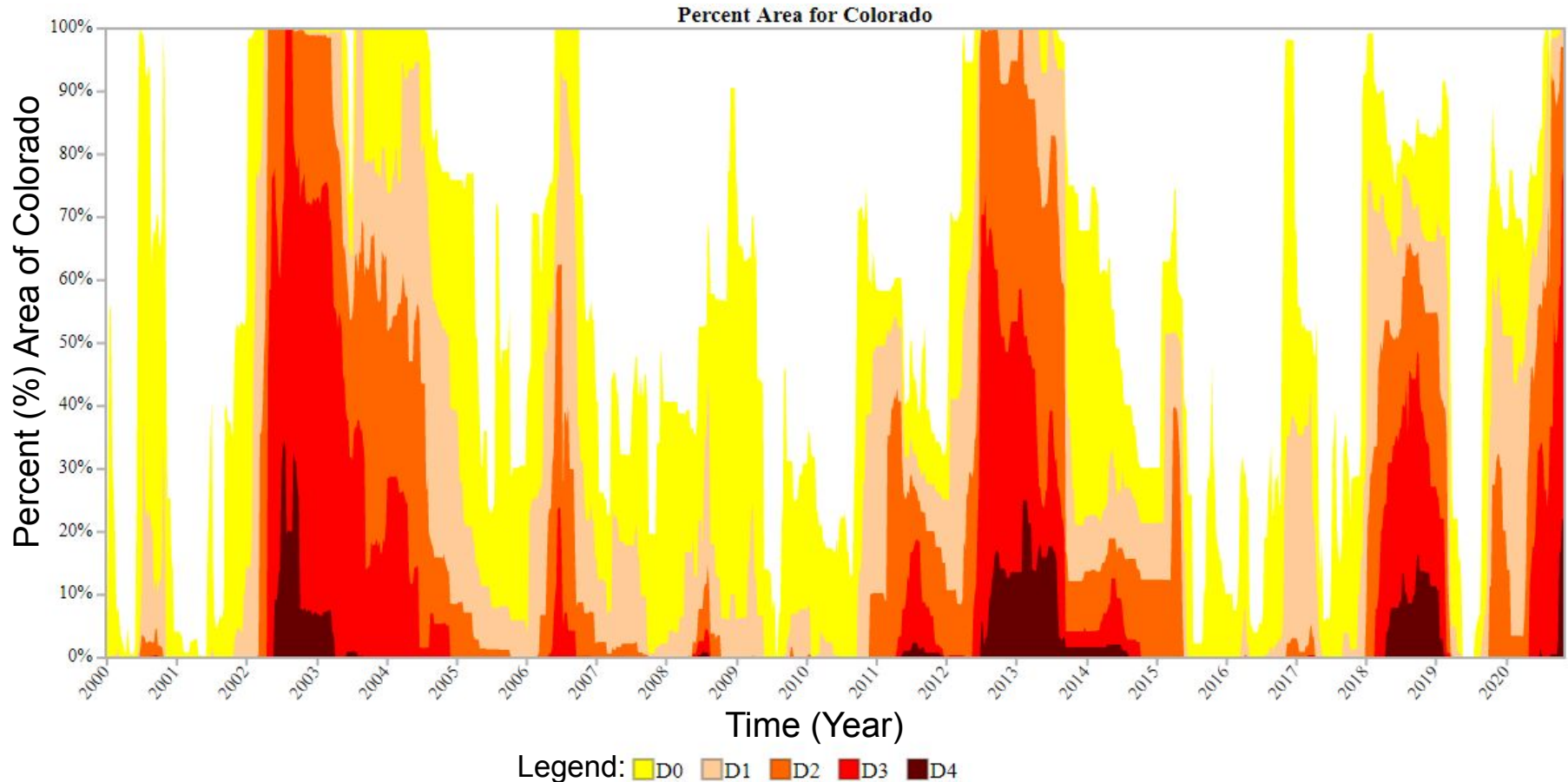
Jigsaw Station 1: Drought Preparation & Response



View: NOAA [To Escape Drought, Slow and Steady Wins the Race](https://www.noaa.gov/media/2015/05/2015-05-20-01)

Jigsaw Station 2: Drought History in Colorado

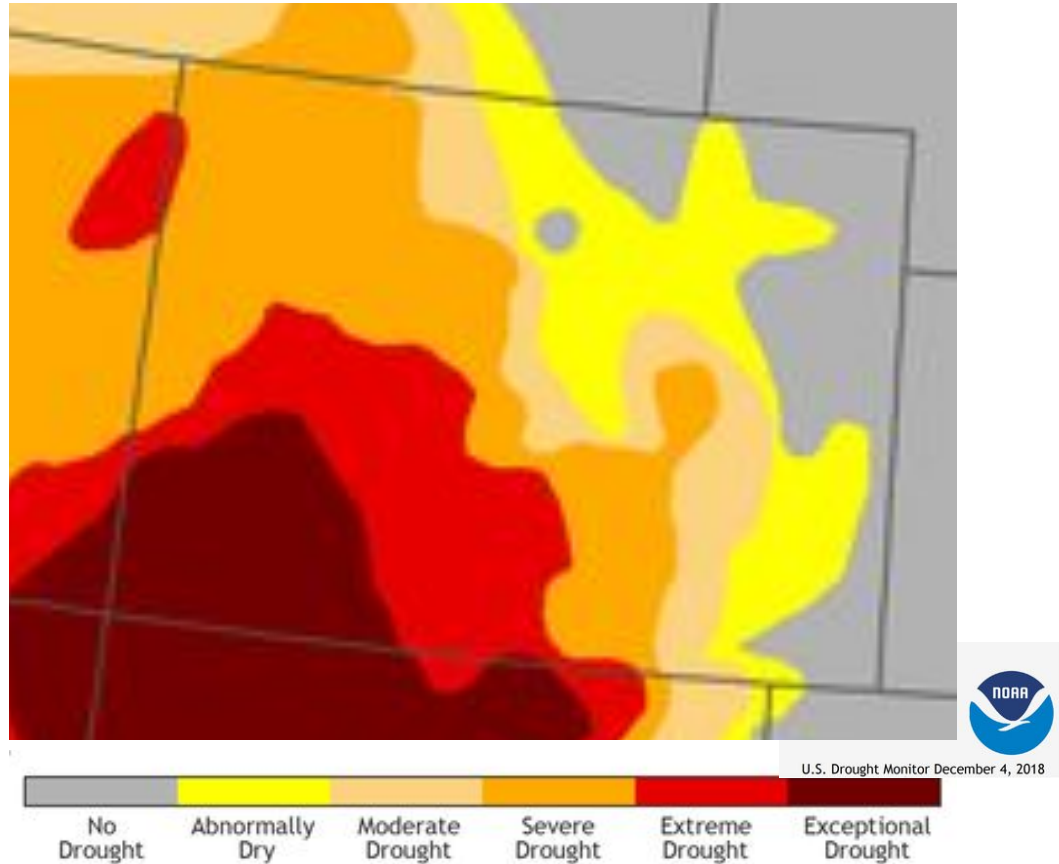
Drought in Colorado from 2000-2020



Interpret: [Drought History in Colorado](#) graph

Jigsaw Station 2: Drought History in Colorado

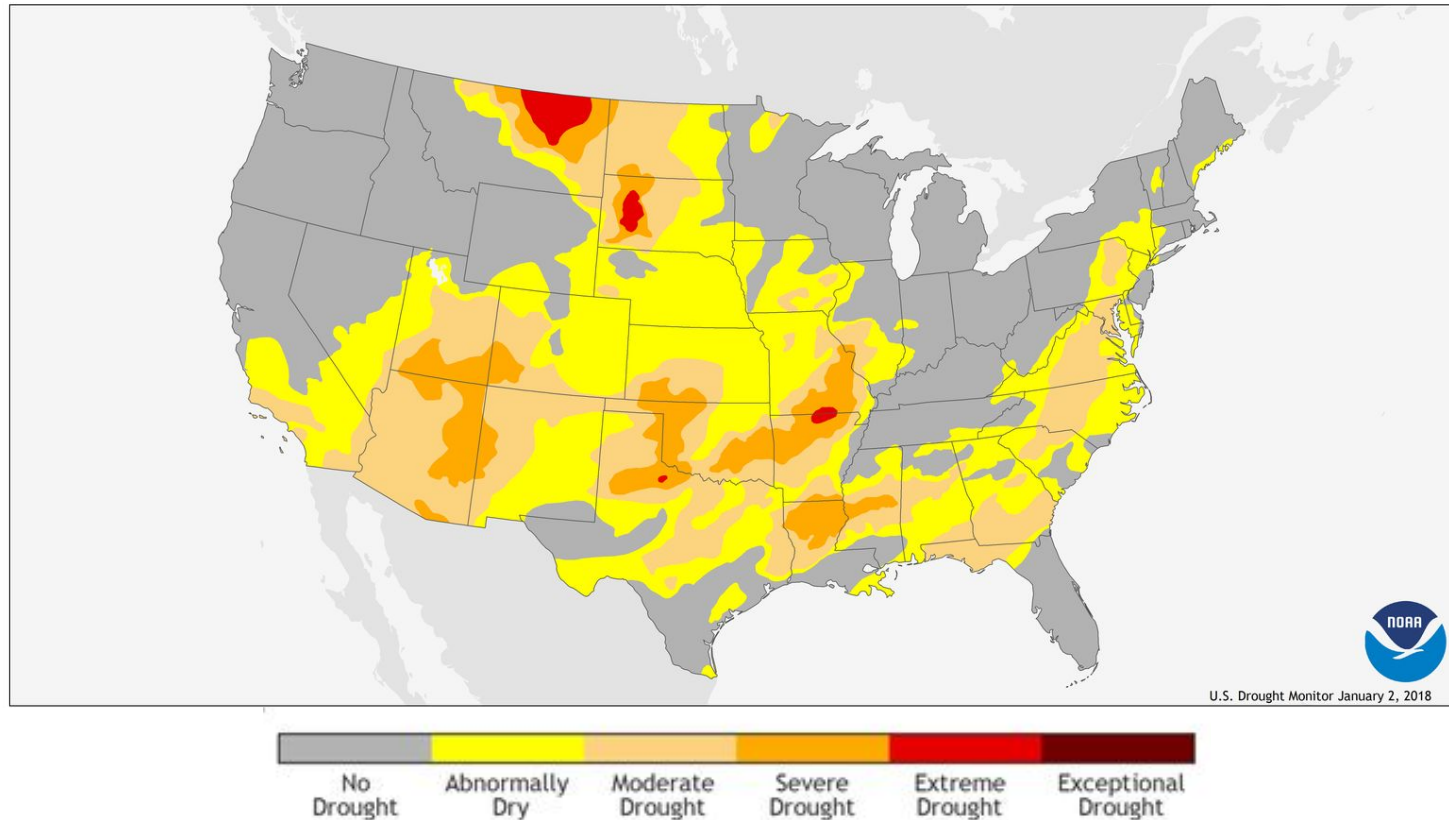
US Drought Monitor Map: Colorado, 12/4/2018



Interpret: [US Drought Monitor Map](https://cires.colorado.edu/outreach/)

Jigsaw Station 3: 2018 American Southwest Drought

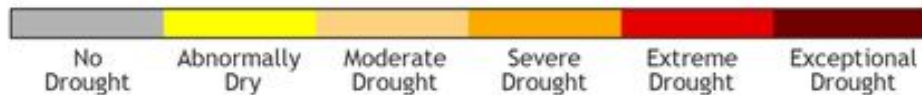
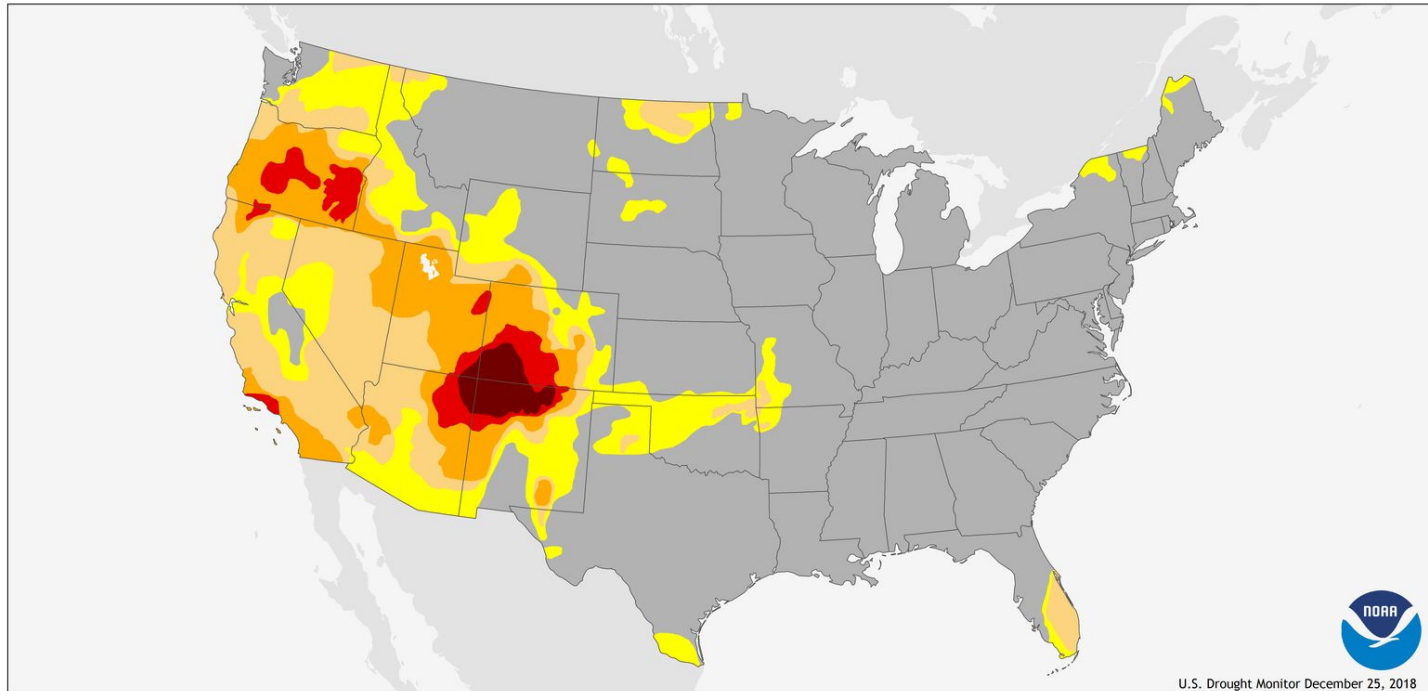
US Drought Monitor Map: 1/2/2018



View and Read: [Intense drought in the U.S. Southwest persisted throughout 2018](#)

Jigsaw Station 3: 2018 American Southwest Drought

US Drought Monitor Map: 12/25/2018



View and Read: [Intense drought in the U.S. Southwest persisted throughout 2018](#)

Jigsaw Station 3: 2018 American Southwest Drought

Tuesday, February 05, 2019

As part of their year-end national climate recap, the NOAA National Centers for Environmental Information reported on the stubbornness of extreme drought in the U.S. Southwest and Four Corners region in 2018.

The animated gif at right shows drought conditions across the contiguous United States every four weeks throughout 2018, starting with January 2 and ending with December 25. Places identified as “abnormally dry” are colored yellow, and increasing intensity of drought is shown in shades of orange to dark red.

According to NCEI’s report,

A large area of extreme to exceptional drought dominated the Southern Plains early in the year, before improving during the summer, when drought intensified across Oregon and adjacent parts of the Pacific Northwest and Great Basin. Large parts of Colorado, New Mexico, Arizona, Utah and Oregon experienced drought [throughout the vast majority of the year](#). Smaller parts of northern North Dakota, West Texas and Southern California did as well.

According to the U.S. Drought Monitor, drought coverage peaked at 39.6% of the contiguous United States in early February 2018. This coverage was largely attributable to intense drought stretching from the Southern Plains across the southern Rockies and Four Corners regions. A secondary peak of 35.7% in early August was driven by continued drought in the Four Corners region and a new center of drought conditions in Oregon and parts of the adjacent Northwest.

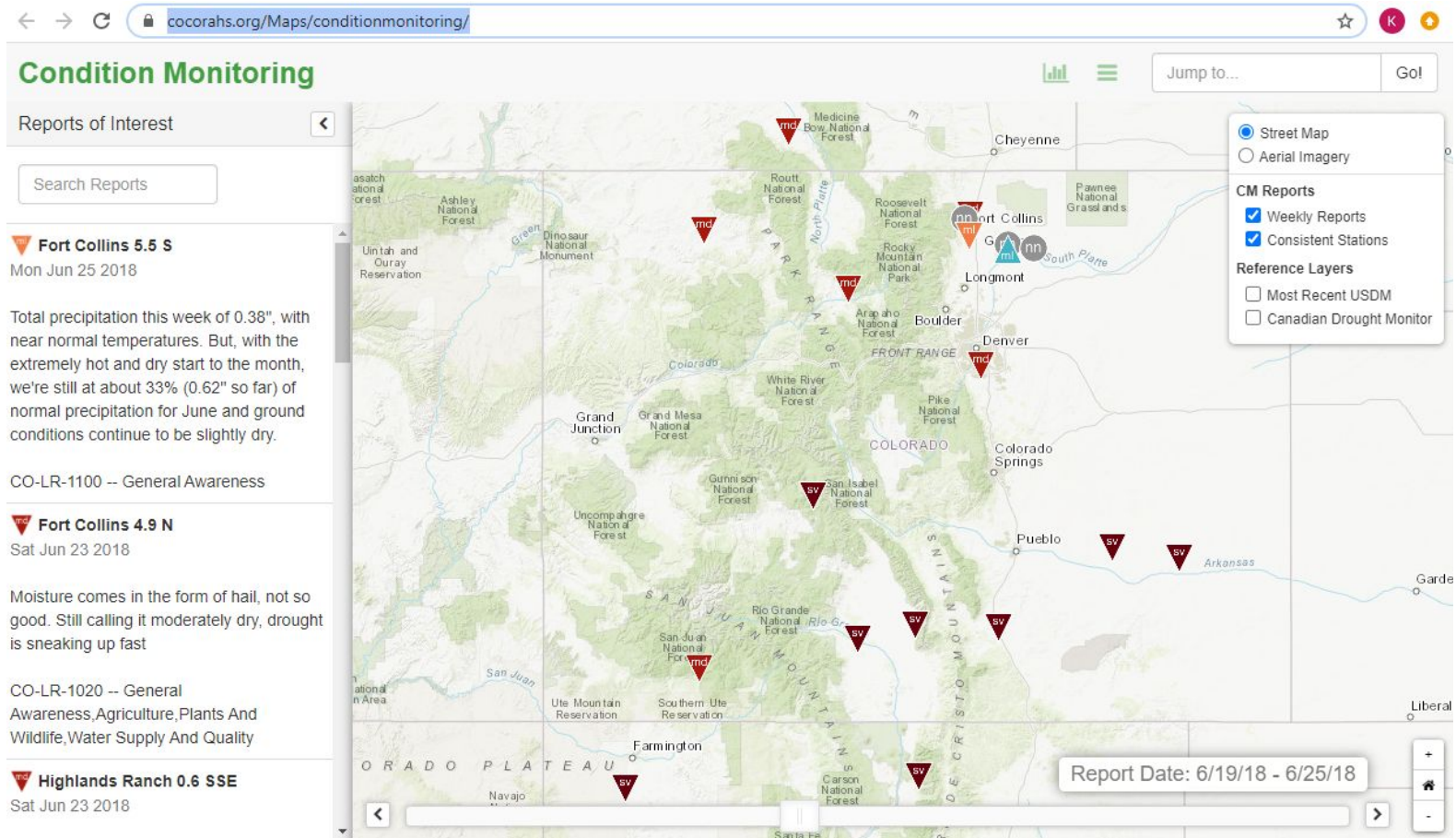
As the drought persisted, the impacts on people, agriculture, and natural landscapes piled up. According to news reports, the drought contributed to an intense fire season in northwestern Colorado, and for the first time in its history, the Yampa River (east of Dinosaur National Monument) was [subject to a water “call.”](#) all users whose water rights were granted since 1951 had to stop diverting any water from the river to protect the flows for more senior users.

Meanwhile, in New Mexico, surface water supplies dwindled to the point that parts of the Rio Grande were in danger of running dry. The U.S. Bureau of Reclamation had to broker a \$2 million deal to lease groundwater from the Albuquerque Bernalillo County Water Utility Authority in order to keep minimum up minimum flows needed to protect endangered species.

The drought had abated somewhat as of late January, according to the U.S. Drought Monitor’s [latest weekly report](#). But parts of the Four Corners remained stuck in extreme drought.

View and Read: [Intense drought in the U.S. Southwest persisted throughout 2018](#)

Jigsaw Station 4: Observations of the 2018 Drought in Colorado



Explore: CoCoRAHS [Drought Condition Monitoring Map](http://cocorahs.org/Maps/conditionmonitoring/)

Jigsaw Station 5: Current Drought Conditions in Colorado



The screenshot shows the top of the Drought.gov website. The header includes the National Integrated Drought Information System (NIDIS) logo and the text "Drought.gov U.S. Drought Portal". Below the header is a navigation menu with links for Home, Data, Maps & Tools, Regions, Research, Resources, What is NIDIS?, and News. The main content area features a large banner with the text "Advancing Drought Science and Preparedness across the Nation". Below the banner is a search tool titled "How is Drought Affecting your Neighborhood?". The search tool includes a text input field with the placeholder "Enter your city or zip code for current conditions" and a "Get Conditions" button.

Explore: [Drought.gov](https://drought.gov)

Jigsaw Station 5: Current Drought Conditions in Colorado



The image shows a screenshot of an interactive tool on the Drought.gov website. The background is a photograph of dry, brown grass. At the top, the text reads 'Advancing Drought Science and Preparedness across the Nation'. Below this, a white box contains the question 'How is Drought Affecting your Neighborhood?' with a 'Reset' button. Underneath, there is a circular icon with a green plant and the text 'D2 Severe'. To the right of the icon, the text reads 'Current Conditions for Alamosa, Colorado (Alamosa County)', 'Precip Total - Last 7 days | 0.94 in.', 'Average High Temp - Last 7 days | 48.86 °F', and 'Report your drought impacts'. At the bottom right of the white box, there is a button labeled 'Colorado Conditions' which is circled in red. A red arrow points from the right side of the image towards this button.

Explore: [Drought.gov](https://drought.gov)

Jigsaw Station 6: Drought Preparation and Response

Understand Drought and Know How to Respond

[Weather.gov](#) > [Safety](#) > Understand Drought and Know How to Respond

Safety
National Program

Drought Safety

Monitoring,
Forecasts

Take Action

Drought Impacts

Types of Droughts



Drought Resources

[U.S. Drought Monitor](#)

[U.S. Drought Monitor Explained](#)

[U.S. Seasonal Drought Outlook](#)

[Drought Impacts Report](#)

[Wildland Fire Potential Outlook](#)

[Billion \\$ Weather, Climate Disasters](#)

[Food Resilience](#)

[Drought Basics, Education](#)

[Links And Partners](#)

[Share Your Story](#)

Drought is a shortage of water over an extended period of time. Droughts are a normal part of a climate cycle. They occur in all climate zones. Drought can be short or span years. There have been at least three major U.S. droughts in the last 100 years. Two of these, the 1930s Dust Bowl drought and the 1950s drought, each lasted 5-7 seven years and covered large areas of the country with devastating results. Although hurricanes and tornadoes are more dramatic, droughts are among the most costly weather related events and the most far reaching. [From 1980–2014, there were 22 drought events with losses exceeding \\$1 billion \(CPI-Adjusted\) each across the United States.](#)

Drought may require safety precautions just like other weather hazards. Dry conditions often lead to brush fires or wildfires. Local officials may ask that you not burn brush or trash during dry conditions and comply with other safety precautions. In extreme fire conditions, officials may issue mandatory evacuation orders to protect your life. Always follow these directives. They could save your lives and the life of your family.

Explore: National Weather Service [Drought Safety](#)

Jigsaw Station 6: Drought Preparation and Response

U.S. Seasonal Drought Outlook

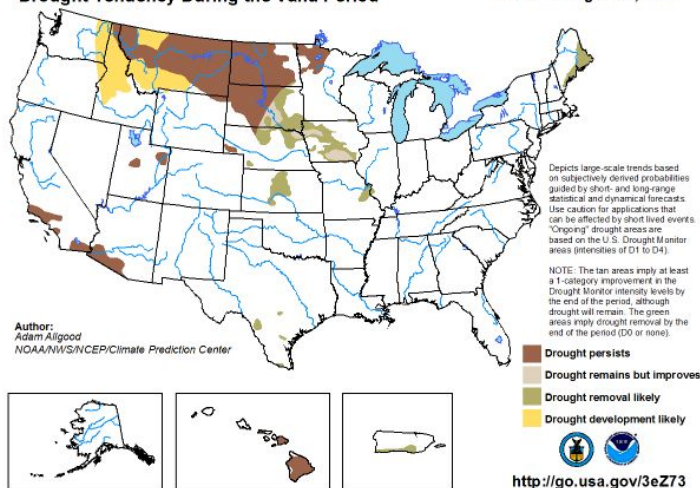
[Weather.gov](#) > [Safety](#) > U.S. Seasonal Drought Outlook

Safety
National Program

Drought Safety	Monitoring, Forecasts	Take Action	Drought Impacts	Types of Droughts
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U.S. Seasonal Drought Outlook Valid for August 17 - November 30, 2017 Drought Tendency During the Valid Period Released August 17, 2017



Drought Resources
U.S. Drought Monitor
U.S. Drought Monitor Explained
U.S. Seasonal Drought Outlook
Drought Impacts Report
Wildland Fire Potential Outlook
Billion \$ Weather, Climate Disasters
Food Resilience
Drought Basics, Education
Links And Partners

The U.S. Drought Monitor is produced in partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. The U.S. Drought Monitor (USDM) is a weekly product that provides a general summary of current drought conditions. Multiple drought indicators, including various indices, outlooks, field reports, and news accounts are reviewed and synthesized. In addition, numerous experts from agencies and offices across the country are consulted.

The U.S. Seasonal Drought Outlook shows predicted trends for areas currently in drought, as well as areas where new droughts may develop. The NOAA Climate Prediction Center issues this monthly product in conjunction with their long-lead temperature and precipitation outlooks on the first and third Thursday of each month and when weather events warrant an interim update. The general large-scale trends depicted are based on numerous indicators, including short and long-range forecasts.

Explore: National Weather Service [Drought Safety](#)

Jigsaw Station 6: Drought Preparation and Response

Take Action

[Weather.gov](#) > [Safety](#) > Take Action

Safety
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Be Green, Conserve Water

- Check plumbing for leaks and promptly repair leaks found.
- When you update appliances in your home or office, select ones that are more energy and water efficient.
- Replace toilets, shower heads, faucets, etc., with low-flow versions.

During a Drought Be Vigilant

Conserve water

- Take shorter showers.
- Turn off the water while brushing your teeth or shaving.
- Run the washer less frequently and only when you have a full load.
- Water your lawn less frequently and do so when the temperature is cooler in the early morning or late evening.
- When you run the tap to heat or cool water, keep a pitcher to store the water and use it to water plants.
- Avoid washing your car.

Practice fire prevention

- Don't set off fireworks when conditions are dry.
- Deposit cigarette butts in the proper receptacle to avoid starting a fire.
- Pour water over camp fires and backyard fire pits to ensure they are completely out before leaving them unattended.

Follow directions from local officials

- If there are restrictions on water usage, be sure to heed them!
- Follow burn bans.

Explore: National Weather Service [Drought Safety](#)

Part 3

Drought Expert Interview



Watch: [Drought Expert Video](#)

Local Drought News Story

Prompt: Create a local news story in a format of your choice (see options below), that summarizes important information for people in your community to prepare for and understand drought.

The format choices for the local drought news story include:

- Newspaper article with one picture and one graph or map (one page)
- Radio story (2-3 minutes in length)
- Video newscast (2-3 minutes in length)

Use the outline in your worksheet to compile information for your news story.