



Dry, Drier, Drought in Colorado

Setting the Stage

The 2012-13 North American Drought originated in the midst of a record-breaking heat wave, and was an extension of the 2010-13 Southern United States Drought.

In 2018, Colorado drought conditions were the worst since that time. By the end of 2018, the Southwest Region was experiencing “exceptional drought”, which is the most severe intensity of drought.

The 2018 drought is part of a trend towards increasing frequency and severity of drought globally. This lesson will investigate the causes, effects, and impacts of this phenomenon in Colorado.



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

Driving Questions:

- What causes drought?
- How is drought measured and monitored?
- Which areas in Colorado are more vulnerable to drought impacts?
- In what season are drought impacts most likely to occur?

Materials & Procedures

- Use a computer device and internet connection to complete the lesson activities.
- Record your activity responses in your student handout.



These materials were developed by CIRES Education & Outreach at the University of Colorado Boulder.

<https://cires.colorado.edu/outreach/projects/HEARTForce>



Lesson Overview

- **Activity 1** (Engage): Drought in Colorado
- **Activity 2** (Explore): Drought Data Analysis Jigsaw
- **Activity 3** (Explain): Create a Local Drought News Story



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

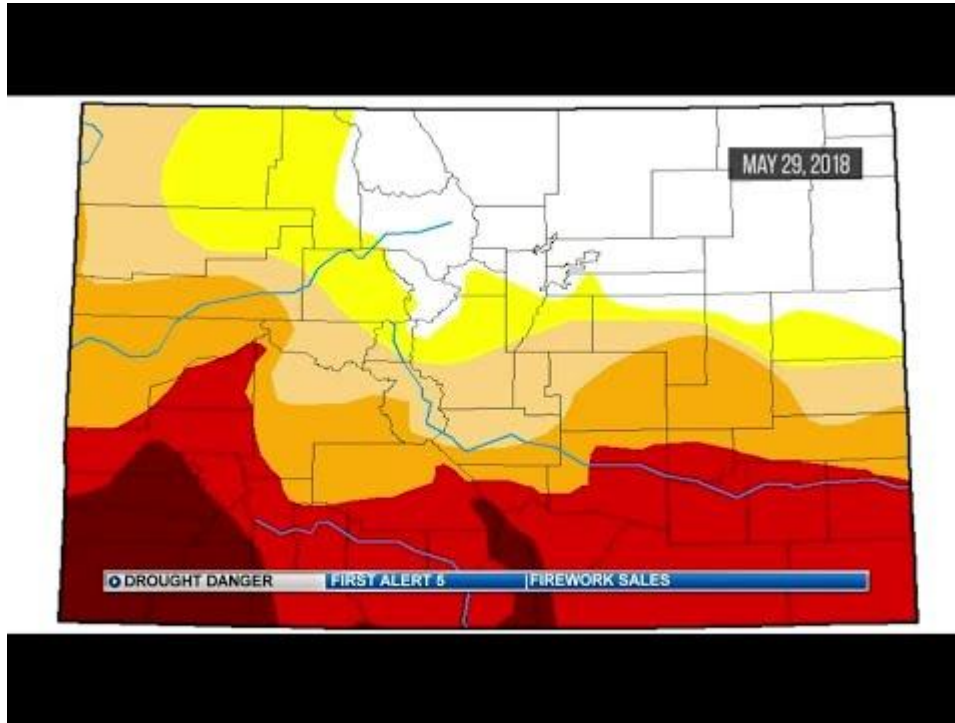
KWL Chart	
1. What I K now	
2. What I W onder	
What I L earned (Activity 3)	



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



Watch: [Drought News Clip](#)



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

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

3. List the four categories of drought, in order from least to greatest level of drought, and their color coding.
4. Which organization tracks the level of drought across our country?



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Station 1: Drought Causes and Impacts



Watch: [Droughts 101](#)

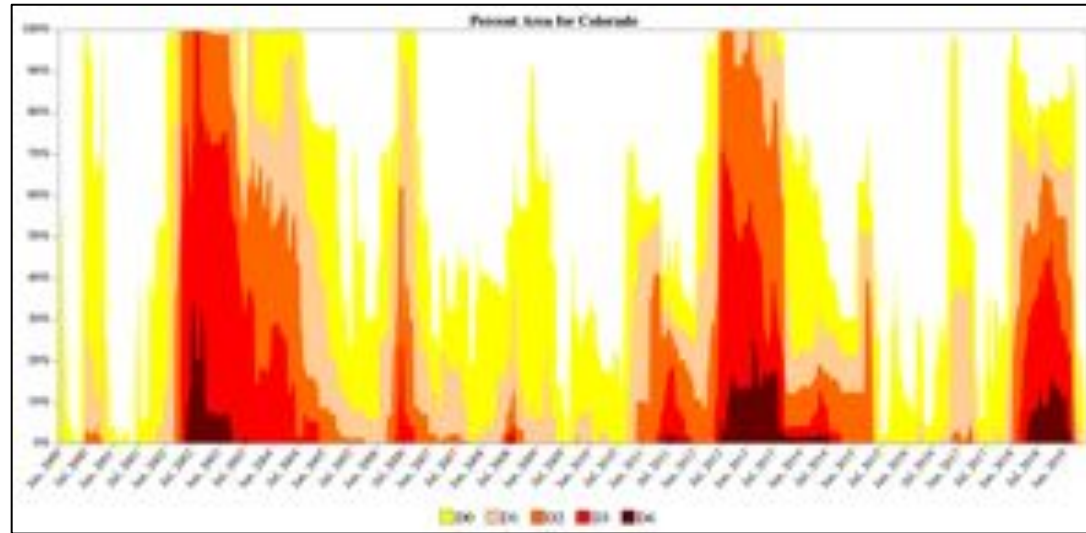


Review: [Drought in America: Slow moving, far reaching](#)

5. What is drought?

6. What are some causes and impacts of drought?

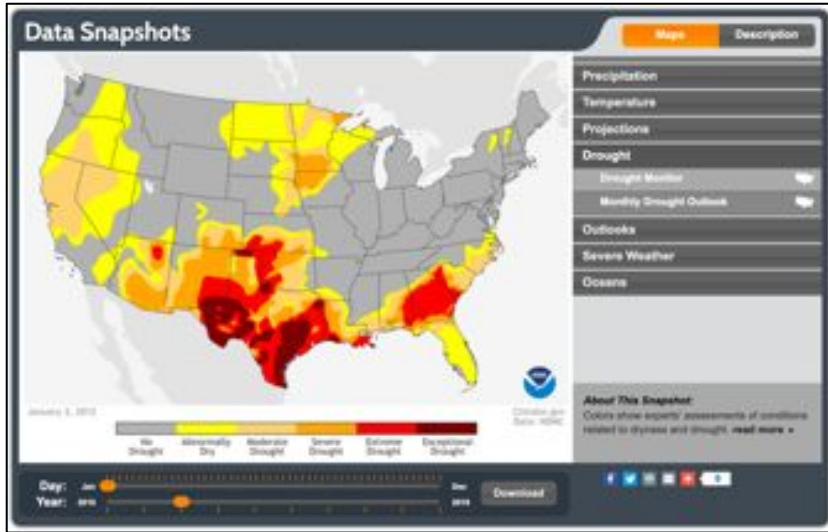
Station 2: Drought History in Colorado



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

7. Which years did Colorado experience extreme drought (D3) and exceptional drought (D4)? Which specific time frame had the greatest level of exceptional drought (D4)?
8. When Colorado is experiencing drought (D1-D4), especially intense drought (D3, D4), what percentage of the state is generally affected?

Station 2: Drought History in Colorado, cont.



Explore: [Drought Data Snapshots](#)
interactive

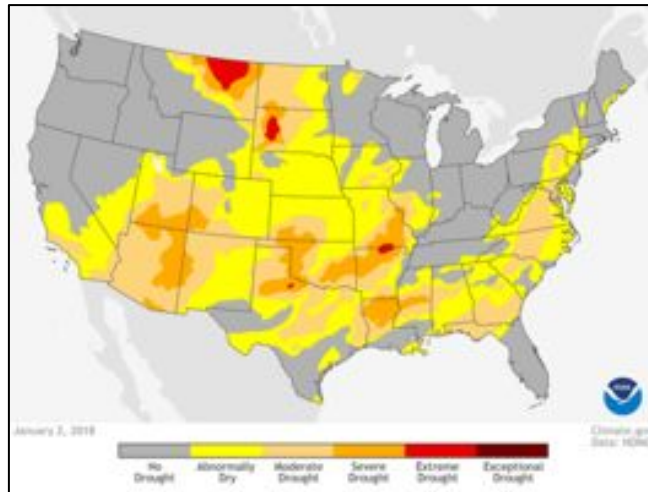
Use the adjustable timeline located below the map screen to move the “Year” tab over two marks to the right to select 2012, and slide the “Day” tab from the far left (January) to the far right (December) to observe changes in the map data (spatial data) over the year.

9. During 2012, which month and what general location in Colorado first experienced extreme drought (red)?
10. During 2012, which month and what general location in the state was first affected by exceptional drought (dark red)?
11. In which month of 2012 was the severity and expanse of drought the greatest in Colorado, and what was the primary level of drought?
12. What was the statewide level of drought in Colorado at the end of December 2012?

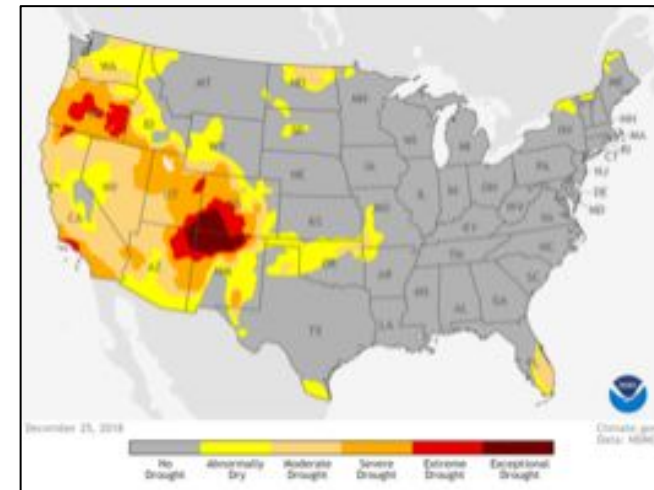
Station 3: 2018 American Southwest Drought

The American Southwest is defined as New Mexico, Colorado, Utah, Nevada, Southern California, and Arizona.

Review the maps of the 2018 southwest drought; first, the map from the start of the year and then at the map at the end of the year:



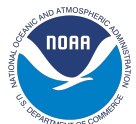
[Dry Southwest still waiting on winter in January 2018](#) (start of 2018)



[Intense drought in the U.S. Southwest persisted throughout 2018](#)(end of 2018)

Station 3: 2018 American Southwest Drought, cont.

13. What were the drought categories throughout Colorado at the start of 2018? Which areas of the state had the greatest drought level, and which areas had the lowest?
Note: the dates for each map are in the bottom left corner of the animation.
14. What were the drought categories throughout Colorado at the end of 2018? Which areas of the state had the greatest drought level, and which areas had the lowest?

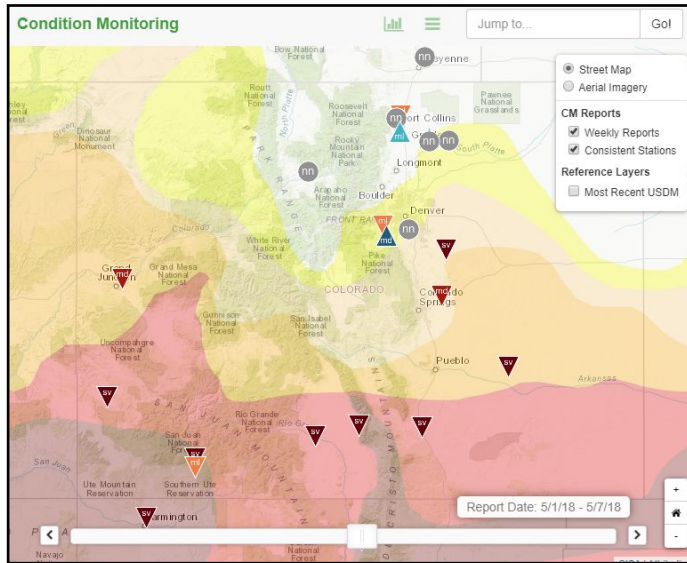


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Station 4: Impacts of the 2018 Drought in Colorado



[CoCoRaHS Condition Monitoring Map](#)

Zoom into Colorado and use the timescale slider to view maps from June, July, and August 2018.

15. Read some observations from areas experiencing Extreme and Exceptional Drought (dark red areas). What are observers reporting? Include details of the impacts they see, and the date and general location of the observer (e.g., June 2018, SE Colorado).
16. Read some observations from areas experiencing Abnormally Dry conditions or Moderate drought. What are observers reporting? Include details of the impacts they see, and the date and general location of the observer (e.g., June 2018, SE Colorado).

Station 5: Current Drought Conditions in Colorado

Enter your zip code into the box in the middle of the screen that says “Enter your city or zip code for current conditions,” and click the yellow “Get Conditions” box.

17. What is the current drought condition in your community?
What is the precipitation total and average high temperature for the last 7 days?



[Drought.gov Web Portal](https://drought.gov)

Now, click on the brown box that says “Colorado Conditions.” A map of Colorado should appear, with an explanation of what percentage of the state is in each drought category.

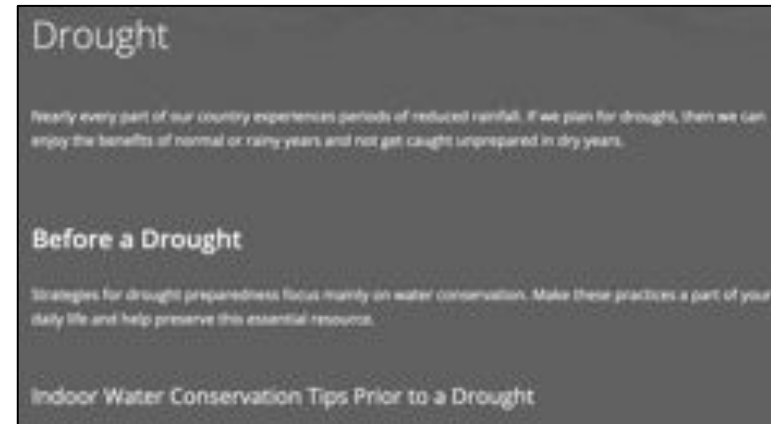
18. What percentage of the state is Abnormally Dry? What percentage of the state is in Severe Drought?
What percentage of the state is in Exceptional Drought?
19. Based on the time of year, and the recent weather in your community, are you surprised about the current drought conditions in Colorado? Why or why not?

Station 6: Drought Preparation & Response

Drought is described as a slow-moving and long-term natural hazard, which is a different experience from fast-acting and shorter-duration natural hazards, such as floods, wildfires, earthquakes. How does this difference affect how people are able to prepare for, respond to, and rebound from drought?



Watch: [To Escape Drought, Slow and Steady Wins the Race](#)



Review: [Drought Ready.gov](#) webpage

Station 6: Drought Preparation & Response, cont.

20. What are ways that your family and community can conserve water during a drought?
21. Drought increases the risk of wildfire due to vegetation drying out and dying. What are some fire prevention actions you and your family can take during a drought?



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Activity 3.1 Drought Expert Interview



[Drought Expert Video](#)

Activity 3.2 Local Drought News Story

Prompt: Create a local news story in a format of your choice (see options below) that summarizes important information about for people in your community to be “drought wise” before, during, and after a drought. Use information from the Drought Expert Video and information gathered in your student handout to communicate information about:

- Causes and impacts of drought
- Historic drought: Highlights of the 2012 and 2018 Colorado droughts
- Recent and current drought conditions around Colorado and in your community
- Tips for people in preparing for and responding to drought

The format choices for the Local Drought News Story include (be creative but accurate):

- 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)



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Activity 3.2 Local Drought News Story, cont.

Local Drought News Story

1) KWL Chart
“What I Learned”
(see page 2)

Check when completed

As a group, reflect on what was learned in Activities 1, 2, and 3. Then independently complete the “What I Learned” section of your KWL Chart (see page 2 of the student handout) to summarize your learning. Use these prompts to reflect on what you learned:

- What important things do you now know about drought that you didn’t know before?
- What should people do to be “drought wise” before, during, and after a drought?

KWL Chart

What I
Learned
(Activity 3)



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Activity 3.2 Local Drought News Story, cont.

Local Drought News Story

2) Choose a Format

- Check when completed

As a team, choose one of the following formats for your group's Local Drought News Story:

- 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)

3) Create a Draft

- Check when completed

Referring to notes and responses in your student handout, make a quick draft of your group's product ideas. Your team's product should summarize and share information about:

- Causes and impacts of drought
- Historic drought: Highlights of the 2012 and 2018 Colorado droughts
- Recent and current drought conditions around Colorado and in your community
- Tips for people in preparing for and responding to drought

Activity 3.2 Local Drought News Story, cont.

Local Drought News Story

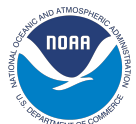
4) Create the Final Product

Check when completed

Create your team's Local Drought News Story. Remember to keep your product brief and summarize the key elements for your community audience that you drafted in step 3 (above).

Lesson Rubric

Refer to the [rubric](#) to understand expectations for your final product.



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