



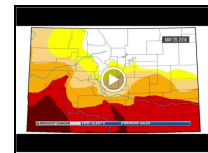
Name: **ANSWER KEY**

Date:

Colorado Drought - Student Worksheet

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

- What's the connection between drought, wildfire, and weather? Write at least three things in the What I Know section of the KWL Chart below.
- Watch the [drought news clip](#) (2:43) and [Assessing Drought in the United States](#).
- Write down your observations and questions about drought as a natural hazard in the "What I Wonder" section of the KWL Chart.



KWL Chart	
What I Know	Answers will vary.
What I Wonder	Answers will vary.
What I Learned (Activity 3)	Answers will vary.



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Part 2: Drought Data Analysis Stations

Jigsaw Station 1: Drought Causes and Impacts

Use the [Drought in America: Slow moving, far reaching](#) website to build your knowledge about drought. Next, watch the video [To Escape Drought, Slow and Steady Wins the Race](#).



1. What is drought?

Drought is when less than normal or no precipitation falls for an extended period of time (usually a season or longer), and results in a water shortage.

2. What causes drought?

Drought is caused by below-normal precipitation (rain and snow), leading to a shortage of water in the soil and in streams, rivers, and lakes. Unusual heat is often part of drought, since dry weather is associated with sunny and warm conditions. Changes in normal weather and precipitation patterns (e.g., El Niño/La Niña) can also lead to drought, as can overuse of water resources by humans.

3. What are some impacts of drought?

In ecosystems, lack of water can affect animals and plants by reducing food supplies, increasing wildfire risk, and damaging habitats (e.g., decreased streamflow affects fish). Drought can affect the health and safety of people due to heat-related illnesses and conflicts over water resources. Drought is one of the most expensive natural hazards due to the costs of crop failure, increased energy and water use, and infrastructure and human property losses from drought-related wildfires.

4. What type of precipitation is needed to “break” a drought?

Repeated rainfall events over a long period of time (months) are needed to break a drought, for water to infiltrate soil and increase soil moisture.



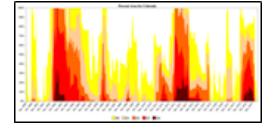


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Jigsaw Station 2: Drought History in Colorado

Review the graph of [Drought History in Colorado](#) (scroll down the webpage and click the “Percent Area for Colorado” graph).



5. What does the graph show?

This graph shows the percentage of area of Colorado with drought conditions between 2000 and 2008. Higher amounts of red mean that a larger portion of Colorado is experiencing more severe or extreme drought.

6. In which years did all of Colorado (100% of Colorado) experience a drought?

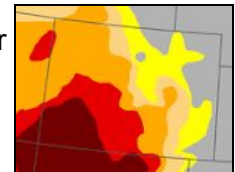
2000, 2002-2004, 2006, 2012-2013, 2020

7. In which years did Colorado experience exceptional drought (D4)?

2002, 2003, 2008, 2011-2014, 2018, 2020

8. Look at the Data Snapshot of the Drought Map of Colorado on December 4th, 2018. Estimate the percentage of Colorado that looks like it is in exceptional drought.

Answers will vary. Estimates range between 10-25%.



9. Now, look back to the graph of Drought in Colorado. Based on the graph, what percentage of Colorado was in exceptional drought (D4) in late 2018? Was your estimate accurate?

10-20%



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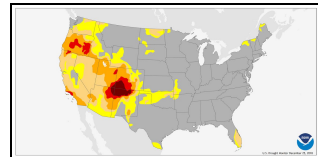
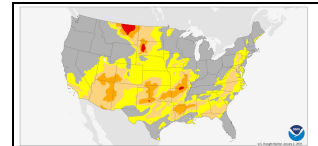
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Station 3: 2018 American Southwest Drought

The American Southwest is defined as New Mexico, Colorado, Utah, Nevada, Southern California, and Arizona. View the [animation of the 2018 U.S. Southwest Drought](#).

10. What patterns do you observe when you watch the animation?

At the beginning of the year, a large portion of the United States is experiencing drought. The drought persists throughout the country through the year, but the most severe drought is concentrated around the four corners region and the Kansas and Oklahoma border. At the end of the year, the drought becomes concentrated in the Southwest and West Coast of the U.S.



11. 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.*

The drought categories in Colorado at the start of 2018 included abnormally dry (eastern, northwest corner, partial central area), moderate drought (western and southwestern area), and severe drought (southwest corner). A majority of the state was drier than normal and western, southwestern, and southern parts of the state were in drought at the start of 2018.

12. 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?

The drought categories in Colorado at the end of 2018 included abnormally dry (northeast and southeast areas), moderate drought (small portions of north central and southeast areas), severe drought (northwest and southeast areas), extreme drought (west and south central areas), and exceptional drought (southwest corner). A majority of the state was in drought and the level of drought was much greater at the end of 2018 than at the start of the year.

13. What were some of the major impacts of the 2018 drought in the Southwest?

There was an intense fire season in northwest Colorado, and the Yampa River was subject to a water “call” for the first time in history. Parts of the Rio Grande ran dry in New Mexico.

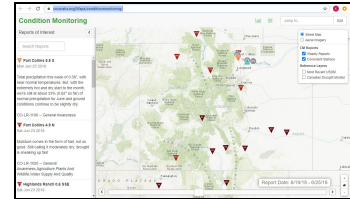


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Station 4: Observations of the 2018 Drought in Colorado

Visit the [CoCoRaHS Condition Monitoring Map](#), a resource you can use to explore past drought conditions and read on-the-ground reports made each week by CoCoRaHS volunteer citizen scientist observers.



In the lower right, use the “+” symbol to zoom in on the map, the “-” symbol to zoom out, and the home icon to return to the default map view screen. Use the timescale slider at the bottom of the screen to change the date of the maps that you are viewing. Read volunteer observations by clicking on the upside down triangles.

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

14. Read at least 4 observations for each month. What are observers reporting? Give a brief summary that includes details of the impacts they see, the date, drought condition, and general location of the observer (e.g., June 2018, Moderately Dry, SE Colorado).

June: Answers vary.

July: Answers vary.

August: Answers vary.



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Station 5: Current Drought Conditions in Colorado

Use the Drought.gov web portal to find out the current drought conditions in your community and 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.



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

Answers vary.

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.

16. 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?

Answers vary.

17. 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?

Answers vary.



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Station 6: Drought Preparation & Response

Read the National Weather Service [Drought Safety](#) page. Make sure to read the “Monitoring, Forecasts” and “Take Action” tabs.

18. What map shows the predicted trend for current or new droughts in the U.S.?

The U.S. Seasonal Drought Outlook

19. Click on the “U.S. Seasonal Drought Outlook” link in the “Monitoring, Forecasts” tab. What is the current drought outlook for Colorado (e.g. Drought persists, Drought remains but improves, etc.)?

Answers vary.

20. List three things you and your family can conserve water during a drought.

Take shorter showers, turn off water while tooth brushing or shaving, run washer less frequently, water the lawn less frequently, avoid washing the car, check plumbing for leaks and repair any leaks found, buy energy and water efficient appliances, use low-flow toilets, shower heads, etc.

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?

Do not use fireworks, completely put out campfires and fire pits, properly dispose of cigarettes, follow any fire ban and/or water use restrictions, etc.



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Part 3 : How can communities know about and manage their drought risk in Colorado?

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 wildfire risk.

Choose from the following format choices for the local wildfire 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)

Use the outline below to collect information from the jigsaw activity to include in your news story.

<p>Station 1: Drought Causes and Impacts</p>	<p><u>Drought Definition:</u> Answers the same as above, in jigsaw worksheets.</p> <p><u>Causes of Drought:</u></p> <p><u>Impacts of Drought:</u></p>
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<p>Station 2: Drought History in Colorado</p>	<p><u>Recent Significant Droughts (in which 100% of Colorado experienced drought and/or some of Colorado experienced exceptional drought)</u></p>
<p>Station 3: 2018 American Southwest Drought</p>	<p><u>National Drought Pattern of 2018</u></p> <p><u>Major Impacts of 2018 Drought</u></p>



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<p>Station 4: Observations of the 2018 Drought in Colorado</p>	<p><u>June 2018 Observations Summary:</u></p> <p><u>July 2018 Observations Summary:</u></p> <p><u>August 2018 Observations Summary:</u></p>
<p>Station 5: Current Drought Conditions in Colorado</p>	<p><u>Local Drought Conditions:</u></p> <p><u>Statewide Drought Conditions:</u></p>

