

Drought and Drought Risk in Colorado



HEART Force Drought Lesson Middle School

Lesson Focus Case Study Summary

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.



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 the *Drought Diary student handout*
(digital access or printed copy and pencil).

Lesson Overview Learning Activities

- **Activity 1** (Engage): 2018 drought case study
- **Activity 2** (Explore & Explain): Analyze 2012 & 2018 drought data
- **Activity 3** (Explore & Elaborate): Create a local drought news story

Engage Activity 1

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

Watch:

[Drought News Clip](#)

[Assessing Drought in the United States](#)



Engage Activity 1

Drought Videos

Using your *Drought Diary student handout*:

- KWL Chart
- Share your observations & wonderings about the videos

KWL Chart

What I Know
(Activity 1)

What I Wonder
(Activity 1)

What I Learned
(Activity 3)

Explain Activity 2.1

What is Drought?

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



Explain Activity 2.1

Types of Drought

Using your *Drought Diary student handout*, answer these questions:

- What is drought?
- What are some causes and impacts of drought?

Explore & Explain Activity 2.2

Case Study of the 2012 Drought

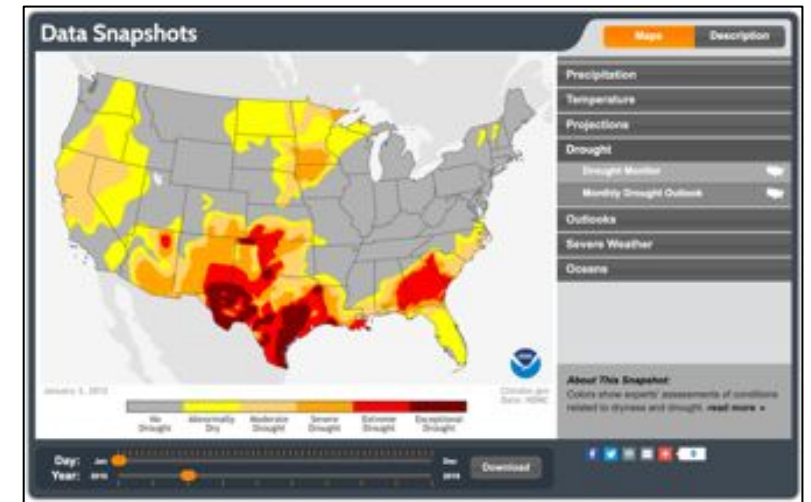
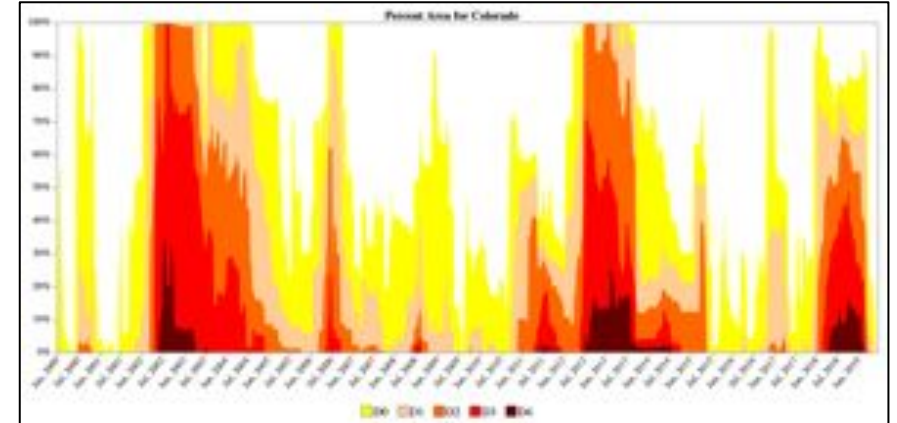
Watch:
[Droughts 101](#)



Explore & Explain Activity 2.2

Case Study of 2012 & 2018 Droughts

- Review the graph of Drought History in Colorado
- Explore the Drought Data Snapshots interactive



Explore & Explain Activity 2.2

Case Study of 2012 Drought

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

Explore & Explain Activity 2.2

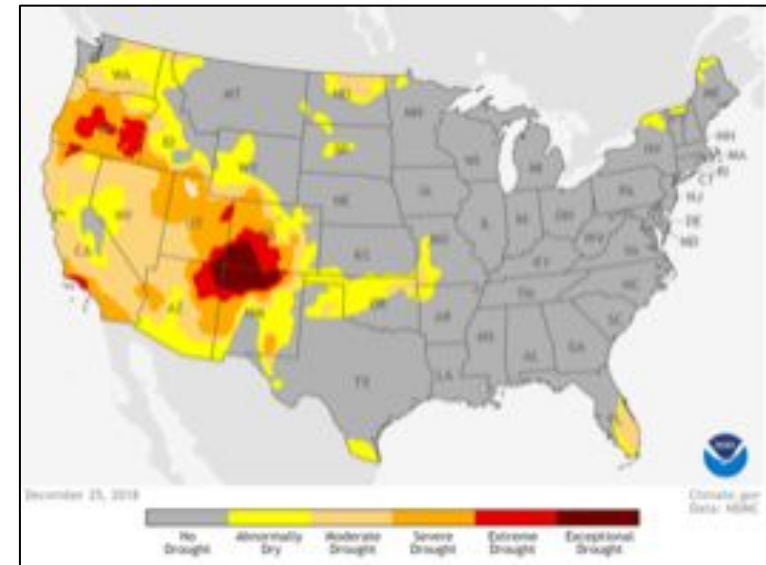
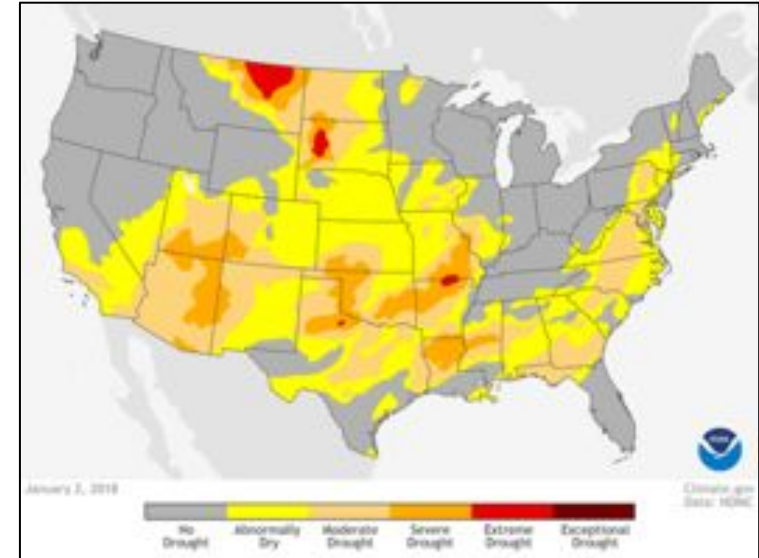
Case Study of the 2018 Drought

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, lingers into the new year (end of 2018)

Now read a short article from the Denver Post from May 2019:

- Finally! Colorado's drought is nearly officially over



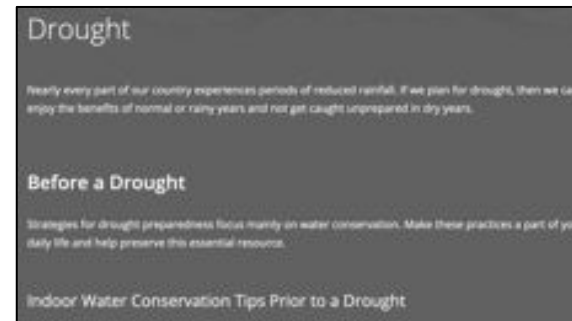
Explore & Explain Activity 2.4

Drought Preparation & Response

Watch:

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

Review the [Drought Ready.gov](http://DroughtReady.gov) webpage



Explore & Elaborate Activity 2.4

Drought Tips

Using your *Drought Diary student handout*, answer these questions:

- Describe the main impacts of droughts.
- List the steps you can take to prepare for and respond to drought.

Explore & Explain Activity 2.4

Wildfire Mind Mapping

Class Mind Mapping Session

Have a 10-min Mind Mapping session or consensus discussion session about your findings and learning from the activity sections.

Start the class Mind Map with “Drought” labeled in the center of a large Post-It, butcher paper, or shared digital document.

As a class, briefly share findings for Activities 2.1 through 2.4 to check and correct your responses, as needed, and add key information to the Drought Mind Map.

Explore & Elaborate Activity 3A

Wildfire Expert Interview (5 min)

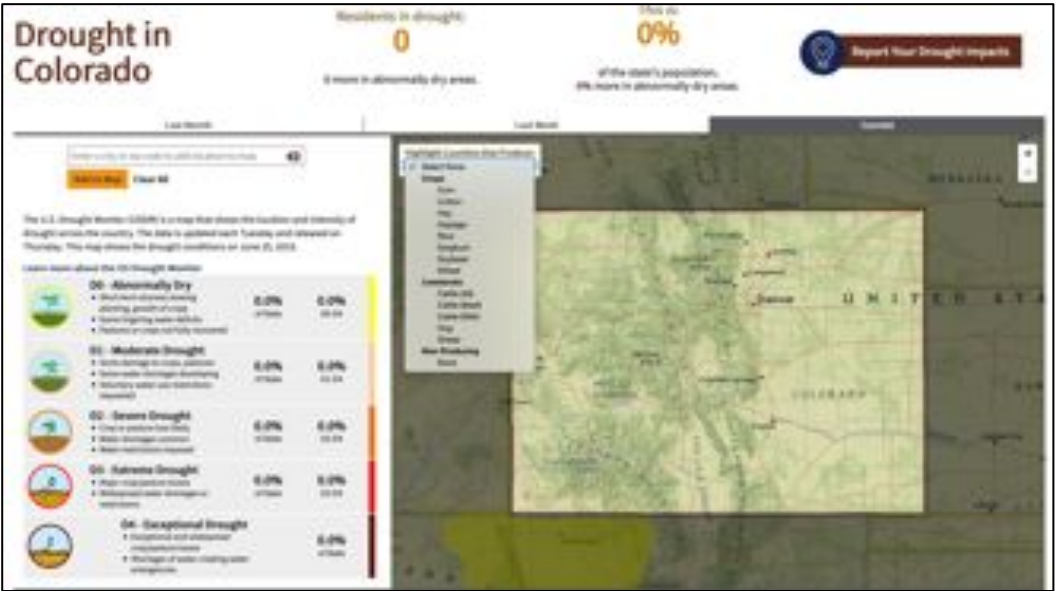
Drought Expert Video:
Watch Dr. Doug Kluck discusses
drought topics and concepts.



Explore & Explain Activity 3B

Communicating About Drought

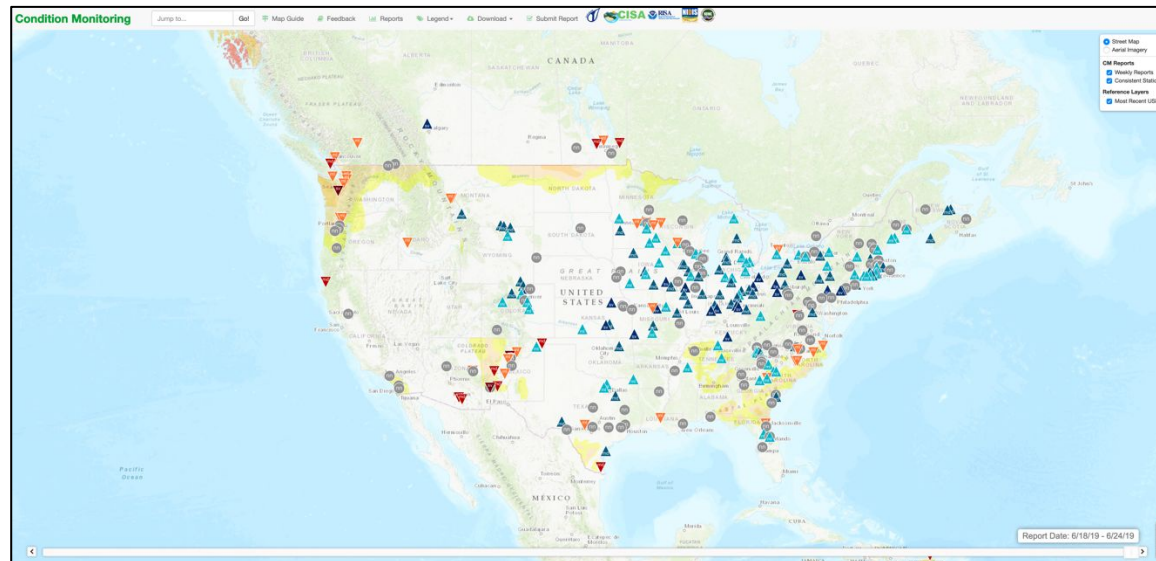
Analyze the Recent and Current Drought Conditions in Colorado GIS map.



Explore & Elaborate Activity 3B

Drought Case Study Data Analysis (20 min)

Explore the 2018 drought conditions in Colorado with the CoCoRaHS Condition Monitoring Map.



Explore & Elaborate Activity 3 C

Create a Drought Public Information Notice (25 min)

Using information from the drought expert video (Part A), GIS data and screen shots (Part B) and information gathered in your *Student Drought Diary student handout*, your team will now create a concise Drought Public Information Notification for your community that summarizes and communicates key facts and information about:

- Causes and impacts of 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 and responding to drought

The format choices for the Drought Public Information Notification include (be creative but accurate):

- Poster (approx. 2' x 3' digital or hard copy)
- Slideshow (8-12 slides)
- Tri-fold leaflet (8.5 x 11" digital or hard copy)
- Radio story (; 2-3 min in length)
- Video (2-3 min in length)

Drought Public Information Notification	
1. KWL Chart “What I Learned” (see Activity 1) Check when completed <input type="checkbox"/>	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 Activity 1) to summarize your learning. Use these prompts to reflect on what you learned: <ul style="list-style-type: none"> • 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?
2. Choose Product Format Check when completed <input type="checkbox"/>	As a team, choose one of the following formats for your group’s <i>Drought Public Information Notification</i> : <ul style="list-style-type: none"> <input type="checkbox"/> Poster (approx. 2’ x 3’ digital or hard copy) <input type="checkbox"/> Slide product (8-12 slides) <input type="checkbox"/> Tri-fold leaflet (8.5 x 11” digital or hard copy) <input type="checkbox"/> Audio PSA (public service announcement; 2-3 min in length) <input type="checkbox"/> Video (2-3 min in length)
3. Product Draft Check when completed <input type="checkbox"/>	Referring to notes and responses in your <i>Drought Diary student handout</i> , make a quick draft of your group’s product ideas. Your team’s product should summarize and share information about: <ul style="list-style-type: none"> • Causes and impacts of drought in Colorado • Locations and times of higher drought risk in Colorado • Describe how people and communities prepare for, respond to, and rebound from drought
4. Create Product Check when completed <input type="checkbox"/>	Create your team’s Drought Public Information Notification. Remember to keep your product brief and summarize these key elements for your community audience: <ul style="list-style-type: none"> • Causes and impacts of 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 and responding to drought
5. Lesson Rubric	Refer to the rubric to help you assess Activity 3.
6. Lesson Reflection Check when completed <input type="checkbox"/>	Click on the link for the Lesson Reflection survey, and enter your HEART Force ID to access it: http://bit.ly/HEARTLesson

