



Name:

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Colorado Flood - Student Worksheet

Part 1: What are the main causes and impacts of floods?

- How is flood risk changing in Colorado? Write at least three things in the What I Know section of the KWL Chart below.
- Watch the news stories [1976: Deadly Big Thompson flood devastates Colorado](#) and [Dramatic images show devastating flooding in Colorado](#) to get a feel for the impacts of floods on people and the environment.
- Write down your observations and questions about flooding in the “What I Wonder” section of the KWL Chart.



KWL Chart	
What I Know	
What I Wonder	
What I Learned (Activity 3)	



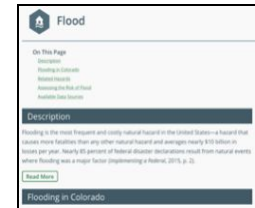
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Part 2: Flood Data Analysis Stations

Jigsaw Station 1: Colorado Flood Fast Facts

Read the [Colorado Planning for Hazards -- Flood](#) webpage.



1. What is the difference between a “general flood” and a “flash flood”?
2. What is a floodplain?
3. Who identifies flood hazard areas (floodplains)?
4. What are the greatest risks that floods pose in Colorado?
5. What are the main causes of floods and flash floods?



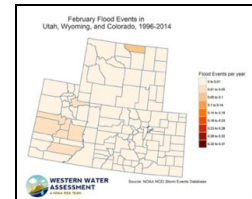
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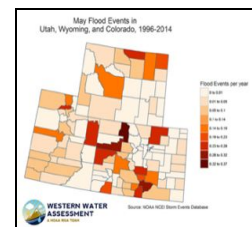
Jigsaw Station 2: Seasonality and Location of Floods and Flash Floods in Colorado

Select and analyze the Monthly Maps of Significant Weather Events “[Flood](#)” and “[Flash Flood](#)” series to assess the frequency and locations of floods in the state.

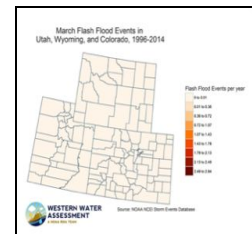
6. In Colorado, when does flooding mainly occur (months/seasons)?



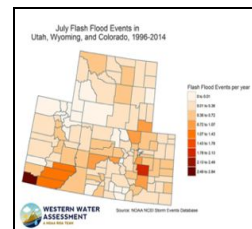
7. In Colorado, where does flooding mainly occur (geographic area/counties)?



8. In Colorado, when does flash flooding mainly occur (months/seasons)?



9. In Colorado, where does flash flooding mainly occur (geographic area/counties)?



10. Compare and contrast the timing and location of floods and flash floods in Colorado.



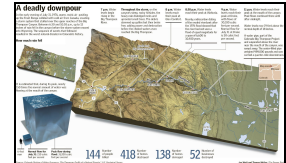
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Jigsaw Station 3: Big Thompson River Topography

Explore the “A Deadly Downpour” infographic (slide 14 and 15 of the [lesson slides](#)) and the [Colorado Floodplain GIS](#).

11. The “A Deadly Downpour” infographic shows a topographic relief map of the Big Thompson watershed. The Big Thompson runs from Estes Park to Loveland on the map. Describe the topography of the Big Thompson watershed.



12. Explore the Floodplain for the Big Thompson River on the [Colorado Floodplain GIS](#). Type “Loveland, CO” into the Search bar, and zoom out so you can see the stretch of the Big Thompson River that runs between Estes Park and Loveland. What do you observe about the Big Thompson floodplain (purple and blue areas) between Loveland and Estes Park?

13. Why would flat areas have larger floodplains than steep mountainous areas?

14. If you were to build a house close to the Big Thompson River, where would you want it to be located?

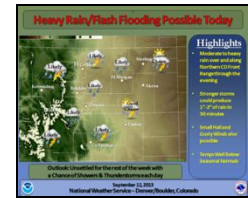


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Jigsaw Station 4: The 2013 Flood Weather Story

Look over the National Weather Service's Weather Story forecasts ([lesson slides](#) 16-21) from September 10-22 about the 2013 Colorado Front Range Flood, which included the Big Thompson River flood.



9. On what date was the first flash flood watch issued for the Front Range? When was the last flash flood watch for this area?

11. On what date(s) and in what general location (in relation to key cities) did severe flooding occur? Why do you think severe flooding occurred in this area?

12. Describe the pattern and location of the flood between September 17 and September 22, 2013, during the Weather Story forecasts.



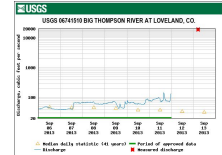
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Station 5: The 2013 Big Thompson Flood Hydrograph

Analyze the hydrograph (slide 23 of the [lesson slides](#)) from the 2013 Big Thompson Flood and watch the first minute of the "[Drew in a Canoe](#)" video, to learn about how river discharge is measured, in cubic feet per second.

13. What does this graph show?



14. What is the *independent variable* and its units? What is the *dependent variable* and its units?

15. Watch the first minute of this "[Drew in a Canoe](#)" video, to learn about cubic feet per second. What does Drew use to visualize one cubic foot per second?

16. What does the red point on the graph represent?

17. Make an educated guess about why the discharge measurements stopped on September 12th.



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Station 6: Flood Safety

Read the National Weather Service [Flood Safety Tips and Resource page](#). Make sure to look through all tabs.

18. Which of these demand immediate action; flash flood warning, flood warning, flood watch, and/or flood advisory?

19. What action should you take if a flash flood or flood warning is issued?

20. As a kid, what is one thing you can do with your family to prepare for a flood?

21. Is it okay to walk through flood waters? Why or why not?



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Part 3: How can communities know more about and manage their flood risk?

Local Flood 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 flood risk.

Choose from the following format choices for the local flood 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: Colorado Flood Fast Facts</p>	<p><u>General Flood vs. Flash Flood</u></p> <p><u>Floodplain Information (Definition and Entity in Charge of Floodplain ID)</u></p> <p><u>Flood Risks</u></p> <p><u>Causes of Floods and Flash Floods</u></p>
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<p>Station 2: Seasonality and Location of Floods and Flash Floods in Colorado</p>	<p><u>Time of Year and Location that Floods Usually Occur in Colorado</u></p> <p><u>Time of Year and Location that Flash Floods Usually Occur in Colorado</u></p>
<p>Station 3: Big Thompson River Topography</p>	<p><u>Floodplains in Flat versus Steep Mountainous Areas</u></p> <p><u>How can homeowners know if they are located in a floodplain?</u></p>



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<p>Station 4: The 2013 Flood Weather Story</p>	<p><u>What weather pattern led to the September 2013 flood?</u></p> <p><u>What information can community members learn from National Weather Service Weather Story forecasts?</u></p>
<p>Station 5: The Big Thompson Flood Hydrograph</p>	<p><u>What information do hydrographs show?</u></p> <p><u>Why is it important to measure river discharge (in cubic feet per second)?</u></p>



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<p>Station 6: Flood Safety</p>	<p><u>Types of Flood Alerts and What They Mean:</u> <u>Flash Flood Warning:</u></p> <p><u>Flood Warning:</u></p> <p><u>Flood Watch:</u></p> <p><u>Flood Advisory:</u></p> <p><u>How to Prepare for a Flood:</u></p>
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