

Lesson 1: Hurricane Headlines

SKILLS:



Lesson question: What do people do when a hurricane is approaching and how are people affected when a hurricane hits?

Learning objectives:

- Students learn how people prepared for and then dealt during a hurricane by analyzing news headlines about Hurricane Florence (2018).
- Students analyze data about the amount of damage that different categories of hurricanes cause, learning that even low category storms are able to cause damage.

Timing: One class period

Materials:

- Student pages: *Hurricane Headlines* (pages 14-17)
- Projector and computer with Internet access for the classroom
- Lesson 1 Slides (download from scied.ucar.edu/HurricaneResilience)
- Colored Pencils

Preparation:

- Review the Lesson 1 Slides and the Headline Timeline on the student pages.
- Copy student pages for each student.

Directions

Consider hurricane impacts.

- Have students recall a hurricane or tropical storm that affected their local area. Discuss what students remember about the storm from their own experience.
- Tell students that in this activity, they will assess how a hurricane affected the people and places in another coastal location. They will explore what news headlines can tell us about the storm and its impacts on people and places.

Assess Hurricane Florence from the headlines.

- Handout the *Hurricane Headlines* student pages (pages 14-17) to each student.
- Show **Slide 1**, the map of Hurricane Florence's path. Tell students that in this activity, they will find out from news headlines what happened when Hurricane Florence hit the North Carolina coast in 2018. (Leave the map projected while students complete the activity.)
- Tell students that in order to answer the question at the top of *Hurricane Headlines* student page 14 (What do news stories tell us about Hurricane Florence?) they will answer the questions on the first page while analyzing the headlines from the Washington Post that are in the Headline Timeline (student pages 15-17).
- Have students work in pairs to describe Hurricane Florence through a timeline of news headlines following the instructions on the second page of the first Student Activity Sheet, focusing on (1) forecasts, (2) preparation, and (3) storm impacts and responses.
- Bring the class back together and discuss what students now know about Hurricane Florence after reading the headlines with the following questions:
 - › What were people dealing with before and during the storm?
 - › What can stories help us understand about a hurricane?

Explore data about types of hurricanes and how much damage they cause.

- Show **Slide 2** (the map of hurricane tracks worldwide) and ask students to answer the questions:
 - › Where do hurricanes happen?
 - › Where do hurricanes make landfall?
- Explain that not all hurricanes make landfall at the same intensity and show **Slide 3** (the Saffir Simpson Scale). Explain that the scale describes hurricane intensity based on how strong the winds are of a hurricane or tropical storm. Ask students, based on the Saffir-Simpson Scale, what they think is the most dangerous type of hurricane?
 - › *(Students will likely indicate Category 5 based on what they just learned.)*
- Show **Slide 4** (graph of most damaging hurricanes and tropical storms) and explain to students that it shows the cost of damage (y-axis) due to the 30 most destructive hurricanes and tropical storms to hit the US coast between 1983 and 2019. Ask students: Are all of the most destructive storms high on the Saffir Simpson scale?
 - › *(Students should notice that there are tropical storms and Category 1 and 2 storms that are among the most destructive. They should also notice that the most destructive storms are Category 3 and 4.)*
- Tell students that Hurricane Florence was a Category 1 storm and it is among the 30 most damaging storms. Ask students, based on the headlines they analyzed, what aspect of Hurricane Florence caused the most damage?
 - › *(Students should recognize that flooding was a major problem during Hurricane Florence. Students may recognize that the Saffir Simpson categories are based on winds, not flooding. Students will explore which characteristics of hurricanes are the most damaging in Lessons 3 and 4.)*
- Have students brainstorm what else, besides wind speed, could make a hurricane damaging.
 - › *(For example, the amount of rain, the amount of storm surge, how fast the storm moves, the size of the storm, etc. Note that students may not know all these factors at this point, which is okay).*
- Show **Slide 5** (overall and insured losses due to hurricanes). This graph shows how the cost of hurricane damage has changed over time in the United States. Orient students to the graph:
 - The x-axis shows years since 1980.
 - The y-axis is the cost of damage.
 - Blue is insured losses.
 - Green is uninsured losses.
 - Provide students with a tangible example: if a roof is damaged by a hurricane's winds, the cost of the roof repair is represented on the graph.
- Ask students how the cost of damage has changed over time.
 - › *(Students should notice that the cost of damage has increased.)*
- Ask students: What do you think has changed that could increase the cost of damage?
 - › *(Students may wonder if there are more hurricanes today than there were in the past, which is something that they explore in Lesson 5. Students may also wonder if there are more houses and other buildings near coasts now, which could add up to more damage. This is something that students consider during Lesson 9.)*

Introduce the Hurricane Resilience unit.

- Working in pairs, have students brainstorm the types of impacts that a hurricane can have (drawing on both prior knowledge and what they have learned in this lesson), considering both:
 - › **impacts on places and things** (such as flooded homes, wind damage, wetlands loss, destroyed roads, etc.)
 - › **impacts on people** (physical and mental health problems, loss of jobs, having to move, etc.)
- Bring the class together to compile a list of types of hurricane impacts on the board and then ask students what actions people can take to stay as safe as possible (drawing on both prior knowledge and the headlines).

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- › (Students may mention individual actions such as getting to higher ground or boarding up windows and may also mention larger-scale actions such as closing an airport and calling in the military to help.)
- Introduce students to the Hurricane Resilience unit: Explain that, during the unit, they will:
 - › Gather stories from people in their local area about how hurricanes have affected people and places,
 - › Figure out what hurricane characteristics are the most hazardous,
 - › Discover how hurricanes could affect us in the future,
 - › And make plans for how people in this community can stay safe, now and in the future.

Opportunities for Assessment:

- Sharing experiences with hurricanes and tropical storms at the start of class can be helpful for formative assessment. It will indicate what types of prior experiences students bring to this unit.
- Student answers to the questions about Hurricane Florence on the *Hurricane Headlines* student page (page 14) should also be used for formative assessment, indicating whether students can identify weather forecasts (predictions) and storm impacts. It can also indicate whether students are able to identify actions that people took to prepare and steps that people took to respond to the storm impacts. These are elements that students will explore in depth during Parts 1 and 2 of the curriculum.



A flooded area of South Carolina due to Hurricane Florence in 2018. (South Carolina Air National Guard)

Name: _____



What do news stories tell us about Hurricane Florence?

Lesson 1 Student Pages: Hurricane Headlines

Step 1: Interpret the headlines.

Color-code the headlines on pages 15-17 into the three categories listed below. Add the colors to the key.

- Forecasts and warnings
- Preparing: what people are doing to prepare
- During the hurricane: impacts and how people are dealing with them

Step 2: Answer the questions below about Hurricane Florence based on the headlines.

What do these headlines tell you about Hurricane Florence?

Describe the warnings that you can find in the news headlines.

What did people do to prepare?

What were the storm impacts?

What actions did people take in the past that were successful in reducing impacts?

Where else do you think people were getting information about the storm besides newspapers and news websites?

What do news stories tell us about Hurricane Florence?

Lesson 1 Student Pages

Headline Timeline: Hurricane Florence

9/7/2018 - 9/13/2018

DATE	HEADLINE	CATEGORY
9/7	Tracking Florence: <i>Florence is expected to strengthen and may threaten the east coast</i>	<input type="radio"/>
9/9	'We're in the bull's eye': Evacuation orders multiply as Hurricane Florence churns toward East Coast <i>The governors of North Carolina, South Carolina, Virginia and Maryland have declared states of emergency. The hurricane is expected to make landfall later in the week.</i>	<input type="radio"/>
9/9	Hurricane watches posted as 'extremely dangerous' Florence churns toward Carolinas <i>The storm could slow or stall over the Mid-Atlantic and produce disastrous amounts of rain.</i>	<input type="radio"/>
9/10	Trains canceled, airports reduce operations as East Coast braces for Hurricane Florence <i>Charleston International Airport said it anticipates its runways to close by midnight Wednesday. But some airlines were already announcing plans to cease operations.</i>	<input type="radio"/>
9/11	Hurricane Florence in Washington region: The worst is likely to stay south <i>The most extreme rainfall is likely to focus in Southern Virginia and areas farther south, but small shifts could bring substantial rain and flooding to the Washington area.</i>	<input type="radio"/>
9/11	D.C. declares state of emergency ahead of Hurricane Florence, braces for 'torrential rain' <i>Officials laid out how they are preparing for the Category 4 storm.</i>	<input type="radio"/>
9/11	'Multiple threats, multiple hazards.' Aside from powerful wind, Florence could inundate the Carolinas, Virginia <i>Hurricane Florence is expected to stall and could soak an already oversaturated region.</i>	<input type="radio"/>
9/11	Moving chickens, harvesting tobacco, managing hog manure: N.C. farmers prepare for Florence <i>The nation's eighth-largest agricultural producer prepares to weather the hurricane.</i>	<input type="radio"/>
9/11	Hurricane warnings issued as 'life-threatening' Florence strengthens <i>Catastrophic flooding and destructive winds are likely in the eastern Carolinas.</i>	<input type="radio"/>
9/12	Disaster-preparedness apps are flourishing ahead of Hurricane Florence <i>The impending storm recently made a digital walkie-talkie the App Store's No. 1 app. People have learned the value of smartphones in emergencies, experts say.</i>	<input type="radio"/>
9/12	Hurricane Florence looks like a nightmarish monstrosity – 'even from space' <i>"Get prepared on the East Coast, this is a no-kidding nightmare coming for you."</i>	<input type="radio"/>
9/12	These cats and dogs were moved to safety as Hurricane Florence bears down on the East Coast <i>A District shelter is calling on people to adopt, which helps to make room for more animals in need of shelter.</i>	<input type="radio"/>

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DATE	HEADLINE	CATEGORY
9/12	Nursing homes rush to move elderly and ill from path of Hurricane Florence <i>Officials in the Carolinas want to avoid repeating mistakes in Florida, where older residents died in the aftermath of Hurricane Irma last year.</i>	<input type="radio"/>
9/12	Hurricane Florence grows larger as it bears down on Carolinas with 'life-threatening' fury <i>The Category 2 storm is likely to produce "catastrophic" flooding in the eastern Carolinas as well as damaging winds.</i>	<input type="radio"/>
9/13	Forecasts for cities affected by Hurricane Florence <i>How Florence will affect populations centers in Southeast Virginia, the Carolinas, and Georgia.</i>	<input type="radio"/>
9/13	A hurricane is coming. Now we wait: <i>The slow, anxious hours before the storm.</i>	<input type="radio"/>
9/13	'It's looking a little grim': As hurricane bears down on Carolinas, the waiting is over: <i>Powerful first surges of Hurricane Florence hit the beaches on Thursday as residents in a large area await potentially catastrophic rains.</i>	<input type="radio"/>
9/13	D.C. Mayor Bowser rescinds state of emergency orders as hurricane heads south <i>As Hurricane Florence lands in the Carolinas, District officials expect diminished threat to Washington.</i>	<input type="radio"/>
9/13	Hurricane Florence's assault begins as wind gusts top 105 mph on Outer Banks, waters rise 10 feet <i>The damaging winds, rise in the ocean and unforgiving rains will bring devastating effects to the Carolinas.</i>	<input type="radio"/>
9/14	Cajun Navy races to the Carolinas; citizen rescuers pull people from rising waters <i>An armada of various boats streamed toward Hurricane Florence this week, trying to emulate the effort during Hurricane Harvey in Texas.</i>	<input type="radio"/>
9/14	Will Hurricane Florence's remnants curl back and drench Washington early next week? <i>Areas west and north of Washington have the best chance of seeing some heavy rain Monday into Tuesday.</i>	<input type="radio"/>
9/14	Tropical Storm Florence forecast: 'Catastrophic flash flooding' becomes primary threat <i>Florence's winds are weakening, but some of its most devastating effects probably are yet to come.</i>	<input type="radio"/>
9/14	Hurricane evacuees face long journeys, lengthy stays in search for safety <i>By the time Florence bore down on the Carolinas on Friday, about 20,000 people had sought refuge at one of 200 Red Cross shelters across the region.</i>	<input type="radio"/>
9/14	Record flooding projected as Florence rolls slowly across the Carolinas <i>Officials warn that this is a slow-motion natural disaster that could last for weeks.</i>	<input type="radio"/>
9/14	At least 4 deaths linked to 'powerful, slow and relentless' storm pummeling North Carolina <i>Hurricane Florence is lashing parts of North Carolina and South Carolina. Water rescues are underway in New Bern, N.C., as the storm is about to make landfall.</i>	<input type="radio"/>

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DATE	HEADLINE	CATEGORY
9/15	'We face walls of water': Communities in North Carolina band together to face Florence <i>Florence was downgraded to a tropical storm Saturday. But its slow forward movement means that coastal and southeastern areas will still get the brunt of its deluge.</i>	<input type="radio"/>
9/15	North Carolina braces for Florence's devastating deluge <i>As Florence stalls out on its march westward, record rainfalls threaten to flood bodies of water across a large region.</i>	<input type="radio"/>
9/16	Carolinas turn into an archipelago of island communities as Florence's rain causes widespread flooding <i>With rivers still rising and roads inundated, officials warn evacuees it's not safe to go home.</i>	<input type="radio"/>
9/16	Florence forecast: Dangerous flooding expands into western North Carolina and southwest Virginia <i>The devastating rain event will only slowly relent in southeast North Carolina as it pushes toward the Appalachians and eventually the Northeast.</i>	<input type="radio"/>
9/16	Florence has made Wilmington, N.C., an island cut off from the rest of the world <i>There are no roadways open to the city, the airports and port are closed.</i>	<input type="radio"/>
9/17	Florence remnants spawn deadly tornadoes in Richmond area <i>Storms killed at least one person in the Richmond area Monday as the remnants of Hurricane Florence swept through the Mid-Atlantic.</i>	<input type="radio"/>
9/17	With Florence's flooding expected to worsen, the military could respond for days <i>Helicopters on ships nearby are still on call if needed, said a general overseeing relief efforts.</i>	<input type="radio"/>
9/17	Rivers, death toll and environmental hazards still rising in Carolinas as flooding sets records <i>Experts warn that rivers will crest and remain at high level for as many as 10 days before dropping, part of "catastrophic flooding" across the region following the hurricane.</i>	<input type="radio"/>
9/18	More headaches as Florence's waters overtake toxic pits and hog lagoons <i>Environmental casualties: Soaked hog farms, flooded coal ash pits and threatened sewage systems.</i>	<input type="radio"/>

All of the headlines in this timeline are from news stories published in *The Washington Post* between September 7 and 18, 2018.



This satellite image shows Hurricane Florence on Sept. 14, 2018, approaching the coast of North Carolina and South Carolina. (NOAA)