

RESOURCE LIBRARY | ACTIVITY : 1 HR

Hurricane Michael: Before and After Images of Destruction

Hurricane Michael made landfall near Mexico Beach, Florida on October 10, 2018. Use ArcGIS Online to compare the landscape before and after the storm.

GRADES

6 - 12, Higher Ed

SUBJECTS

Earth science, Meteorology, Geography, Geographic Information Systems (GIS), Physical Geography

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OVERVIEW

Hurricane Michael made landfall near Mexico Beach, Florida on October 10, 2018. Use ArcGIS Online to compare the landscape before and after the storm.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/hurricane-michael-and-after-images-destruction/>

DIRECTIONS

On October 10, 2018, [Hurricane](#) Michael made landfall near Mexico Beach, Florida. It landed as a category four hurricane which made it the first ever category four hurricane to land in that region. It was also the strongest storm of the season.

Present the following scenario to your students and have them follow the steps to use ArcGIS Online to compare pre- and post imagery from the storm.

Scenario

National Oceanic and Atmospheric Administration (NOAA) has provided imagery of the destruction of Mexico Beach, FL. Your office has been tasked to quickly create a storymap application that can compare the pre- and post imagery.

Obtaining the Web Map Tile Service Service from NOAA

A Web Map Tile Service (WMTS) delivers pre-generated georeferenced map images. The WMTS to be used in this exercise was acquired by the NOAA Remote Sensing Division to support NOAA homeland security and emergency response requirements.

1. Click on NOAA Emergency Response Imagery.
2. Click Hurricane Michael (2018).
3. Click About.
4. Click Web Services.
5. Copy the URL for the WMTS

Service: <https://storms.ngs.noaa.gov/storms/tilesj/services/tilesserver.php/wmts>

Preparing Pre-Hurricane Michael Imagery Map

Using Basemap imagery to prepare pre-Hurricane Michael imagery map.

1. Go to ArcGIS Online and sign in to your organizational account.
2. Click Map.
3. In the locational box in the upper right corner search for Mexico Beach, Florida.
4. Add to Map Notes.
5. Change the Basemap to Imagery.
6. On the top ribbon save the map as

Have students write a paragraph describing the landscape of Mexico Beach before Hurricane Michael.

Preparing Post Hurricane Michael Imagery Map

Add the WMTS from NOAA to show Mexico Beach after Hurricane Micael came to shore.

1. One the top menu ribbon select Add.
2. Select Add Layer from the Web.
3. Select a WMTS OGS Web Service as the type of data referenced.
4. Copy and paste the WMTS URL obtained from NOAA in the first section of the exercise.
5. Click GET LAYERS.
6. Click Choose a LAyer and select 20181011a_PGB.
7. ADD LAYER.
8. Save the map as *Post Hurricane Michael_your initials*.

Constructing a Swipe Map to Compare and Contrast

The Esri Story MApp Swipe and Spyglass app template enables users to interact with two web maps. This is a perfect application for observing pre-and post changes.

1. On the upper left go to Home and select Content.
2. Click and open Pre Hurricane Michael.
3. Click Create Web App Using a Template.
4. Click Build a Story Map and select Story Map Swipe and Spyglass.
5. CREATE WEB APP.
6. Title: Pre and Post Imagery of Mexico Beach after Hurricane Michael.
7. Done.
8. Select the Vertical bar layout and click Next.
9. Select Two web maps.
10. Click the magnifying glass and select the Post Hurricane Michael Map.
11. Click Next and Next again.
12. Type Pre Michael for the LEft MApp Header Title and Post Michael for the Right Map Header Title.
13. Click Open the app.
14. In the Tab on the left type information about Hurricane Michael.
15. SAVE.

Have students write a paragraph describing the landscape of Mexico Beach before and after hurricane Michael. Ask them to be specific with details about structures that have been destroyed.

In this activity, students have used a Web Map Tile Service of post-hurricane imagery to compare the damage done to Mexico Beach by Hurricane Michael.

OBJECTIVES

Subjects & Disciplines

Earth science

- [Meteorology](#)

Geography

- [Geographic Information Systems \(GIS\)](#)
- [Physical Geography](#)

Learning Objectives

Students will:

- Add a WMTS Service.
- Make pre- and post imagery maps.
- Create a Swipe Map to compare.

Teaching Approach

- Learning-for-use

Teaching Methods

- Hands-on learning

Skills Summary

This activity targets the following skills:

- Geographic Skills
 - [Acquiring Geographic Information](#)
 - [Analyzing Geographic Information](#)

National Standards, Principles, and Practices

PREPARATION

What You'll Need

REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per learner, 1 computer per pair, 1 computer per small group

PHYSICAL SPACE

- Classroom
- Computer lab

OTHER NOTES

Account for [ArcGIS Online](#) required.

RESOURCES PROVIDED: WEBSITES

- [NOAA: Emergency Response Imagery](#)

RESOURCES PROVIDED: INTERACTIVES

- [Esri: ArcGIS](#)

BACKGROUND & VOCABULARY

Background Information

Prior Knowledge

Recommended Prior Activities

- None

Vocabulary

Term	Part of Speech	Definition
emergency	<i>noun</i>	sudden, unplanned event that requires immediate action.
hurricane	<i>noun</i>	tropical storm with wind speeds of at least 119 kilometers (74 miles) per hour. Hurricanes are the same thing as typhoons, but usually located in the Atlantic Ocean region.
National Oceanic and Atmospheric Administration (NOAA)	<i>noun</i>	U.S. Department of Commerce agency whose mission is to "understand and predict changes in climate, weather, oceans, and coasts; to share that knowledge and information with others, and; to conserve and manage coastal and marine ecosystems and resources."
remote sensing	<i>noun</i>	methods of information-gathering about the Earth's surface from a distance.

For Further Exploration

Websites

- [NOAA: Homepage](#)



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