



High School Science Virtual Learning

Earth Science

Tropical Storms

April 30, 2020



High School Earth Science

Lesson: April 30, 2020

Objective/Learning Target:

Students will be able to identify the hazards associated with tropical storms and how they form and develop.



Let's Get Started:

Watch this video: Hurricanes 101: National Geographic

[Link to Video](#)

Questions:

1. To be classified a hurricane, tropical storm winds must exceed ____ miles per hour.
2. The most dangerous part of a hurricane is the wall of water called the ____ ____, as it crashes over the coast.



Let's Get Started: **Answer Key**

1. Question 1- **74 mph**
2. Question 2 - **storm surge**



Lesson Activity: **Introduction to Tropical Storms**

Directions: Read - *“Introduction”* from the National Weather System *“JetStream”*

[Link to page](#)

Complete the guided reading questions on the following slide.



1. What minimum ocean water temperature is required for tropical cyclone development?
2. In what general direction do hurricanes generally move in the northern hemisphere?
3. How are tropical storms helpful to the Earth's environment?



Lesson Activity: **Structure of Tropical Storms**

Directions: Read “Structure” from the National Weather System “*JetStream*”

[Link to Page](#)

Complete the guided reading questions on the following slide.



1. Describe the conditions in the eye of a hurricane.
2. Describe the conditions in the eyewall of a hurricane.
3. About how wide is a typical tropical cyclone of hurricane strength?



Lesson Activity: Tropical Cyclone Classification

Directions: Read “Classification” from the National Weather System “*JetStream*”

[Link to Page](#)

Complete the guided reading questions on the following slide.

1. What system is used to classify hurricanes?
2. Complete the table below.

Hurricane Category	Maximum sustained winds (mph)
1	
2	
3	
4	
5	



Lesson Activity: : Hazards associated with Tropical Cyclones

Directions: Read “Tropical Cyclone Hazards” from the National Weather System “*JetStream*”

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Complete the guided reading questions on the following slide.



1. What is a storm surge?
2. Why is the storm surge dangerous to coastal residents?
3. How does a hurricane lift the roof off a house?
4. How do most of the children killed by a hurricane die?



Answers

1. What minimum ocean water temperature is required for tropical cyclone development? **at least 80°F / 27°C**
2. In what general direction do hurricanes generally move in the northern hemisphere? **West or northwest**
3. How are tropical storms helpful to the Earth's environment?
tropical cyclones help regulate the earth's temperature

1. Describe the conditions in the eye of a hurricane. **The hurricane's center is a relatively calm, generally clear area of sinking air and light winds that usually do not exceed 15 mph and is typically 20-40 miles across.**
2. Describe the conditions in the eyewall of a hurricane. **The eyewall consists of a ring of tall thunderstorms that produce heavy rains and usually the strongest winds.**
3. About how wide is a typical tropical cyclone of hurricane strength? **Typical hurricane strength tropical cyclones are about 300 miles wide.**

1. What system is used to classify hurricanes? **Saffir-Simpson Scale**
2. Complete the table below.

Hurricane Category	Maximum sustained winds (mph)
1	74 - 95 mph
2	96 - 110 mph
3	111 - 129 mph
4	130 - 156 mph
5	Greater or equal to 157 mph

1. What is a storm surge? Storm surge is simply water that is pushed toward the shore by the force of the winds swirling around the storm.
2. Why is the storm surge dangerous to coastal residents? Because much of the United States' densely populated Atlantic and Gulf Coast coastlines lie less than 10 feet above mean sea level, the danger from storm tides is tremendous
3. How does a hurricane lift the roof off a house? The process involved is called Bernoulli's Principle which implies the faster the air moves the lower the pressure within the air becomes. The high wind moving over the top of the roof creates lower pressure on the exposed side of the roof relative to the attic side. The higher pressure in the attic helps to lift the roof.
4. How do most of the children killed by a hurricane die? Over three-fourths (78%) of children killed by tropical cyclones drowned in freshwater floods.

Extensions:

Video “What are hurricanes, typhoons, and tropical cyclones?”

[Link to Video](#)

1. **Where do the tropical storms that produce Atlantic hurricanes generally begin?**
2. **What is the most destructive part of a hurricane?**

Hurricane Safety - Read about hurricane safety to advise family or friends living on the US east coast.

[Link to page](#)

Extension Answers

1. Where do the tropical storms that produce Atlantic hurricanes generally begin? **Off the western coast of Africa between 8 & 20 degrees N. Latitude.**
2. What is the most destructive part of a hurricane? **The eyewall.**