Contents

TEACHER GUIDE

STUDENT HANDOUTS

READING COMPREHENSION

NAME: _____

Before You Read

Extreme Weather

1. Have you ever experienced a bad storm or other type of extreme weather? Write about your experiences on the lines below.

_____

_____

_____

_____

_____

_____

_____

2. Use the words in the box to answer each question. You may use a dictionary to help you.

estimate	**degrees**	**precipitation**	**destructive**	**evaporation**

_____ **a)** What is the process by which liquid water turns to water vapor?

_____ **b)** What is a word for water or ice that falls to Earth's surface from clouds; for example, rain, sleet, or snow?

_____ **c)** What units is temperature measured in?

_____ **d)** What do scientists do when they make a prediction of a condition based on several pieces of information?

_____ **e)** What is another word for harmful?

Reading Passage

NAME: _____

Extreme Weather

Scientists estimate that average temperatures for the Earth as a whole will rise about 10 degrees Fahrenheit (5 degrees Celsius) by 2100. A few degrees may not seem like a lot. However, this rise in temperature can cause more extreme weather events. This include storms, floods and droughts.

Hurricane Michael makes landfall in Florida.
(Image courtesy of NASA & Goddard Space Flight Center)

Warm air holds more water than colder air. Therefore, Earth's atmosphere can hold more water as temperatures rise. More water in the atmosphere leads to more **precipitation**. This then leads to more stormy weather. Some areas may get much higher rainfall than usual. This results in flooding. Storms, such as hurricanes, can carry more rain than usual. This makes them larger and more destructive when they move onto land and through areas where people live.

Name three kinds of extreme weather events.

_____

_____

For the air to carry more water, it must be close to a source of water, like an ocean. Air that is over normally dry areas, like the middle of continents, can actually become drier. With higher land temperatures and no source of water for **evaporation**, masses of air over dry land can become hotter and drier. This can lead to **droughts**, or periods of unusually dry weather. Deserts can spread as the air above them becomes hotter and drier over time. Spreading deserts can overtake forests and farmland. There is little that people can do to stop the movement of sand. There is little that people can do to stop the movement of sand.

NAME: _____

After You Read

Extreme Weather

1. Circle the word **TRUE** if the statement is TRUE **or** Circle the word **FALSE** if it is FALSE.

a) If global average temperature rises only 10°F, people will not be affected.
TRUE **FALSE**

b) More water in the atmosphere leads to less precipitation.
TRUE **FALSE**

c) Hurricanes that hold more water are more destructive when they move onto land.
TRUE **FALSE**

d) Masses of air over land will most likely become wetter if global temperatures keep rising.
TRUE **FALSE**

e) There is little that people can do to stop the movement of sand from spreading deserts.
TRUE **FALSE**

2. Put a checkmark (✓) next to the answer that is most correct.

a) How many degrees Fahrenheit do scientists estimate the average temperatures on Earth will rise by 2100?

- ○ **A** 2°F
- ○ **B** 6°F
- ○ **C** 10°F
- ○ **D** 20°F

b) What is the most likely effect of climate change on deserts?

- ○ **A** They will become wetter.
- ○ **B** They will grow and spread.
- ○ **C** They will experience severe hurricanes.
- ○ **D** They will become good areas for farming.

c) What is the most likely type of severe weather to increase in the middle of continents?

- ○ **A** drought
- ○ **B** flooding
- ○ **C** tornadoes
- ○ **D** hurricanes

After You Read

NAME: _____

Extreme Weather

3. Answer each question with a complete sentence.

a) Explain why storms, such as hurricanes, may become stronger as Earth's average temperature rises.

_____

_____

_____

_____

b) Explain why climate change may lead to drought in some areas.

_____

_____

Research

4. How will climate change affect the extreme weather in your area?

List the types of extreme weather that your area experiences.

_____ _____

_____ _____

Use the library or Internet resources for help. Research ways that climate change may affect the types of extreme weather that your area experiences. Contact your local government emergency management offices. Ask for information about how to prepare for extreme weather in your area. Ask whether the office is making any plans for increased extreme weather due to climate change. Design a poster to report your findings. Share with the class and post in your school.

Hands-On Activity # 1

Investigate fossils. Obtain a selection of fossils from your teacher.

For each fossil:

- Draw a sketch.
- Describe what parts of the plant or animal are preserved.
- Compare it to living things that are on Earth today.
- Describe what environmental conditions the plant or animal would have needed to live.
- Identify the ecosystem in which the plant or animal most likely lived.

Create a chart like the one shown below to organize your information.

Fossil Sketch	Living things that are like the fossil.	Needs of the plant or animal that made the fossil.	Ecosystem the plant or animal most likely lived in.

NAME: _____ After You Read

Crossword Puzzle!

WORD LIST

climate
desert
economy
ecosystem
forest
fossils
glacier
infrastructure
levee
migrate
permafrost
satellites
sea level
tundra

Across

1. Remains of once-living things preserved in rock.
3. The frozen ground in the tundra.
6. A large mass of ice that doesn't totally melt in summer.
7. A common ecosystem in North America filled with trees.
9. A hot, dry ecosystem.
13. Objects that orbit Earth.
14. When people move from one area to another.

Down

2. The permanent parts of cities.
4. The use of money by a government.
5. This structure is built to help stop flood waters from spreading.
8. Where the ocean meets land.
10. The interaction between the living and nonliving parts of an environment.
11. The average weather conditions over time.
12. The ecosystem in the Arctic and Antarctic.

NAME: _____ After You Read

Comprehension Quiz

Part A 26

Circle the word **TRUE** if the statement is TRUE **or** Circle the word **FALSE** if it is FALSE. 8

1. Melting ice caps can create a negative feedback cycle.
   TRUE **FALSE**
2. Early humans migrated around the globe in response to changes in climate.
   TRUE **FALSE**
3. Fossils are the remains in rock of plants and animals that lived a very long time ago.
   TRUE **FALSE**
4. Ice sheets once covered Florida.
   TRUE **FALSE**
5. Climate change may lead to tropical diseases spreading to more locations.
   TRUE **FALSE**
6. Global climate change is causing fewer severe storms to form.
   TRUE **FALSE**
7. Ozone cannot harm the lungs of healthy people.
   TRUE **FALSE**
8. Ice sheets and permafrost are already melting at a fast pace due to climate change.
   TRUE **FALSE**

Part B 4

Label the diagram by doing the following:

1. Label the map of North America with the ecosystems from the list below.
   1 desert
   2 deciduous forest
   3 grassland
   4 tundra

SUBTOTAL: /12

Arctic & Antarctic Iceburgs

"Ice reflects more sunlight than other materials on Earth's surface."

After You Read

NAME: _____

Extreme Weather

3. Answer each question with a complete sentence.

a) Explain why storms, such as hurricanes, may become stronger as Earth's average temperature rises.

_____

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3.

a) More heat energy causes more evaporation and larger, faster moving storms.

b) Hotter air over the inside of continents becomes drier without a source of to evaporate.

Across:

1. fossils
3. permafrost
6. glacier
7. forest
9. desert
13. satellites
14. migrate

Down:

2. infrastructure
4. economy
5. levee
8. sea level
10. ecosystem
11. climate
12. tundra

Reading Passage

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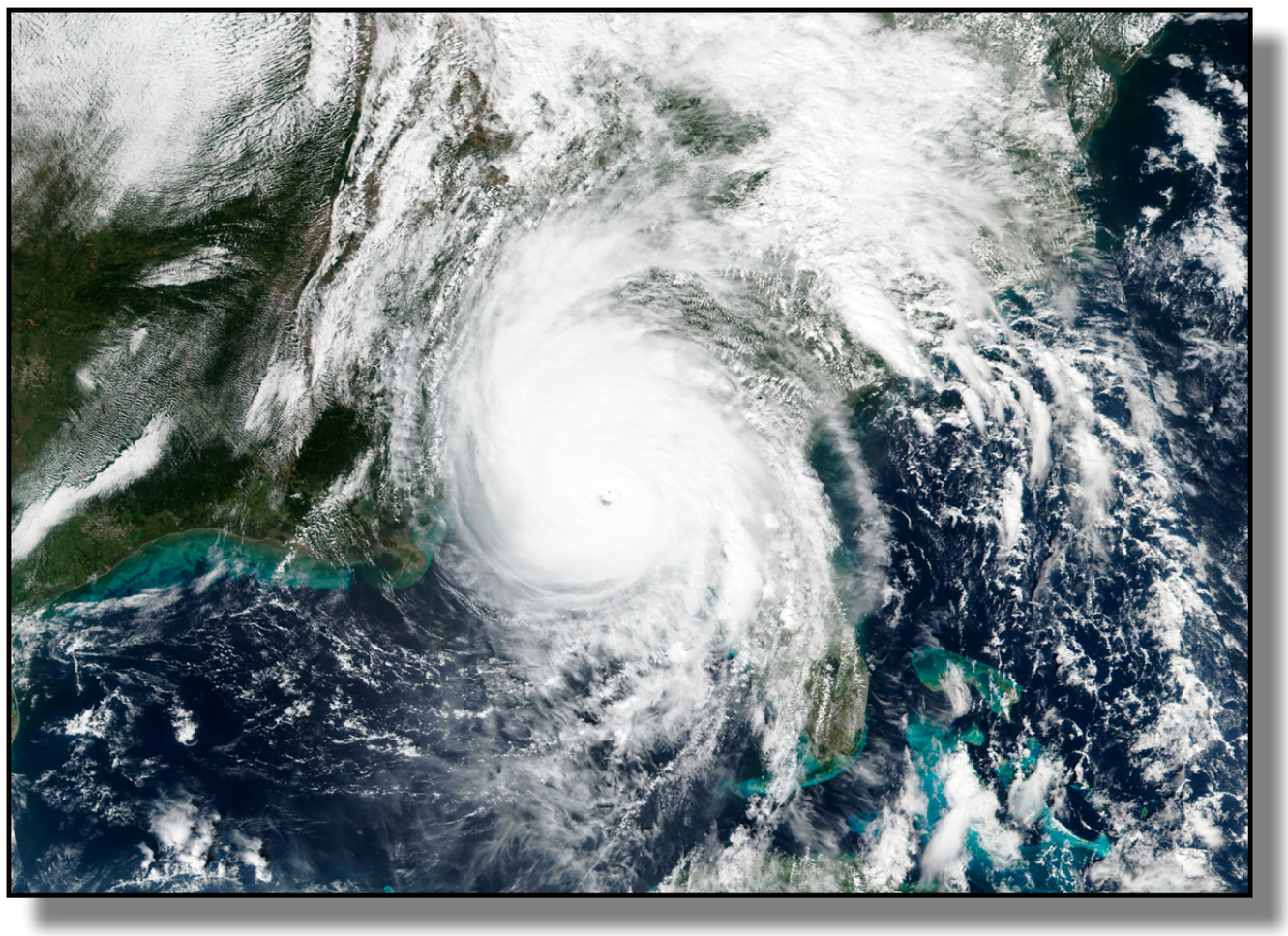

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