



WEATHER WATCHERS

TIME & AUDIENCE LEVEL

- Grades 3-4
- 45 minutes-1 hour; 15 minutes additionally

VOCABULARY

- Climate Change
- Meteorologists
- Weather
- Climate

MATERIALS

- Field journal (provided)
- Pens/pencils/coloring materials
- Thermometers/weather apps
- Cloud chart
- Access to computer/local library



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SUMMARY

In this activity, students will learn the difference between weather and climate by making observations and looking at long term data trends in their local community to inspire curiosity about weather/climate dynamics and better understand the process of climate change.

OBJECTIVES

- Students will observe and identify local weather patterns
- Students will communicate local weather patterns through graphs and tables
- Students will draw conclusions about how human activity impacts climate and the living things that rely on it

BACKGROUND INFORMATION

The role weather plays in our overall climate is key to truly understanding the impacts we face through **climate change**, or the change in normal conditions in a region over a long period of time, such as temperature and rainfall. In recent years, climate change has come to refer to our current chapter of warming accelerated by human activities.

Weather is the ever-changing atmospheric conditions that we can observe daily, such as rain, sun, or snow. **Climate** is the overall average of weather over a long period of time, such as tropical, dry, and temperate climates.

Animals and plants rely on natural indicators like weather and climate to migrate, hunt, sleep, and reproduce. Changes in the normal conditions can put living things at risk, as blooming times, migration patterns, and food available may be altered. Sea turtles, for example, may find the currents they rely on to migrate and hunt changing due to the warming climate. This change may force them in unfamiliar waters that may have new predators or water that cools too quickly for them to escape. Climate change may also alter beach habitats they rely on to nest as extreme weather events are expected to increase in frequency and sea level rise may see nests being washed over with high tide too many times to produce viable eggs. Sea turtles, like all living things, will have to adapt to these changing conditions in order to survive.

Establishing a baseline of "normal" is how climate scientists, including **meteorologists**, scientists that study weather patterns, are able to discern any abnormalities caused by a changing climate. They do this by observing local weather patterns for several years at a time and looking at past historical data.

CRITICAL THINKING QUESTIONS

Pretending like each 15 minutes you observed is a year, what would you say is the local climate of where you observed?

Did you notice any animals while observing? What were they doing? How do you think a changing climate will affect wildlife like them?

NGSS

3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.

3-ESS2-2. Obtain and combine information to describe climates in different regions of the world

GEORGIA STANDARDS OF EXCELLENCE

S2E3. Obtain, evaluate, and communicate information about how weather, plants, animals, and humans cause changes to the environment.

S4E4. Obtain, evaluate, and communicate information to predict weather events and infer weather patterns using weather charts/maps and collected weather data.

In this activity, students will become meteorologists and observe local weather patterns over several weeks in order to establish a baseline of "normal" conditions. This activity, once explained, can be a part of normal morning routine, only taking around 15 minutes as students observe the weather each morning or afternoon.

SET UP

To set up this activity, print out field guide. To ensure easy assembly, print on both sides and have printer flip the long way. It may be easier to trim the margins before you cut the pieces into their respective quadrants.

Resources can be placed around the room in order to help with observing weather, such as thermometers, wind vanes, and rain gauges. Wind vanes and rain gauges can be made as a craft beforehand if time. Utilize local weather apps and websites in order to gather more information for students. Example websites have been provided in the reference section.

Observations can be made outside in nature (recommended) or through a window if a safe outdoor space for students is not available. If no windows, videos or livestreams of local weather conditions can be broadcasted for students to observe.

ACTIVITY PROCEDURE

PART I: Discussion/Introduction | 30-45 minutes

Discuss the importance weather plays in our everyday lives. As a class brainstorm examples of weather patterns typically seen in the area, how students prepare for these weather patterns, when they usually see them throughout the year, etc. Explain the differences between weather and climate.

PART II: Daily Observations | 15-minutes daily

Using the field guides observe and record local weather data at the same time for the length of the observation period. We suggest one month or longer. Encourage students to take special notice of the clouds, the wind, the sun, and anything else that may stand out.

PART III: Student Findings | 45-90 minutes, or as time allows

After the daily observations have concluded, invite students to create reports on their findings graphing their data. Use resources such as websites (examples found in resource section), farmers almanacs, testimonials, etc. to compare their findings with what observations are normal for this time of year.

Within the each student's or group's report encourage them to answer the following questions:

- Is the average of the entries normal for this time of year?
- Have you noticed anything out of the ordinary?

EXTENSION RESOURCES

Cloud Charts:

- https://www.weather.gov/media/owlie/cloud_chart.pdf
- <https://scied.ucar.edu/learning-zone/clouds/cloud-types>

DIY Wind Vane:

- <https://www.sciencebuff.org/scienceactivity/diy-wind-vane/>

DIY rain gauge:

- <https://www.education.com/science-fair/article/DIY-rain-gauge/>

Meteorological resources:

- <https://www.meteoblue.com/>

Livestreams:

- <https://www.weather.gov/slc/Cameras>
- <https://www.weatherusa.net/skycamnet>
- <https://www.weatherbug.com/weather-camera/>

Historical weather data:

- <https://www.almanac.com/>
- <https://www.farmersalmanac.com/weather-history>
- <https://www.wunderground.com/history>
- <https://www.visualcrossing.com/weather-history/>

- What has the weather been like previously in your area? Does your observations match this?
- What are your predictions for future weather/climate of your area?

WRAP UP/CONSERVATION MESSAGE

After each student or groups has an opportunity to present their findings, as a group discuss what is normal for the area and encourage them to think critically about what a change in these normal conditions could mean for local ecosystems.

Discuss the positive and negative implications of a changing climate in how it might impact animals. Use sea turtles as an example of an already endangered species and the challenges or benefits climate might have on finding food, migration, and reproduction.

Review how weather and climate play a very important role in our everyday lives. When talking about climate change, it is easy to mistake weather conditions and patterns as representative of the whole climate. Exploring this concept with students to understand the difference between weather and climate is important to foster the next generation of climate stewards.

ADDITIONAL INFORMATION/EXTENSIONS

Students may create their own metrological tools in order to help them with observing their local weather patterns. Wind vanes and rain gauges can be made with just a few basic supplies, and instructions have been linked in the reference section.

If students would like to dig further into the difference of weather and climate globally, in addition to observing your local weather, students may also access a live stream online of one or two other places to observe local weather. Have them compare and contrast findings. Some suggested live streams can be found in the references section.



CONTACT INFORMATION

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(912) 635-4141



_____'S Weather Watch Book



Name: _____

Dates watched: _____



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Date: _____

Today's Weather Looked Like...

Draw what you see!

Time observed: _____

Temperature: _____

CIRCLE ONE: SUNNY RAINY WINDY FOGGY CLOUDY SNOWY

Date: _____

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Name: _____



My Weather Data

Use this page to showcase the weather you observed!

Count the number of sunny, rainy, windy, foggy, cloudy, and snowy days and add the totals to the chart. Then, color in the number of days in the bar graph below!

Data for dates from _____ to _____.

	Number of Days
Sunny	
Rainy	
Windy	
Foggy	
Cloudy	
Snowy	

