

## 9. MONITORING WEATHER

What is weather?

### Background

Weather is the daily state of the atmosphere and its short-term variation (from a matter of minutes to as long as a few weeks). Commonly, weather is thought of as the combination of temperature, humidity, precipitation, cloudiness, visibility, and wind. Weather is spoken of in terms such as "What will it be like today?", "When will that storm hit our part of the state, province, or country?" and "How cold is it right now?"

### Objectives

- Recognize the components of weather.
- Investigate and observe local weather conditions as well as how weather can change over time.
- Measure, record, and interpret data.

### Materials and Equipment

- Data collection system
- Weather sensor
- Clipboard and pencil

### Safety

Follow these important safety precautions in addition to your regular classroom procedures:

- Only go to teacher approved areas outside.
- Make sure your teacher can see you at all times outside.

### Procedure

#### *Part 1 - Measuring Weather at Specific Points in Time*

1. Select a location outside to place your weather sensor. Conduct your first data entry in the morning.
2. Select Sensor Data in SPARKvue.
3. Connect your weather sensor to your device.
4. Select Temperature, Relative Humidity, Barometric Pressure, and Windspeed.
5. Select the Digits display.
6. Start recording data and make observations to monitor the weather conditions in your selected location.
7. Record the time, sensor data, and visual observations in Table 1.
8. Repeat steps 1 - 7, two more times throughout the day.

**Part 2 - Measuring Weather over a Time Period: Temperature and Relative Humidity**

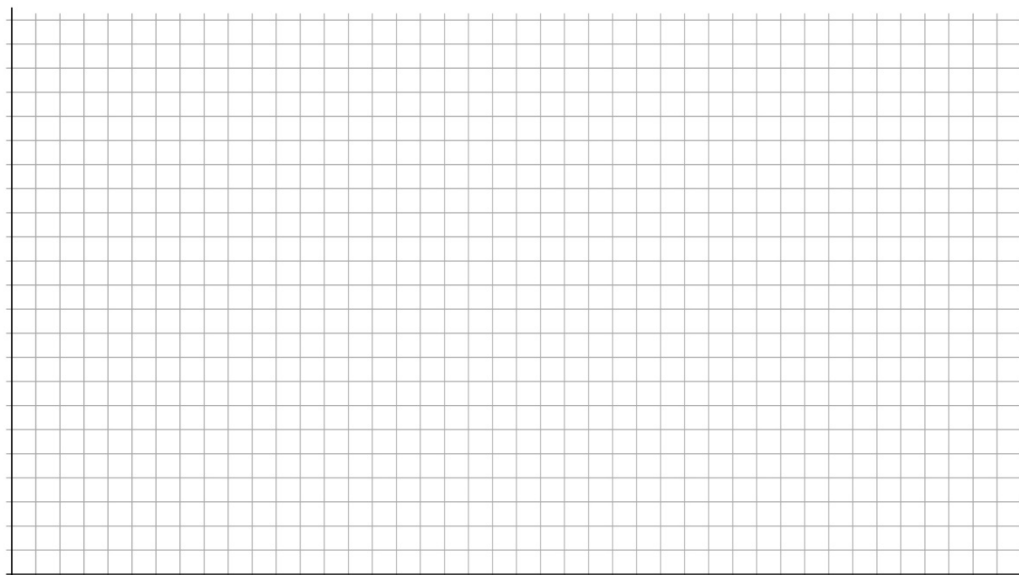
1. In the morning, go back to your selected location from Part 1.
2. Select Remote Logging in SPARKvue.
3. Select your weather sensor for remote logging and press OK.
4. Leave the sensor in this location for a minimum of 3 hours.
5. After 3 hours, retrieve the weather sensor.
6. Go back into Remote Logging in SPARKvue and Select Sensors with data. Briefly press the power button to awaken the sensor. Select your weather sensor.
7. Click Download Data.
8. Select only Temperature and the Graph template.
9. Record your data in Graph 1. Make sure to label your x and y axis. If your teacher asks, make sure to include units of measure. If you do not include units of measure, recreate the trend in data to show the change over time.
10. Click on the y-axis Temperature and switch this reading to Relative Humidity.
11. Record your data in Graph 2. Make sure to label your x and y axis. If your teacher asks, make sure to include units of measure. If you do not include units of measure, recreate the trend in data to show the change over time.
12. Save your experiment according to your teacher's directions.

**Data Collection**

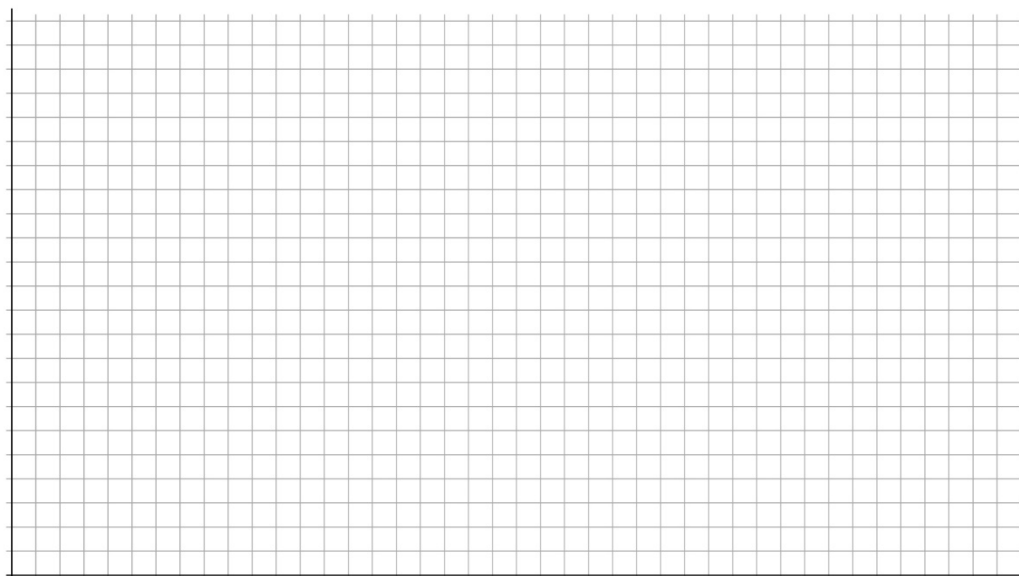
Table 1: Weather conditions

Time of Day			
Temperature			
Relative Humidity			
Barometric Pressure			
Wind Speed			
Precipitation			
Cloud Cover			

Graph 1: Temperature over time



Graph 2: Relative humidity over time



## Questions and Analysis

1. Using data from Table 1, what changes in the weather did you notice throughout the day?
2. What factors determine whether or not a location receives precipitation?
3. How did the temperature change over time? Use evidence from Graph 1 to explain your answer.
4. How did the relative humidity change over time? Use evidence from Graph 2 to explain your answer.
5. Did you notice a relationship between temperature and relative humidity over time? Use evidence from Graph 1 and Graph 2 to explain.
6. How does monitoring weather data over a period of time help you become more familiar with the weather you experience in your area?