

## Teacher's Guide Grade 5: Weather and Climate



**TEKS 5.8 Earth and Space:** The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon system. The student is expected to:

A) differentiate between weather and climate.



**Background Information:** This unit reinforces the idea of recognizable patterns in the natural world. Students learn the difference between weather and climate. Weather is the condition of the atmosphere at a particular time and place. Climate reflects the average weather pattern of a particular place over a long period of time. They understand the factors such as temperature, humidity, and air pressure affect the climate and weather conditions.



**Prerequisite Knowledge:** Prior to this year, students have learned that there are recognizable patterns in the natural world. Students know that the natural world includes the air around us and objects in the sky. They are able to describe weather changes and identify events that have repeating patterns including seasons and times of the day. Students are able to record, measure, and graph weather information including temperature, wind conditions, precipitation, and cloud coverage, using tools that include Celsius thermometers, rain gauges and wind vanes. They can also compare day-to-day weather conditions in different locations. Students can descriptively illustrate that the Sun is a star that provides light and heat energy for the water cycle. They have also measured and recorded changes in the weather and can make predictions using weather maps, weather symbols, and a map key.



**Common Misconceptions:** Students often believe the terms weather and climate are interchangeable. It is important for students to recognize that weather and climate are quite different. Weather is the condition of the atmosphere at a particular time and place. Climate reflects the average weather pattern of a particular place over a long period of time. Another misconception students may have is that the atmosphere traps the heat from the Sun. In actuality, thermal energy from the Sun enters the

atmosphere and strikes the surface of the Earth. Heat energy moves from the surface of the Earth to the air above it. This energy drives weather and climate patterns worldwide.



**Essential Questions:**

- 1) What is the difference between weather and climate?

*Weather is the short-term atmospheric conditions that occur in a particular place at a particular time. Climate is the long-term average weather conditions over time in a particular area.*

- 2) Where does the energy come from that drives weather and climate patterns?

*The main energy source for both weather and climate is the Sun. Energy travels from the Sun through the atmosphere to the Earth's surface. Some of the Sun's energy is absorbed by land and oceans. This absorbed energy changes into heat and is then transferred to the air above it.*

- 3) How does the Sun interact with the Earth to produce weather and climate patterns?

*The Sun is the main source of thermal/ heat energy for the Earth. Due to the tilt of Earth on its axis, the surface of the Earth is heated unevenly by the Sun, so the air above the Earth's surface is also unevenly heated. This causes motion of air in the atmosphere and movement of water in the water cycle. As a result it causes changes in weather and climate that form patterns that can be used to predict the weather.*

- 4) What do meteorologists use to help them predict the weather?

*Meteorologists use the temperature, humidity and air pressure to help them predict the weather.*



**Notes:**