

## Lesson 1: Climate and Weather

### Learning objectives:

- Distinguish the difference between weather and climate
- Describe what factors indicate a climate zone
- Compare and contrast climatic regions around the world

### Assessment criteria:

- Active participation in classroom activity that displays comprehension of the concept of a climate zone
- Accurate portrayal of climate zones using a world map
- Explain in own words the terms weather and climate to peers

### Benchmark/Standard:

Global patterns of atmospheric movement influence local weather. *National Science Education Standards: Observe, Interact, Change, Learn*. Washington, DC: National Academy, 1996. 160. Print

### Relationship to the driving question:

This lesson is the introduction to the unit of climate zones and climate change. The reasoning behind focusing on the difference between weather and climate is because throughout the unit students will examine climate zones and typical weather that occurs in those zones. If students do not understand the difference between weather and climate, then the lessons proceeding will not make much sense.

### Prior Knowledge/Prior Conceptions:

- Reasonable understanding of weather
- Different parts of the world have different climates, and that climate generally becomes colder away from the equator
- Misconception: Weather and climate is the same thing.

### Instructional strategies:

- Class field trip outdoors to analyze local weather and have discussion about the difference between climate and weather
- Map activity categorizing and examining climate zones around the world

### Instructional resources used:

- Barbara Hug
- It's About Time: Investing Earth Systems Teacher's Edition Unit 4

### Materials and set-up needed:

- Map Worksheet
- Markers

**Time required:**

One class period (50 minutes)

**Cautions:**

Depending on weather, cover may need to be taken. Will not go outside if there is lightning or strong winds, weather will be observed from inside.

**Body of Lesson:*****Introducing the lesson:***

The lesson will be introduced by asking the students the question "What is climate?" and to tell them to not answer aloud but think about it in their heads. A follow up question would be "What is weather, and how is it alike and different from climate?" After a minute of thought, the students will be asked to go outside (weather permitting) to do some observation and find answers to those opening questions.

***Body of the lesson:***

Outdoor discussion:

When the students are outside, the class will sit as a group in a large circle and have a discussion about the difference between weather and climate. In order to encourage participation throughout the discussion, a ball will be thrown around the circle and the student who holds the ball has to answer the question.

The first discussion topic will be about weather. What is the weather like outside today? What is the temperature?

*"It's sunny and warm." or "It's breezy" or "It's drizzling" are all answers to be expected depending on the weather on the given day.*

After it has quickly been established what the weather is like on the given day, the following questions will be "What was the weather like the past week?" and "What is the weather forecasted to be for next week?"

*Answers to this question depend on what season this lesson is taught in, but should show that the weather is mainly consistent with few chances of being out of the ordinary for the given time of year.*

Once these questions have been discussed, the topic of the day, the difference between climate and weather, can be established. Students will try to explain in their own words that weather is the day-to-day atmospheric activity and climate is the typical trend of weather in the area.

Classroom Mapping Activity:

Once the students file back into the classroom and have taken their seats, every student will receive a blank atlas map of the world. The students will color in the map based on the five different climate zones that will be taught in this unit. Using the projector, the teacher will color out the map simultaneously with the students. Once the coloring is done, the teacher will prompt the students with the question, "What does this map tell you about how climate is defined?"

*Students may answer with "Climates are unique to certain areas around the world" or "Climates are different depending on how far away the land is from the equator"*

\*Make note that plants and animals also define climate zones. Most organisms are specifically adapted for the climate. The amount of water that is near the land also affects climate. Large bodies of water hold heat, which affect the local climate.

The students will then zoom in on where they live and discuss the local climate, such as being seasonal and mostly dry. They will also make the connection that they are land locked. After that short discussion the students will label the climate zones on the map: temperate, arid, tropical, polar, and Mediterranean.

***Wrapping up the lesson:***

The lesson will end with a short reflection in their journal that compares and contrasts weather and climate, using their own climate as an example. They will then write a prediction to how the climate is in another zone and what types of weather may be experienced there.

***Evaluating learning:***

The amount of participation and questions asked are a major way of evaluating the learning that takes place. If students are enthusiastic about the discussion then they are learning. The analysis and predictions made in a journal entry also indicate if the student learned during the lesson.

**Design Rationale:**

This lesson is to serve the purpose of introducing the main unit that analyzes climate zones and climate change. The focus on the difference between weather and climate in the first part of the lesson is because many students hold misconceptions about what weather truly is, and that there is no difference between climate and weather. The goal of the activity is to make students realize that weather is the daily atmospheric activity and that climate is the trend of weather over long periods of time. Students may have previously heard those terms used interchangeably when they do mean different things. The misconception will be addressed throughout the unit because in one lesson students may not let go of their thought process. Investigating and comparing these ideas brings out critical thinking. The map activity makes the idea of climate zones visual and realistic. Having students put definitions into their own words help solidify understanding and comprehension. By having students make predictions about other climates shows that they are applying new knowledge and trying to make connections.