Distinguishing between Weather and Climate

Description:

This lesson helps students understand the difference between weather and climate. The goal is to develop a deeper understanding of the climate systems discussed throughout the module. This activity presents students with examples of weather and climate and asks them to identify each in a Jeopardy style game.

Objectives:

- Distinguish between weather and climate in photos, descriptive language, maps and graphs
- List key characteristics of climate and weather

Vocabulary:

Atmosphere, climate, weather, weather forecast

Materials:

- Distinguishing between Weather and Climate Accompanying Slides
- Interactive whiteboard or projector
- Mini whiteboards (one for each team)
- Dry erase markers (one for each team)
- Optional: If these aren't available, replace with markers and paper

Background Information:

First, as a class watch Weather vs. Climate Crash Course Kids Video.

To understand the changes in our atmospheric system and the implications they will have for decades to come, we must also identify the differences between climate and weather.

Climate is considered the average weather of a place over a period of time, including the upper and lower extremes as compared to the past thirty years. Weather can be daily or even hourly whereas climate is usually seasonal or annual. Weather simply is a shorter term measurement of the state of the atmosphere, which includes most standard factors like temperature, rain, wind, sun, snow, humidity, as well as natural disasters.

The effects of climate change are not felt immediately. People sometimes make the mistake of attributing an unusually warm day in winter or an unusually cold day in summer, to climate change. The pace of change for our climate is much slower than many people think. Instead, that warm day was likely due to a variation in weather, or climate variability. This is not to say that climate change is not occurring, we just don't feel climate change the same way we feel changes in weather or climate variability.

According to the United States Global Change Research Program, "Seasonal variations and multi-year cycles (for example, the El Niño Southern Oscillation) that produce warm, cool, wet, or dry periods across different regions are a natural part of climate variability. They do not represent climate change."[1] Columbia University also provides some helpful context; "While the long-term trends of climate change are considered by scientists to be largely human-caused, climate variability is mostly due to natural oscillations in the earth's systems…

[1] The Essential Principles of Climate Science Guide

changes in pressure, temperature and other climate variables."[2] Occurrences of climate variability should not universally be attributed to climate change. It is important for students to be aware of this distinction.

Method:

- This climate versus weather game has three rounds, with increasing difficulty and point value for each round. Each round has five questions; questions in the first round are worth 100 points each, and increase to 200 points in second round and 300 points in the third.
- Split students into groups of 3-5 and ask them to come up with team names, maybe related to their favorite type of weather or climate.
- Have students look at the photo, sentence, graph or map on the slide and discuss in groups whether it is climate or weather. Groups will have up to 60 seconds to deliberate together, write an answer legibly on their whiteboard or piece of paper, and raise their written answer for the educator. The quickest team wins the round, as long as their answer is correct. If the answer is not correct, the second group to raise their answer will then be given the opportunity to win the round.
- The team with the most points at the end wins!
- Optional: On the slides below each answer is a description of the answer (usually the type of climate or weather). Consider giving students bonus points for listing a relevant description.

Discussion:

- Why is it important to differentiate between weather and climate?
- How do these differences relate to climate change or our understanding of the topic?
- What are the differences between predicting weather and predicting climate? Are these predictions reliable?
- Consider how technology will further enhance predictions and research. How do you envision this field changing in the future?

Extension:

- After this activity, present the graph on page 6 of The Teacher-Friendly Guide to Climate Change. Is this graph accurate? Is it helpful to organize these concepts graphically?
- Go through DEP's Recording Weather and Climate lesson.
- Further explore climate variability by discussing El Niño and other oscillation patterns with students. Visit Columbia University International Research Institute for Climate and Society's site for more information.

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For more information visit www.nyc.gov/dep

[2] Columbia University International Research Institute for Climate and Society