Weather or Climate?

Alaska FFA Association and USDA Northwest Climate Hub

Levels 6-12

DESCRIPTION

Using image cues, students will learn about the differences between climate and weather.

OBJECTIVES

1. Students will define the differences between weather and climate.
2. Students will apply these definitions to determine whether included photos are representations of weather or climate.

MATERIALS NEEDED

- Computer and projector (1)

BACKGROUND

It can be easy to confuse the concepts of weather and climate. However, misunderstanding the difference between weather and climate can lead to inaccurate conclusions about climate change.

¥Adapted from USDA Southwest Climate Hub's "Weather or Climate" Lesson Plan created by the Asombro Institute for Science Education.

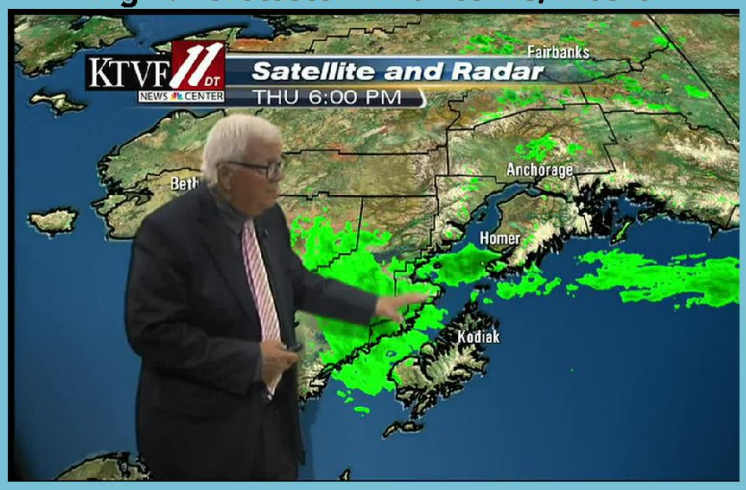
Weather is a description of short-term atmospheric conditions. It can include temperature, humidity, precipitation, cloudiness, visibility, wind, and atmospheric pressure. These observations are used to describe the conditions **over a short time, from minutes to months.**

Climate is the long-term pattern of weather in an area. It describes the average weather for a region over a longer period, often defined as approximately **30 years or more.**

ACTIVITY

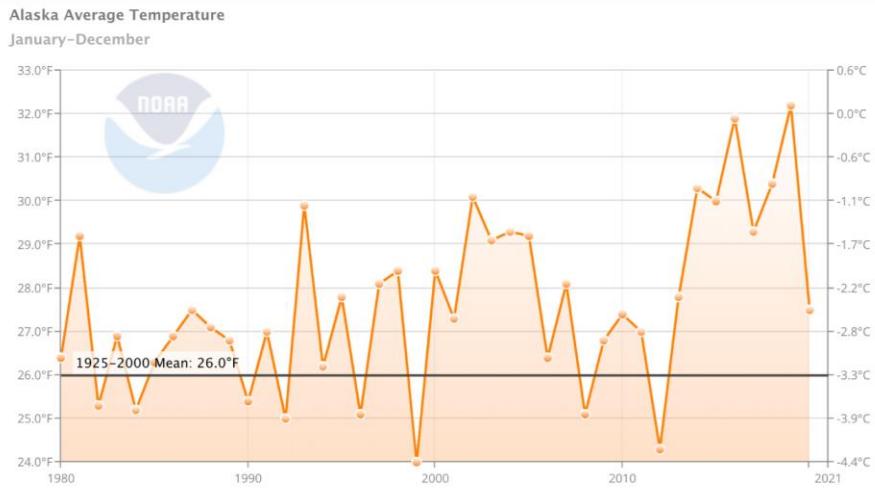
1. Show this University of Alaska Fairbanks video on the difference between weather and climate.
2. Ask students to take some time to read the definitions of weather and climate (either on the PowerPoint or in printed out definitions).
3. After a few minutes, ask a volunteer to describe the difference between weather and climate for the group.
4. Begin the PowerPoint presentation or pass out printed sets of the activity figures.
5. Explain that students will view seven numbered figures. Ask students to examine each figure and determine whether the figure better represents the concept of weather or climate. They will note whether each figure is climate or weather in their notebooks.
    a. Figure 1: television forecaster who is giving a prediction of the conditions in Fairbanks, Alaska for a 4-day period [answer: weather].
    b. Figure 2: map that displays the average temperature in Alaska from 1961-1990, a 30-year period [answer: climate].
    c. Figure 3: satellite images of ponds shrinking due to permafrost thaw. The left photo was taken in 1951, and the right photo was taken in 2000, 49 years later [answer: climate].
    d. Figure 4: photo of a rain gauge. The rain gauge has collected precipitation from a recent rain event [answer: weather].
    e. Figure 5: map that displays the average precipitation in Alaska from 1961 to 1990, a 30-year period [answer: climate].
    f. Figure 6: photo of a person walking in a snowstorm [answer: weather].
    g. Figure 7: graph of the average surface temperature on Earth since 1880 [answer: climate].

Fig 1. Forecaster in Fairbanks, Alaska



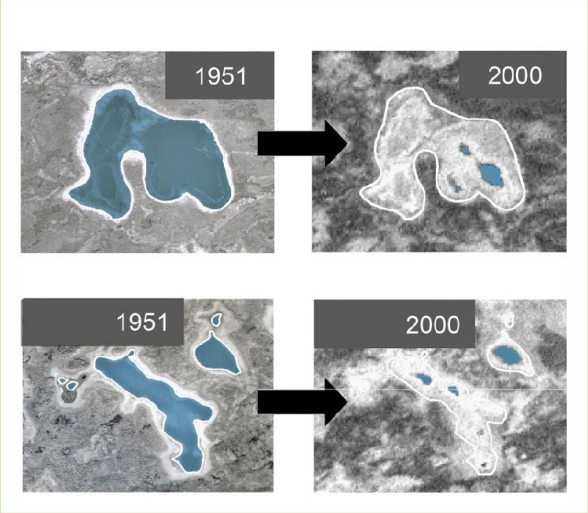
Source: webcenterfairbanks.com

Fig 2. Average annual temperature in Alaska from 1980-2021



Source: https://www.ncdc.noaa.gov/cag/statewide/time-series/50/tavg/ann/12/1980-2021?base_prd=true&begbaseyear=1925&endbaseyear=2000

Fig 3. Lowered pond levels due to permafrost thaw—northeastern interior Alaska

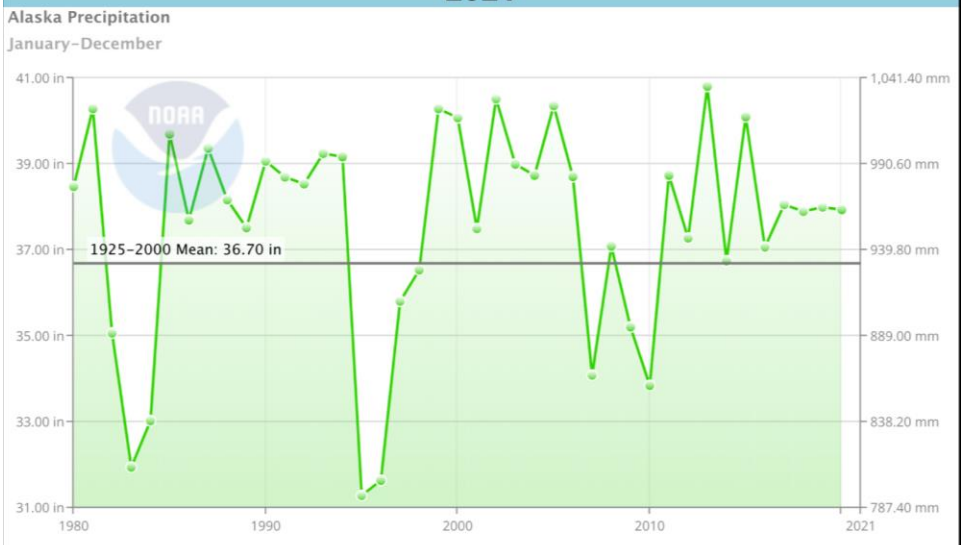


Source: https://nca2009.globalchange.gov/alaska/index.html

Fig 4. Rain gauge

Source: pmm.nasa.gov/node/739

Fig 5. Average annual precipitation in Alaska from 1980-2021

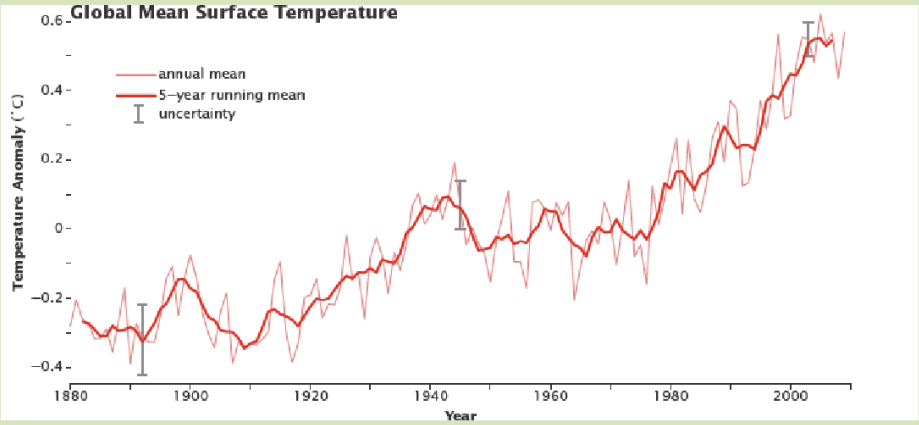


Source: https://www.ncdc.noaa.gov/cag/statewide/time-series/50/pcp/ann/12/1980-2021?base_prd=true&begbaseyear=1925&endbaseyear=2000

Fig 6. Snowstorm

Source: www.noaa.gov/features/monitoring_0209/coldwinds.html

Fig 7. Average global surface temperature



Source: earthobservatory.nasa.gov/Features/GlobalWarming/page2.php