

Weather & Climate



Essential Standard 2.6

Analyze patterns of global climate change over time.

Learning Objective 2.6.1

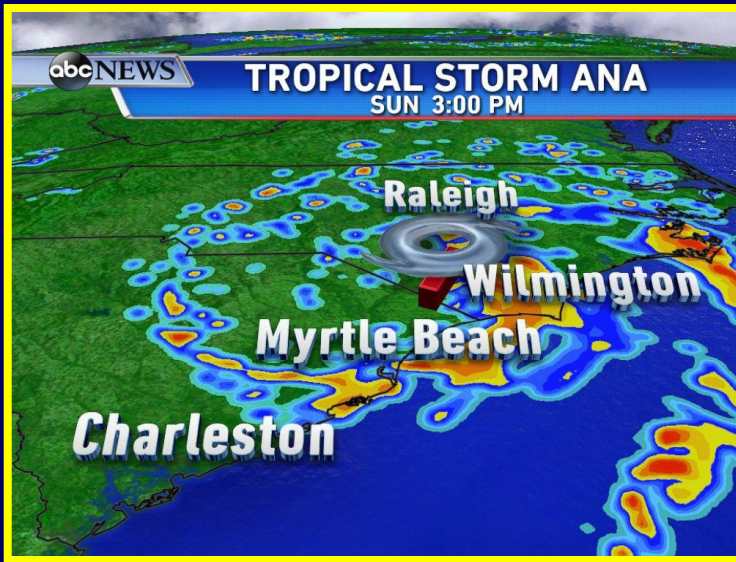
Differentiate between weather and climate.

I Can Statements

At the end of this lesson, you should be able to say, with confidence:

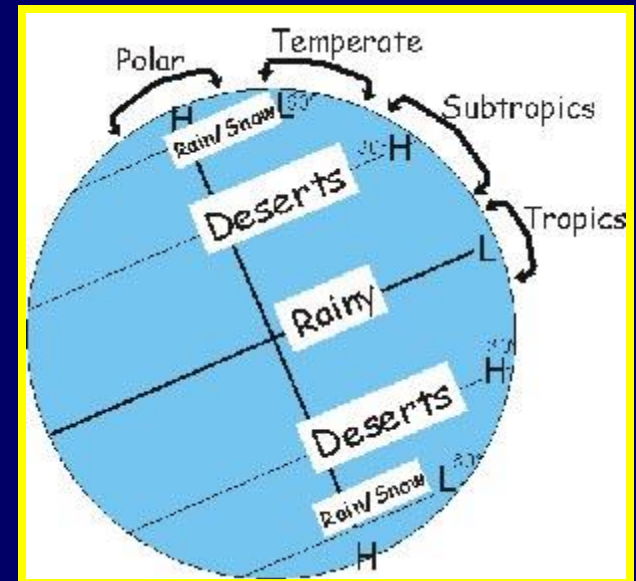
- I can distinguish between weather and climate
- I can describe six different climates based on the Koeppen Classification System.
- I describe what a microclimate is and provide some examples of microclimates.

Weather Vs. Climate



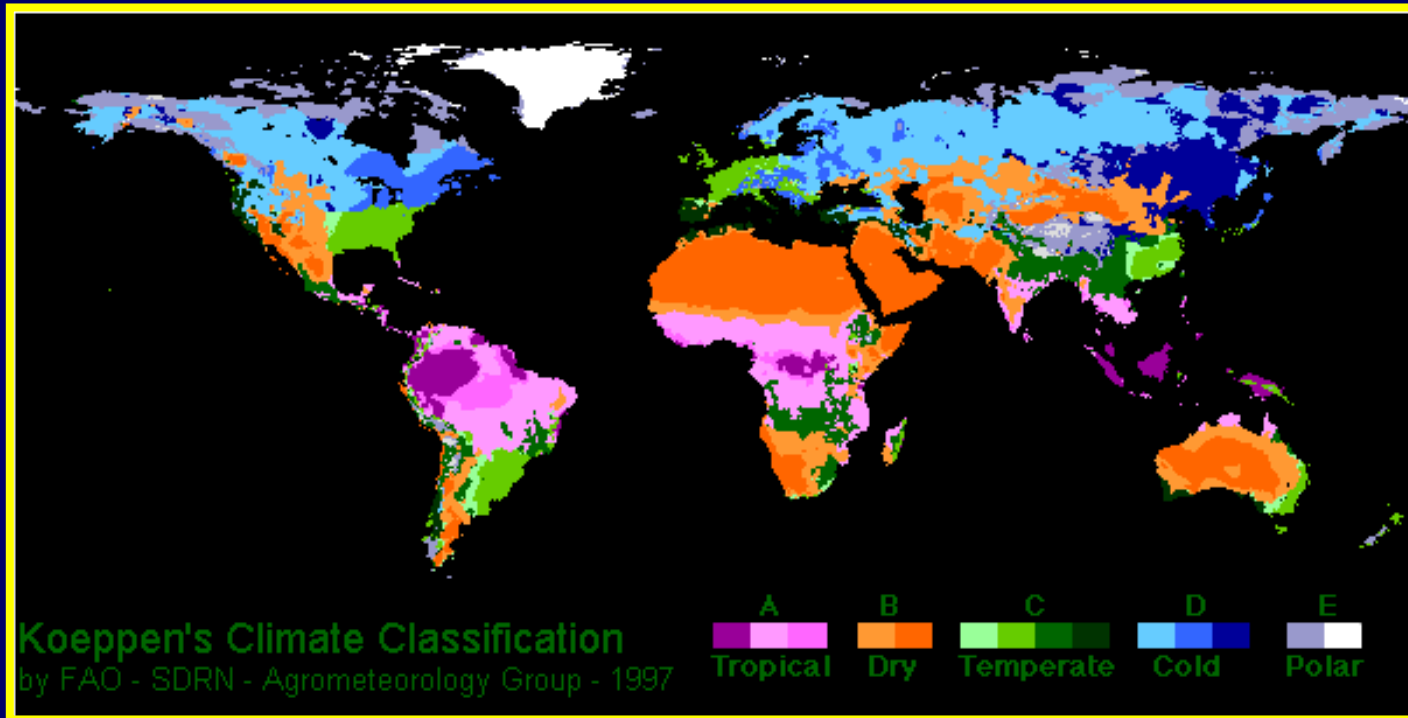
Weather is the current state of the atmosphere.

Climate refers to long-term weather patterns for a particular area over the course of 30 years or more.



Koepfen Classification System

The Koepfen Classification System uses precipitation and temperature to classify climates.



Koepfen Classification System

Tropical climates have consistently high temperatures and abundant rainfall.



Dry climates have low amounts of rainfall and can be arid, deserts, or semi-arid, steppes.

Koeppen Classification System

Temperate climates have four distinct seasons without extreme variations in temperature.



Koeppen Classification System



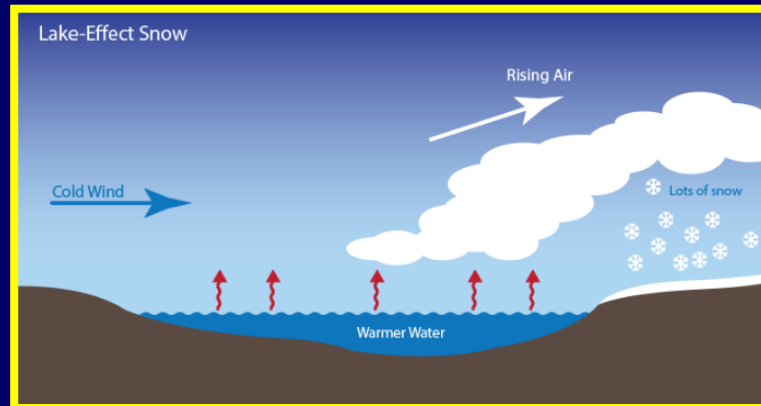
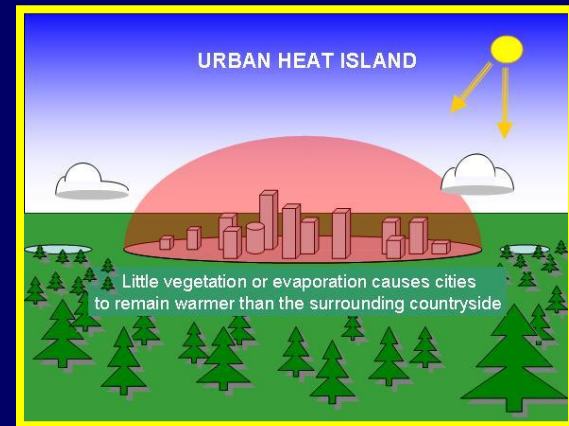
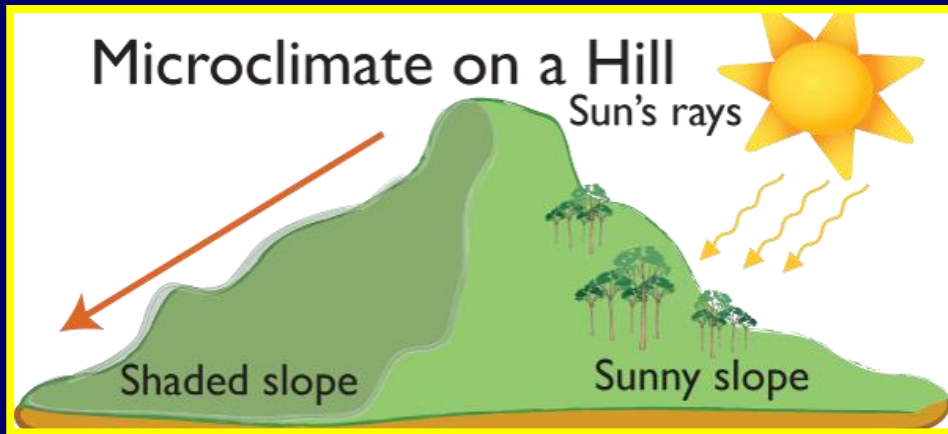
Cold climates experience rapid and extreme changes in temperatures with short summers and long winters.

Polar climates are the coldest regions on Earth with very little precipitation.



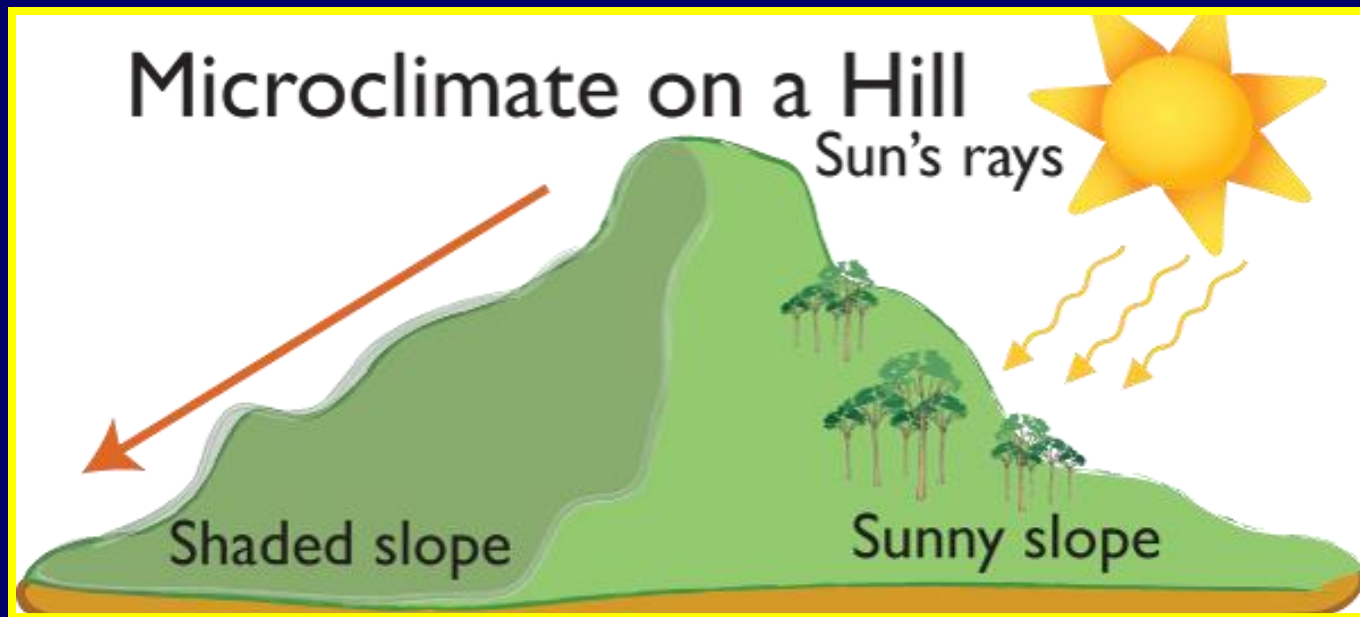
Microclimates

A localized climate that differs from the main regional climate is called a microclimate.



Mountains

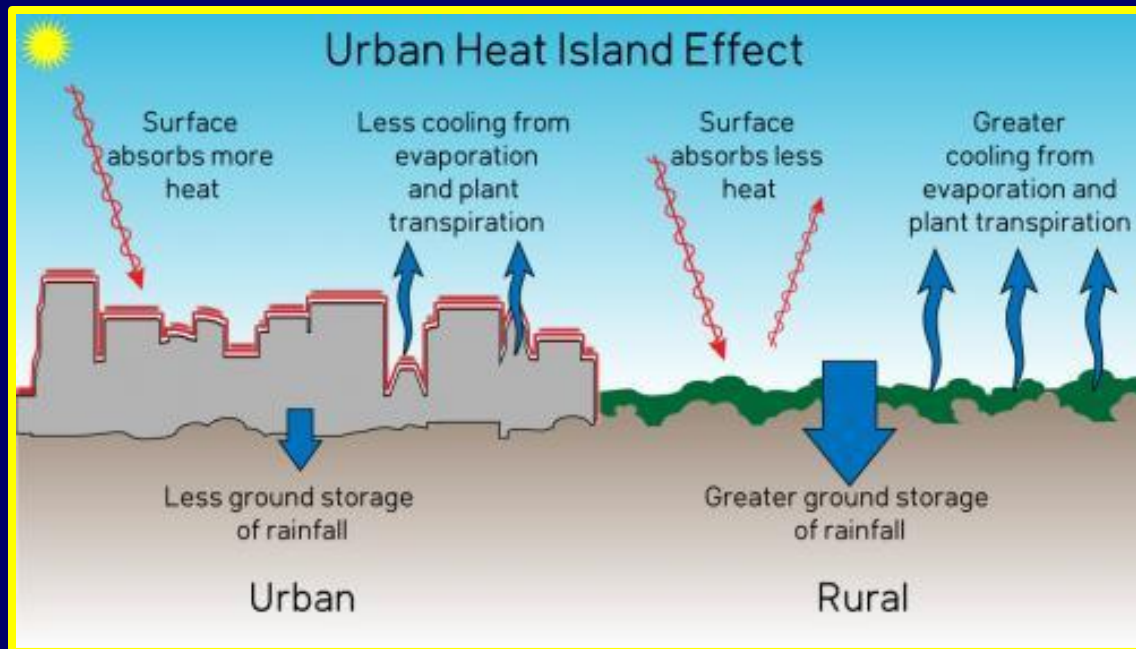
The side of a mountain that gets more sunlight than the other side will have a very different climate, plant life, and soil than the side that gets less sunlight.



The soil on the sunny slope will be thicker and richer in nutrients due to better plant growth.

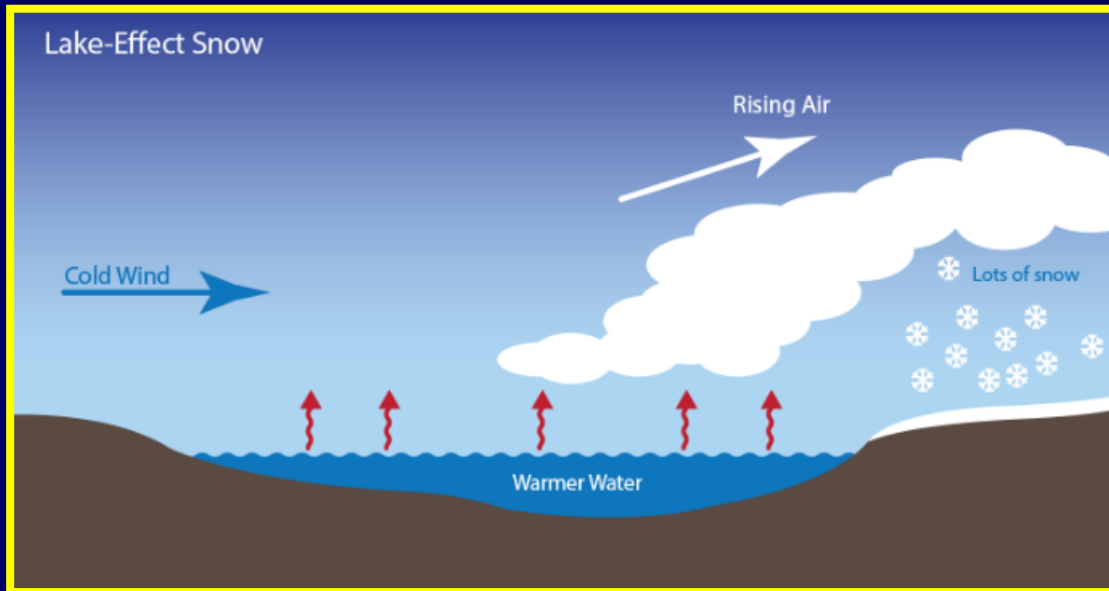
Urban Heat Islands

Urban areas are warmer than rural areas due to more paved surfaces and roofs that absorb heat while also having less plants that cool the air through transpiration.



Lake Effect Snow

Areas around large lakes, especially in cooler regions, experience more frequent large snowstorms than areas not near lakes.



Lake Effect Snow

Lake Effect Snow

This is a common phenomenon, called the lake effect, around the Great Lakes, especially in Buffalo New York that sits on the shores of Lake Erie. Buffalo has been known to get snow as deep as 27 feet before.



Lake Effect Snow

After the lake freezes in mid-winter, water can't evaporate into the air and lake effect snow decreases.

Ocean Currents

The Gulf Stream, in the Atlantic ocean, is an ocean current that brings warm water up from the Equator, along the east coast of the United States, and over to England.



Ocean Currents

The warm ocean current keeps the climate in those areas warmer and more humid than it would be just based on latitude.



Tropical garden in Devon, England.

Ocean Currents

Another effect of the Gulf Stream is the fog in London.



As the warm water evaporates, it condenses quickly in the cool air and creates consistent fog conditions.

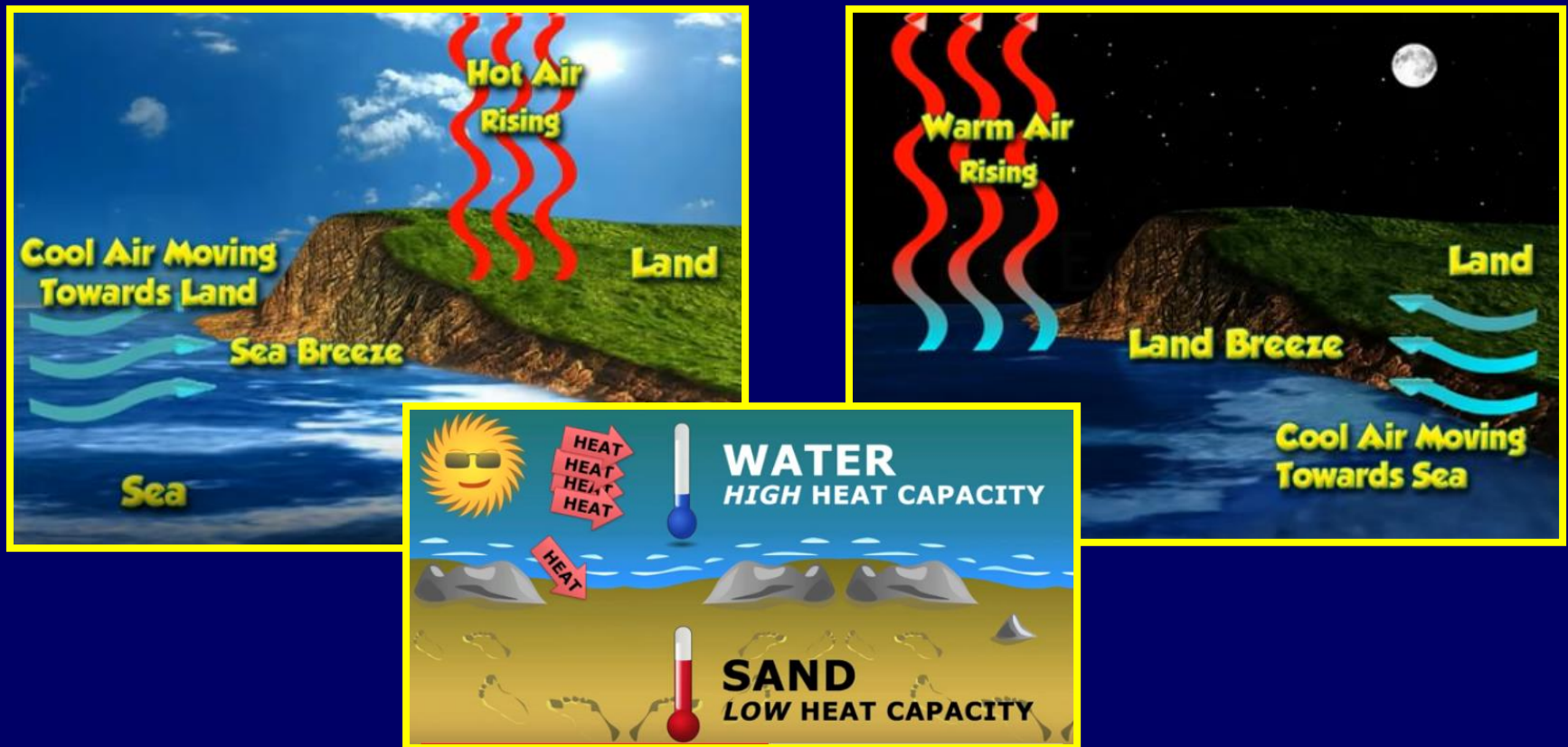
San Francisco

San Francisco also experiences frequent fog conditions as warm, moist air from over the Pacific encounters the cooler land temperatures.



Moderate Coastal Climates

Due to the sea and land breezes that are a result of the high heat capacity of water, coastal climates tend to be more moderate than inland climates.



The End

