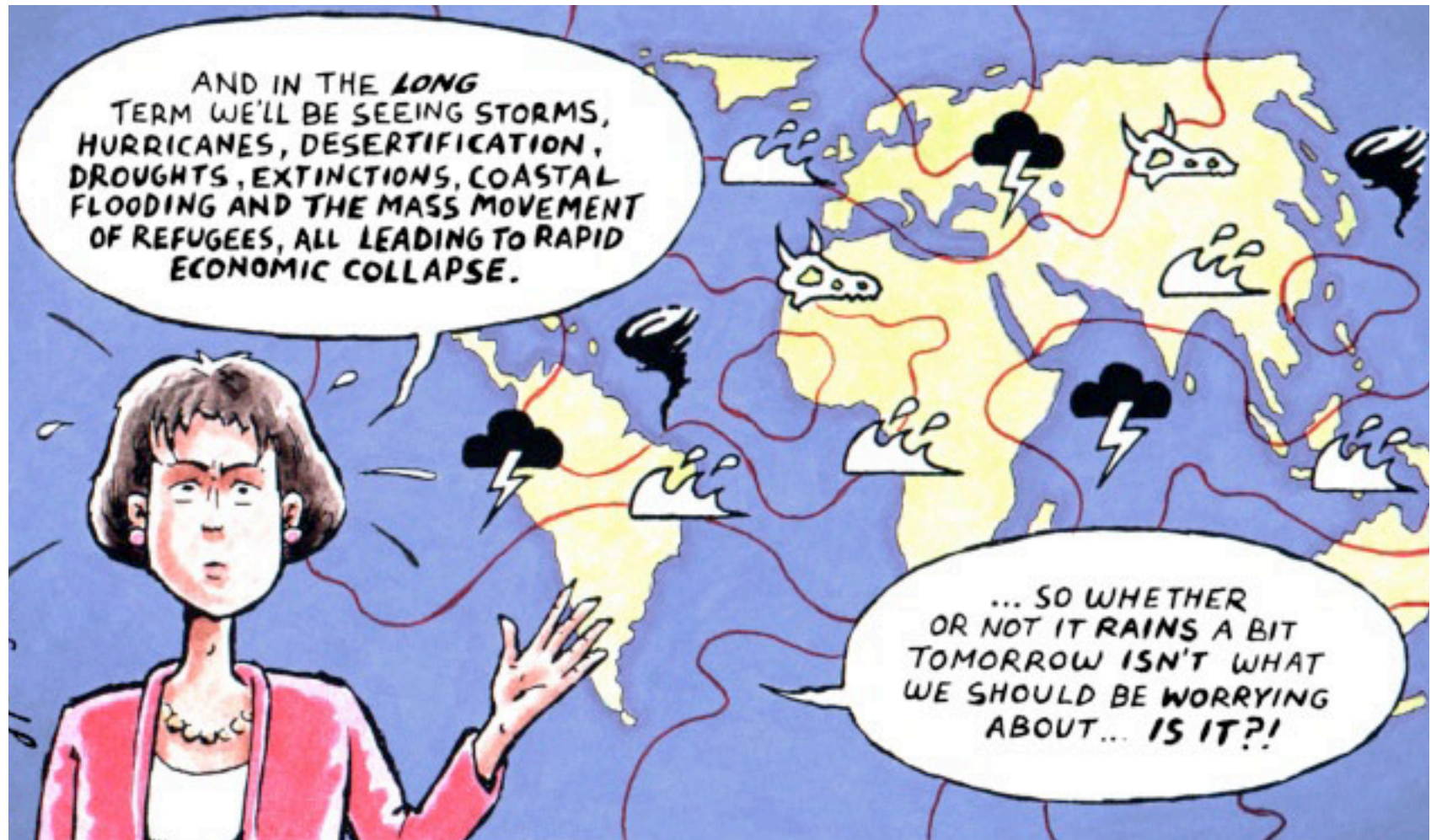


Weather vs Climate



Weather & Climate

Weather vs Climate

Weather

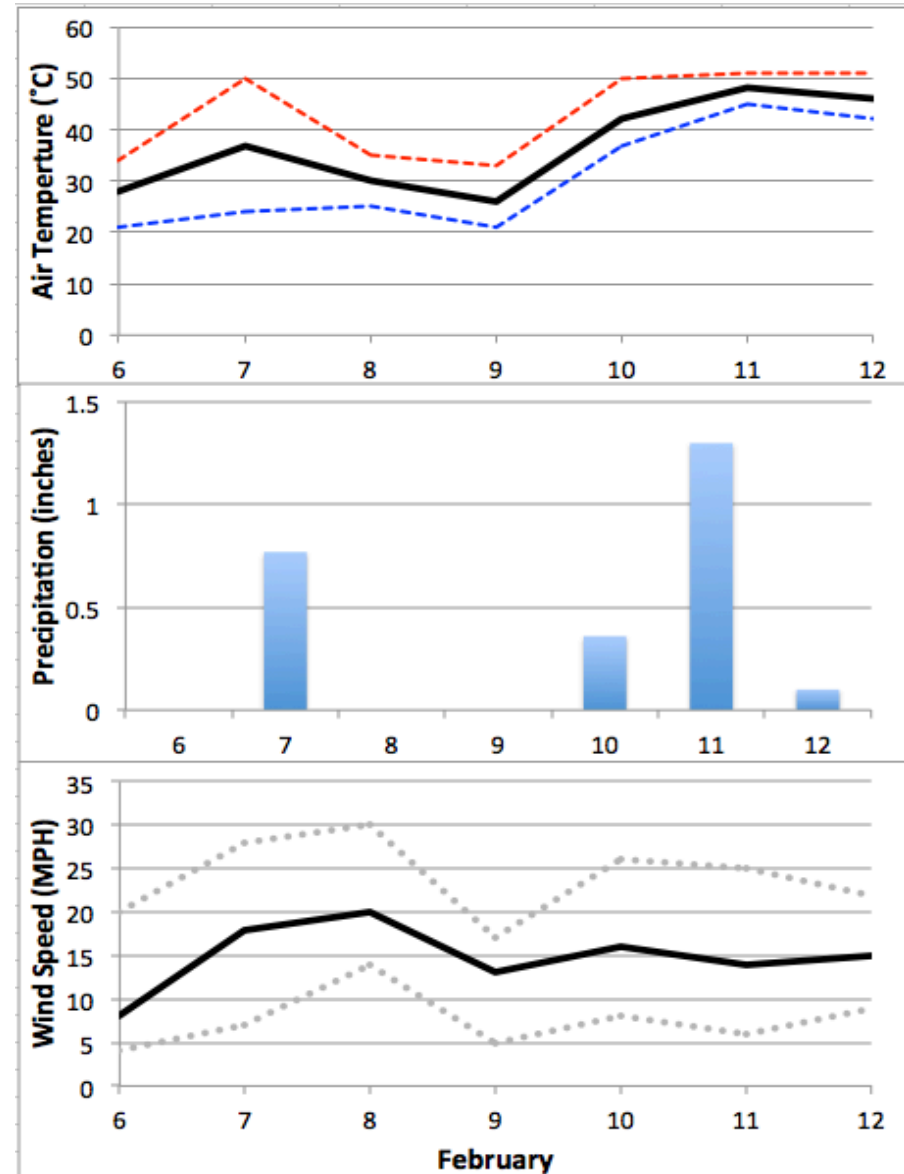
- day-to-day state of the atmosphere in a region
(e.g., sunny, cloudy, rain, snow, hot, cold)
- short-term

Climate

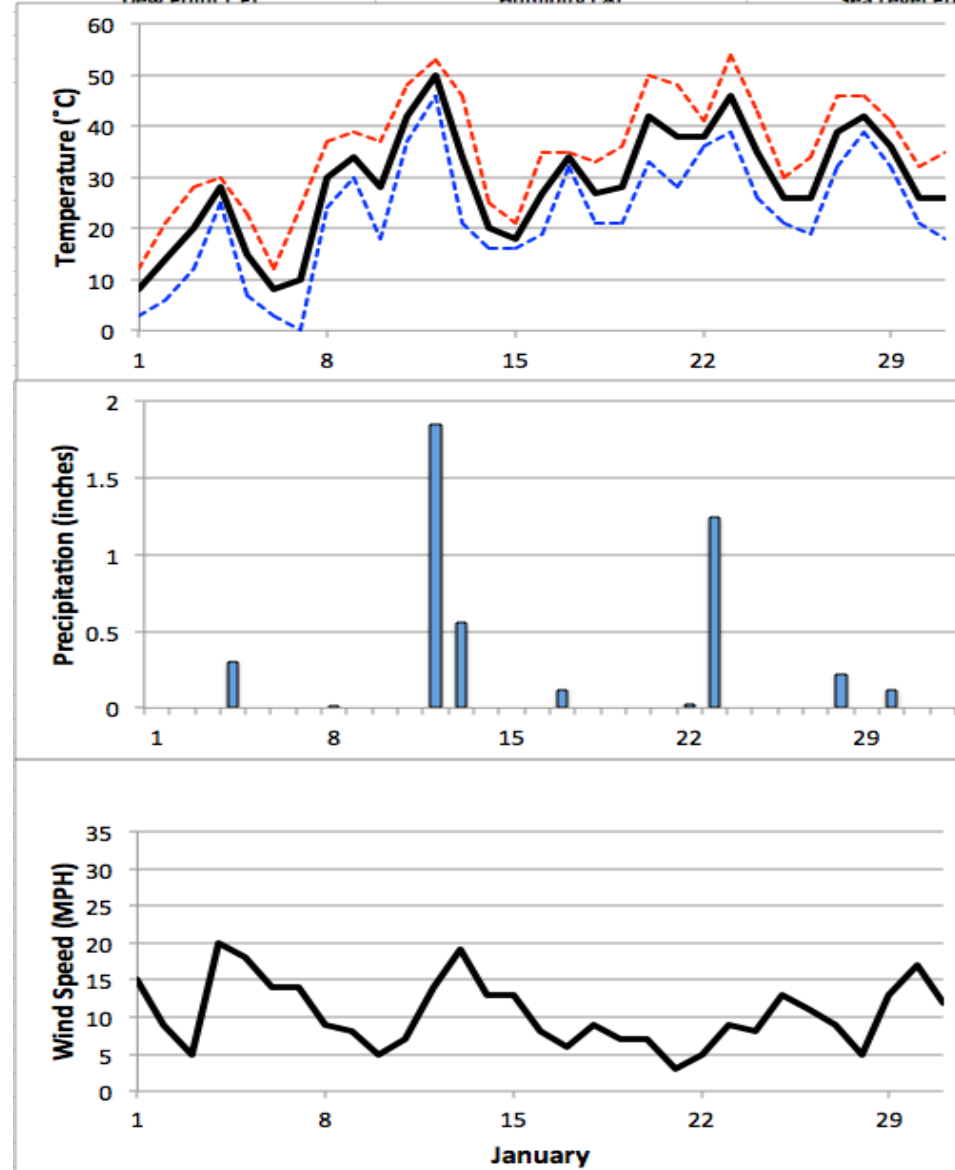
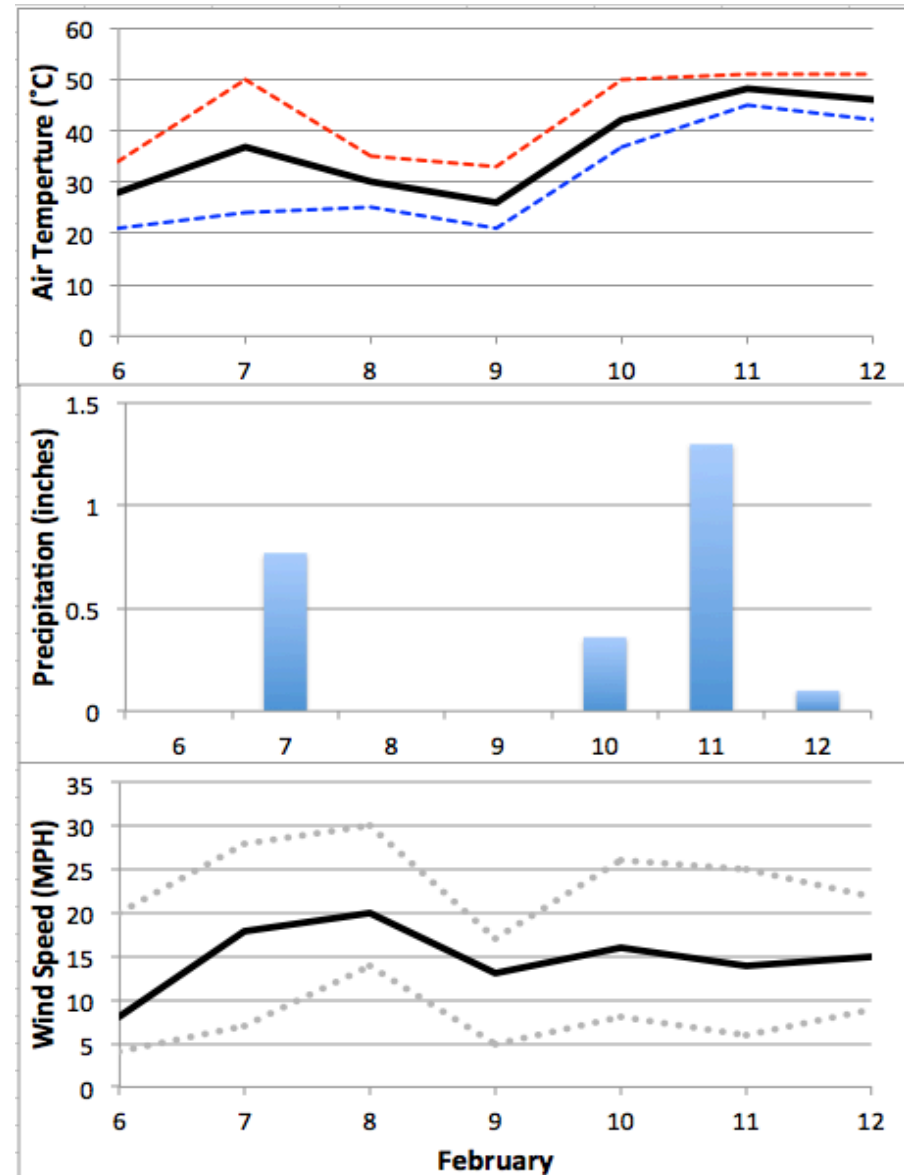
- average weather pattern(s) in a region
(e.g., tropical, temperate, polar, dry, wet)
- longer-term (~30 years of observations)

Weather & Climate – Local Examples

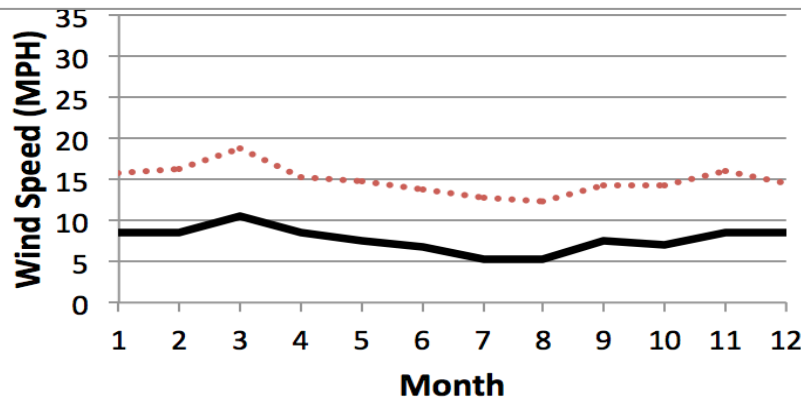
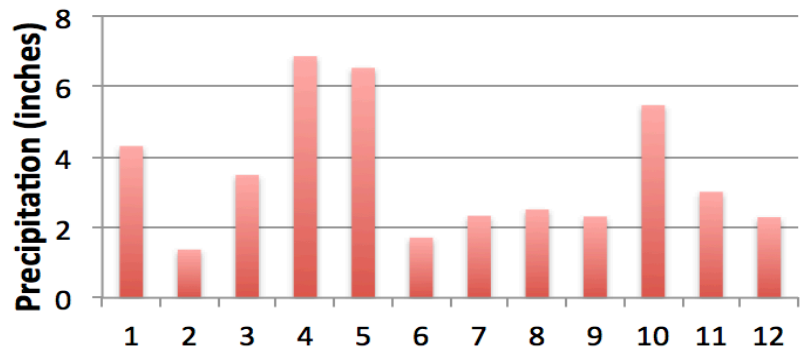
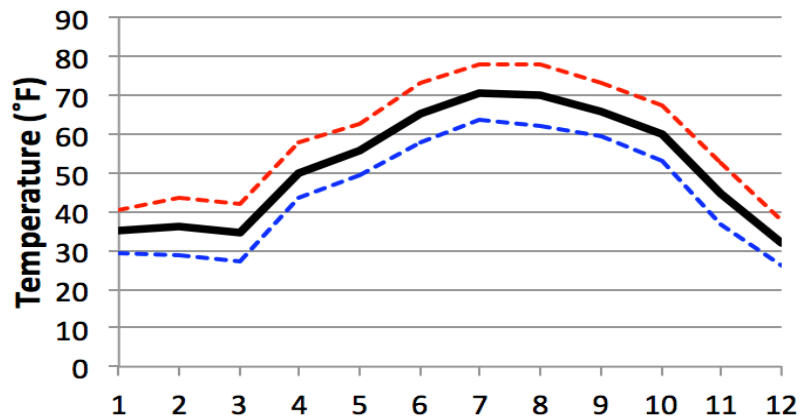
Weather or Climate



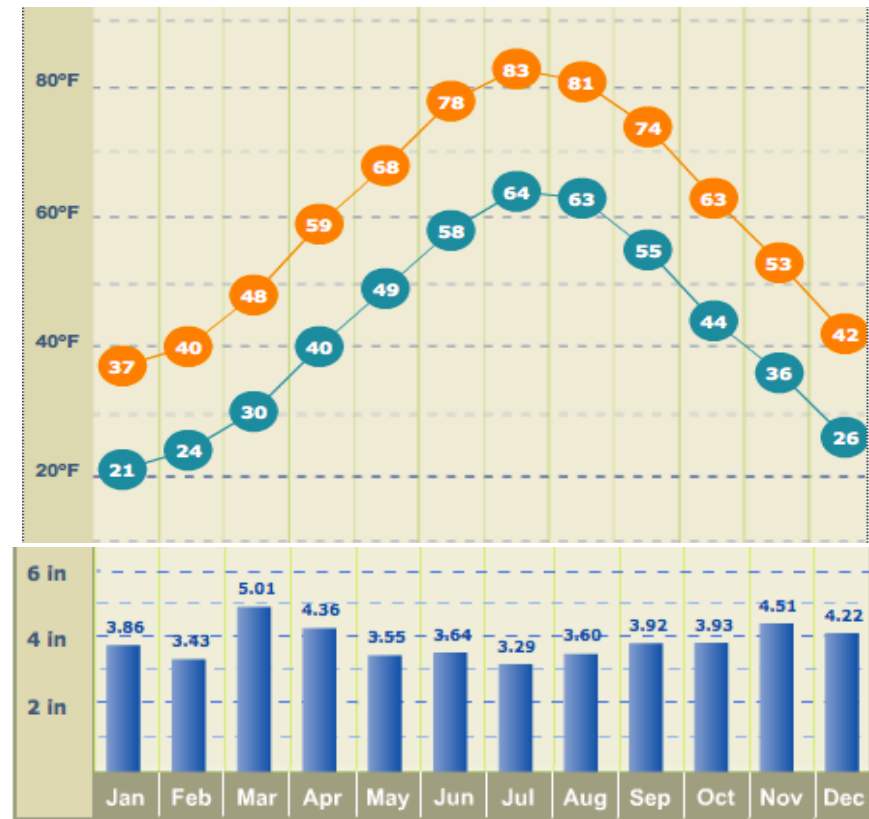
Weather & Climate – Local Examples



Weather & Climate – Local Examples



Local RI Climate



Winds

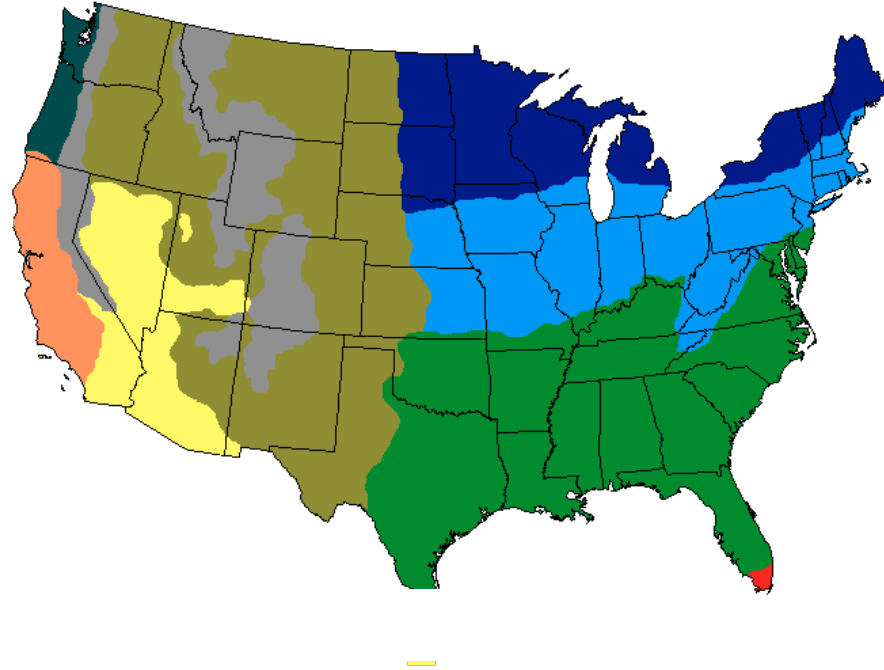
NW

SW

NW



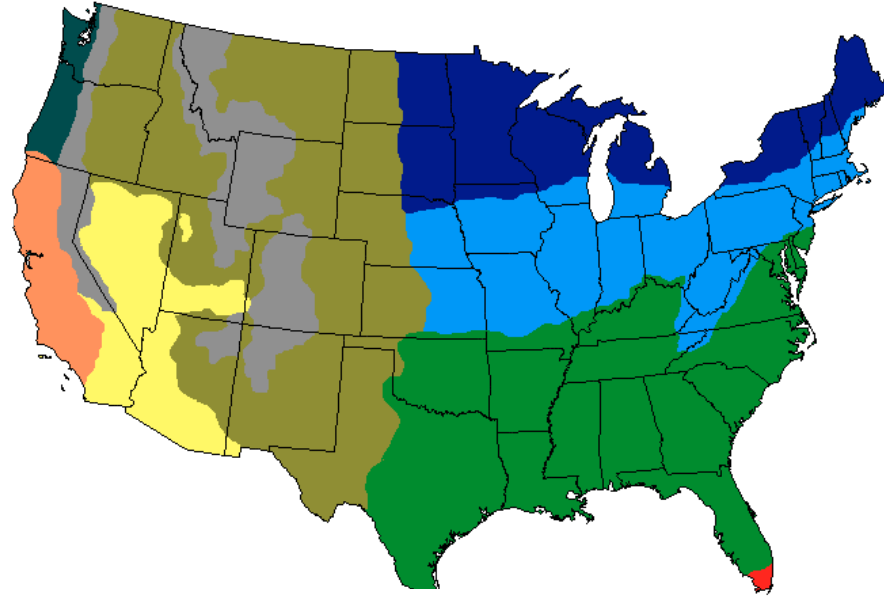
Weather & Climate – U.S. Climate Zones



Think-Pair-Share

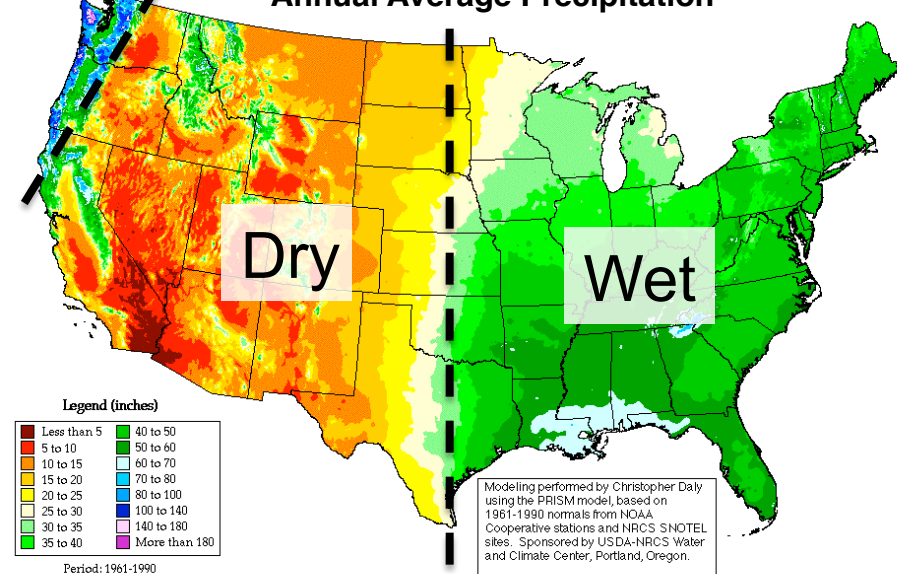
- 1) What patterns do you notice?
- 2) What are the cause(s) of these patterns?

Weather & Climate – U.S. Climate Zones

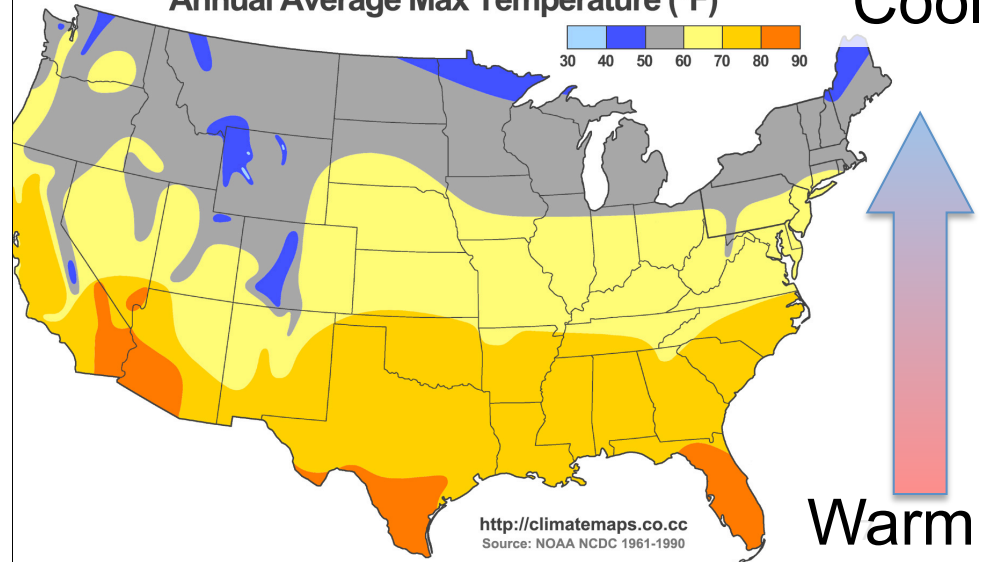


Very
Wet

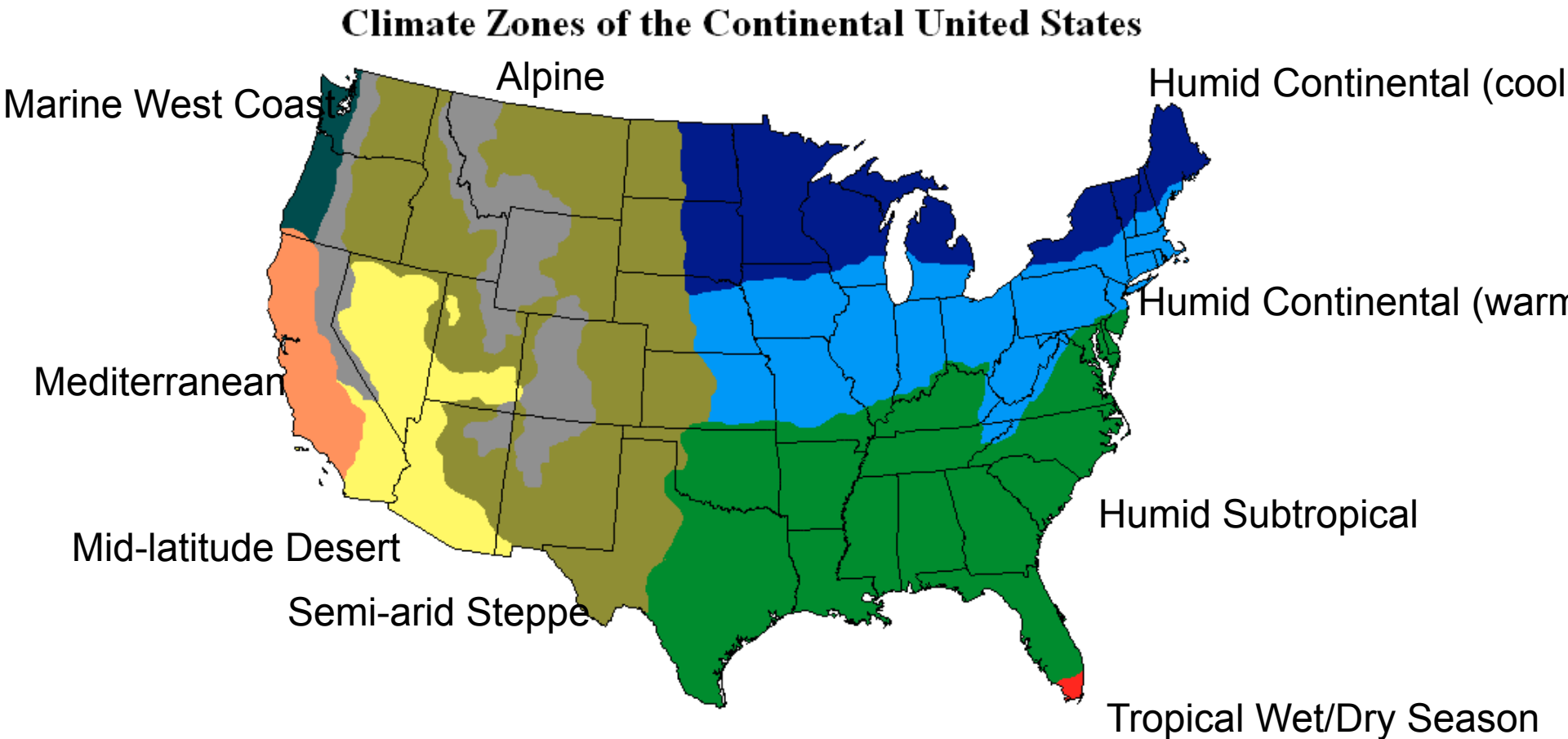
Annual Average Precipitation



Annual Average Max Temperature (°F)

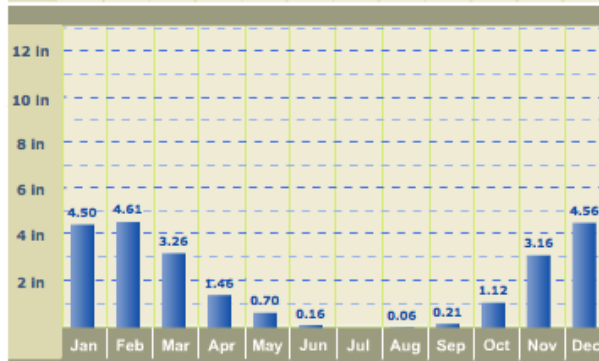
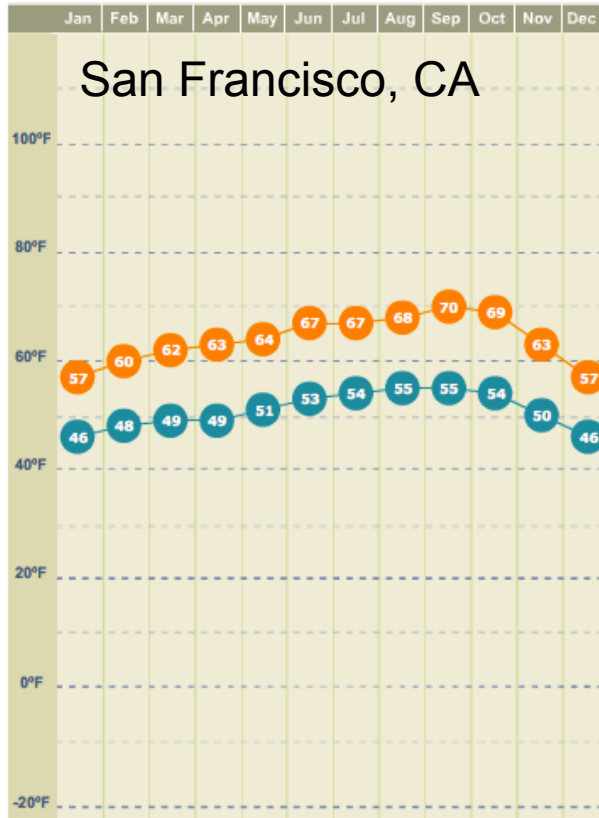


Weather & Climate – U.S. Climate Zones

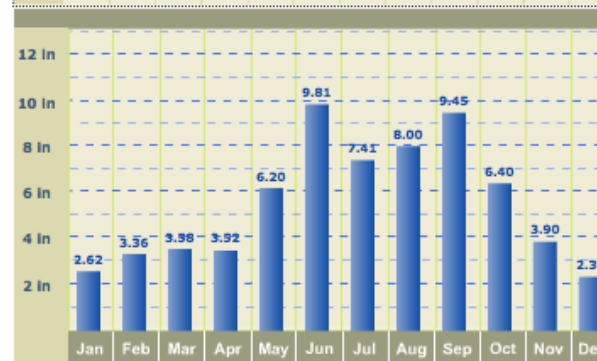
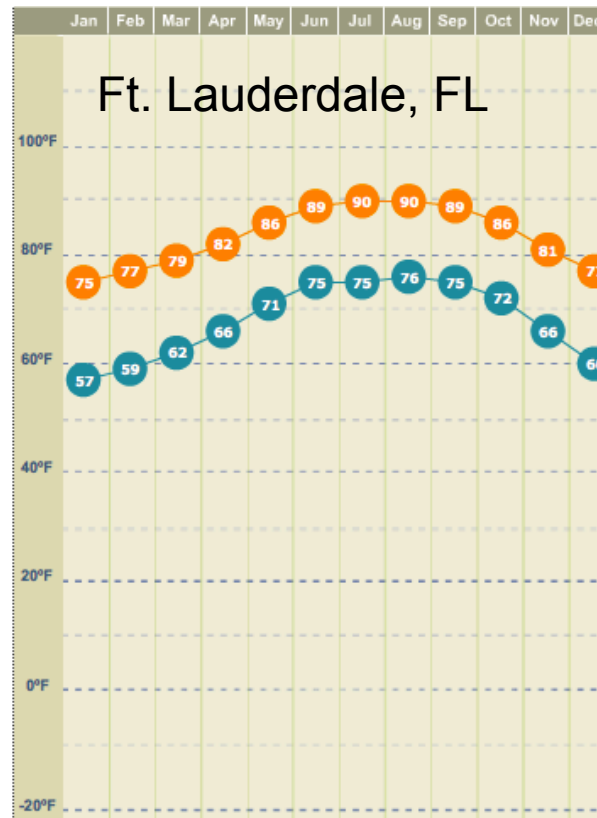


Weather & Climate – Climate Comparisons

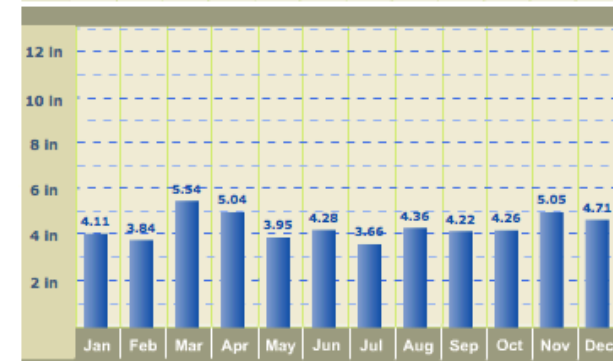
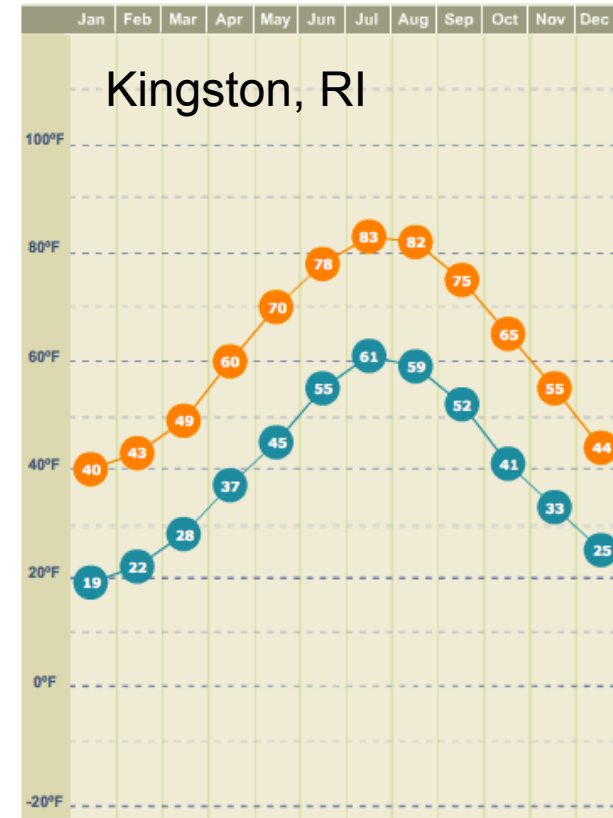
San Francisco, CA



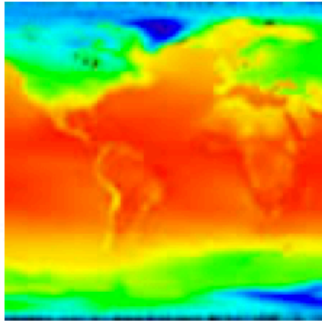
Ft. Lauderdale, FL



Kingston, RI



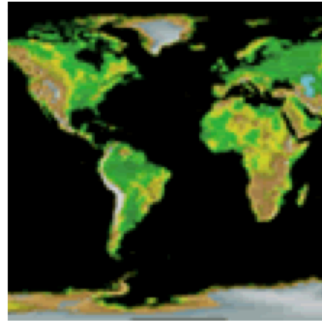
Other Factors



NASA

LATITUDE

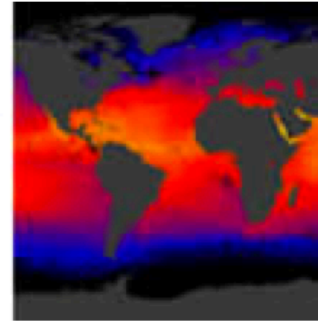
Surface temperatures vary with latitude.



NOAA

ELEVATION

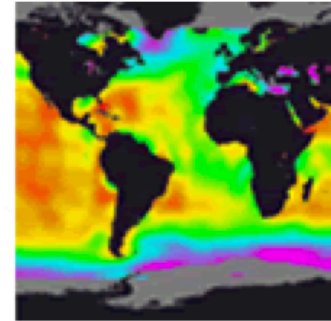
Climate zones coincide roughly with elevation ranges.



NASA

NEARBY WATER

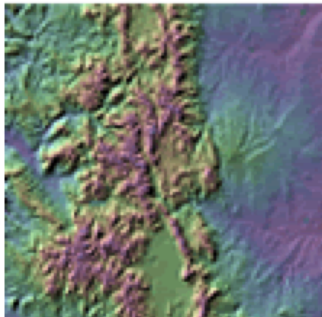
Sea surface temperatures affect land temperatures.



NASA

OCEAN CURRENTS

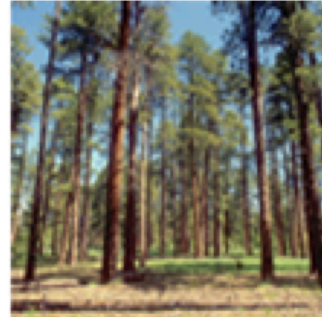
Water temperatures indicate transfer of heat energy by currents.



Ray Sterner, Johns
Hopkins University
Applied Physics
Laboratory

TOPOGRAPHY

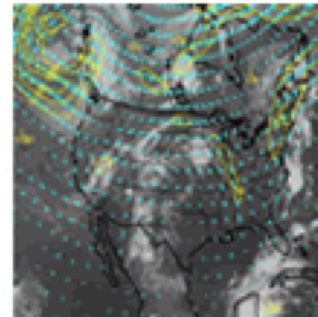
Local variations in elevation can cause local variations in climate.



Martos Hoffman

VEGETATION

Type of ground cover and seasonal changes affect climate.

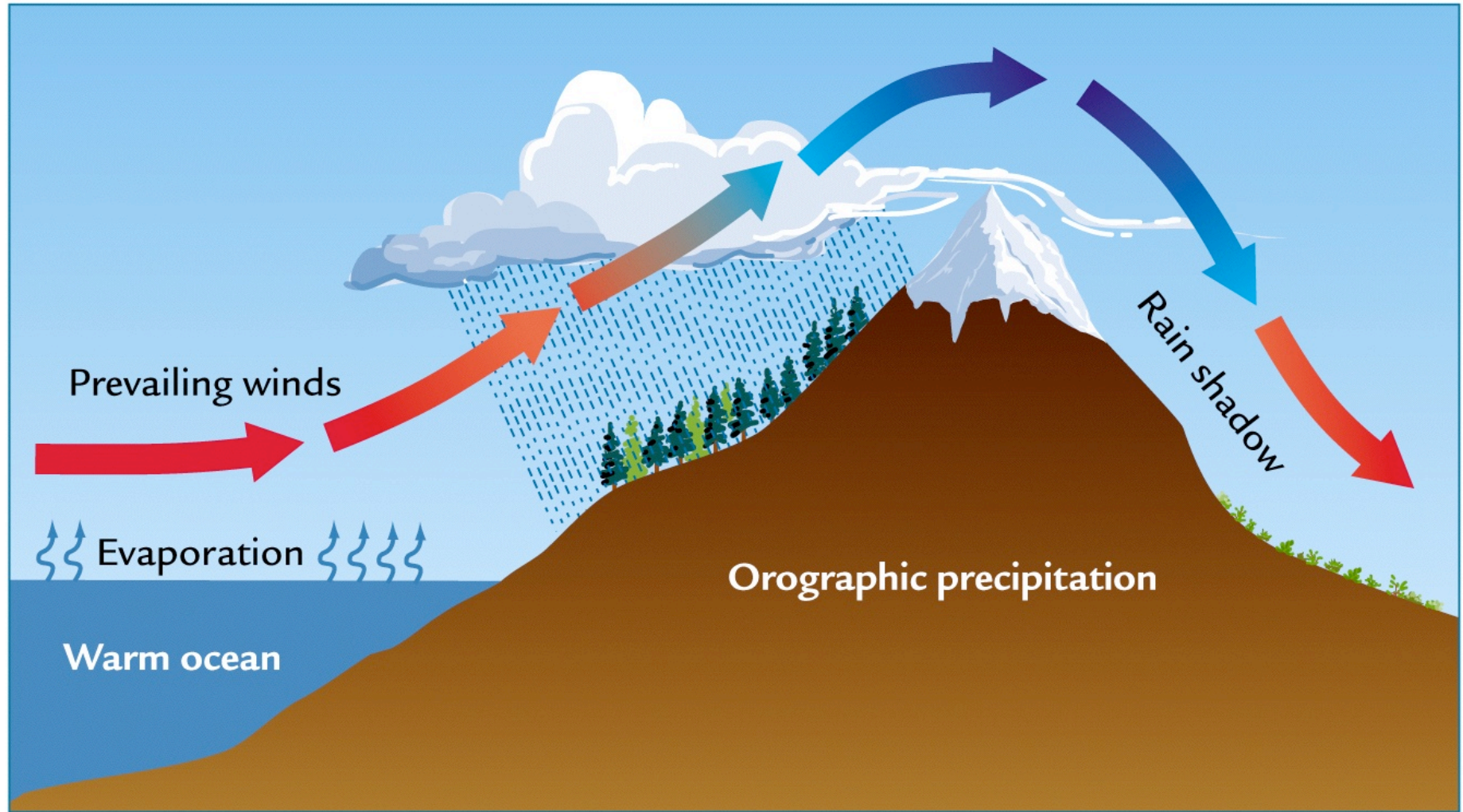


San Francisco
State University—
Meteorology

PREVAILING WINDS

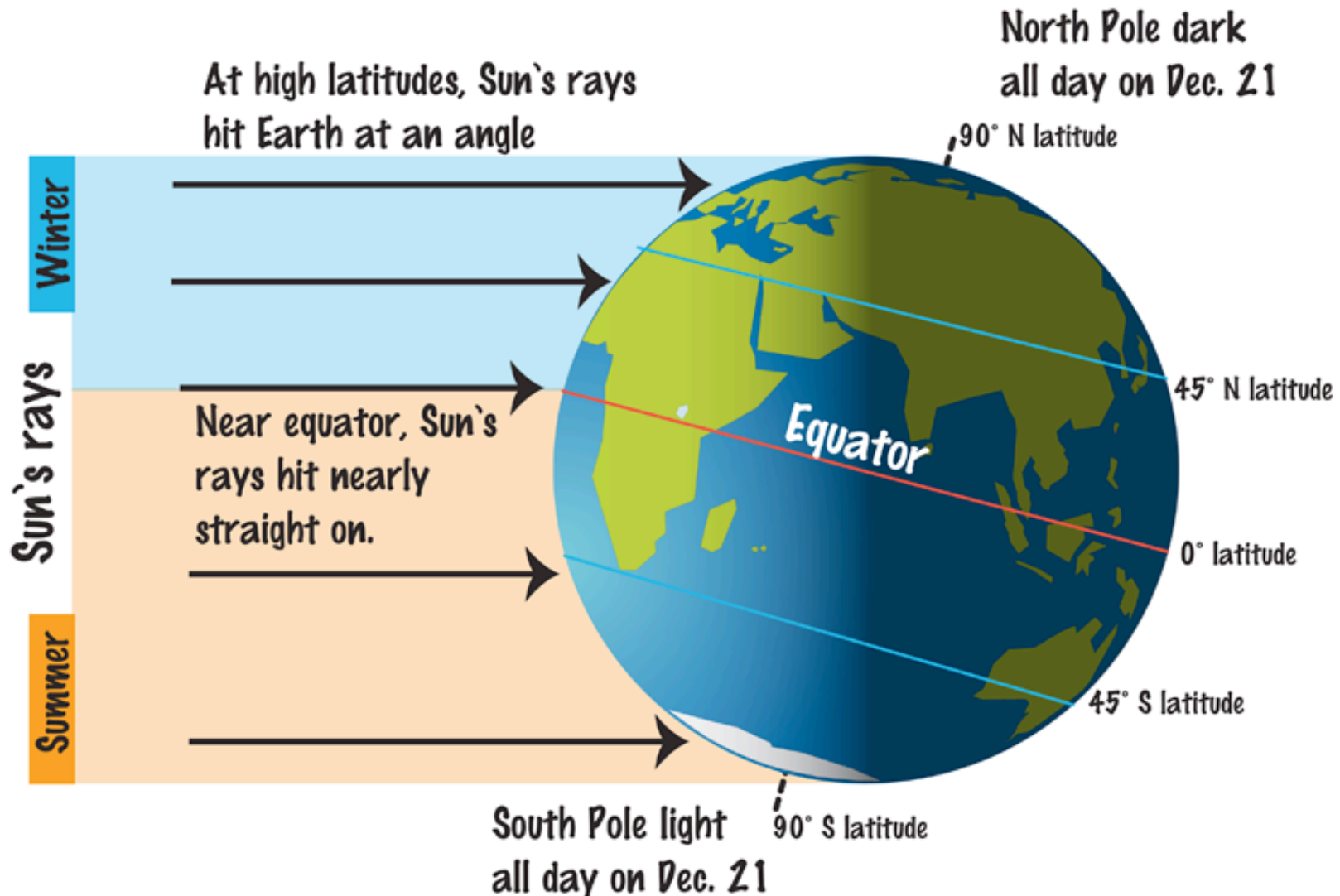
Winds deliver air masses with specific properties.

Other Factors – Orographic (Mountain) Effect

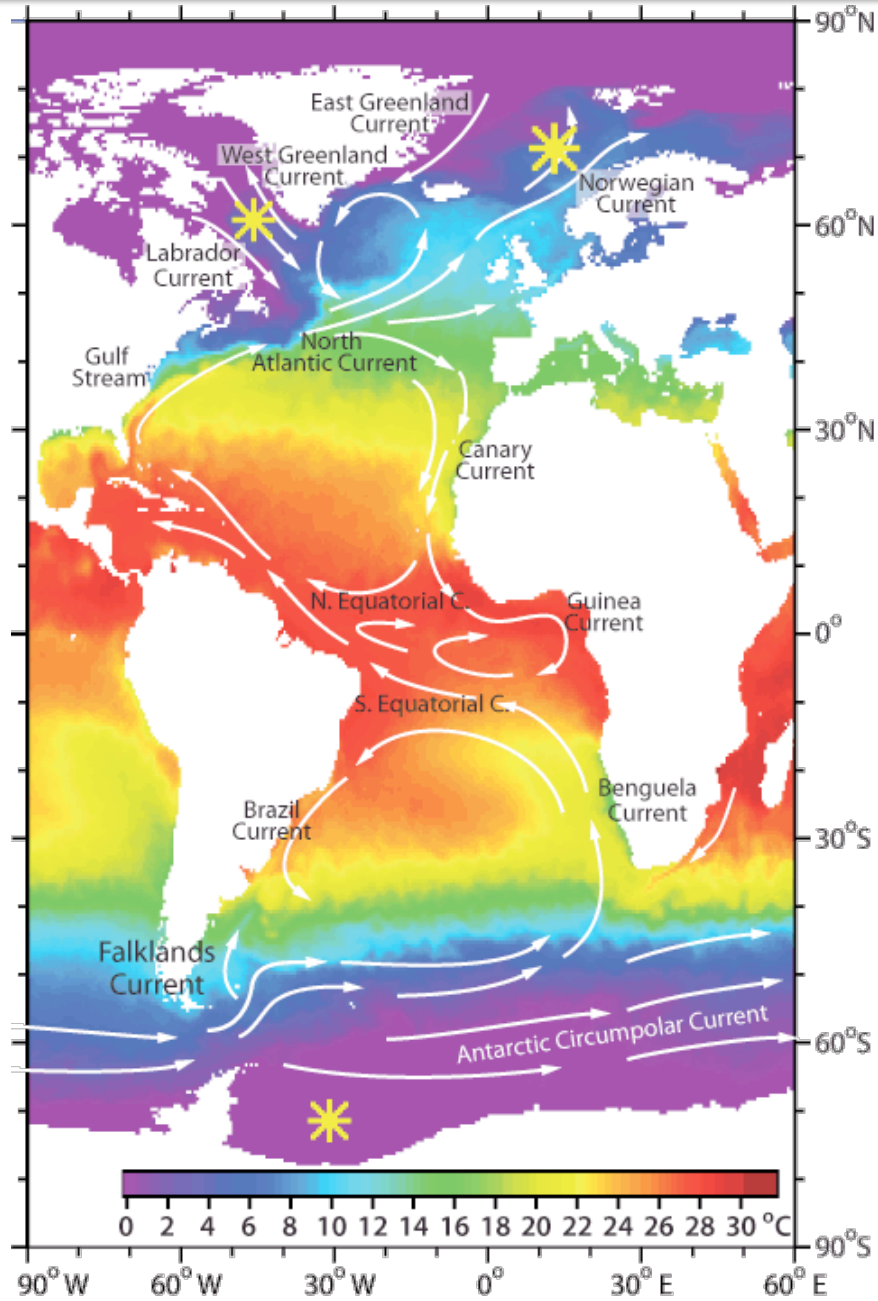


Other Factors – Latitude

Earth at Winter Solstice (~Dec. 21)



Other Factors – Ocean Currents



Impact of Ocean Currents

Do you think England would be

- 1) warmer
- 2) colder
- 3) about the same

without ocean currents?

Other Factors - Vegetation

Today, if no agriculture

~25, kybp



Summary

Weather vs Climate

- Weather is short term conditions
- Climate is longer term (~30 years)

For more information
Weather and Climate Basics
<http://www.eo.ucar.edu/basics/>

Indicators of Climate

- Primarily Temperature & Precipitation

U.S. Climate Zones

- Eastern Half => temperature gradient from N to S
- Western Half => amount of precipitation & elevation

Factors Controlling Climate

- Latitude
- Elevation/Topography
- Vegetation
- Nearby Water/Currents
- Prevailing Winds