Weather vs. Climate

What is the difference between weather and climate?
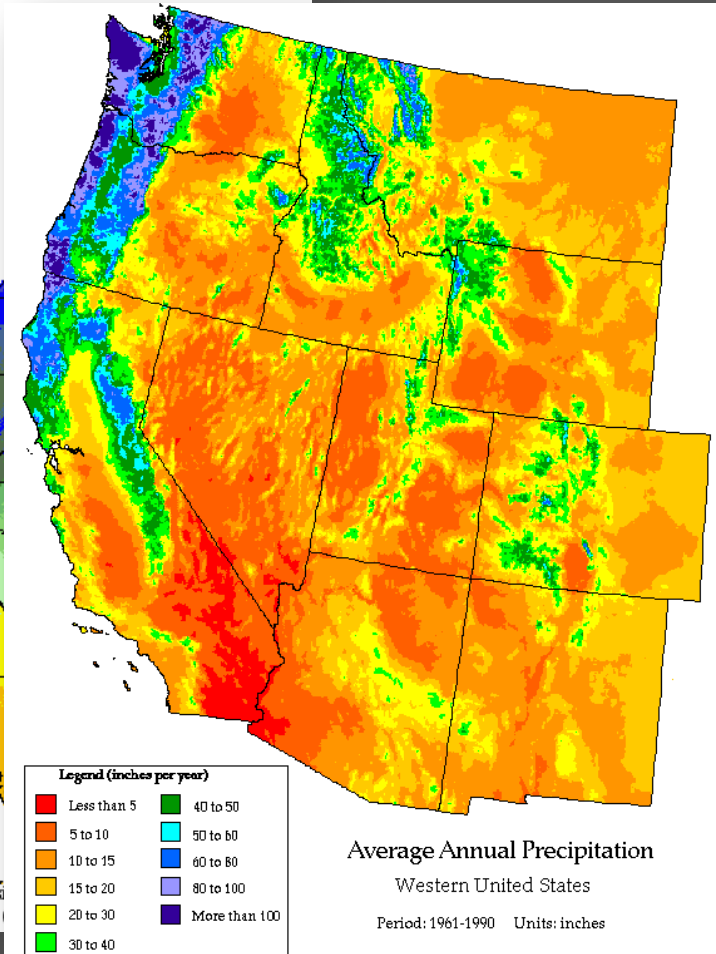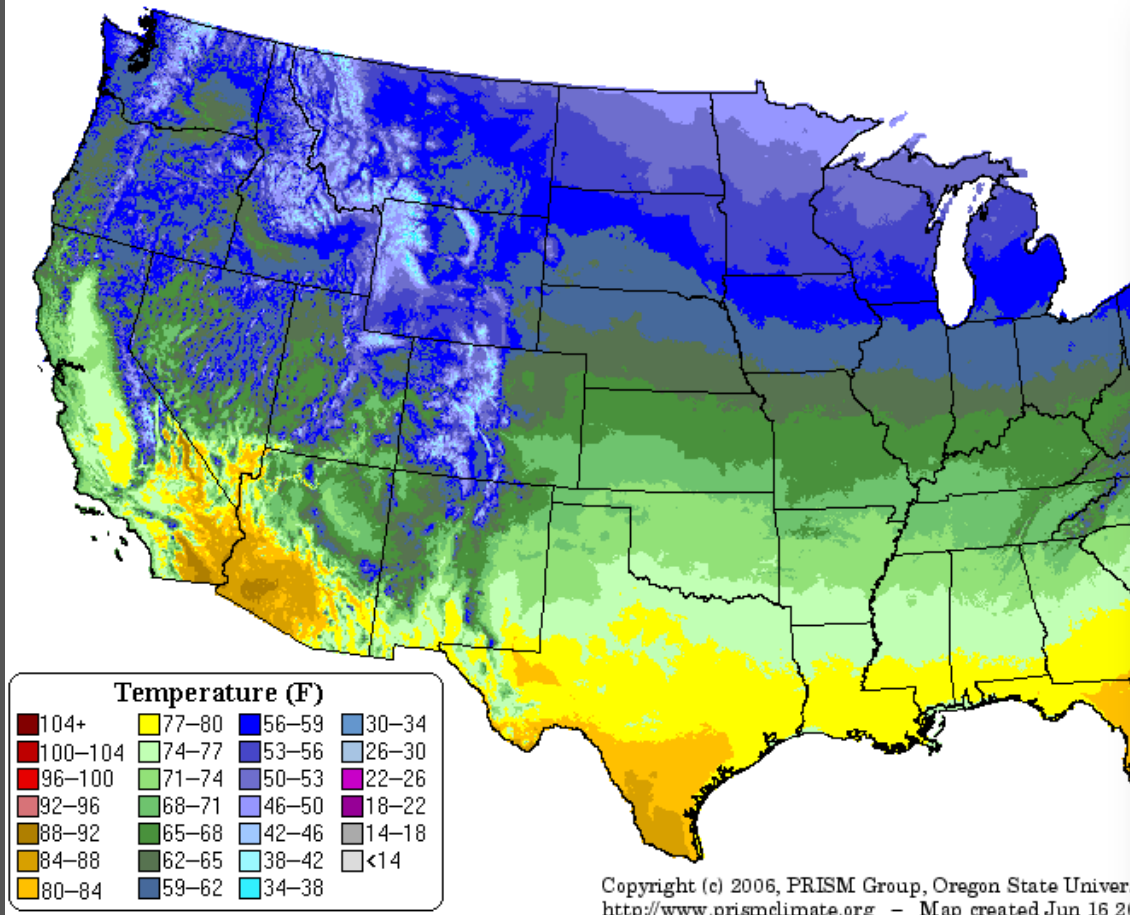
Weather vs. Climate

WEATHER

- Weather is what conditions of the atmosphere are over a short period of time.

- The high temperature today in St. George is 72 degrees.

- The snowstorm on Dec. 8-9 dropped 25 inches at Alta.

CLIMATE

- Climate is how the atmosphere "behaves" over relatively long periods of time.

- The average May high temperature in St. George is 86 degrees.

- Alta receives 500 inches of snow every winter on average.

What controls the climate of a certain location?

Maximum Temperature: Annual Climatology (1971–2000)

Temperature (F)

104+	77–80	56–59	30–34
100–104	74–77	53–56	26–30
96–100	71–74	50–53	22–26
92–96	68–71	46–50	18–22
88–92	65–68	42–46	14–18
84–88	62–65	38–42	<14
80–84	59–62	34–38	

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http://www.prismclimate.org – Map created Jun 16 20

Legend (inches per year)

Less than 5	40 to 50
5 to 10	50 to 60
10 to 15	60 to 80
15 to 20	80 to 100
20 to 30	More than 100
30 to 40	

Average Annual Precipitation
Western United States
Period: 1961-1990   Units: inches

Factors That Impact Local Climates

- Global Atmospheric and Ocean Circulations

- Elevation

- Latitude

- Topography

- Geography (e.g. distance from mountains or water)

- Land Cover (ocean, ice, vegetation, buildings)

Climate Consulting

Weather Consulting Using Climate Data

- A weather consultant helps people or businesses make decisions based on knowledge of weather or climate.

- Sometimes that means knowing the current weather situations, but it also requires knowledge of climatology (what weather has been like in the past).

- Climate concerns long-term weather patterns and seasonal changes, instead of the day to day forecasts.

Imagine you are a Weather Consultant

- Listen to the business story.

- With your partner discuss which city you think would be best for the business idea.

- With your partner discuss what climate information you would want to make a better informed decision.

EnCom Needs Wind!

- One of your biggest clients as a weather consultant is EnCom, an energy utilities corporation. The EnCom Corporation is looking into harnessing **wind** energy as an alternative to fossil fuels. They want to conduct experiments in some **windy** locations.

- A. Chicago, Illinois

- B. Amarillo, Texas

- C. Reno, Nevada

Variable:

Highest Annual Average Wind Speed

Which has the highest annual average wind speed?

- Chicago
- Annual Average Wind Speed:
- 10.5 mph
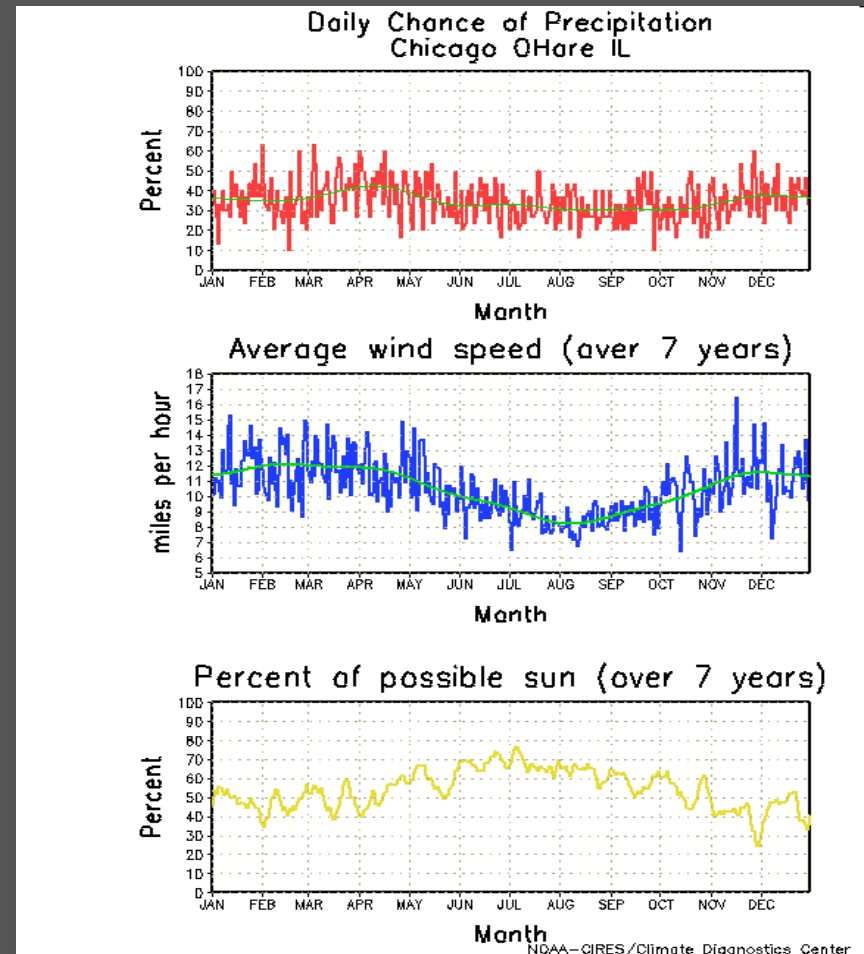
Which has the highest annual average wind speed?

- Amarillo

- Annual Average Wind Speed:

- 12.9 mph

Daily Chance of Precipitation
Amarillo TX

Average wind speed (over 7 years)

Percent of possible sun (over 7 years)

NOAA-CIRES/Climate Diagnostics Center
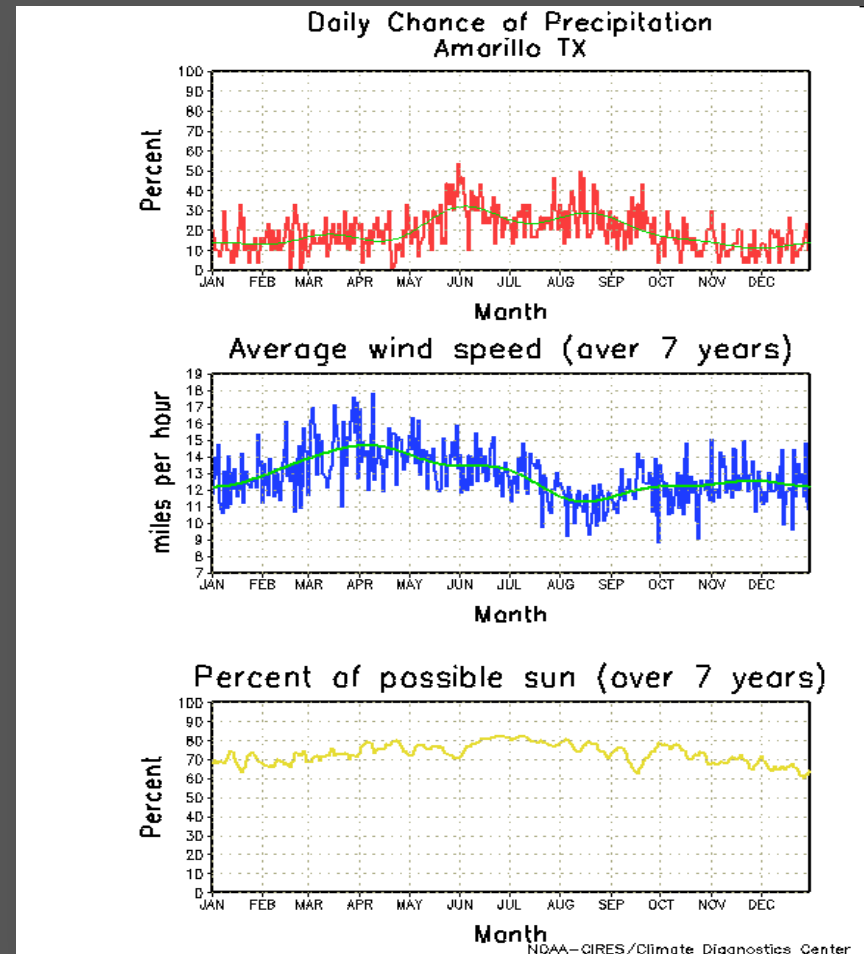
Which has the highest annual average wind speed?

- Reno

- Annual Average Wind Speed:

- 7.3 mph
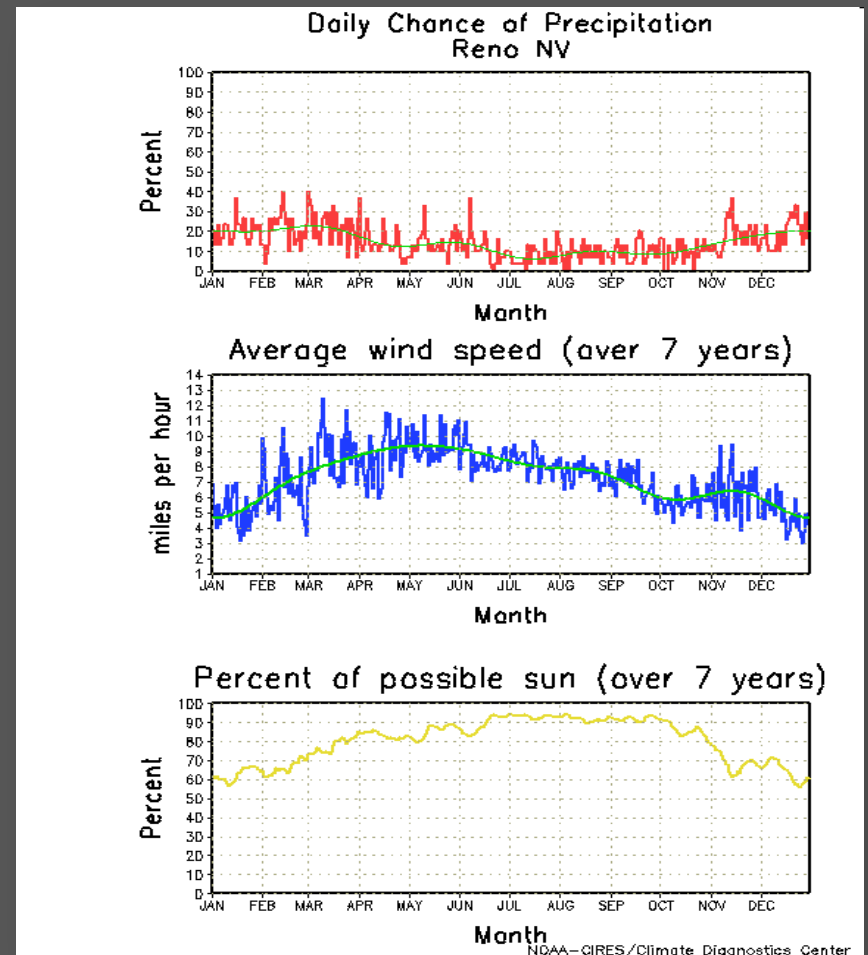
Why do you think Amarillo has the highest annual average wind speed?

EnCom Wants Sun!

- EnCom is also looking to use **Solar Energy** in the future. They need to find a location with lots of sun.

- A. Miami, Florida

- B. Phoenix, Arizona

- C. Oklahoma City, Oklahoma

Variable:

Highest Annual Average Percent of Available Sun

Which has the highest annual average percent of available sun?

- Miami

- Annual Average Percent of Available Sun:

- 73.0%

Daily Chance of Precipitation
Miami AP FL

Average wind speed (over 7 years)

Percent of possible sun (over 7 years)

NOAA-CIRES/Climate Diagnostics Center
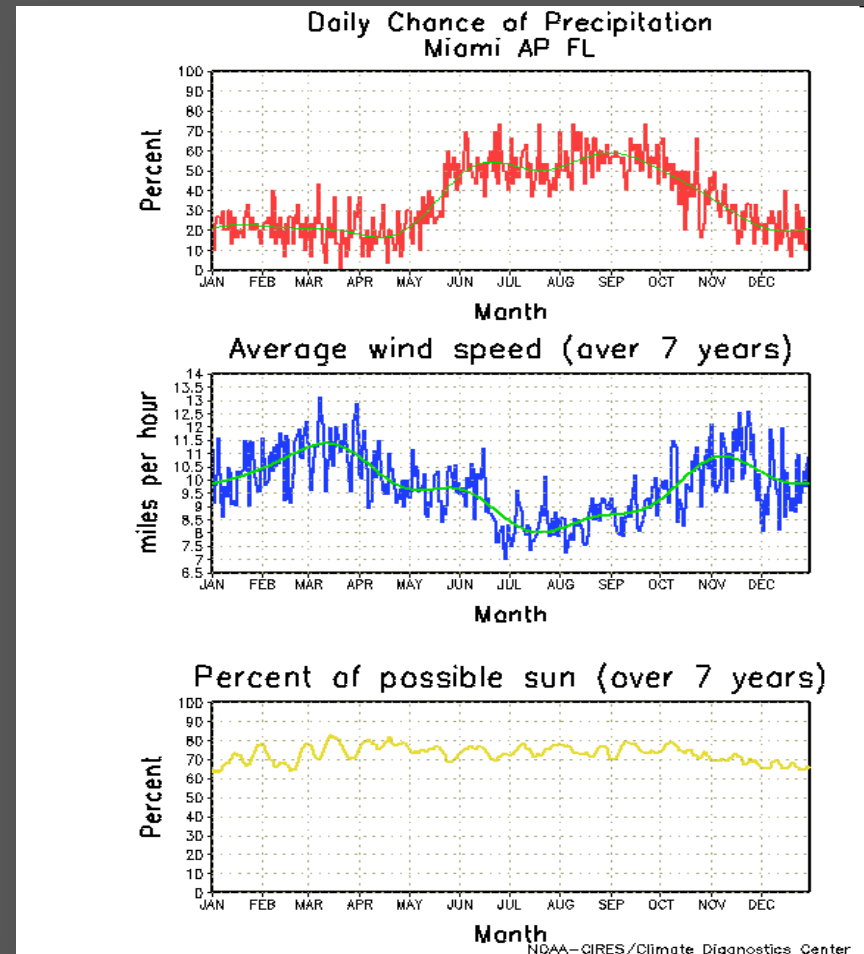
Which has the highest annual average percent of available sun?

- Phoenix

- Annual Average Percent of Available Sun

- 86.1%
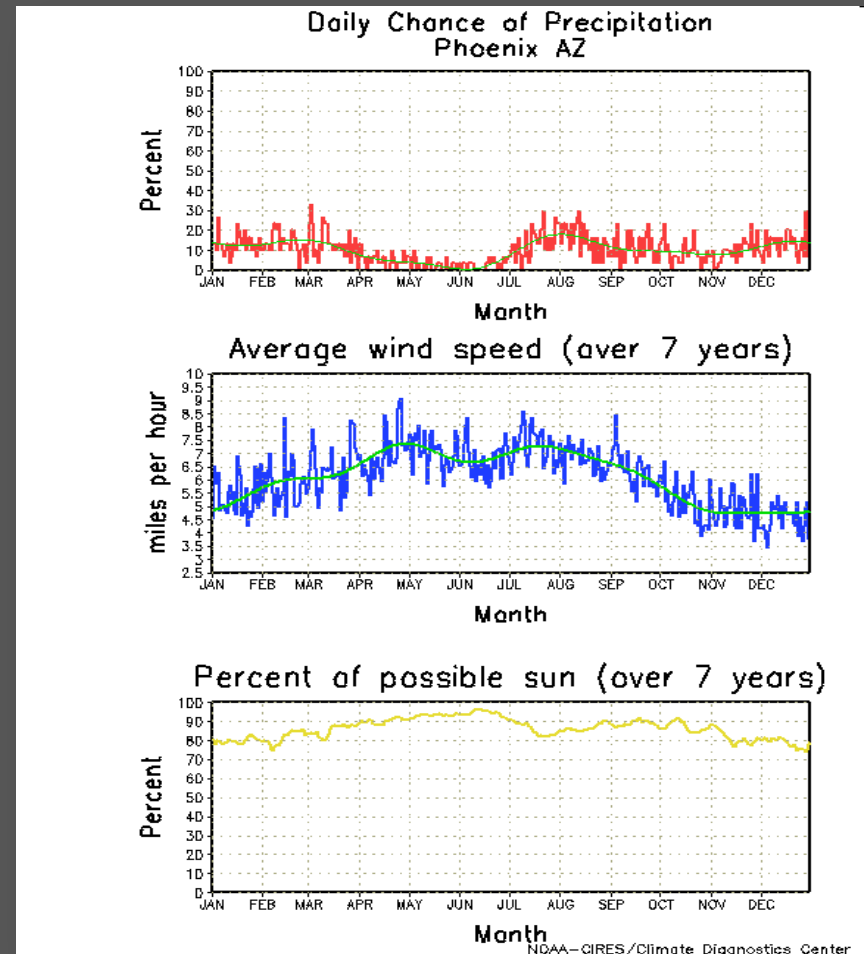
Which has the highest annual average percent of available sun?

- Oklahoma City

- Annual Average Percent of Available Sun

- 68.9%
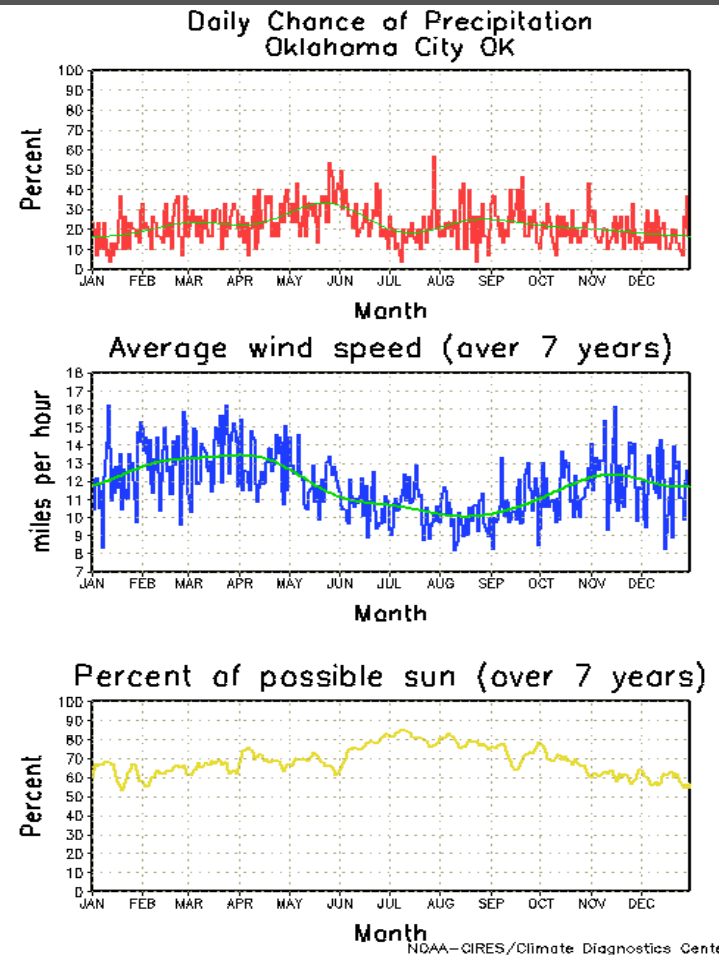
Why do you think Phoenix has the highest annual average percent of available sun?

Selling Snow Shovels

- You have received a call from the Mondo-Marketing firm in New York City. The company wants to find places to sell some new products that have just been developed.

- The first product is a new heavy-duty snow shovel. Mondo-Marketing is looking for a location that receives a lot of snow.

- A. Minneapolis, Minnesota

- B. Denver, Colorado

- C. Syracuse, New York

Variable:

Highest Annual Average Snowfall

Which has the highest annual average snowfall?

- Minneapolis

- Annual Average Snowfall

- 56.0 inches
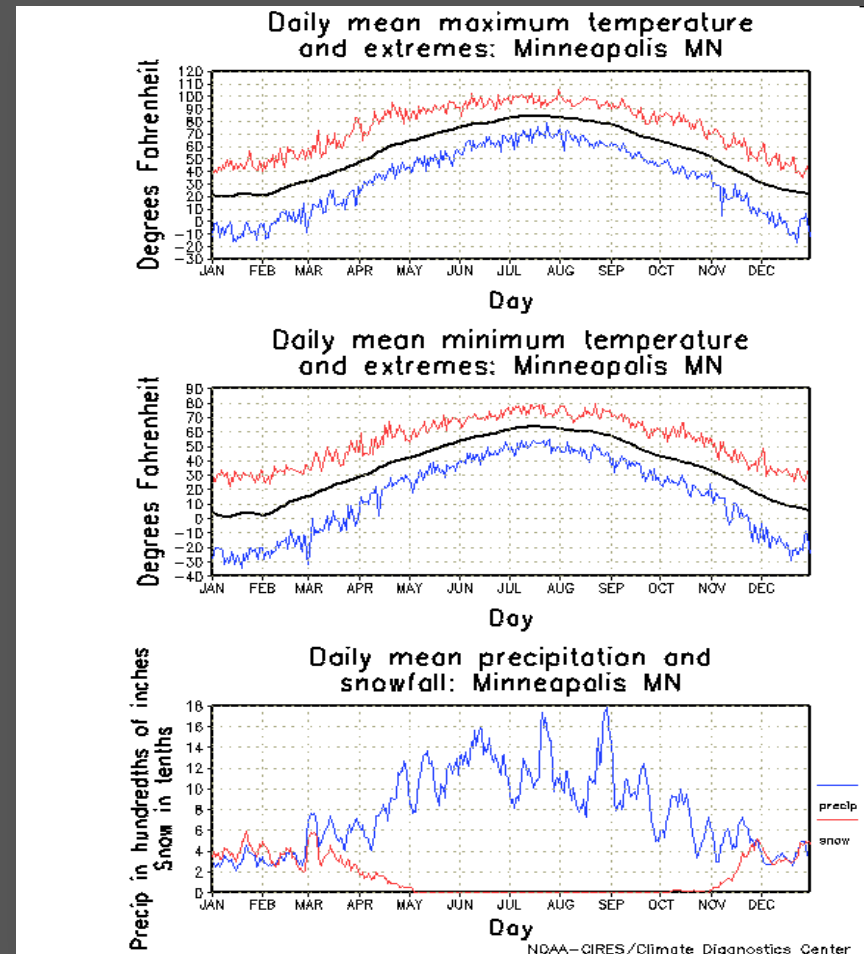
Which has the highest annual average snowfall?

- Denver

- Annual Average Snowfall

- 60.4 inches
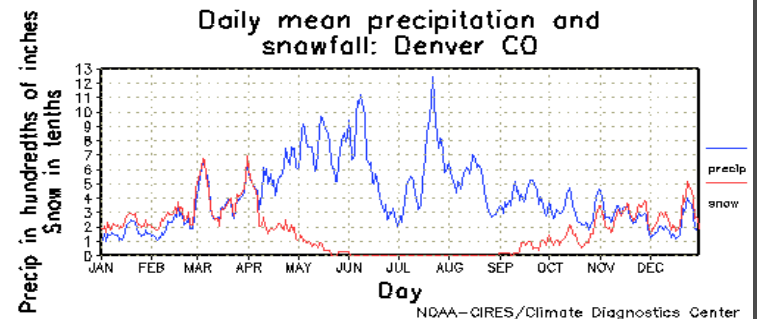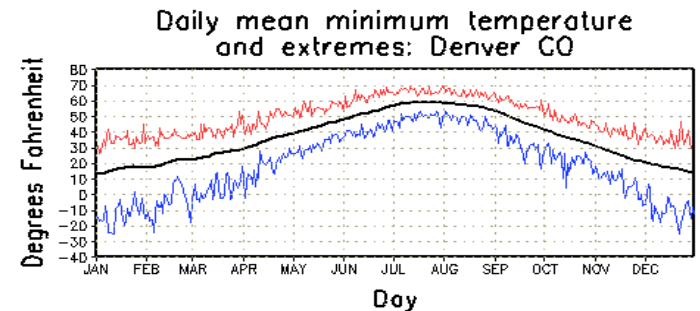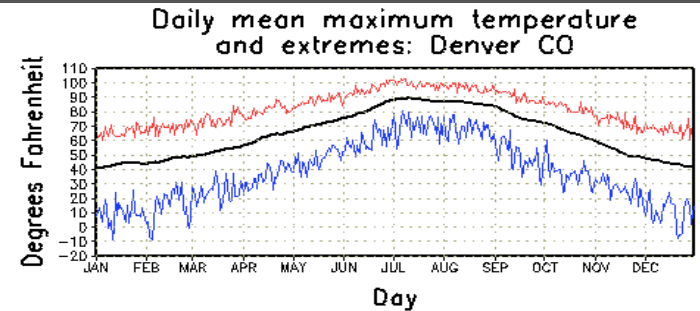
Which has the highest annual average snowfall?

- Syracuse

- Annual Average Snowfall

- 110.1 inches
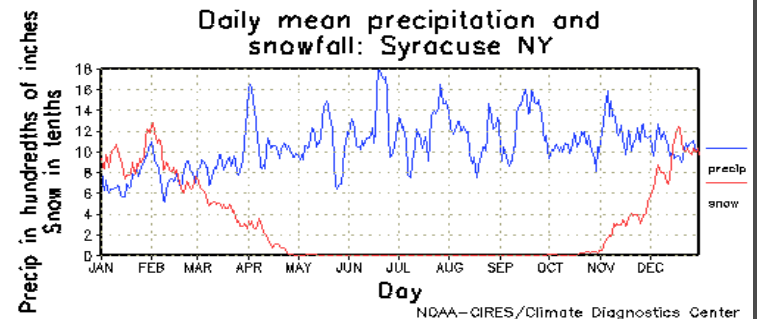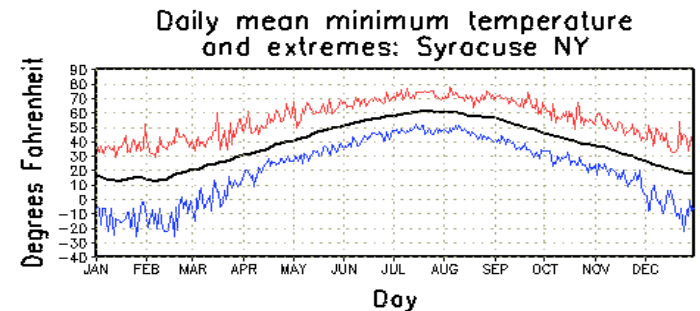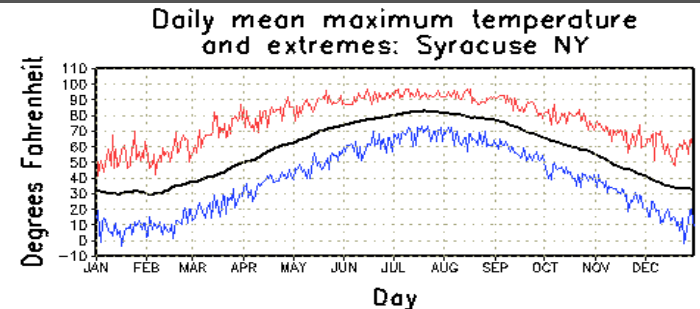
Why do you think Syracuse has the highest annual average snowfall?

New Rain Jacket

- A Scientist has invented a new rain-proof leather jacket. The marketing firm is looking for a rainy place to sell this new jacket.

- A. New Orleans, Louisiana

- B. Augusta, Maine

- C. Portland, Oregon

Variable:

Highest Annual Average Precipitation

Which has the highest annual average precipitation?

- New Orleans

- Annual Average Precipitation:

- 62.2 inches
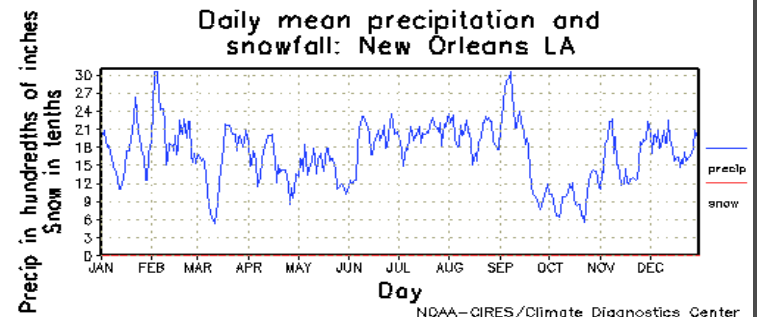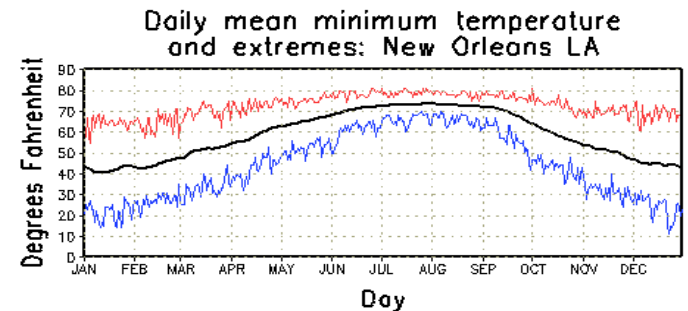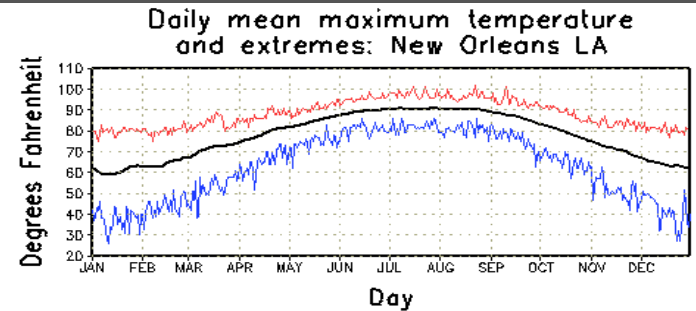
Which has the highest annual average precipitation?

- Augusta

- Annual Average Precipitation:

- 42.0 inches
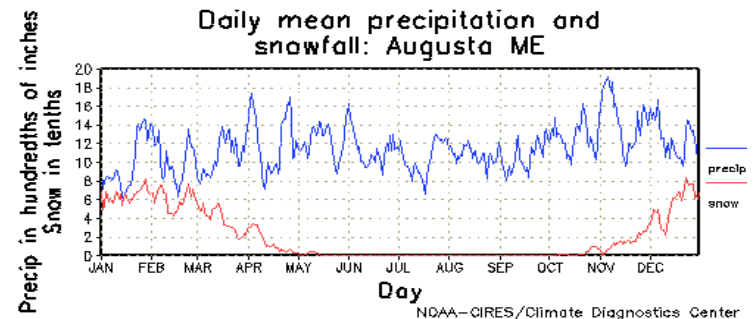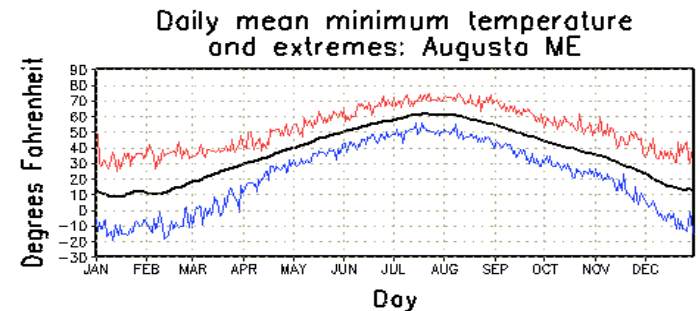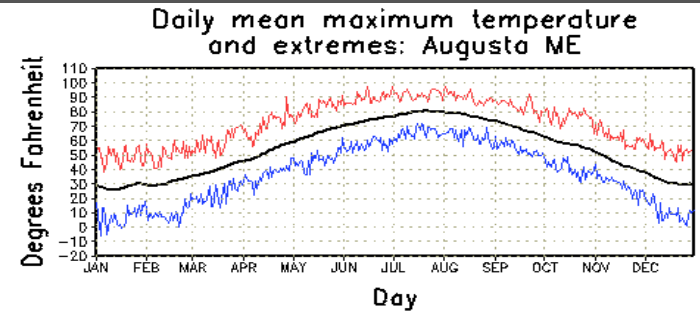
Which has the highest annual average precipitation?

- Portland

- Annual Average Precipitation:

- 36.3 inches
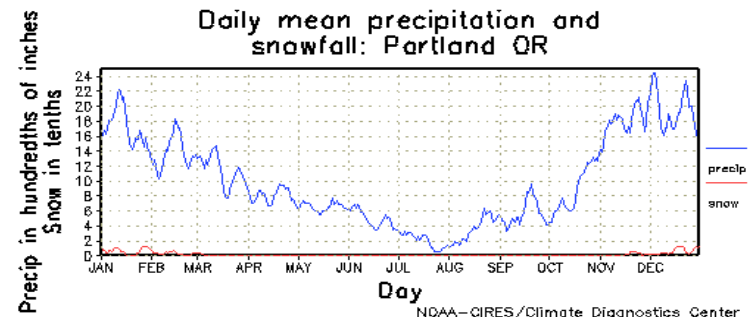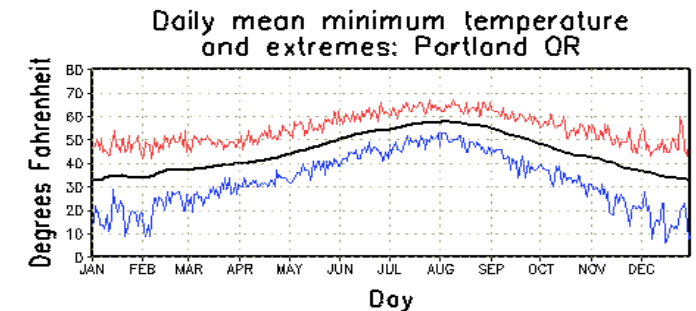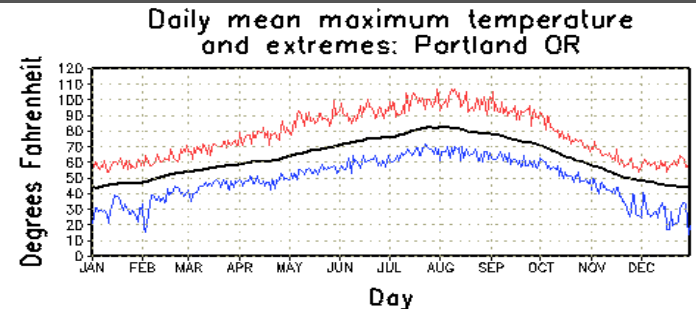
Why do you think New Orleans has the highest annual average precipitation?

Hot New Jacket

- A different scientist has invented a new fabric designed to give off heat on very cold days. The marketing firm is looking to sell this new jacket in a city that has a very cold winter.

- A. Juneau, Alaska

- B. Boston, Massachusetts

- C. Cedar Rapids, Iowa

Variable:

Lowest Average January Temperature

Which has the lowest average January temperature?
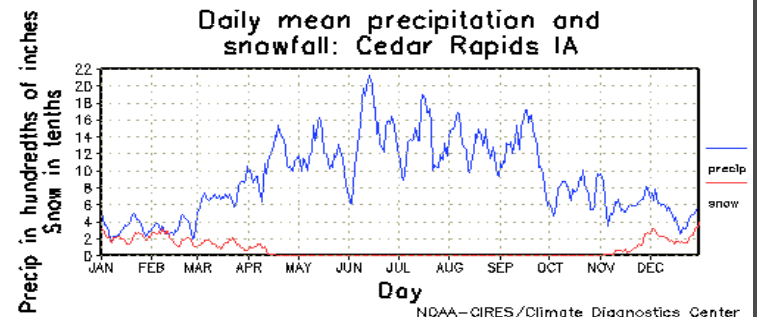
- Juneau

- Average January Temperature:
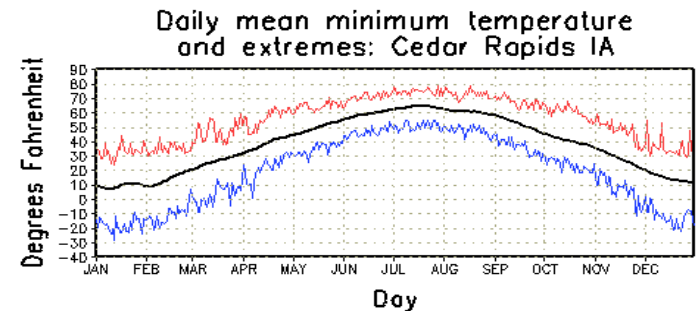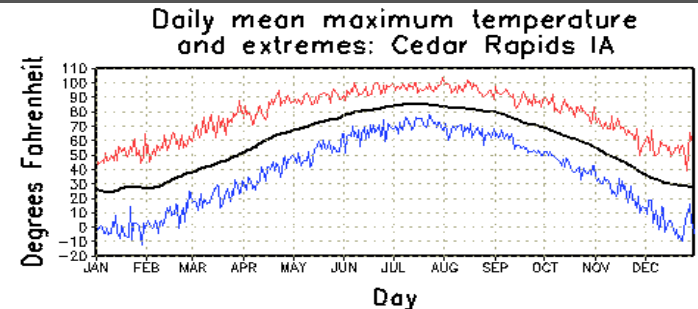
- 23.8 deg F
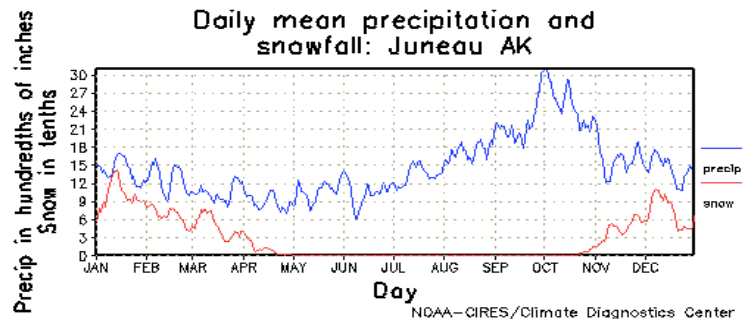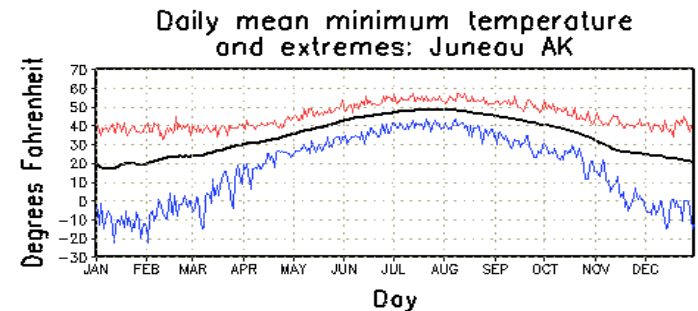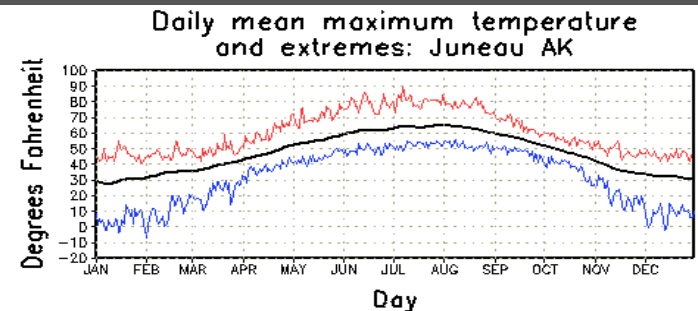
Which has the lowest average January temperature?

- Boston

- Average January Temperature:

- 28.8 deg F
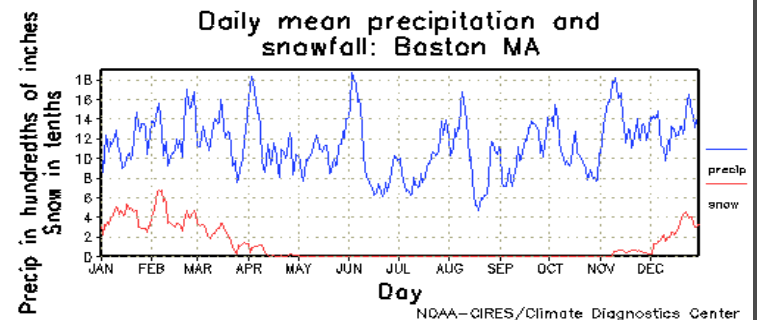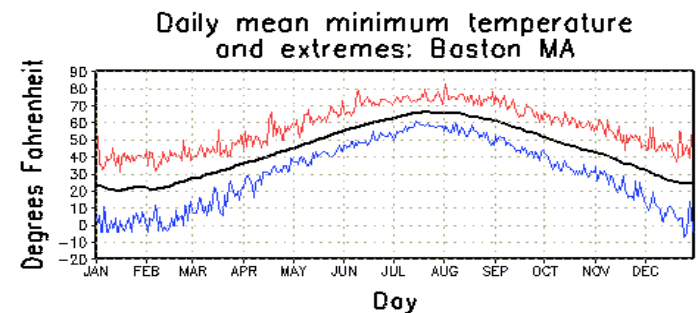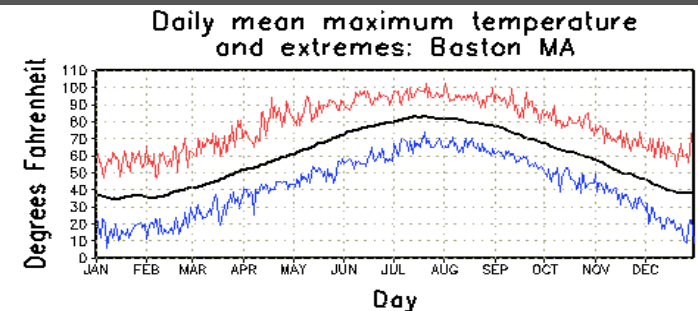
Which has the lowest average January temperature?

- Cedar Rapids
- Average January Temperature:
- 17.6 deg F

Why do you think Cedar Rapids has the lowest average January temperature?

Keep Your Cool

- The Cool Breeze Refrigeration Division has created a new T-shirt that has its own portable air conditioner! People who wear this shirt will never be hot! The marketing firm is looking to sell this new T-shirt in a city that has a very hot summer.

- A. Atlanta, Georgia
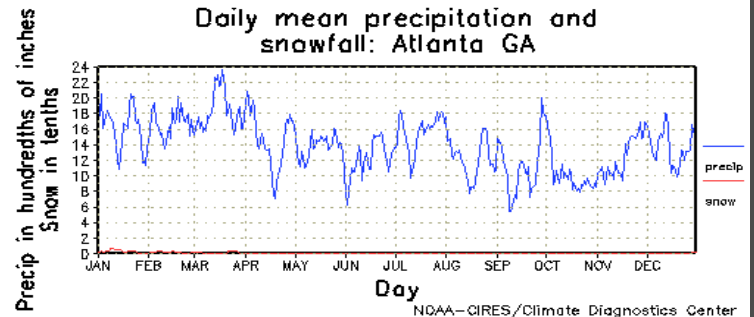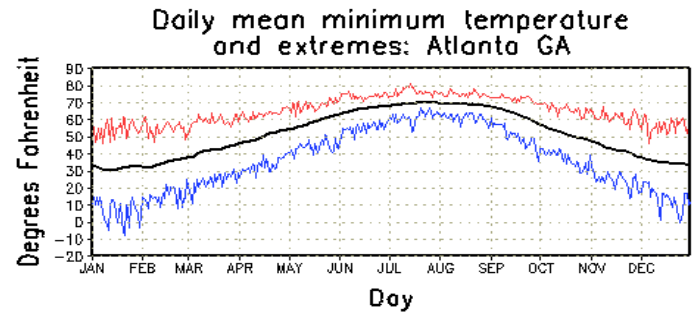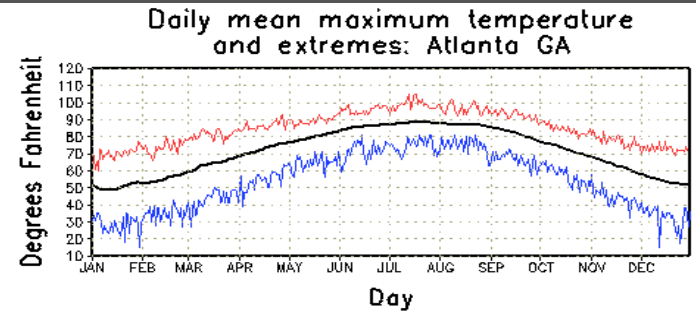- B. Memphis, Tennessee
- C. Flagstaff, Arizona
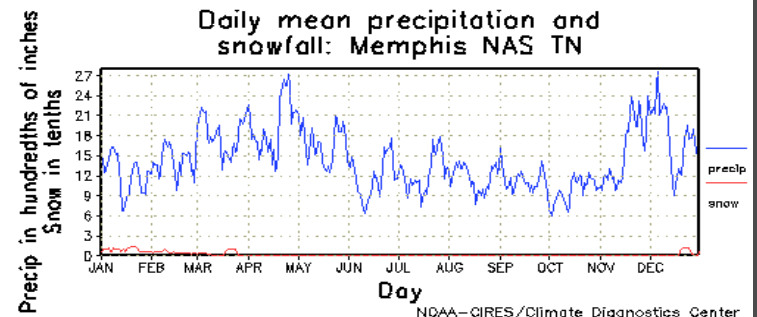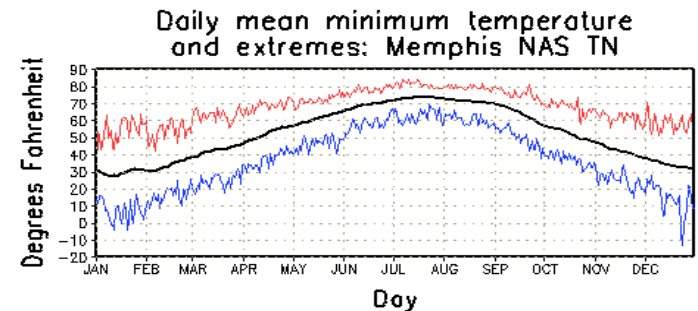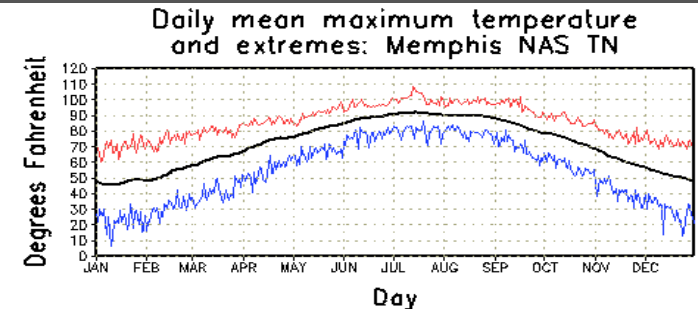
Variable:

Highest Average July Temperature

Which has the highest average July temperature?
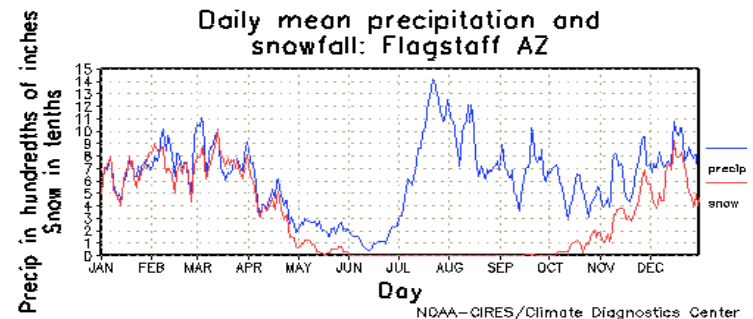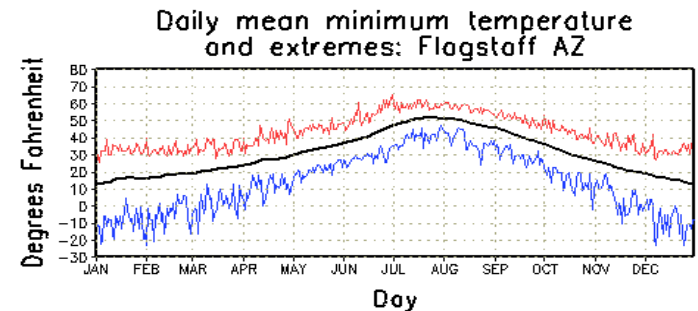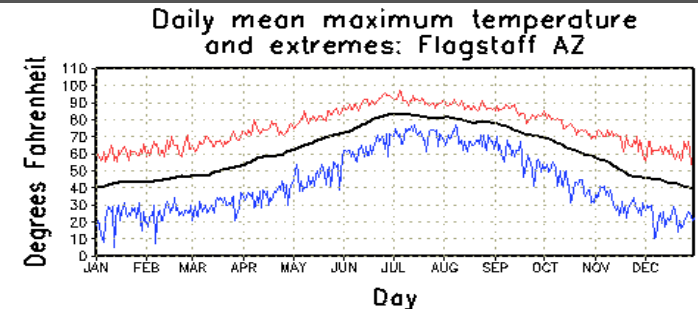
- Atlanta

- Average July Temperature:

- 78.7 deg F

Which has the highest average July temperature?

- Memphis

- Average July Temperature:

- 82.3 deg F

Which has the highest average July temperature?

- Flagstaff

- Average July Temperature:

- 66.3 deg F

Why do you think Memphis has the highest average July temperature?

Factors That Impact Local Climates

- Global Atmospheric and Ocean Circulations
- Elevation
- Latitude
- Topography
- Geography (e.g. distance from mountains or water)
- Land Cover (ocean, ice, vegetation, buildings)