

LABORATORY 5: CLASSIFICATION OF GLOBAL CLIMATES

To answer the questions in this lab, follow the steps outlined below, and the Köppen Climate Classification system charts found on the next five pages of this document.

Go through the following eight sequential steps to determine which Köppen Climate Classification system chart applies to the location being categorized.

- A. Divide the calendar year for each location into two six-month periods: April to September and October to March.
- B. Determine the associated seasons to these periods by recognizing the location's hemisphere.
- C. If the average temperature of **EACH** of the twelve months is below 10°C go to the **E Climate Chart**.
- D. If the total annual precipitation for your location is less than 890 mm continue to STEP E. If the total annual precipitation for your location is more than 890 mm continue to STEP F.
- E. Determine if the location being investigated is a **B Climate** by using the **B Climate Chart**. If your location is not a **B Climate** proceed to STEP F.
- F. If the average temperature of **EACH** of the twelve months is above 18°C go to the **A Climate Chart**.
- G. If the average temperature of at least **ONE** month is below -3°C go to the **D Climate Chart**.
- H. If the average temperature of the **COLDEST** month is between -3°C and 18°C go to the **C Climate Chart**.

A CLIMATE CHART

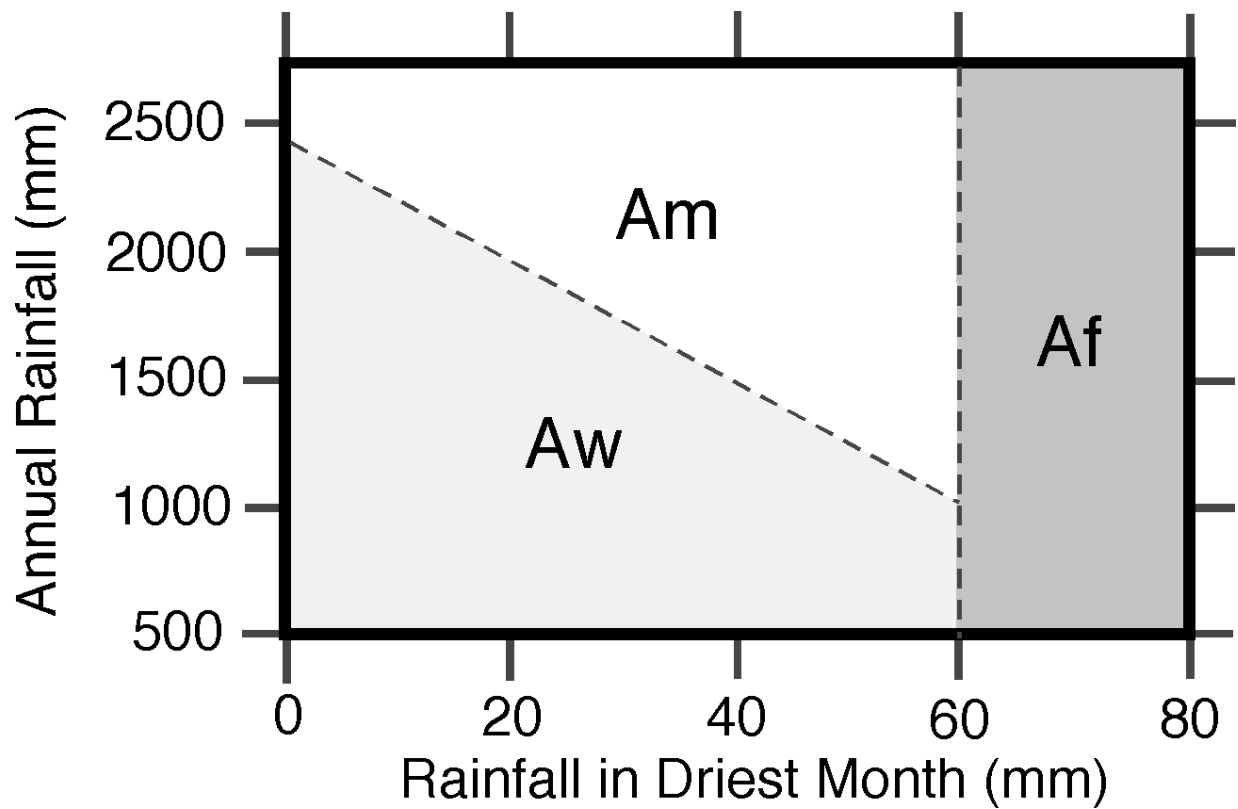
Group A Climate Types (average temperature of all months above 18° C)

Af – Tropical Wet

Am – Tropical Monsoon

Aw – Tropical Wet and Dry

Use the figure below to determine the exact classification of the location in question. On this figure plot the intersection of **average annual rainfall** and the **average rainfall of the driest month**.



E CLIMATE CHART

Group E Climate Types (average temperature of all months below 10° C)

ET – Polar Tundra

EF – Polar Icecap

A location is defined as an **ET** climate if at least **one** average monthly temperature is **above** 0° C. If **all** of the average monthly temperatures are below 0° C the location is classified as an **EF** climate.

B CLIMATE CHART – Part 1

Group B Climate Types (potential evaporation and transpiration exceed precipitation)

BWh – Dry Arid Low Latitudes

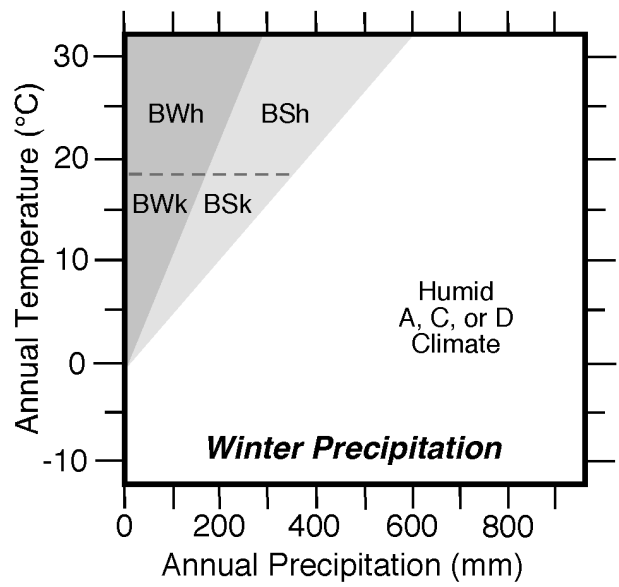
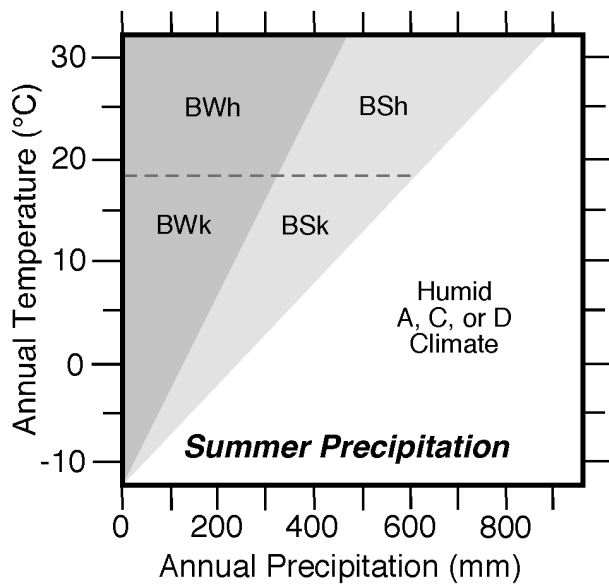
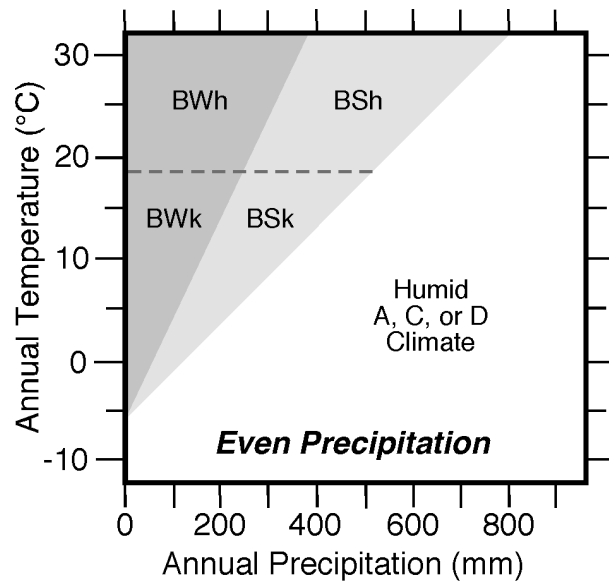
BWk – Dry Arid Mid-Latitudes

BSh – Semiarid Low Latitudes

BSk – Semiarid Mid-Latitudes

Plot the location's average annual precipitation and annual temperature values on one of the graphs on the next page to determine climate type. If more than 70 % of the precipitation occurs in the 6 summer months (note the hemisphere) use the **Summer Precipitation** graph. If more than 70 % of the precipitation occurs in the 6 winter months (note the hemisphere) use the **Winter Precipitation** graph. Use the **Even Precipitation** graph if the previous two conditions are both false.

B CLIMATE CHART – Part 2



C CLIMATE CHART

Group C Climate Types (average temperature of coldest month between -3°C and 18°C , warmest month above 10°C)

Cfa – Humid Subtropical

Cfb – Marine Coast - Mild Winter

Cfc – Marine Coast - Cool Winter

Csa – Interior Mediterranean

Csb – Coastal Mediterranean

Secondary Grouping

If the wettest winter month has three times as much precipitation than the driest summer month – secondary grouping is **s** (summer dry)

The climate is wet all year if the condition above cannot be met – secondary grouping will be **f**

Tertiary Grouping

If the warmest month has a temperature greater than 22°C , the climate has a hot summer – tertiary grouping is **a**

If the warmest month has a temperature less than 22°C and there are four months with temperatures greater than 10°C , the climate has a warm summer – tertiary grouping is **b**

If the warmest month has a temperature less than 22°C and there are one to three months with temperatures greater than 10°C , the climate has a cool summer – tertiary grouping is **c**

D CLIMATE CHART

Group D Climate Types (average temperature of coldest month is less than -3°C , warmest month above 10°C)

Dfa – Humid Continental Hot Summer, Wet All Year
Dfb – Humid Continental Mild Summer, Wet All Year
Dfc – Subarctic With Cool Summer, Wet All Year
Dfd – Subarctic With Cold Winter, Wet All Year

Dwa – Humid Continental Hot Summer, Dry Winter
Dwb – Humid Continental Mild Summer, Dry Winter
Dwc – Subarctic With Cool Summer, Dry Winter
Dwd – Subarctic With Cold Winter, Dry Winter

Secondary Grouping

If the wettest summer month has more than ten times as much precipitation than the driest winter month – secondary grouping is **w** (winter dry)

The climate is wet all year if the condition above cannot be met – secondary grouping will be **f**

Tertiary Grouping

If the warmest month has a temperature greater than 22°C , the climate has a hot summer – tertiary grouping is **a**

If the warmest month has a temperature less than 22°C and there are four months with temperatures greater than 10°C , the climate has a warm summer – tertiary grouping is **b**

If the warmest month has a temperature less than 22°C and there are one to three months with temperatures greater than 10°C , and the coldest month is above -38°C , the climate has a cool summer – tertiary grouping is **c**

If the coldest month has a temperature less than -38°C , the climate has a severe winter – tertiary grouping is **d**