

Global Precipitation Measurement Mission

Name: _____ Date: _____ Period: _____

Geographical Influences on Climate – Student Capture Sheet

Objective: Compare temperature and precipitation data to determine the effects of geography on climate.

Name some geographic features you know. Can you think of any ways they might affect temperature or precipitation? _____

What is the difference between **weather** and **climate**? _____

Refer to the map and climatogram given to you to fill out the information below.

Location: _____
Latitude: _____ Longitude: _____

Elevation of location: _____ (in meters)
Using the guidelines below, how would you describe this elevation? _____
• Close to sea level – up to 35 meters • High elevation – 1001 to 2000 meters
• Low elevation – 36 to 250 meters • Very high elev. – 2001 meters or higher
• Medium elevation – 251 to 1000 meters

Is your location near large lakes or oceans? _____

If yes, look at the prevailing wind arrows and describe whether the wind would blow across the water or across land to get to your city. **Note any differences for different seasons.**

Is your location near mountains? _____

If yes, look at the prevailing wind arrows. Would the wind hit the mountains first, then your location, or the reverse? **Note differences for different seasons.** _____

Calculate the **mean** precipitation over the entire year: _____ (mm/month)
→ Convert that to inches/month: _____
(1 mm = 0.04 in)

Do you notice any patterns in precipitation? (For example, months or seasons that are rainier or drier than others.) _____

Calculate the **mean** temperature over the entire year: _____ (in °C)
→ Convert that to °F _____
(formula is: °C x 9/5 + 32 = °F)
Calculate the **range** of temperatures during the year (subtract highest from lowest – don't forget the math rules for subtracting a negative!): _____ (in °C)
Do you notice any patterns in temperature? (For example, months or seasons that are warmer or cooler than others, or a generally flat line showing little variation in temperature.) _____

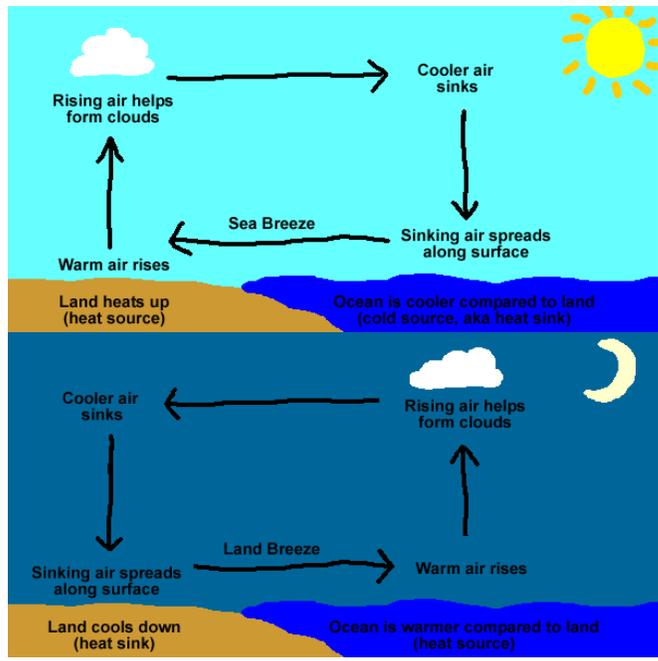
After you have completed the comparison activity, finding patterns in temperature and precipitation in places with similar geographic characteristics, summarize the main points about the impact of geographic features in the boxes below.

Summary of Geographical Influences on Climate

Effect of being **inland/away from water** on temperature and precipitation: _____

Effect of being **coastal/near water** on temperature and precipitation: _____

Effect of **elevation** on temperature and precipitation: _____



Effect of being **near mountains** on temperature and precipitation: _____

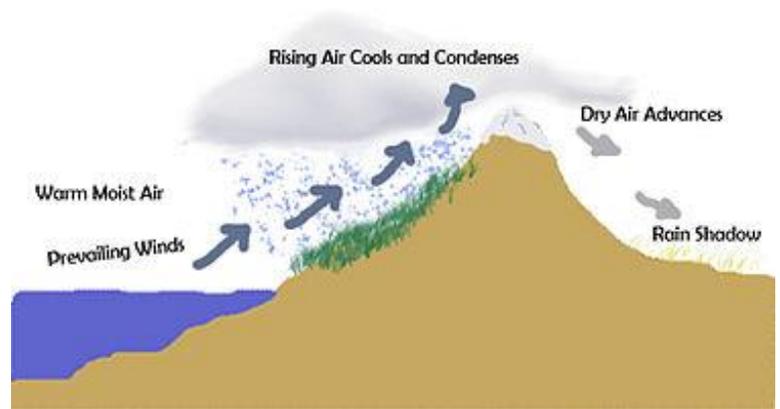


Image sources: <http://www.prh.noaa.gov/hnl/kids/activities.php> and http://en.wikipedia.org/wiki/File:Rainshadow_copy.jpg

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Create Your Own Climatogram DATA COLLECTION - Average Temperature and Precipitation

Refer to the Sources for Climate Data and instructions to collect the data below.

City: _____

Latitude: _____ Longitude: _____

Elevation: _____

Month	Mean Temperature (in °C)	Mean Precipitation (in mm)
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		
YEARLY AVERAGE		
RANGE		

To calculate yearly average: add all data points and divide by the number of data points there are (in this case, it is 12 months). To calculate the range: subtract the LARGEST - SMALLEST number in the data set. Remember negatives: $10 - (-2) = 10 + 2 = 12$ (NOT 8)

Prevailing wind direction: (make notes if the directions changes during different months)

Use this data to create a climatogram (see separate instructions). You will also need to find your location on a map, and note if it is near mountains, large lakes or oceans. Use the checklist on the top of the rubric (back of this paper) to make sure you have included all details on your map and climatogram, and the rubric itself to make sure everything is included in your description of the geographic effects on the climate of your location.

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Checklist and Rubric for Final Product: Climatogram, Map, and Descriptions

Climatogram:

Overall graph

- ___ Data is accurate and entered correctly [3 points]
- ___ Title (location name and description, ex: "Rockville, MD Climatogram")
- ___ Key (both precipitation and temperature data)

Axis labels

- ___ Temperature (including units, °C)
- ___ Precipitation (including units, mm)
- ___ Months (correctly marked)

Axis formatting

- ___ Temperature axis is from -15 to 40
- ___ Precipitation axis is from 0 to 300 mm

Data labels

- ___ Precipitation – present and readable
- ___ Temperature – present and readable

Map:

- ___ Location correctly marked and labeled on map
- ___ Latitude listed
- ___ Longitude listed
- ___ Prevailing winds marked with arrow(s) [2 points]
- ___ Features (mountains, lakes, oceans etc.) drawn or labeled correctly. [3 points]
- ___ Elevation listed

Overall Score:

Climatogram: ___ / 12

Map: ___ / 9

Descriptions: ___ / 24

Total: ___ / 35

_____ %

developed by the



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Descriptions:

Points	Precipitation	Temperature	Elevation	Geographic Effects of Water	Geographic Effects of Mountains	Overall Effect
4 (100%)	Description includes yearly average and range and clearly and accurately describes patterns in the data.	Description includes yearly average and range and clearly and accurately describes patterns in the data.	Elevation data is given, and the effect of that on temperature is described clearly and accurately .	Location of city in relation to lakes and oceans is described accurately, and the effect of bodies of water on temperature and precipitation is clearly explained.	Where the city is in relation to mountains is described, prevailing wind direction given, and the effect of these on temperature and precipitation is clearly explained.	Excellent , with very clear description , excellent use of vocabulary , and attention to correct grammar and spelling .
3.4 (85%)	Missing overall statistics, or with minor errors or lack of clarity.	Missing overall statistics, or with minor errors or lack of clarity	Missing elevation data, but description is accurate.	Overall good, but with minor errors in accuracy, or slight lack of clarity in description.	Overall good, but with minor errors in accuracy, or slight lack of clarity in description.	Good description, some use of science vocabulary, only minor errors in grammar and spelling.
3 (75%)	Some data is missing or inaccurate, or descriptions unclear, but the basic ideas come across.	Some data is missing or inaccurate, or descriptions unclear, but the basic ideas come across.	Some data is missing or inaccurate, or descriptions unclear, but the basic ideas come across.	Some data is missing or inaccurate, or descriptions unclear, but the basic ideas come across.	Some data is missing or inaccurate, or descriptions unclear, but the basic ideas come across.	Fair description, but minimal use of science vocabulary, and noticeable errors in grammar and spelling.
2.6 (65%)	Very unclear or confusing, or with major errors in content.	Very unclear or confusing, or with major errors in content.	Very unclear or confusing, or with major errors in content.	Very unclear or confusing, or with major errors in content.	Very unclear or confusing, or with major errors in content.	Poor description, no use of science vocabulary, and significant errors in grammar and spelling.
0	Not included	Not included	Not included	Not included	Not included	Incomprehensible

