

<b>California's Precipitation Patterns and Water Supply: A Limited Resource?</b>
Earth Science/Geology <span style="float: right;">Mr. Traeger</span>

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

**Background and Purpose**

The population in California has swelled in recent years. California's current population stands at around 34 million. Projected estimates place the population at 54 million by the year 2025 ([http://www.enn.com/news/enn-stories/2002/03/03212002/s\\_46490.asp](http://www.enn.com/news/enn-stories/2002/03/03212002/s_46490.asp)). The question is: Where will we get the water to support all of these people? In this activity, you will analyze precipitation patterns throughout the State to get a better understanding of our limited water supply here in California.

**Materials**

- Precipitation Data for Select Cities
- Colored Pencils

**Procedure**

1. Look at the precipitation data below for select locations. Assign a color to each level of precipitation according to the following key: red = 0-10 inches, orange = 10-20 inches, yellow = 20-30 inches, green = 30-50 inches, blue = 50-100 inches Color in the corresponding circles on the map. Weather data from (<http://www.wrcc.dri.edu/climsum.html>).

Location	Elevation (feet)	Average Total Precipitation (inches)
<b>Far Northern California: West to East</b>		
1. Eureka: Northern Coast	800	38.99
2. Lake Shasta: Inland Foothills of Cascade Mountains	1070	62.97
3. Burney: Foothills of Southern Cascade Mountains	3140	27.81
4. Alturas: Inland High Desert	4460	12.58
<b>Northern Central California: West to East</b>		
5. San Francisco: Coastal Northern California	10	20.11
6. Vacaville: Coastal Hills	1800	25.13
7. Sacramento: Central Valley	200	17.22
8. Auburn: Foothills of Northern Sierra Nevada	1360	34.55
9. Blue Canyon: Northern Sierra Foothills on Western Side	5280	67.52
10. Lake Tahoe: Northern Sierra Nevada Mountains	6230	31.75
11. Reno, NV: Northern Sierra Foothills on Eastern Side	4400	7.28
<b>Central California: West to East</b>		
12. Morro Bay: Central Coast	60	16.74
13. San Luis Obispo: Central Coast Hills	300	23.35
14. Bakersfield: Central Valley	490	6.19
15. Kern River: Southern Sierra Foothills	2700	12.79
16. Death Valley: Desert Below Sea Level	-170	2.21
<b>Los Angeles Area: West to East</b>		
17. Santa Monica: Coastal Southern California	10	12.53
18. Los Angeles Downtown: Coastal Plain	360	14.73
19. Pasadena: Foothills of San Gabriel Mountains	860	19.93
20. Mount Wilson: San Gabriel Mountains	5710	35.37
<b>Southern California: West to East</b>		
21. San Diego: Coastal Southern California	30	10.17
22. Mount Palomar: Mountains	5600	27.97
23. Borrego Springs Desert Park: Desert	850	5.97
24. Imperial: Low Desert	-60	2.54
25. Blythe: Low Desert near Colorado River	270	3.83

**Questions**

1. What are the different kinds of precipitation? Define each and explain how each is formed.
2. Look at your data and your map. What happens to precipitation amounts as you go from west to east?
3. Look at your data and your map. What happens to elevation as you go from west to east?
4. Look at your answers to #s 2 and 3. Is there any relationship between precipitation and elevation? If so, what is this relationship?
5. Draw a diagram of the rain shadow effect below. See chapter 18 for assistance.
6. How does your diagram of the rain shadow effect explain your change in precipitation from west to east? How does this west to east pattern explain the presence of desert areas such as Death Valley?
7. Look at the values for rainfall in each sector. What happens to precipitation amounts as you go from Northern California to Southern California? Why do you think this is?
8. Previous to this, you watched a video on El Niño. Knowing that the influence of El Niño comes mostly from the tropics, how do you think El Niño would affect the average precipitation rates in Southern California? How about in Northern California?

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### Short Essay

9. It is apparent that Southern California (where we live) does not get a whole lot of annual precipitation. It is a fact that humans need water to survive. Write a short essay explaining the following in detail: A) Where do you think our water here in Southern California comes from? B) Based on projected population increase in California, do you think that we will be able to support all who want to come to California? C) Who is using the water? Do we only use water here in the city, or are there other needs for our water? D) If you were on the city planning commission for the agricultural city of Imperial, what would you tell a developer who wants to build more homes in the city? Assume that your previous supply of water from the Colorado River has been cut way back. E) What can **you** do to conserve our water supply right here in La Cañada? See pages 19, 306, 358-359 in your textbook for ideas.

Map of California: Attach to Question Sheet



Color Key for Precipitation Amounts