

## **Ocean Influences on Climate**

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### **OBJECTIVES**

1. Students will brainstorm about the geographical factors that contribute to climate
2. Students will graph average monthly temperatures at two island groups, and analyze the data for similarities and differences.
3. Students will demonstrate comprehension of the impact of ocean currents on coastal temperatures by completing a quiz.

### **AGE**

Grades 8-12.

### **TIME ALLOWANCE**

2-3 hours

### **MATERIALS**

Internet access  
Graph paper  
Map of ocean currents (available in most atlases)

### **INSTRUCTION:**

1. To introduce this lesson, the teacher should ask the students "What factors affect the climate of a location?"

If they need further prompting, ask them what the climate in Alaska is like. Even if the students have never been to Alaska, they have some idea of the climate. Why? Hopefully, they'll understand that latitude is a key factor.

If there are mountains near your town, ask the students how the climate on the mountains is different from the climate in your town. This should remind them that elevation plays a factor in climate, which is why snow-capped mountains can be seen from temperate locations.

If you had two cities at the same latitude, same elevation, but one was coastal and one was inland, ask the students to hypothesize about whether there would be any climate differences.

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2. Have students get on the internet and research the climate of the Galapagos Islands, located in the eastern equatorial Pacific Ocean. They should record average daily temperatures each month during the year.
3. Next students will obtain the average daily temperature each month during the year for Palau, also located in the western equatorial Pacific Ocean.
4. Students will graph these temperatures on the same piece of graph paper, using different colors for each data set.
5. Students will write a "Data Analysis" explaining what they see on the graphs. They should note any similarities and differences between the temperatures of the two locations.
6. Teacher should now hand out a map of the ocean currents, or display one on an overhead. Most atlases contain this type of map.
7. Why are the climates different? What could be happening to cause two island groups, in the same ocean, at the same latitude and elevation, to have different climates? The teacher may choose to lead a class discussion, or have students brainstorm in groups. By the end of the lesson, students should understand that the temperature of large bodies of water has a large impact on the air temperatures on nearby land.

### **EVALUATION / ASSESSMENT**

Using the same ocean current map used above, the teacher can quiz the students (formally or informally) by naming other coastal locations on Earth, and asking the students if there is a cold water current or a warm water current nearby. Students can also be asked if the coastal climate will be cooler or warmer than that of areas at similar latitude and elevation.

Temperature graphs will be assessed for completeness and accuracy

Data analysis and hypotheses will be assessed for the level of independent thought shown by the student