

Name: _____

Date: _____ Period: _____

Water and Climate

The Physical Setting: Earth Science

Lab Activity: Rainfall Patterns

INTRODUCTION:

When prevailing winds travel across an ocean they picking up moisture along the way. When the encounter a mountain barrier, such as the Big Island of Hawaii, the mountains help play a significant role in modifying the distribution of rainfall.

On the Big Island of Hawaii, the windward side causes the prevailing winds to be pushed upward. This creates a rainy side due to the rising, expanding, cooling, and condensing air mass.. The leeward side experience the exact opposite. The air sinks, condenses, and warms and creates an extremely dry side.

OBJECTIVE:

You will compare the topographic map and a precipitation map of the Big Island of Hawaii to see how mountain barriers play a role in rainfall patterns.

VOCABULARY:

Orographic Effect

Isohyet

Windward

Leeward

Rainshadow Effect

Trade Winds

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PROCEDURE A: ELEVATION

1. Using the elevation data on “Map A: The Big Island of Hawaii Contour Map” construct contour lines at an interval of 500 meters.
2. Label the following volcanic mountains with their names according to their elevations:
 - Kilauea - 1,247 meters
 - Mauna Loa - 4,169 meters
 - Mauna Kea - 4,208 meters
 - Kohala - 1,678 meters
 - Hualalai - 2,515 meters

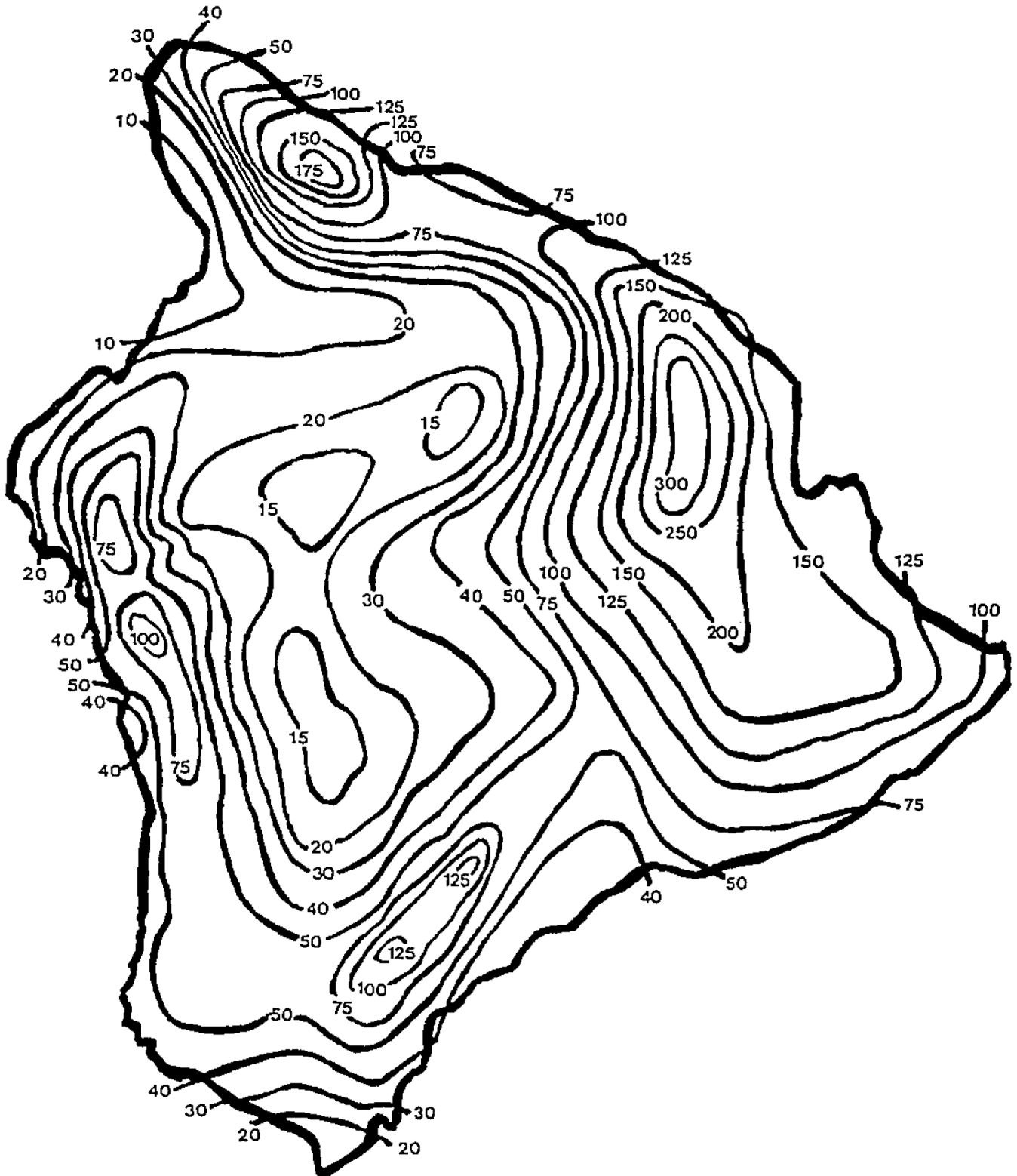
PROCEDURE A: RAINFALL PATTERNS

1. Using “Map B: The Big Island of Hawaii Rainfall” trace over and darken the 20 inch, 50 inch, 100 inch and 200 inch isohyets.
2. Using the color key below, shade the following intervals.

Rainfall	Color
Greater than 200 inches	blue
100 to 200 inches	green
50 to 100 inches	brown
20 to 50 inches	orange
Less than 20 inches	yellow

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MAP B: THE BIG ISLAND OF HAWAII RAINFALL



Lab Activity: Rainfall Patterns

DISCUSSION QUESTIONS:

1. Which coastline of Hawaii has the most annual rainfall?
2. Which side of the Big Island of Hawaii has the least rainfall?
3. Describe the most likely direction of the prevailing winds across the Big Island of Hawaii?
4. Where is the rainshadow area on the Big Island of Hawaii?
5. Why is the rainfall pattern different on the Mountains of Kohala and Mauna Kea?

CONCLUSION: How do mountain barriers modify rainfall patterns on Hawaii's Big Island?