

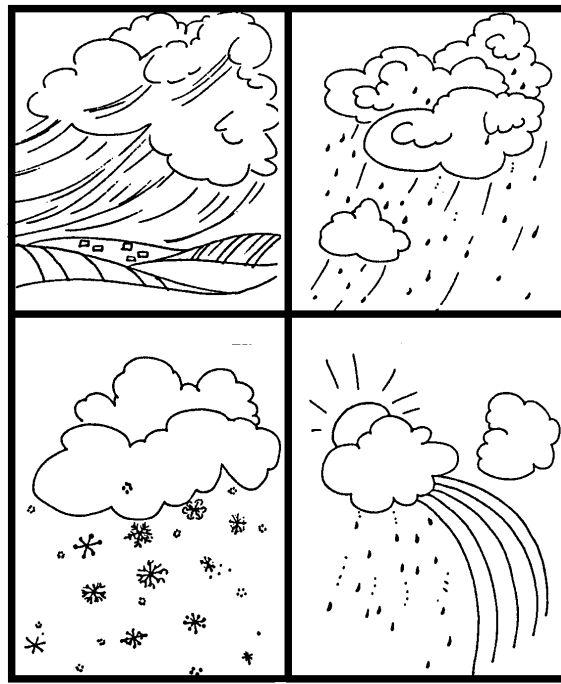


Water Cycle

The Earth's Gift

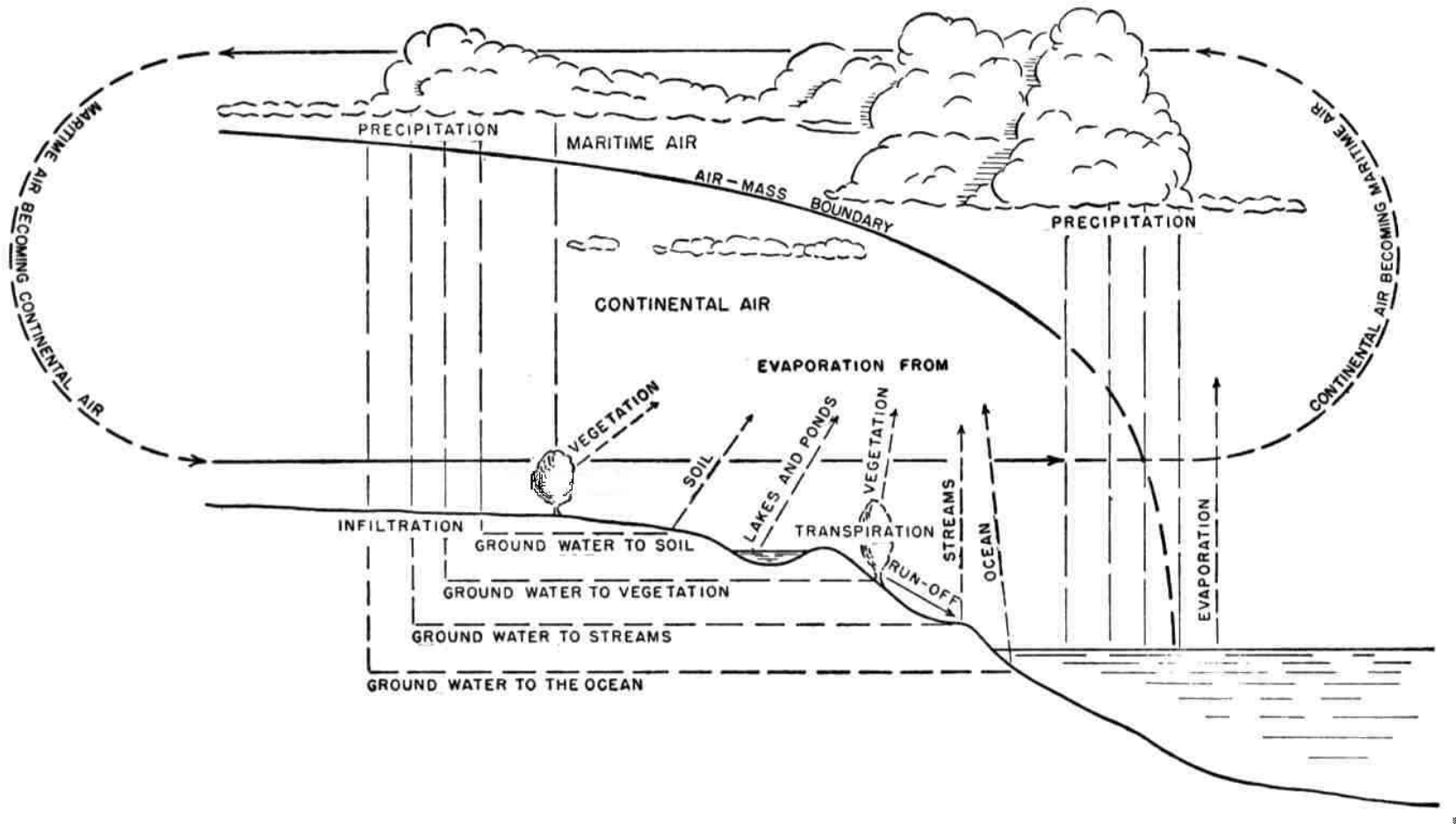


SIXTH GRADE WORKBOOK



student _____

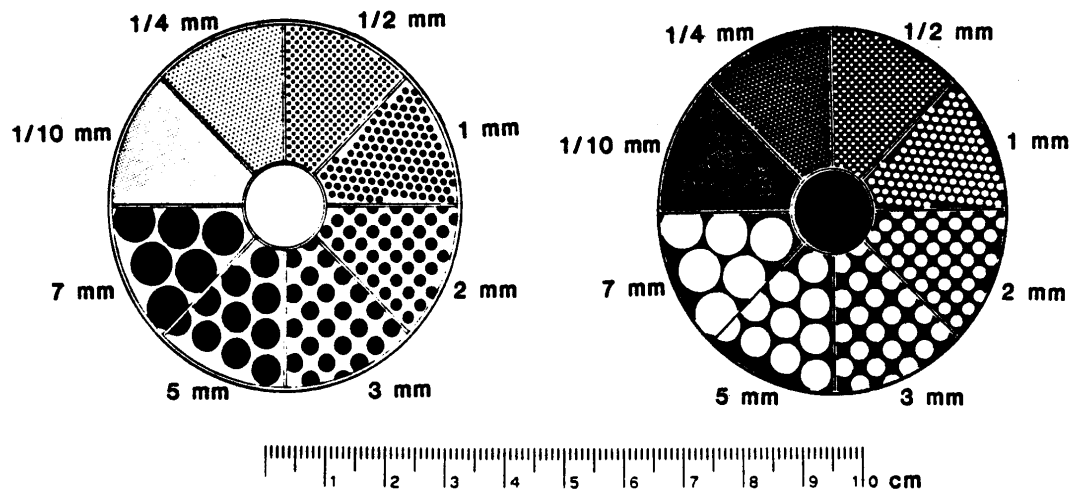
WATER CYCLE - WATER (6)



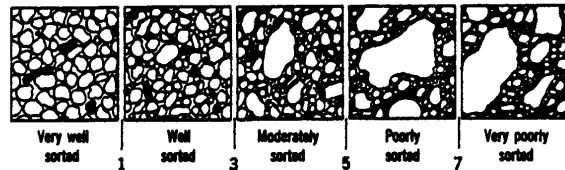
WATER CYCLE - WATER (6) LAB

SAND CHART

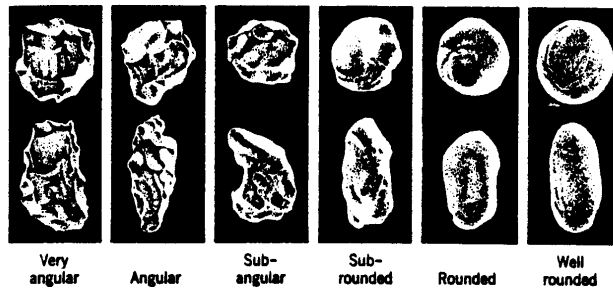
Sorting refers to particles that are the same size (well sorted) or many different sizes (poorly sorted.) Roundness refers to whether the particle is angular or rounded. Both sorting and roundness provide information on the duration of the particle in the erosional cycle.



sorting



roundness



WATER CYCLE - WATER (6)

PROBLEM: Does water flow at different rates in different types of sand?

PREDICTION: _____

MATERIALS: 4 graduated cylinders (25ml), 4 different types of sand, 250 ml beaker of water

EXERCISE 1. Using the sand charts, measure the size and sorting of the 4 different sands. Record the results in the chart below.

	LOCATION	SIZE	SORTING
SAND #1			
SAND #2			
SAND #3			
SAND #4			

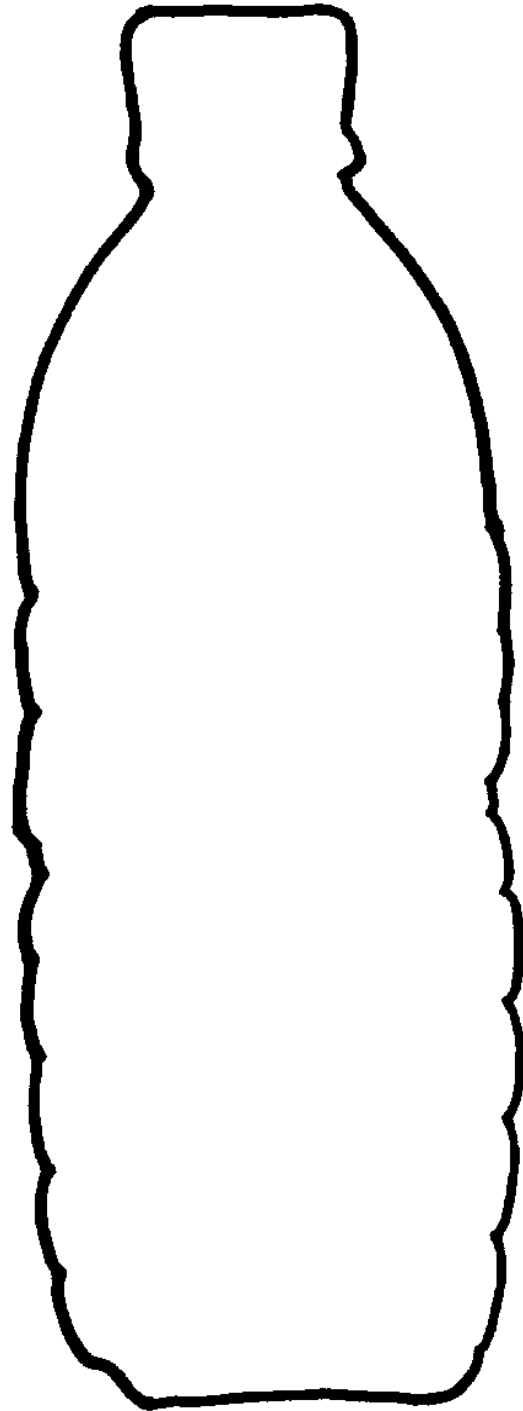
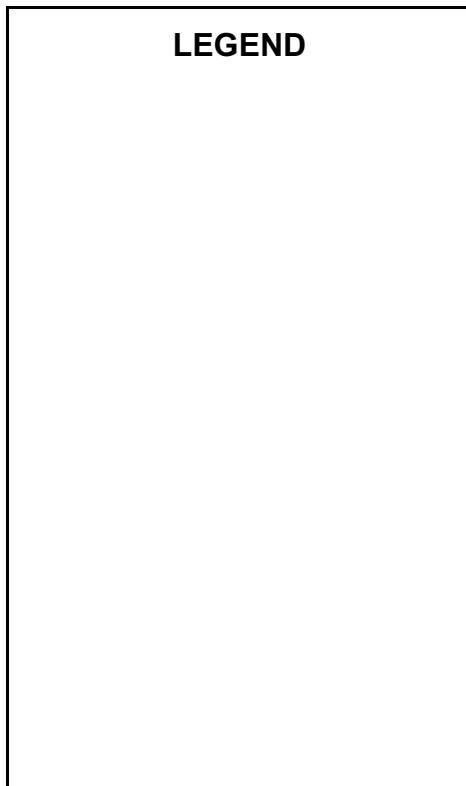
EXERCISE 2. Fill the graduated cylinder with 15 ml, each with a different sand. Make sure they are filled to the same height. Pour approximately 5 ml of water into each tube very slowly. Time how long it takes for all the water to reach the bottom. (Count one thousand one, one thousand two). Record your results in the chart below.

	TYPE OF SAND	TIME
SAND #1		
SAND #2		
SAND #3		
SAND #4		

EXERCISE 3. Make a filtering machine by using different rocks, sand, or soil in a plastic container. Record what you put in and how much in the worksheet provided. Follow your teachers instructions.

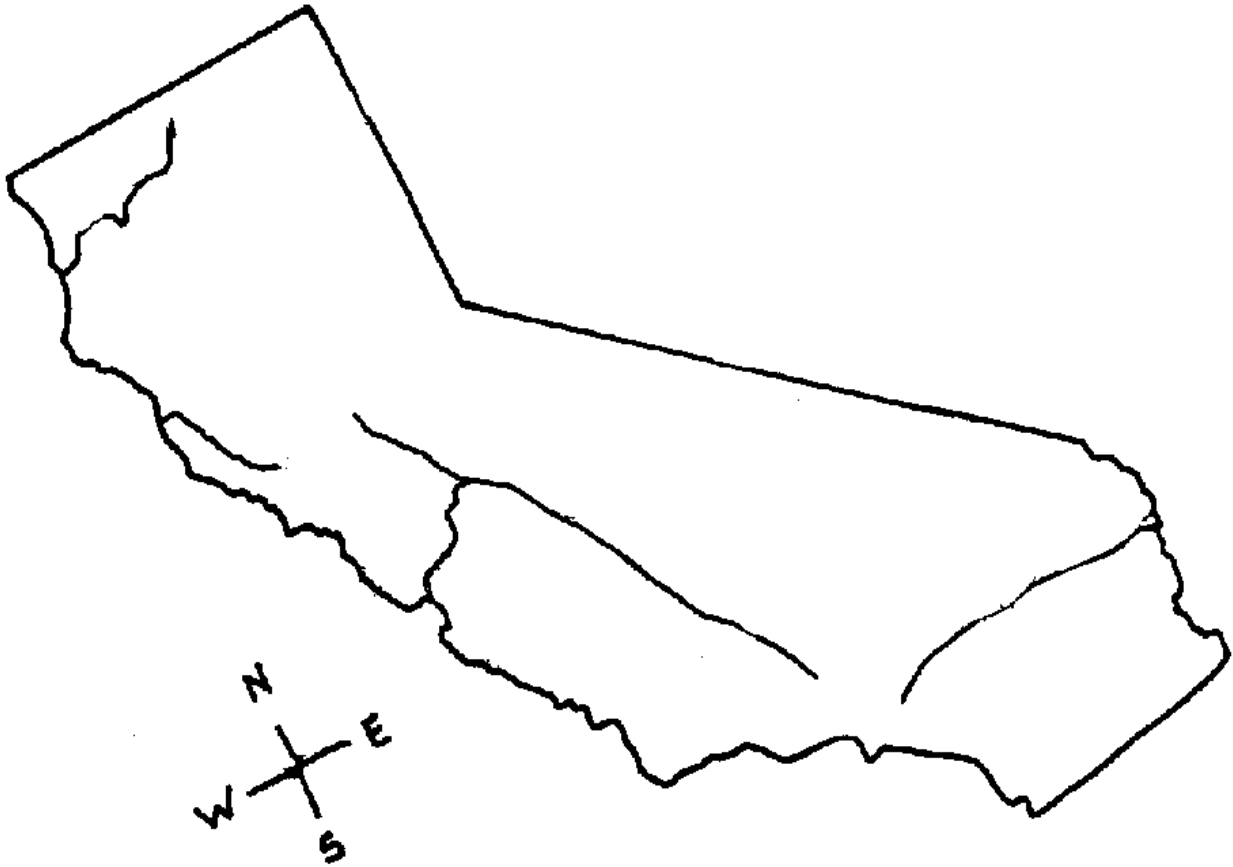
CONCLUSION:

1. Does sand size have anything to do with how fast the water moves? Why? Does the sorting of the sand have anything to do with how fast the water moves? Why?



WATER CYCLE - WATER (6) POST

Why is water so important to California? _____



DRAW THE FOLLOWING:

- * THE MAJOR WATER SOURCES:
COAST RANGE, SIERRA NEVADA,
CASCADE RANGE
- * MAJOR WATER TRANSPORT RIVERS:
COLORADO RIVER, SACRAMENTO RIVER
KLAMATH RIVER, EEL RIVER
- * MAN-MADE AQUEDUCTS:
CALIFORNIA AQUEDUCT,
COLORADO AQUEDUCT

Which industries would fail in California if a long-term drought occurred?

WATER CYCLE - OCEANS (6)

HOW DOES YOUR TOILET BOWL FLUSH?

RIGHT TO LEFT (COUNTERCLOCKWISE) OR LEFT TO RIGHT (CLOCKWISE)

Ask people at your house to tell you the direction of the water as they flush the toilet bowl (right to left or left to right). Record at least 15 flushes. Please do not waste water just to see how it flushes.

1. How many times did it go counterclockwise? _____

2. How many times did it go clockwise? _____

WATER CYCLE - OCEANS (6)

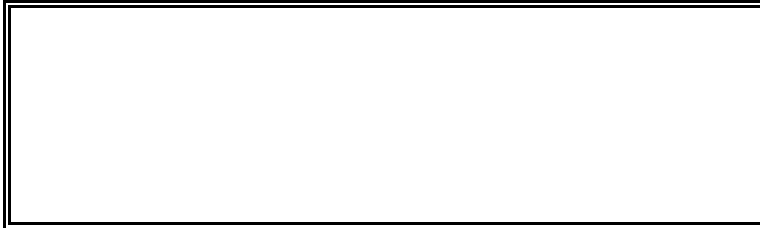
PROBLEM: What causes the circulation of water in the oceans?

PREDICTION:

EXPERIMENT I.

MATERIALS: beakers, hot plate, hot and cold sea water, food coloring

PROCEDURE: Instructor has filled the beaker with hot sea water, pour some cold seawater (mixed with food coloring) slowly into the hot sea water. Draw what happens.



Why does the water move this way?

EXPERIMENT II.

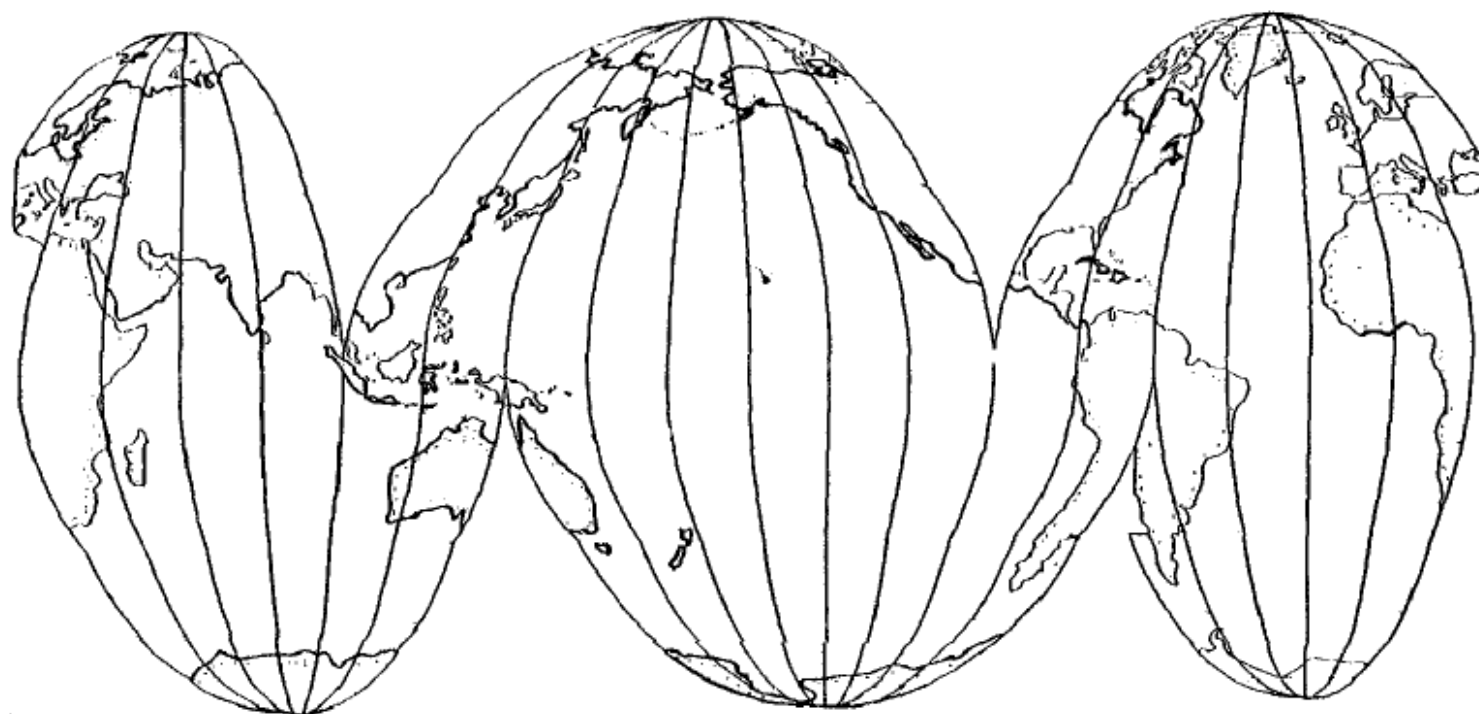
MATERIALS: heavy paper disk (with a hole punched in the center), medicine dropper, stick with a base (to hold paper in place)

PROCEDURE: Insert the nail through the paper disk until the paper rests flat on the base of the stick. Spin the disk of paper and at the same time that it is spinning, squeeze 1-2 drops of water near the center of the disk. Draw what happens. In what direction did the water go? Why? Spin the disk in the other direction. What happens?

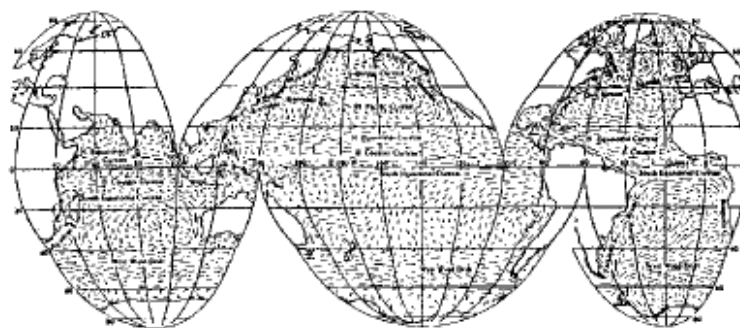
RIGHT TO LEFT	LEFT TO RIGHT

CONCLUSION: What factors influence the movement of water?

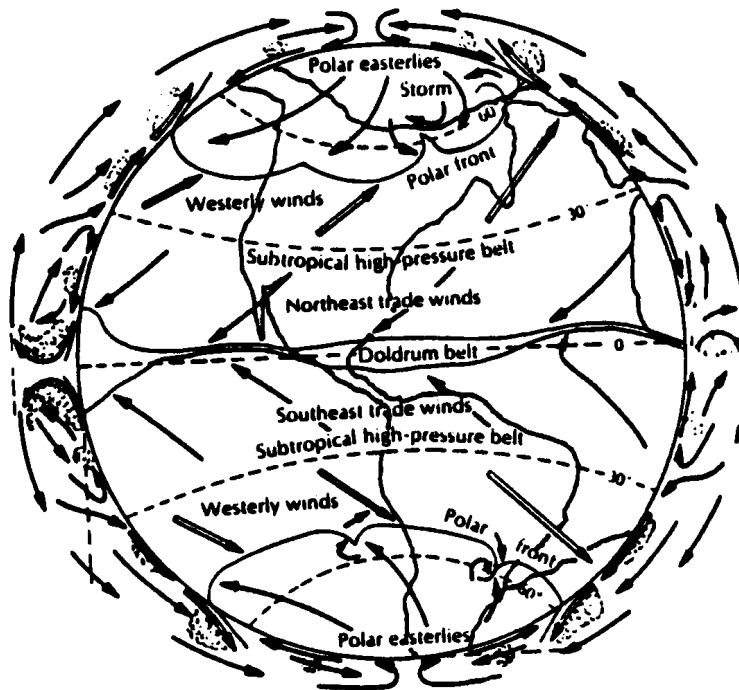
WATER CYCLE - OCEANS (6)
POST



SURFACE CURRENT
OF
THE OCEANS



ATMOSPHERIC WINDS



COLOR THE AREAS OF THE POLAR EASTERLIES, WESTERLY WINDS,
DOLDRUM BELT AND TRADE WINDS



WATER CYCLE - ATMOSPHERE (6)

PROBLEM: How far can ash, airborne pollutants, or other small particles travel?

PREDICTION:

EXERCISE I.

MATERIALS: Ash distribution map of Mt. St. Helens

PROCEDURE: Look at the map and answer the following questions:

1. What happened to the volcanic ash that erupted from Mt. St. Helens?

2. Where was the most ash deposited?

3. Why was more ash deposited onto one side?

4. Is volcanic ash always harmful? Explain.

5. Did any of the Mt. St. Helens ash get blown to the San Francisco Bay Area? (Why/why not?)

EXERCISE II.

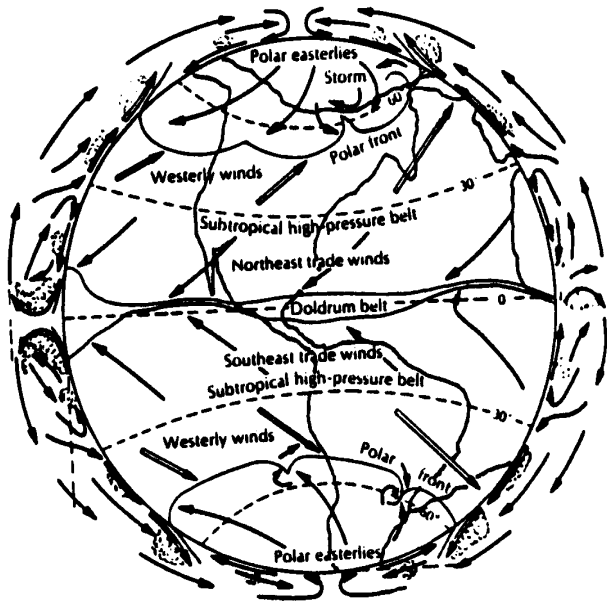
MATERIALS: Map of world air currents, blank map of the world

PROCEDURE: On your map there is a sad face. This represents the site of a make-believe nuclear disaster. Harmful particles were released into the air. Using the map of world wide air currents, determine which cities or countries were affected most by this disaster. Explain why you chose these cities.

CONCLUSIONS: Locations affected most.

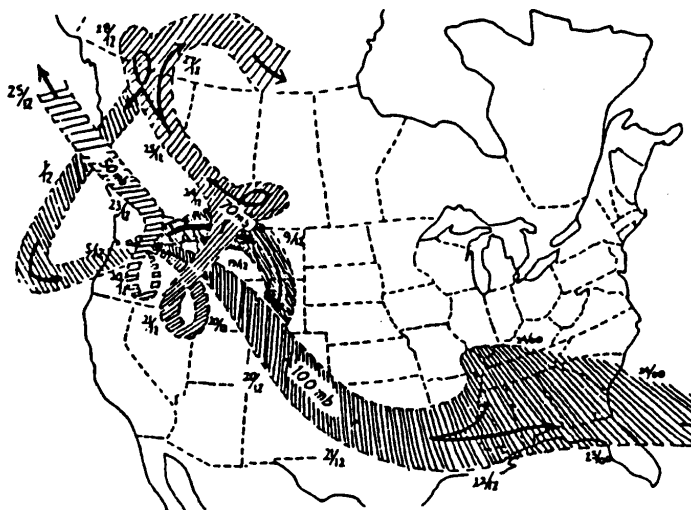
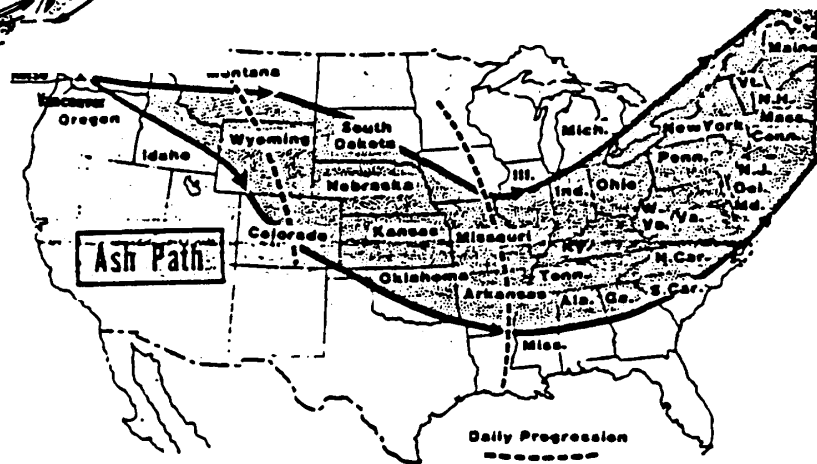
Explain why.

WATER CYCLE - ATMOSPHERE (6)



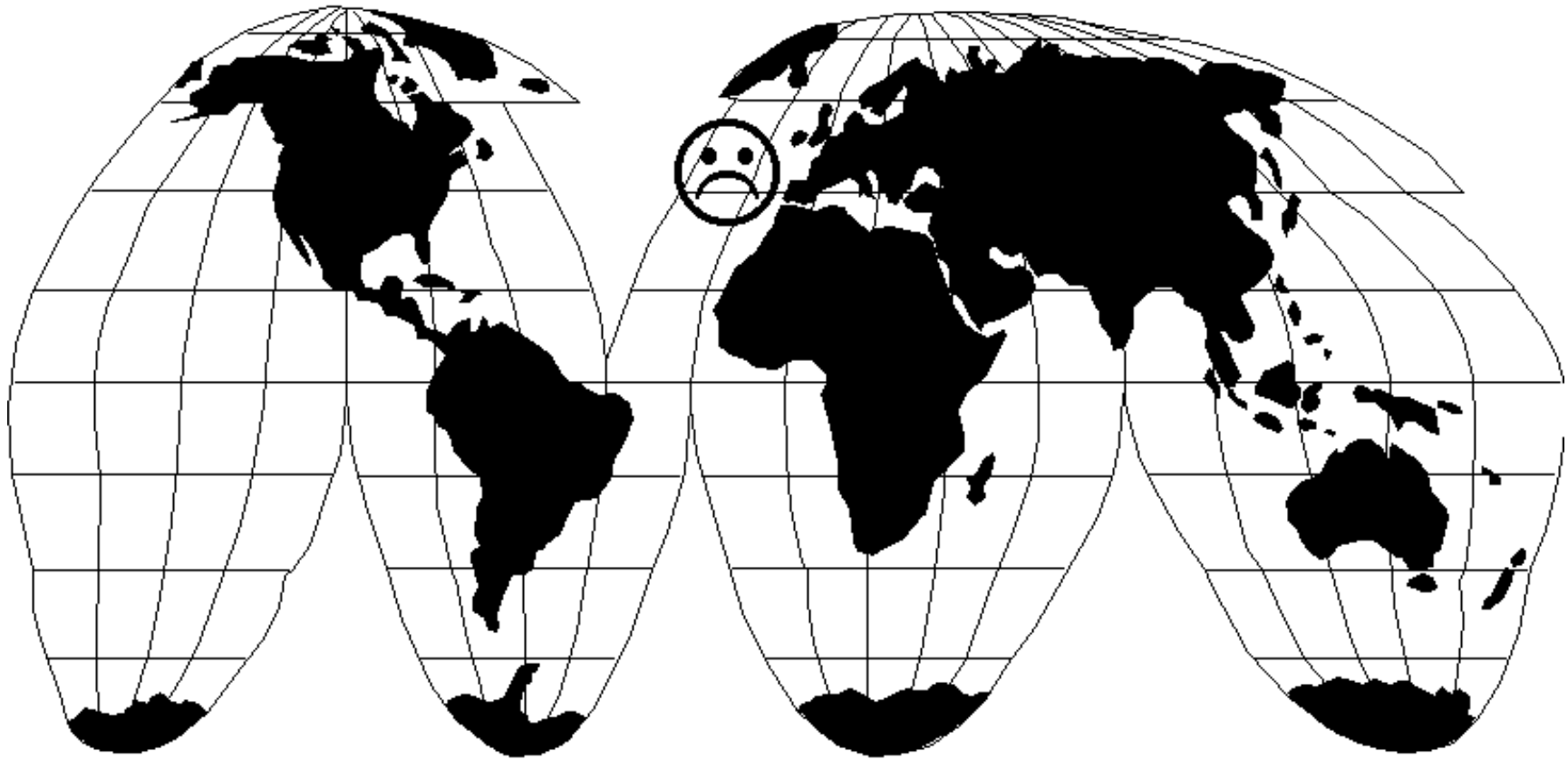
WORLD-WIDE AIR CURRENT MAP

Mt. St. Helen's Ash
Fallout



Mt. St. Helen's ash in the
stratosphere

WATER CYCLE - ATMOSPHERE (6)



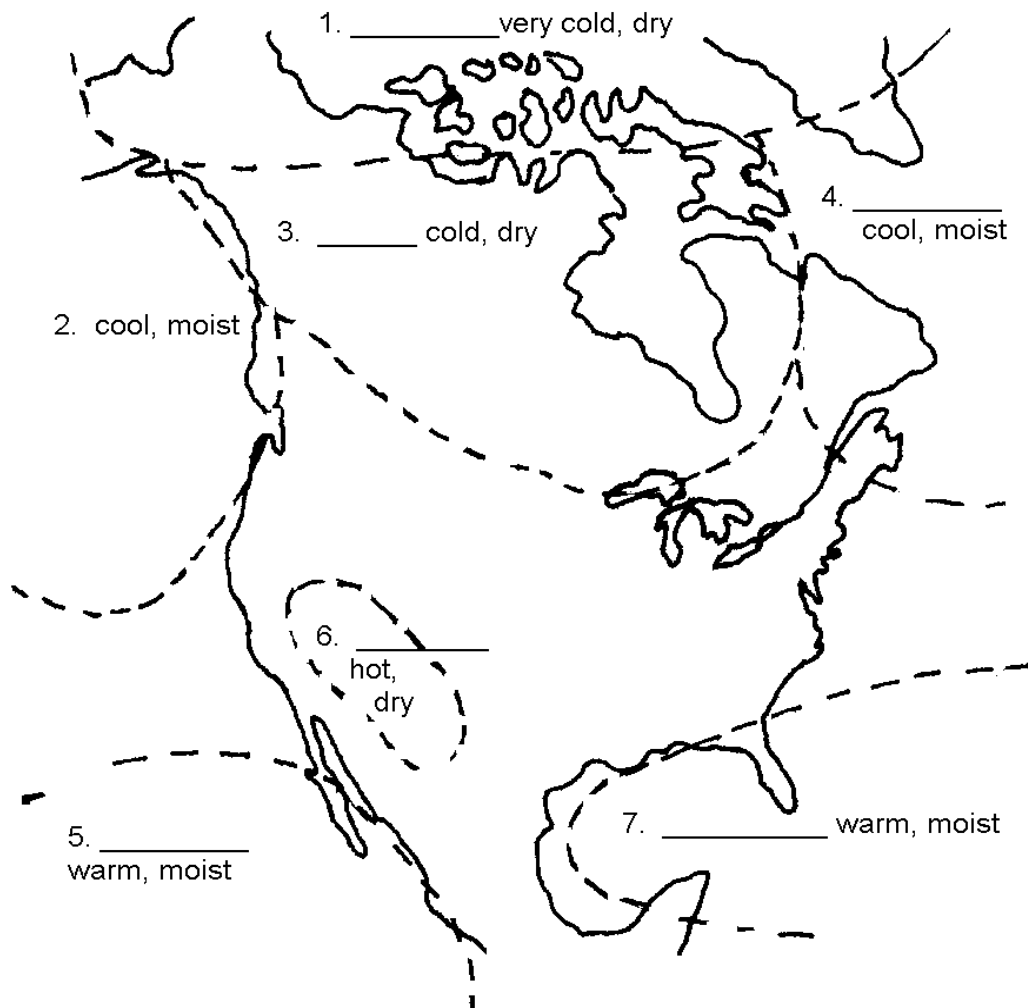
WATER CYCLE - ATMOSPHERE (6)

NAME THE AIR MASS.

AIR MASSES ARE NAMED FOR THEIR SOURCE: TROPICAL (T), POLAR (P), ARCTIC (COLDER THAN POLAR) (A).

MOISTURE IS REPRESENTED BY: CONTINENTAL (c) AND MARINE (m).

EXAMPLES:



1. AIR FORMED OVER THE TROPICAL OCEAN = mT

2. AIR THAT IS COLD, DRY, CONTINENTAL = cP

LABEL THE MAP OF THE UNITED STATES WITH THE CORRECT SYMBOLS.

WATER CYCLE - WEATHER (6)

WEATHER MAP SYMBOLS

Symbol Name	Draw Symbol	How do you interpret Symbol
Rain		
Snow		
Wind Speed		
Cloud Cover		
High Pressure		
Low Pressure		
Temperature		
Warm Front		
Cold Front		
Occluded Front		
Stationary Front		

WATER CYCLE - WEATHER (6)

SYMBOLS USED IN PLOTTING REPORT

Precipitation	Wind speed and direction	Sky coverage	Some types of high clouds
≡ Fog	○ 0 calm	○ No cover	— Scattered cirrus
• Snow	/ 1–2 knots	⊖ 1/10 or less	— Dense cirrus in patches
• Rain	✓ 3–7 knots	⊖ 2/10 to 3/10	— Veil of cirrus covering entire sky
⚡ Thunder-storm	✓ 8–12 knots	⊖ 4/10	— Cirrus not covering entire sky
• Drizzle	✓ 13–17 knots	⊖ 1/2	
▽ Showers	✓ 18–22 knots	⊖ 6/10	
	✓ 23–27 knots	⊖ 7/10	
	✓ 48–52 knots	⊖ Overcast with openings	
	1 knot = 1.852 km/h	● Complete overcast	

Some types of middle clouds	Some types of low clouds	Fronts and pressure systems
∧ Thin altostratus layer	⊖ Cumulus of fair weather	(H) or High Center of high or low pressure system
∧ Thick altostratus layer	⊖ Stratocumulus	⚡ Cold front
∧ Thin altostratus in patches	--- Fractocumulus of bad weather	⚡ Warm front
∧ Thin altostratus in bands	— Stratus of fair weather	⚡ Occluded front
		⚡ Stationary front

WATER CYCLE - WEATHER (6)

PROBLEM: How are satellite weather photos different from weather maps?

PREDICTION: _____

MATERIALS: Satellite photos November 13th, and November 15, 1986, Weather Map Symbols Chart, Air Masses of North America, blank North America maps

PROCEDURE: Study and compare the satellite photos provided and answer the following questions:

1. On which day was Central Coastal California the most cloudy? _____
2. Which map shows a large front moving across parts of Arizona, New Mexico, Texas, Baja California, and the northwest part of Mexico? _____
3. In what area was there a circular wind pattern causing the cloud cover to "swirl"?

4. On which date is there more activity in the Atlantic Ocean? What is the direction of movement? _____
5. Which map appears to have more severe weather? Why?

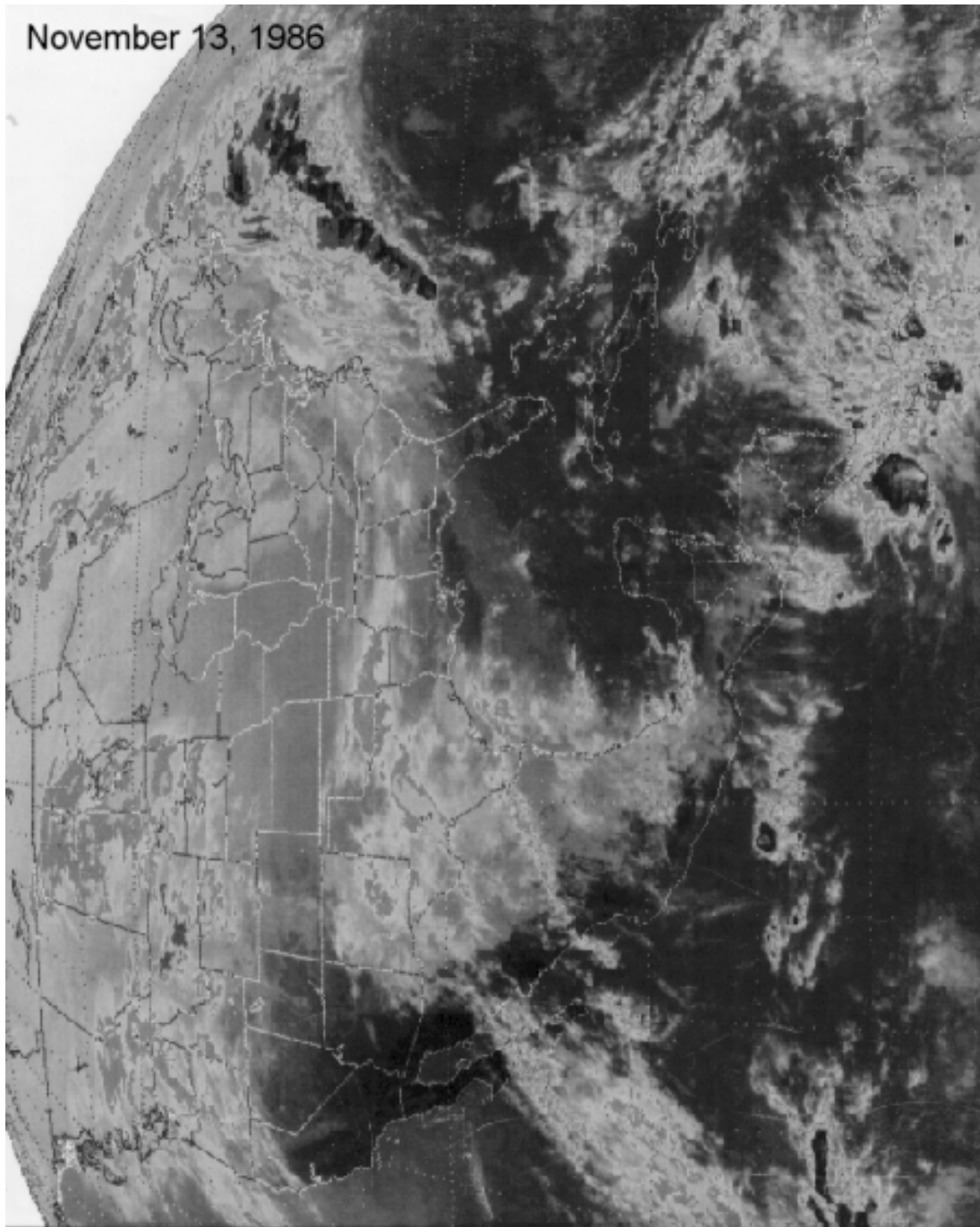
6. Is there a day of clear weather in all of Central America? _____
7. Which states had the clearest weather on these two days? _____
8. Why are these satellite photos useful?

Using the outline maps of North America and the "Symbols Used in Plotting Report" try and create your own weather map for both November 13 and 15. Use the Air Mass map of North America to try and determine what the air masses may be. This might help you determine the correct type of front. **Remember you are missing information. What are you missing?** _____

CONCLUSIONS: How do the satellite and weather maps differ?

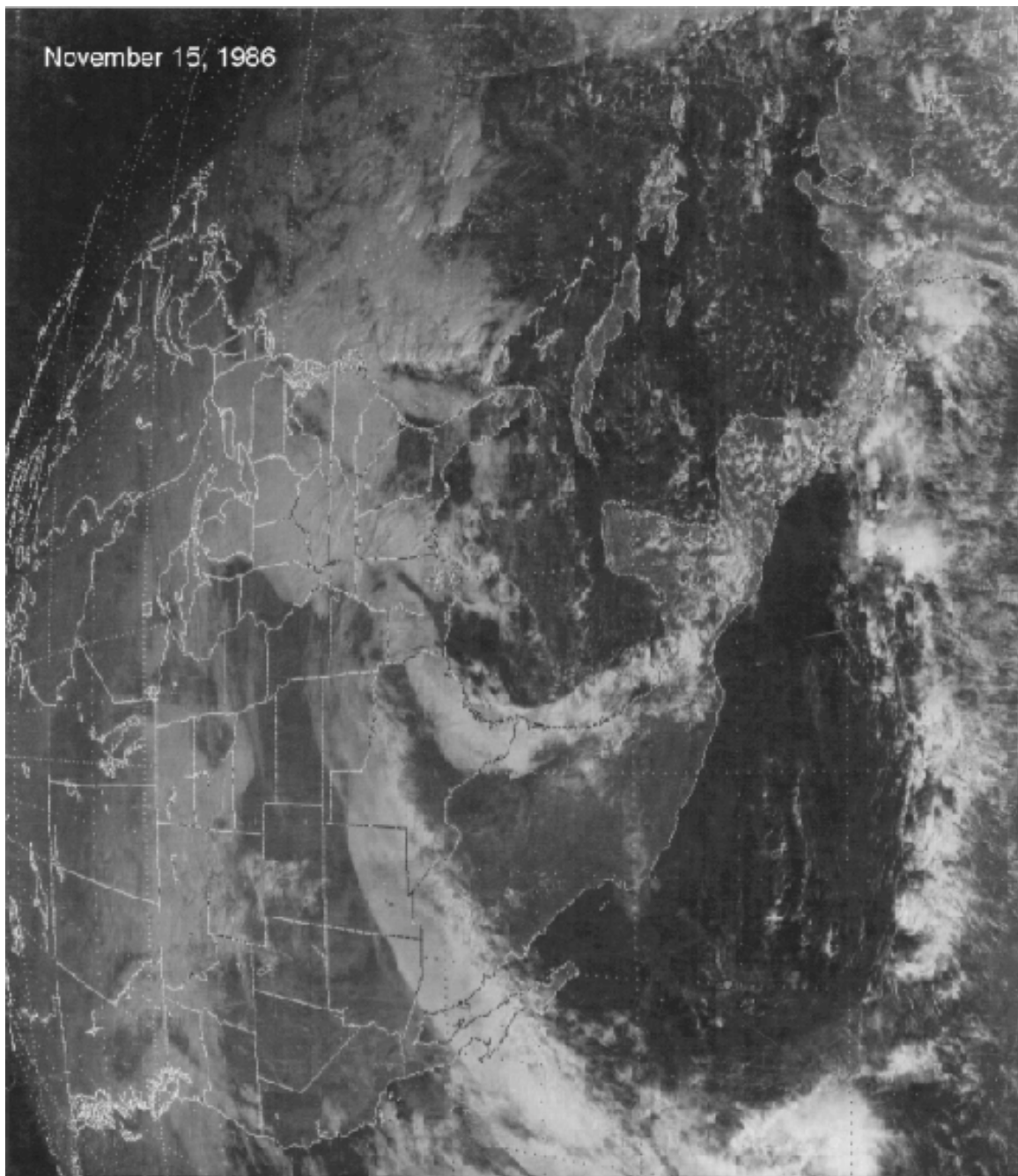
WATER CYCLE - WEATHER (6)

UNITED STATES



WATER CYCLE - WEATHER (6)

UNITED STATES



WATER CYCLE - WEATHER (6)

November 13, 1986



November 15, 1986



WATER CYCLE - WEATHER (6)

FINDING ANSWERS

1. What is the problem you are searching?

2. What are key words or phrases that might help you search?

3. Where are you going to start your research?

4. Describe how you found the answer?

5. Write your answer to the problem you were researching?
