

Name \_\_\_\_\_

Date \_\_\_\_\_

## Surface Ocean Currents Lab

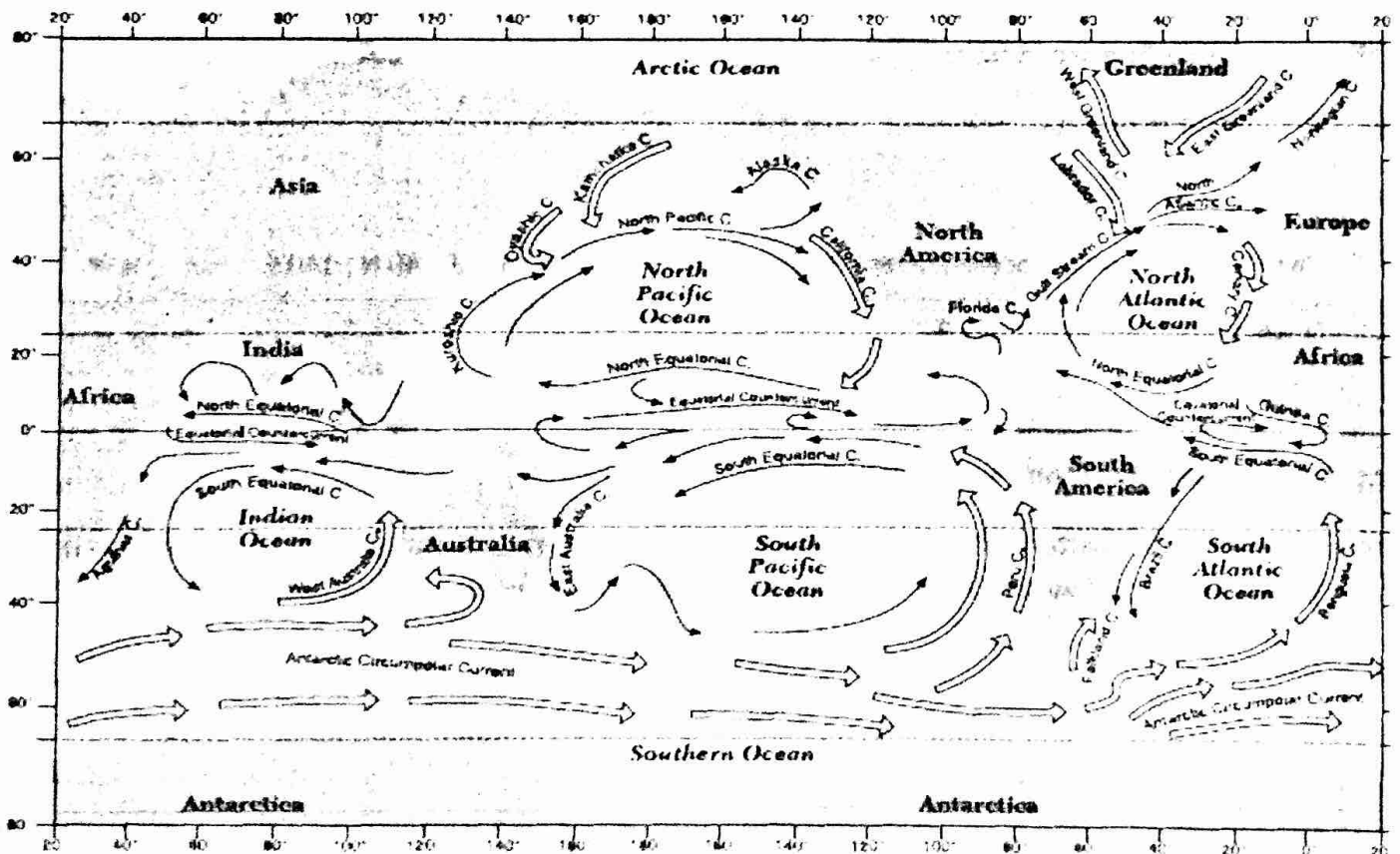
INTRO: Surface ocean currents are shallow currents that are driven by the wind. The wind belts between certain latitudes tend to blow in one direction, forcing the surface ocean water to move in the same direction. The map on page four of the Earth Science Reference table shows the major ocean currents affecting the climate of nearby land masses. The key shows the two classifications of currents; warm and cool.

OBJECTIVE: You will exam the ocean current map for patterns of circulation and temperature.

### PROCEDURE:

- 1) Choose a color to represent the cool currents and color all the open arrows on the map.
- 2) Place an **X** on the map to show the approximate location of NY State.

Surface Ocean Currents



NOTE: Not all surface ocean currents are shown.

Key	
	Warm currents
	Cool currents

Questions:

- 1) List the names of five warm currents                      AND                      the names of five cool currents.

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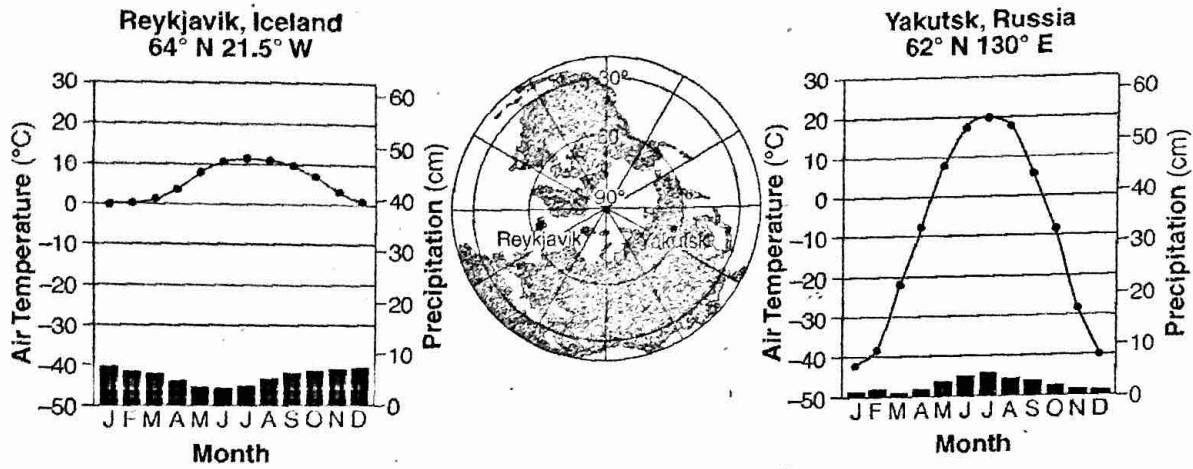
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- 2) Where are most of the warm currents located?
- 3) Where do the cool water currents originate?
- 4) Name the cool water current that goes around the world with no interruption by any landmass.
- 5) State the latitude and longitude of the X you placed on the map to represent NY state.  
Latitude \_\_\_\_\_ Longitude \_\_\_\_\_
- 6) Name the surface ocean current that affects the climate of the NY state coastline.  
Is it a warm or cool current?
- 7) Name the cool surface ocean current that is located at approximately 40 N ; 140 E  
In what direction does it flow?

**Conclusion:** (Answer using complete sentences)

Describe the circulation pattern of surface ocean currents in the northern hemisphere and explain why they move that way and how they affect the climates of the east and west coasts of continents.

...m above the North Pole. Points on the map indicate the positions of Reykjavik, Iceland, and Yakutsk, Russia. The graphs show average monthly air temperature (line graphs) and amount of precipitation (bar graphs) for both locations.



1. Identify *one* warm and *one* cool ocean current that affect the climate of Iceland. *(use Latitude + Longitude to locate Iceland)*

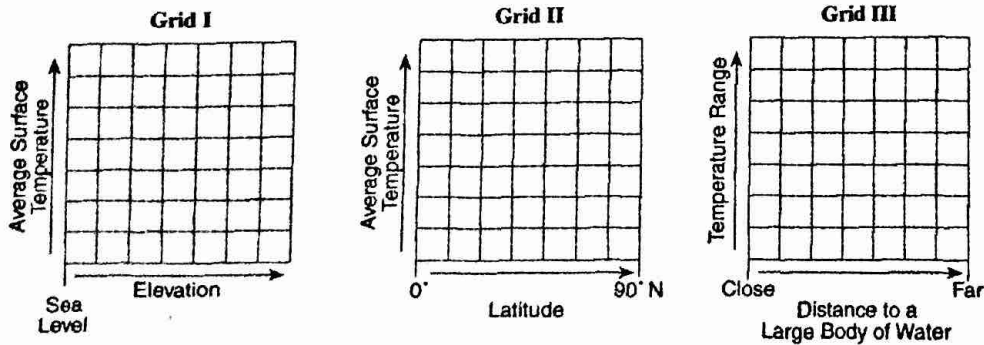
Warm: \_\_\_\_\_

Cool: \_\_\_\_\_

2. Identify by name the surface ocean current that cools the climate of locations on the western coastline of North America.

3. Base your answers to the questions below on the information below.

The climate of an area is affected by many variables such as elevation, latitude, and distance to a large body of water. The effect of these variables on average surface temperature and temperature range can be represented by graphs on grids that have axes labeled as shown below.

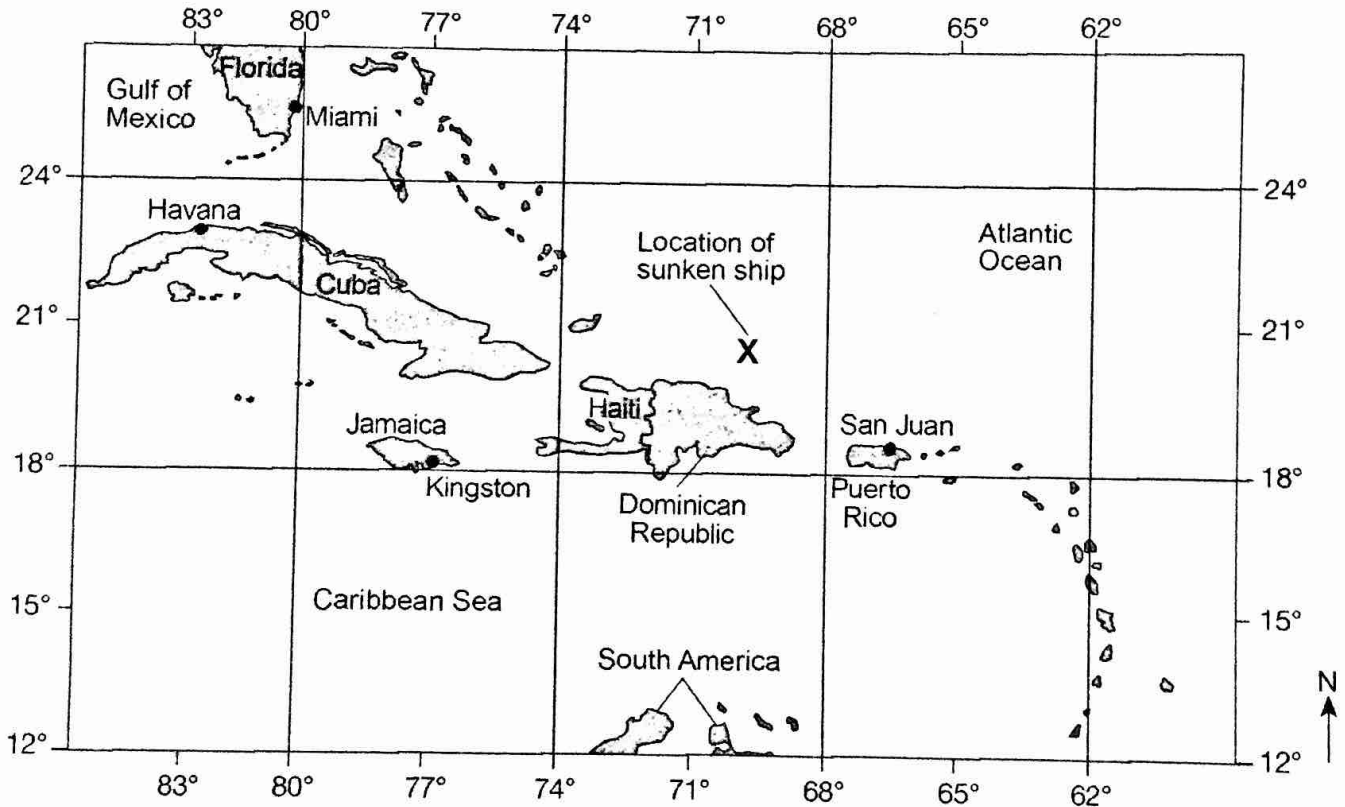


- On Grid I, draw a line to show the relationship between elevation and average surface temperature.
- On Grid II draw a line to show the relationship between latitude and average surface temperature.
- On Grid III draw a line to show the relationship between distance to a large body of water and temperature range.
- Explain why the climate near the Equator is warm and moist.

Base your answers to questions 4 and 5 on the passage and map below. The map shows sections of the Atlantic Ocean, the Caribbean Sea, and the Gulf of Mexico.

**Shipwreck**

In 1641, the crew of the ship *Concepcion* used the Sun and stars for navigation. The crew thought that the ship was just north of Puerto Rico, but ocean currents had carried them off course. The ship hit a coral reef and sank off the coast of the Dominican Republic. The X on the map marks the location of the sunken ship.



4. The *Concepcion* was carried off course to the northwest by an ocean current flowing from the

- A) Florida Current
- B) Gulf Stream Current
- C) North Atlantic Current
- D) North Equatorial Current

5. What is the approximate latitude and longitude of the sunken ship?

- A) 20.5° N 70° E
- B) 20.5° N 70° W
- C) 20.5° S 70° E
- D) 20.5° S 70° W

6. What controls the direction of movement of most surface ocean currents?

- A) density differences at various ocean depths
- B) varying salt content in the ocean
- C) prevailing winds
- D) seismic activity

7. The Gulf Stream and North Atlantic Current modify the climate of northwestern Europe by making the climate

- A) warmer and drier
- B) warmer and more humid
- C) cooler and drier
- D) cooler and more humid