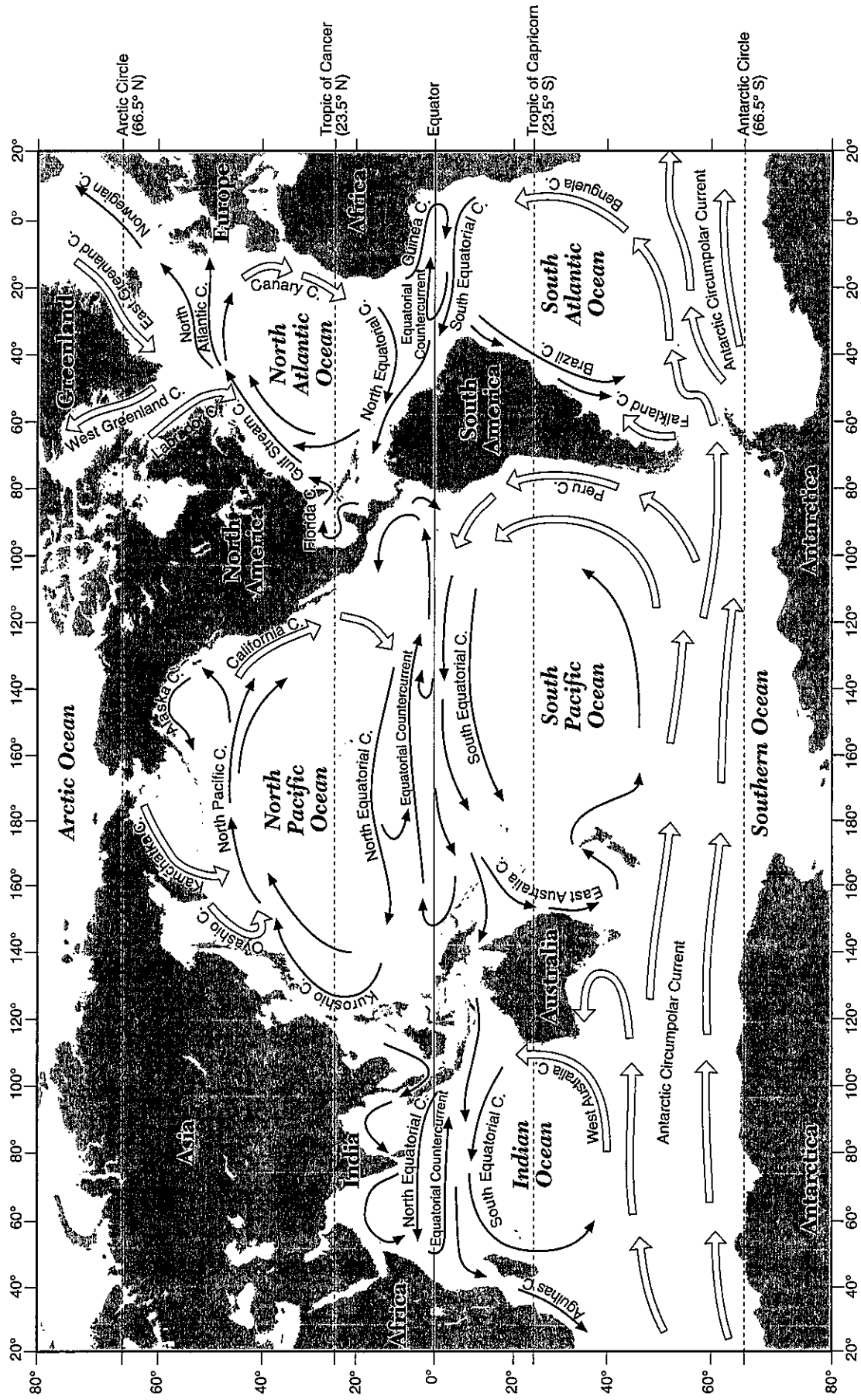


Surface Ocean Currents



Key	
→	Warm currents
- - -	Cool currents

NOTE: Not all surface ocean currents are shown.

Surface Ocean Currents

Overview:

Surface ocean currents are shallow currents that are driven by the wind. Our Earth has large prevailing wind belts. The most commonly known one to us is the “Westerlies” where one of the jet streams is located. These wind belts tend to blow in one direction, forcing the surface ocean water to move in the same direction, thus setting up these currents. Benjamin Franklin, studying log books of ocean sailing ships, realized that sailing with these currents quickened the journey. He encouraged ships leaving Europe heading to America, to first sail south, then west, to take advantage of the currents that move in this direction. Ships departing from America heading to Europe should sail with the Gulf Stream Current that flows NE toward Europe.



“Here comes another big one, Roy, and here—we—
goooooowheeeeeeeool!”

The Map:

The key shows the two classification of currents: warm currents (which are shown by a dark arrow) and cool currents (shown by an outline arrow). Locate the California and Alaska currents. Contrary to what many people would think, the California Current is a cool current and the Alaska current is a warm current, as shown by the key. Check out the Gulf Stream Current, it flows NE and eventually becomes the North Atlantic Current. Since this is a warm current, it is a major factor affecting the climate of Iceland and Western Europe. Flowing south along the eastern side of Greenland is the Labrador Current. The map shows that this current originates in the Arctic Ocean and brings very cold water along with icebergs down to Eastern Canada’s coastal waters. Probably the most feared water to sail in is the area of the Antarctic Circumpolar Current, located above Antarctica. This area is noted for fast winds that produce the notoriously large waves and the strong current of the Antarctic Circumpolar Current. Notice that in this region there is no interruption by any landmass, causing the wind and the resulting current to maintain its strength and speed.

Additional information:

- The map shows that ocean surface currents tend to curve. This curvature is caused by the Coriolis effect. Objects that travel long distances over the Earth’s surface, like ocean currents and wind, tend to curve or get deflected to the right in the Northern Hemisphere and to the left in the Southern Hemisphere. This curvature is caused by the Earth’s rotation. The Coriolis effect is recognized as a proof of the Earth’s rotation.
- This map shows additional lines: Tropic of Cancer, Tropic of Capricorn, Arctic Circle and the Antarctic Circle. For information on these lines, see the Latitude, Longitude and Time Zones section – Surface Ocean Currents.

Surface Ocean Currents

— Set 1 —

1. Which ocean current flows northeast along the eastern coast of North America?
(1) Gulf Stream
(2) North Equatorial
(3) California
(4) Labrador 1 _____

2. The California Ocean Current, which flows along the west coast of North America, is a
(1) cool current, flowing north
(2) cool current, flowing south
(3) warm current, flowing north
(4) warm current, flowing south 2 _____

3. Surface ocean currents curve to the right in the Northern Hemisphere because
(1) the Moon's gravity curves ocean currents
(2) the Moon travels in an orbit around Earth
(3) Earth spins on its axis
(4) Earth travels in an orbit around the Sun 3 _____

4. Surface ocean currents located at 40° south latitude, 90° west longitude generally flow toward the
(1) northeast (3) southwest
(2) southeast (4) west 4 _____

5. What surface ocean current is located at 30° N, 75° W?

— Set 2 —

6. Which current is a cool ocean current that flows completely around Earth?
(1) Antarctica Circumpolar Current
(2) Gulf Stream Current
(3) North Equatorial Current
(4) California Current 6 _____

7. Surface ocean currents resulting from the prevailing winds over the oceans illustrate a transfer of energy from
(1) lithosphere to atmosphere
(2) hydrosphere to lithosphere
(3) atmosphere to hydrosphere
(4) stratosphere to troposphere 7 _____

8. Which two currents are considered to be warm currents?
(1) Brazil Current and Antarctica Circumpolar Current
(2) Kuroshio Current and the California Current
(3) Alaska Current and the Brazil Current
(4) North Atlantic Current and the Benguela Current 8 _____

9. Which current has a major factor on the climate of Western Europe?
(1) Labrador Current
(2) Canary Current
(3) Gulf Stream Current
(4) North Atlantic Current 9 _____