

Name:

Important Marine Currents

Date:

Due by 3pm Friday, May 22

Instructions: Your task is to read the information below, review Chart 38 and Chart 39, and to make your own chart (Chart 37). More detailed instructions are listed under Chart 37.

How the work of the winds is tied to marine currents:

Marine currents affect climates on Earth. The currents are cooled as they flow, return to warm areas, and then are cooled again and return to warm areas in a cycle. This occurs very similar to how blood circulates in our body. Our blood is purified in our lungs, then travels to all parts of our body, and returns to the lungs to be purified again. This is a closed cycle which benefits our entire body.

There are two basic types of currents: vertical and horizontal. Vertical currents are formed by surface water and deep water. Vertical currents can occur at the surface or deep in the oceans, similar to air currents. Horizontal currents (surface currents) are caused by the winds and rotation of Earth. Earth spins west to east, causing clockwise surface currents (horizontal currents) in the Northern Hemisphere and causing counterclockwise surface currents in the Southern Hemisphere. Recall Experiment 38E - Origin of Marine Currents; what type of current was created in this experiment: vertical current or horizontal current?

Chart 38:

This chart shows the general movements in the oceans. Red arrows show warm currents. Blue arrows show cold currents. The chart shows how the currents change course when they encounter land and how they then follow the coastlines. This chart just shows a few of the many marine currents on Earth.

Polar winds from the south create a cold marine current that flows along the Antarctic Ocean. This current meets the coasts of Africa, South America, and Australia. These continents split the currents into three parts which then flow north.

A few important warm currents caused by warm equatorial winds regions are shown on this chart as well. For example, the Gulf current starts in the Gulf of Mexico and crosses the Atlantic Ocean where it proceeds to the northern coast of Europe. The Kuroshio Current starts at Japan, crosses the Pacific Ocean, and reaches the northern coast of North America.

Chart 39:

This chart shows a number of important marine currents. The arrows point out currents (red if warm, blue if cold), the path of the currents, and the name of the currents. You can use this as a reference to complete Chart 37.

Consider waves, the oscillation of water. The length and force of waves is determined by the wind. The waves follow the direction of the winds, and their length depends on the strength of the winds. In ocean waters and lake waters, there are many substances suspended: sand, pebbles, etc. These things floating in the water are interesting because when waves are directed towards the shore and the winds strength creates great force, the waves erode the shore. This force of erosion is increased by the substances contained in the water.

Chart 37:

Use this blank chart to draw the warm and cool currents show on Chart 39. You can also to research (online, encyclopedia, world atlas, etc.) for any additional currents to draw on your map. While you are drawing the arrows for each marine current:

- Read and write the name of each current.
- Analyze whether each current is warm or cold.
- Draw your arrows for warm currents in red.
- Draw your arrows for cold currents in blue.
- Note the course of each current:
 - Where does it start?
 - Where does it end?
 - What coasts does it follow?





