WINDS AND WATERS ACTIVITY 2

As you saw in the film ***Galapagos: Nature's Wonderland***, scientists believe that life arrived on these remote volcanic islands millions of years ago, carried by winds and waters from Central and South America. Today, winds and waters remain important to life on the Galapagos because they bring food and rainfall to the islands.

Steady winds create currents in the ocean by pushing against the water's surface. These currents are almost like rivers flowing through the ocean and can carry water long distances from one region to another. The Galapagos Islands are located at a spot where several currents come together, pushed by winds coming from different directions and bringing water from different regions. Draw and label these currents on the map at right as you read about how they sustain life on the islands.

- **Humboldt Current:** Winds blowing toward the north along the western coast of South America create what is called the Humboldt Current. This current carries cold water up from Antarctica to the Equator, where it turns west toward the Galapagos Islands. The cold waters and cool winds of the Humboldt Current create a subtropical climate for the Galapagos, instead of the sweltering heat one expects at the Equator. These cold waters also carry nutrients that feed algae and plankton in the islands' waters, providing the basis for a food chain that includes fish and all the animals that feed on fish. In addition, the winds that push the Humboldt Current bring moisture to the islands, spreading a cloudy mist over the slopes of the volcanoes from May through December.

- **Panama Current:** Winds blowing toward the south along the western coast of Central America create what is called the Panama Current, which flows along the curve of the coastline to the Equator, where it turns west toward the Galapagos Islands. The Panama Current brings warm waters to the islands, which contain far fewer nutrients than cold water. But the humid winds that push this current brings rainfall from December through May, providing the islands with a rainy season that supplies the land-dwelling plants and animals with fresh water.

- **Cromwell Current:** The third current flowing toward the Galapagos Islands is not caused by winds. It is a subsurface current that flows 300 feet below the surface of the ocean, like an underground river. The Cromwell Current carries water from Asia across the whole width of the Pacific Ocean, traveling east along the Equator. Because it flows deep, the Cromwell Current's waters are cold and rich with nutrients, including nutrients washed into the sea by rivers on the islands of southeast Asia. When it reaches the Galapagos, the Cromwell Current is forced upward by the underwater base of the western islands, which chills the waters along the coastline of these islands and fills them with nutrients, creating an ideal environment for sea life.

Now use your map to discuss in class how changes in the winds and currents could affect life on the Galapagos Islands. For example, what could happen if:

- Pesticides used by farmers on the islands of southeast Asia were carried by rivers into the Pacific Ocean?
- The winds driving the Humboldt Current remained strong all year long, pushing the Panama Current away to the north of the Galapagos Islands?
- The winds driving the Humboldt Current became weaker, allowing the Panama Current to increase rainfall on the islands and warm the waters along the islands' coastlines?