

## Ocean Currents

Geographers try to explain and predict how Earth's physical processes shape patterns in the physical environment. The major ocean currents and wind belts that move across Earth are important in geography. Understanding these ocean currents and wind patterns is important to understanding weather and climate. In this activity you will map and predict how ocean currents and wind move ocean debris.

Major surface currents in the oceans move in large, slow circles called gyres. Gyres are produced by the wind around areas of high pressure. They occur in nearly the same position as the areas of high pressure over the ocean. Like the wind, these ocean currents flow clockwise in the Northern Hemisphere. What direction do you think they flow in the Southern Hemisphere?

The pattern of the world's major ocean currents helps explain the journey some Nike sneakers took through the Pacific Ocean. The container ship *Hansa Carrier* was in the northeastern Pacific Ocean on its way to the United States from Korea. On May 27, 1990, nearly 80,000 Nike sneakers went overboard. Six months to a year later, the shoes began to wash up on the shores of Washington, Oregon, and British Columbia, Canada. After washing the shoes and having the barnacles and oil removed from them, they were still wearable! Since the incident, scientists have constructed several computer models to understand the shoes' route. Now it is your turn. Use the data on the following pages, and follow the steps below to complete the activity.

### YOU ARE THE GEOGRAPHER

1. Find a map showing the world's ocean currents and winds. Describe what the map shows about the relationship between the world's ocean currents and winds.

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2. Look at the table. For how long did the shoes float in the ocean? Have all the shoes been recovered? If not, where do you think the others may be?

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**3.** Use a blank world map to trace the path of the shoes. Label each location with the numbers 1–11. Can you identify the nearest city, state, or country of these locations?

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**4.** Which winds prevail in these areas? After you have labeled the locations, follow the path of the shoes. Draw an arrow from the first date to the last. What shape is created? Did the shoes drift in a clockwise or counterclockwise direction? What term explains the pattern you drew?

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**5.** Where did the shoes land in 1996? Did the shoes complete the gyre’s cycle? How long did it take for the shoes to come back? What additional factors might affect the route of the shoes?

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6. Although the Nike shoes did not seriously harm the environment, there are other types of ocean spills that do. Oil tankers sometimes spill their cargo. Imagine there was an oil spill in the same location where the *Hansa Carrier* lost its cargo. Where would the oil go? What could happen to sea life? Think of the food chain around a coastline. How would the plants and animals be affected?

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***Hansa Carrier Study***

<b>Location Number</b>	<b>Approximate Location</b>	<b>Number of Shoes Found</b>	<b>Date</b>
1	161°W; 48°N	original shoe spill	May 27, 1990
2	135°W; 58°N	250	Mar. 26, 1991
3	130°W; 55°N	200	May 18, 1991
4	128°W; 52°N	100	Jan.–Feb. 1991
5	125°W; 49°N	200	Nov.–Dec. 1990
6	125°W; 48°N	200	Feb.–March 1991
7	124°W; 45°N	150	April 4, 1991
8	124°W; 42°N	200	May 9–10, 1991
9	156°W; 20°N	several	Jan.–Mar. 1993
10	120°E; 15°N	several	Jan.–July 1994
11	124°W; 45°N	several	Mar.–Apr. 1996