

CHAPTER  
**1**

GEOGRAPHY APPLICATION: MOVEMENT  
***The Earth's Wind Systems***

Section 4

*Directions: Read the paragraphs below and study the map carefully. Then answer the questions that follow.*

**B**efore American inventor Robert Fulton launched the first successful steamboat in 1807, the world's ships depended mainly on winds for the power to go from place to place. Wind blowing over water follows fairly predictable, or prevailing, patterns and falls into two main systems, or belts—trade winds and westerlies.

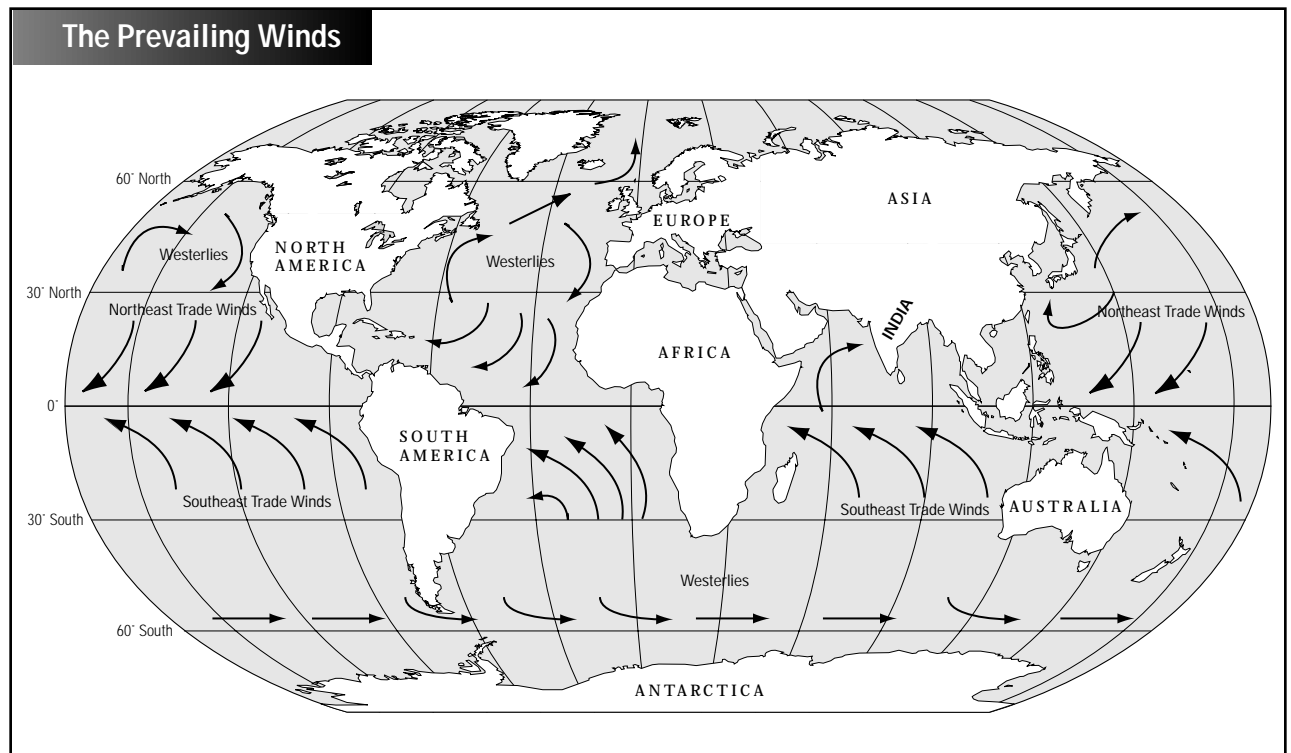
The creation of trade winds comes from a process that begins near the equator (0° latitude) with the heating of air. This warmed air, being lighter, rises upward in the atmosphere—leaving a low-pressure area near the earth's surface. Cooler, heavier air in the higher latitudes, up to about 30° north and south of the equator, then rushes toward the low-pressure area. The cooler air is then heated, and the whole process is repeated.

But the winds of the trade-winds belt, instead

of blowing straight north and south, become north-east and southeast winds. This is because the force of the earth's rotation causes winds to act in different ways at certain latitudes. (Note that winds are identified by the direction from which they blow. Thus, a southeast wind blows from the southeast to the northwest.)

Westerlies are found in the 30° to 60° north and south latitude belts. These very different winds blow generally eastward.

The map below shows the patterns of the two major wind systems. Because surface water is "dragged" in the same direction as the wind, early Portuguese and other explorers learned to use both currents and winds to their advantage by the late 1400s.



### Interpreting Text and Visuals

1. What are the wind systems south of the equator called? \_\_\_\_\_

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What would probably be the effect on these systems if the earth rotated from east to west instead of west to east? \_\_\_\_\_

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2. Which prevailing winds carried Columbus and the Spanish conquistadores from Spain to the West Indies and to Mexico? \_\_\_\_\_

Which winds probably carried them all back? \_\_\_\_\_

3. Look at the map. What boost did Portuguese navigators gain when they finally were able to round the southern tip of Africa while looking for a sea route to India? \_\_\_\_\_

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4. Notice the direction that the westerlies are blowing. Why are these winds not called the easterlies? \_\_\_\_\_

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5. Compare and contrast the westerlies of the north with those of the south.

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What might account for the difference? \_\_\_\_\_

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