

Global Winds Reading Foldable

The section of a cell that flows along Earth's surface is global wind. Notice that the direction of airflow changes from one circulation cell to the next.

Calm Regions

The air usually stays calm in high-pressure and low-pressure zones. Winds are light, and they often change direction.

- 1 The doldrums** are a low-pressure zone near the equator. There, warm air rises to the top of the troposphere, which is the atmosphere's lowest layer. Then the air spreads out toward the poles. The rising, moist air produces clouds and heavy rain. During the hottest months, heavy evaporation from warm ocean water in the region fuels tropical storms.
- 2 The horse latitudes** are high-pressure zones located about 30° north and 30° south of the equator. Warm air traveling away from the equator cools and sinks in these regions. The weather tends to be clear and dry.

Wind Belts

Wind Belts

As dense air sinks to Earth's surface in the horse latitudes and other high-pressure zones, it flows out toward regions of low pressure. This pattern of air movement produces three global wind belts in each hemisphere. Because of the Coriolis effect, the winds curve toward the east or toward the west. Some global winds are named for the directions from which they blow. The westerlies, for example, blow from west to east.

- 3 The trade winds** blow from the east, moving from the horse latitudes toward the equator. These strong, steady winds die out as they come near the equator.
- 4 The westerlies** blow from the west, moving from the horse latitudes toward the poles. They bring storms across much of the United States.
- 5 The easterlies** blow from the east, moving from the polar regions toward the mid-latitudes. Stormy weather often occurs when the cold air of the easterlies meets the warmer air of the westerlies.

...s surface is global wind,
...s from one circulation cell

...e and low-pressure zones,
...ection.

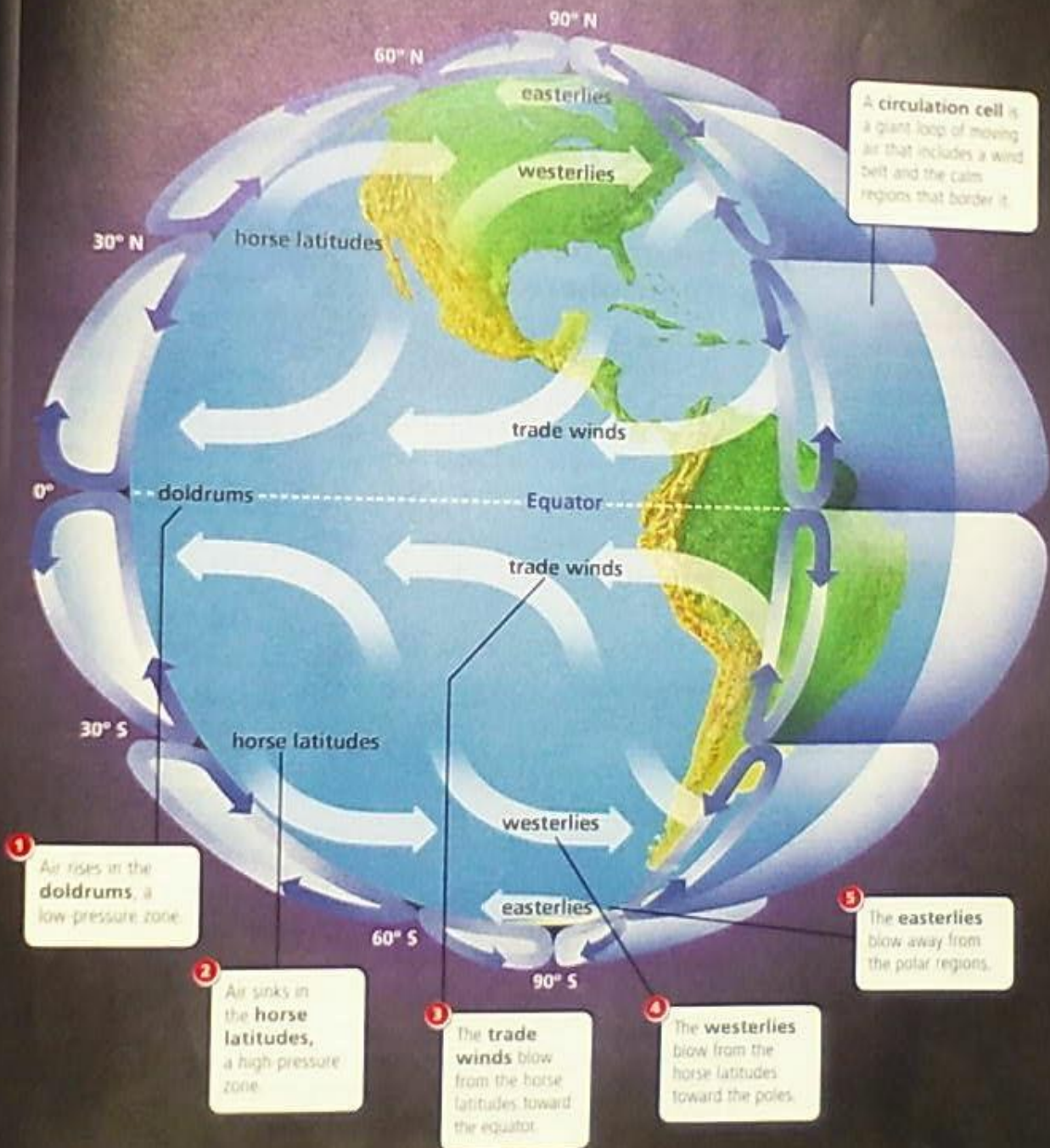
...near the equator. There,
...here, which is the atmos-
...ds out toward the poles.
...and heavy rain. During the
...n warm ocean water in the

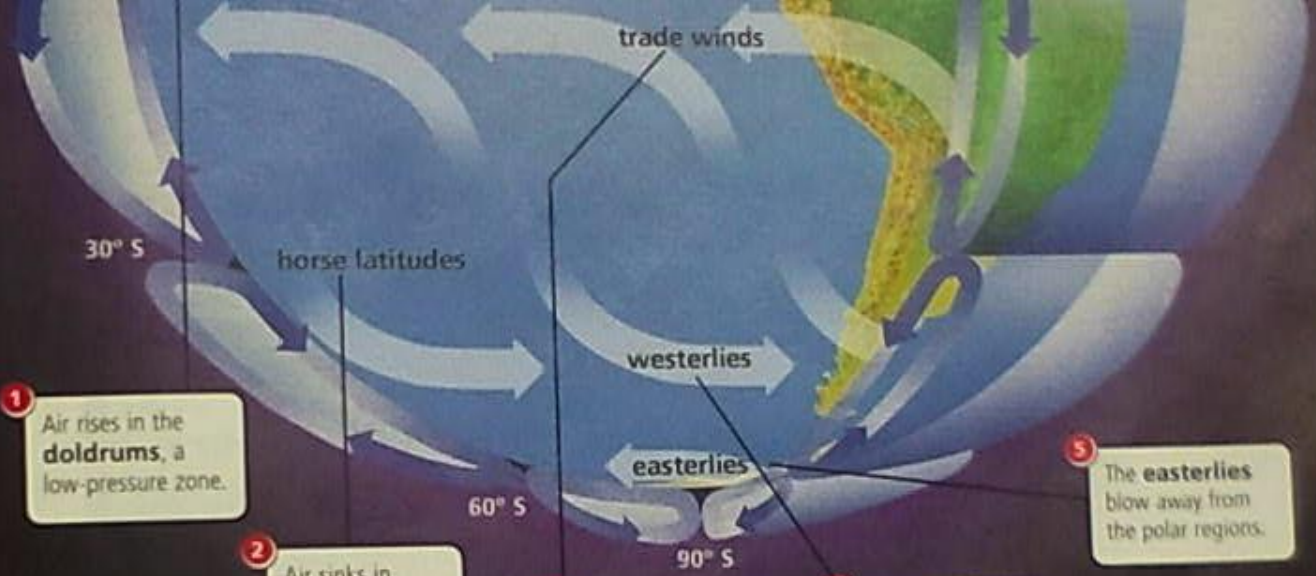
...zones located about 30°
...arm air traveling away from
...ions. The weather tends to

...horse latitudes and other
...egions of low pressure.
...ree global wind belts in each
...the winds curve toward the
...ls are named for the direc-
...s, for example, blow from

...oving from the horse
...ong, steady winds die out

...oving from the horse
...storms across much of the





1 Air rises in the **doldrums**, a low-pressure zone.

2 Air sinks in the **horse latitudes**, a high-pressure zone.

3 The **trade winds** blow from the horse latitudes toward the equator.

4 The **westerlies** blow from the horse latitudes toward the poles.

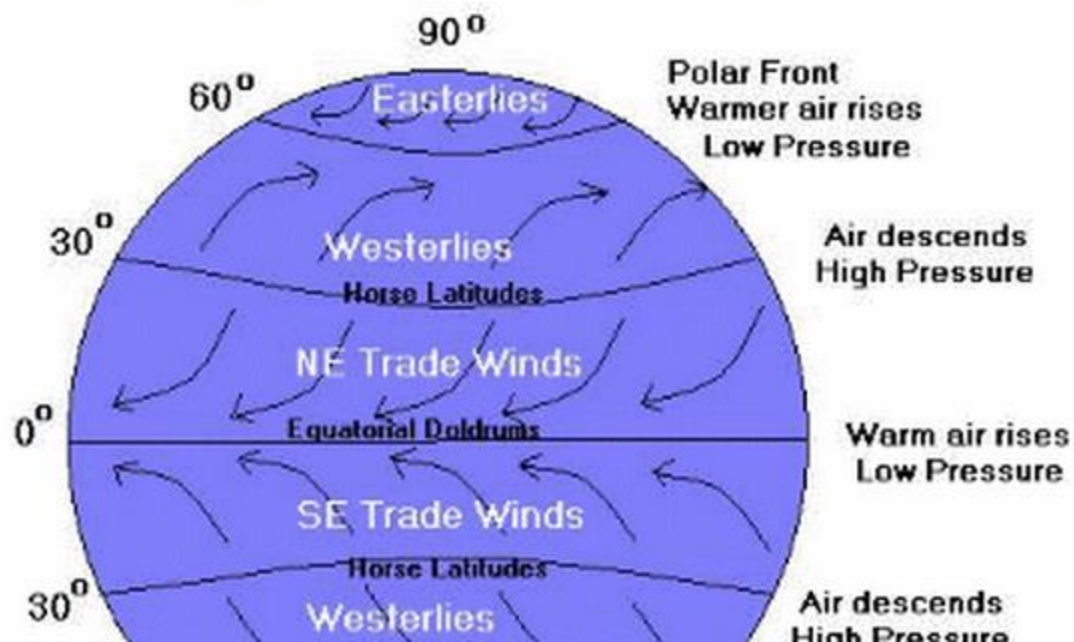
5 The **easterlies** blow away from the polar regions.

READING VISUALS What are the positions of the calm regions and the wind belts in the circulation cells?

for fanning regional wildfires. For these reasons, they are sometimes called the "devil winds" across Southern California.

What are the global wind patterns?

The equator receives the Sun's direct rays. Here, air is heated and rises, leaving low pressure areas behind. Moving to about thirty degrees north and south of the equator, the warm air from the equator begins to cool. Between thirty degrees latitude and the equator, most of the cooling air moves back to the equator. The rest of the air flows toward the



What are the trade winds?

The trade winds are just air movements toward the equator. They are warm, steady breezes that blow almost continuously. The Coriolis Effect makes the trade winds appear to be curving to the west, whether they are traveling to the equator from the south or north.

What are the doldrums?

The doldrums is an area of calm weather. The trade winds coming from the south and the north meet near the equator. These converging trade winds produce general upward winds as they are heated, so there are no steady surface winds.

What are the prevailing westerlies?

Between thirty and sixty degrees latitude, the winds that move toward the poles appear to curve to the east. Because winds are named from the direction in which they originate, these winds are called prevailing westerlies. Prevailing westerlies in the Northern Hemisphere are responsible for many of the weather movements across the United States and Canada.

What are the polar easterlies?

At about sixty degrees latitude in both hemispheres, the prevailing westerlies join with the polar easterlies to reduce upward motion. The polar easterlies form when the atmosphere over the poles cools. This cool air then sinks and spreads over the surface. As the air flows away from the poles, it is turned to the west by the Coriolis effect. Again, because these winds begin in the east, they are called easterlies.