Name Period Date

LESSON 15 When air and storms move, why do they curve?

STEP 1: Compare storm movement with your model.

Watch the *Global Rainfall and Snowfall* video from Lesson 12 again, this time focusing your observations on the movement of storms in the tropics. Below, compare the movement you see in the video to how you might predict storms to move based on your model about air movement in the tropics (from the end of Lesson 14).

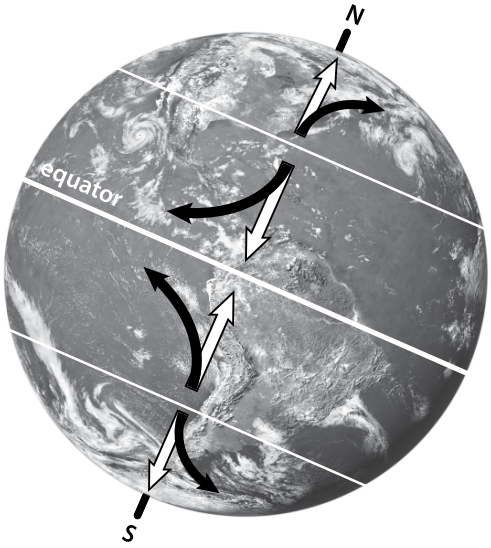
1. What kind of movement did you observe in the video that isn't explained by your model?

LESSON 15

When air and storms move, why do they curve?

STEP 2: Learn about the Coriolis effect.

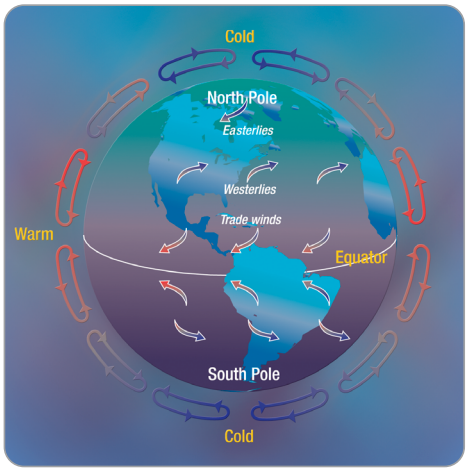
Because Earth is spinning, air does not travel in a straight line above the surface (like the white arrows on the picture to the right). Instead, air has a curved path (like the black arrows). Air north of the equator turns to the right as it moves. Air south of the equator turns to the left as it moves. This is called the **Coriolis effect.**



STOP AND DO

Make a model of the Coriolis effect.

1. Make a model of the Earth.
   - **Inflate** the balloon.
   - **Draw** an equator around the widest point.
   - **Draw** lines around the balloon where 30˚N latitude and 30˚S latitude lines would be.
2. Simulate how air in the tropics would move if the Earth didn't spin.
   - *Student 1:* **hold the balloon** in front of you so that the equator and latitude lines are parallel to the floor.
   - *Student 2:* **draw an arrow** starting at 30˚N latitude going toward the equator.
3. Simulate how air moves with Earth's spin.
   - *Student 1:* **slowly rotate** the balloon counterclockwise to model the Earth spinning on its axis. (Look at the balloon from above to determine which direction is counterclockwise.)
   - *Student 2:* **draw another arrow**, starting from the same point as before and trying to get to the equator.



Why does air move in different directions in the tropics and in the midlatitudes?

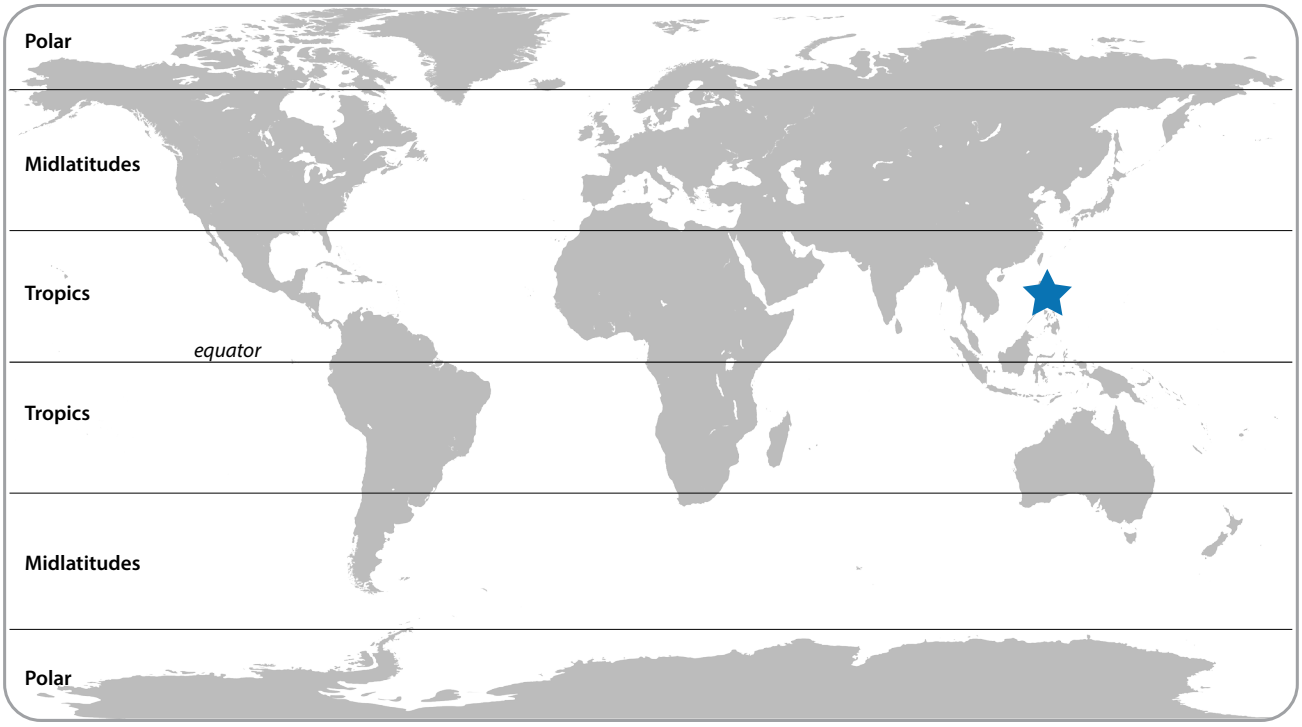
Earth is always on the move. Earth rotates, or spins, making one full turn every 24 hours. If Earth did not spin, air would rise at the equator and sink at the poles. But because Earth spins, there are three areas of convection north of the equator and three south of the equator. Convection causes winds to move across Earth's surface toward the equator in the tropics, away from the equator in the mid-latitudes, and toward the equator around each pole. These winds are called **prevailing winds**. Prevailing winds curve because of the Coriolis effect. Winds in the midlatitudes curve, moving west to east. Winds in the tropics generally move from east to west.

When air and storms move, why do they curve?

STEP 3: Record an explanation.

Use the model of air movement in the tropics you developed and what you learned about the Coriolis effect to explain the direction that storms will likely move through the Philippines (indicated with a star below) and where you live.

- **Draw an arrow** on the map to indicate the direction that storms in the Philippines (starred location) usually travel.
- **Draw a different symbol** on the map that shows where you live. Then, **draw an arrow** to indicate the direction that storms usually travel where you live.



1. Explain why you think storms move through the Philippines in a particular direction.

2. Explain why you think storms will come from a particular direction where you live.