

LESSON
14

How and why does air move in the tropics?

STEP 1: Develop a model.

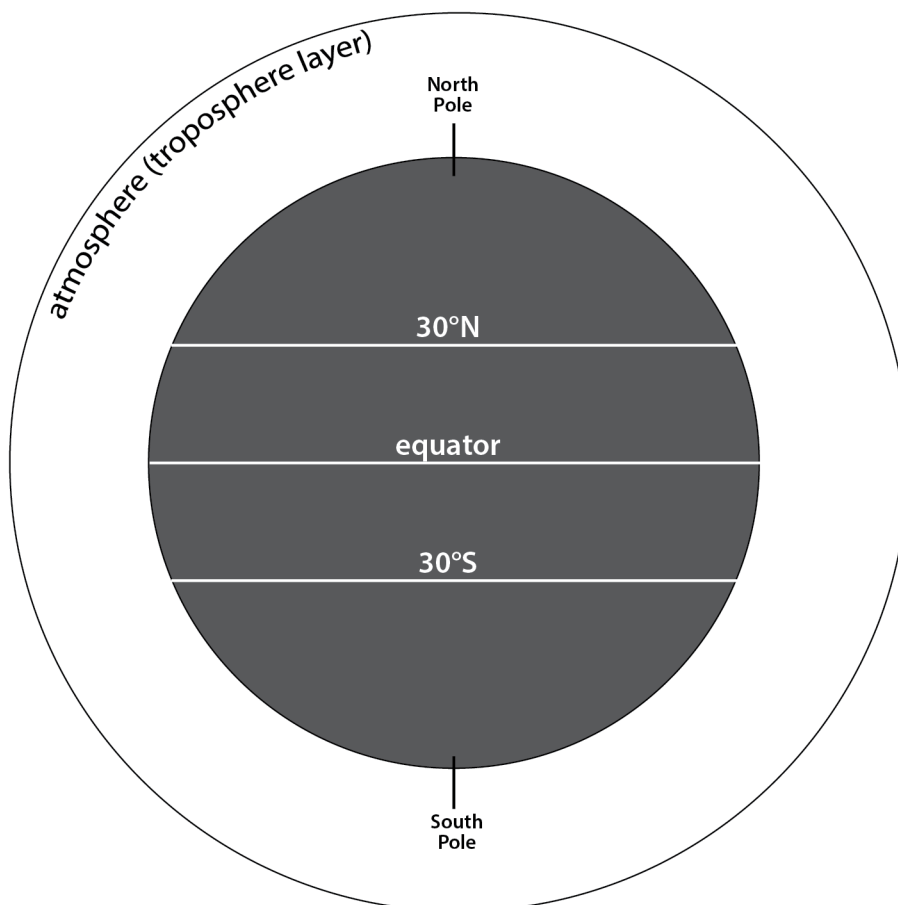
How do you think air is moving in the tropics between 30°N and 30°S? Why? Record your initial ideas on the image below.

Temperature differences cause air to move around the world.

- In some places, warm temperatures cause air to rise from the Earth's surface to higher in the atmosphere.
- In other places, cooler temperatures cause air to sink from higher in the atmosphere to the Earth's surface.

Translate those ideas to the illustration of Earth's atmosphere below. In the illustration, the atmosphere is exaggerated.

1. **Draw arrows in the troposphere layer of the atmosphere** to indicate where air is rising. Remember that warm air rises.
2. Air can't rise forever. **Draw arrows** to indicate where you think the rising air goes when it gets to the top of the troposphere.
3. At 30°N and 30°S latitude, air is cooler than it is at the equator. **Draw arrows** in the atmosphere to indicate what happens to the cooler air.



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STEP 2: Investigate air movement across Earth’s surface.

With a partner, write a statement that connects the water tank demonstration to the real world and explains why they are alike. The first part of the model is completed for you as an example.

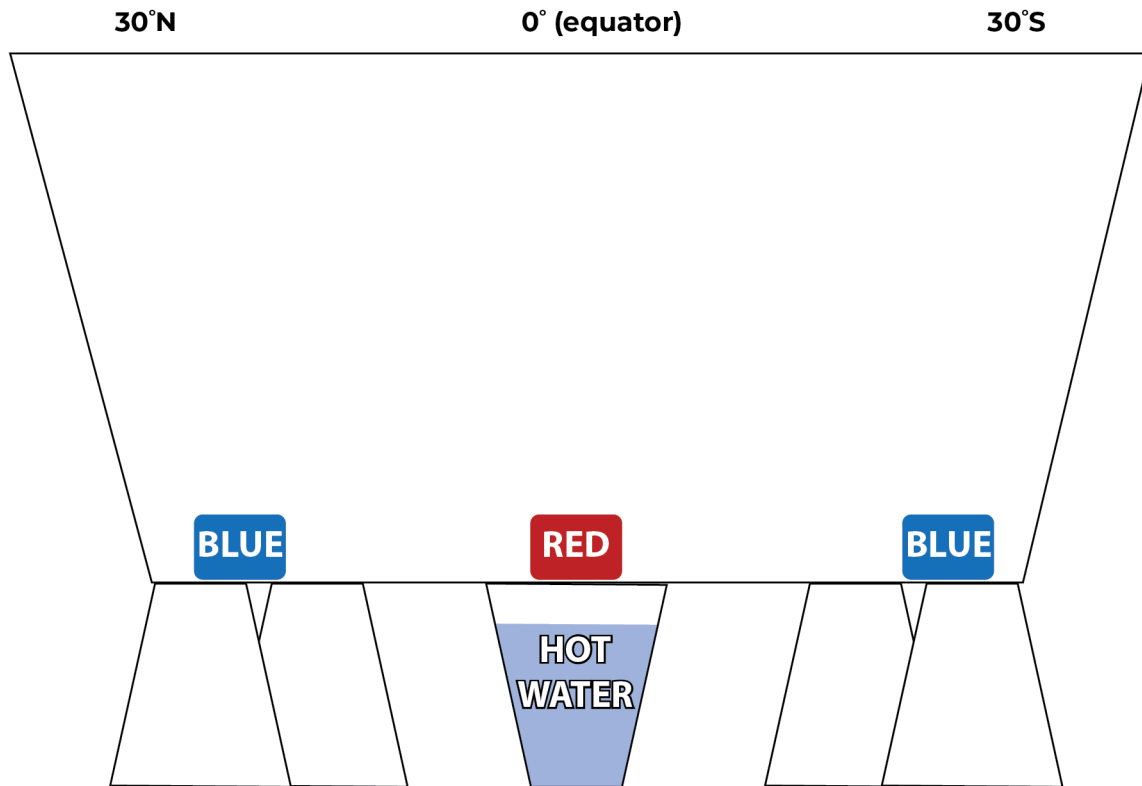
PART OF THE MODEL		PART OF THE REAL WORLD		WHY ARE THEY ALIKE?
The water in the tank	<i>is like</i>	<i>the Earth's atmosphere</i>	<i>because</i>	<i>the water in the clear plastic tub represents the air surrounding the Earth. Air and water are both fluids, so they behave similarly.</i>
Red food coloring	<i>is like</i>		<i>because</i>	
Blue food coloring	<i>is like</i>		<i>because</i>	
The cup of boiling hot water:	<i>is like</i>		<i>because</i>	
The bottom of the clear plastic water tub	<i>is like</i>		<i>because</i>	

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STEP 3: Record observations of the water movement.

Draw how the water moves through the tank.



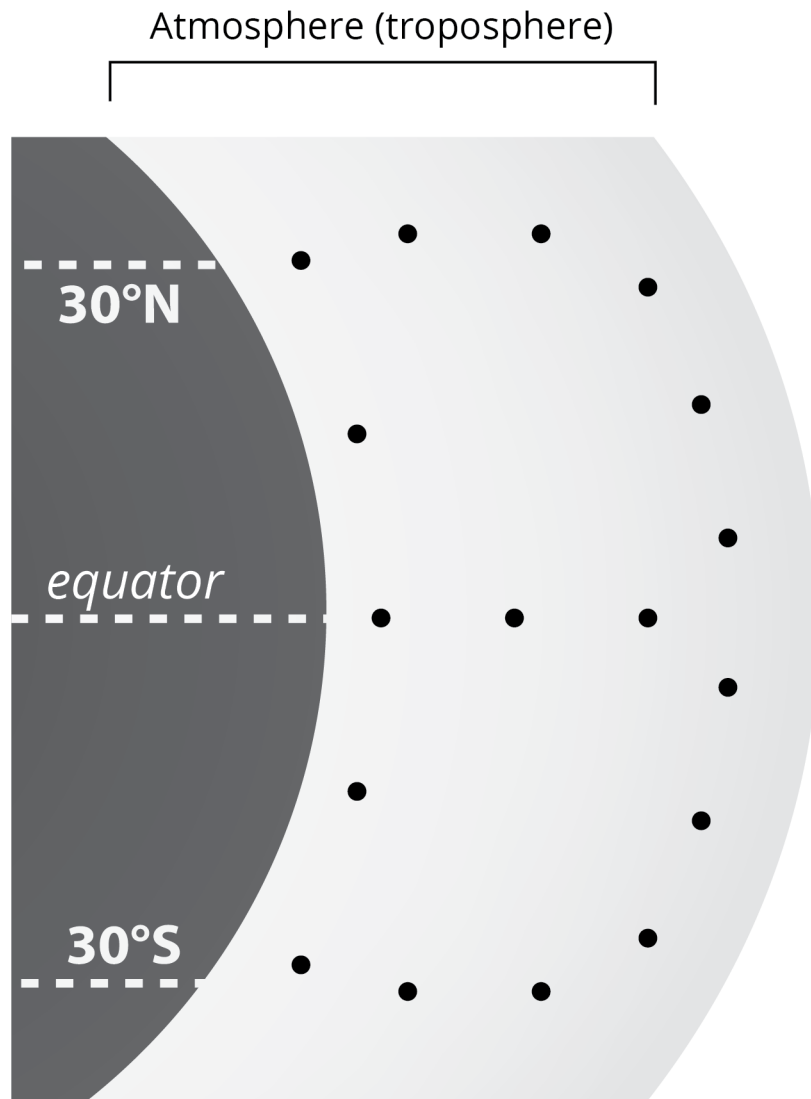
RECORD YOUR OBSERVATIONS <i>I notice...</i>	RECORD IDEAS FOR WHY <i>I think...</i>	RECORD YOUR QUESTIONS <i>I wonder...</i>

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STEP 4: Describe how and why air moves in the tropics.

Focus on how air is moving in the tropics (between 30°N and 30°S of the equator). Draw arrows to connect the dots and show how air is moving in the atmosphere, just as the water moved in the water tank model.



Write a caption to describe air movement in the model above.

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STEP 5: Create a model to describe air pressure and clouds at different latitudes.

Review the following diagram of how air moves around the world.

L Put an "L" in the white boxes where there would be low pressure.

H Put an "H" in the white boxes where there would be high pressure.

 Draw in clouds at locations of low pressure, where they are likely to form.

