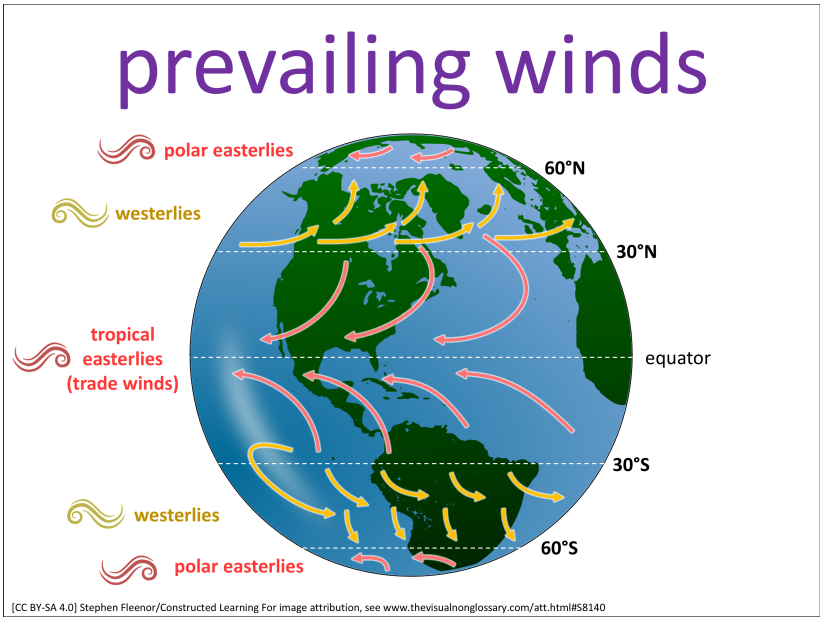
The Visual Non-Glossary™

Prevailing Winds and Weather Patterns

The purpose for reading is to learn how differences in temperature and pressure create patterns of prevailing windsaround the world.

Look Out For:

- Where prevailing winds are located around the world
- How temperature differences occur between the equator and the poles
- How pressure differences are created in the atmosphere
- How prevailing winds move air masses to different regions
- How Earth's rotation changes the path of moving air



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Around the world, large wind patterns called **prevailing winds** move air and weather. These winds blow in certain directions in different parts of the Earth. For example, near the equator, trade winds blow from east to west. In the middle latitudes, the westerlies blow from west to east. Near the poles, polar easterlies blow cold air toward warmer areas.

Air masses move along with **prevailing winds**. Warm air masses and cold air masses bring their temperature and moisture to new places. This is how winds can change the weather far away from where they start. For example, warm, wet air from the ocean can bring rain to a coast, while cold, dry air from inland can make the weather cooler and drier.

The equator gets more sunlight than the poles. This causes differences in temperature and air pressure. These differences move air, and Earth's rotation changes its path. These patterns create the wind belts we see on maps.

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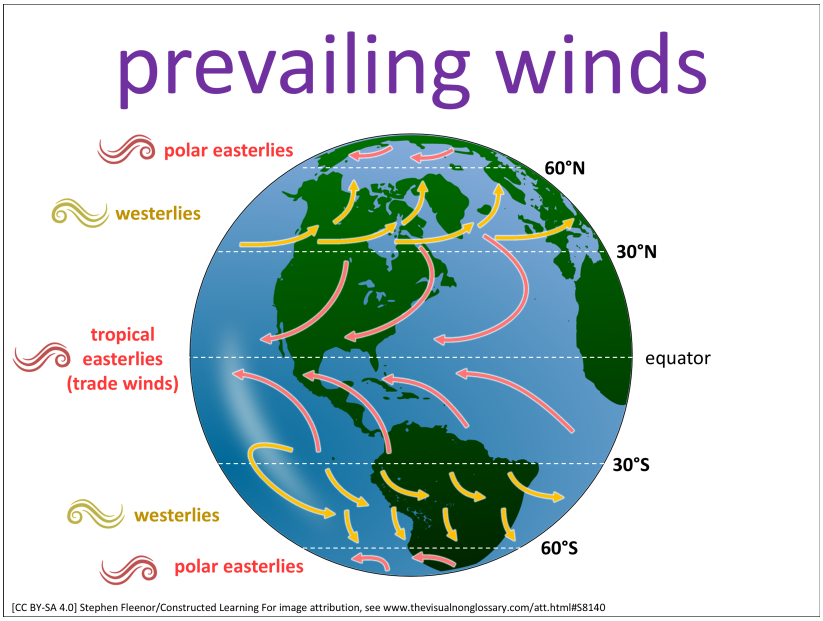
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Around the world, large-scale wind patterns, called **prevailing winds**, shape the movement of air and weather systems. These winds form in consistent directions within specific bands of latitude. For example, trade winds near the equator blow from east to west, while the westerlies in mid-latitudes blow from west to east. Near the poles, polar easterlies push cold air toward lower latitudes.

The movement of **air masses** is strongly connected to **prevailing winds**. Warm and cold air masses travel along these wind belts, carrying their temperature and humidity to new regions. This is one way that a place's weather can be influenced by winds that started thousands of kilometers away. For instance, a warm, moist air mass from the ocean can bring rain to a coastal area, while a cold, dry air mass from the interior of a continent can bring cooler, drier conditions.

Scientists know that **solar energy** is not evenly distributed across Earth. The equator receives more sunlight than the poles, creating differences in air temperature and pressure. These differences set air in motion, and Earth's rotation

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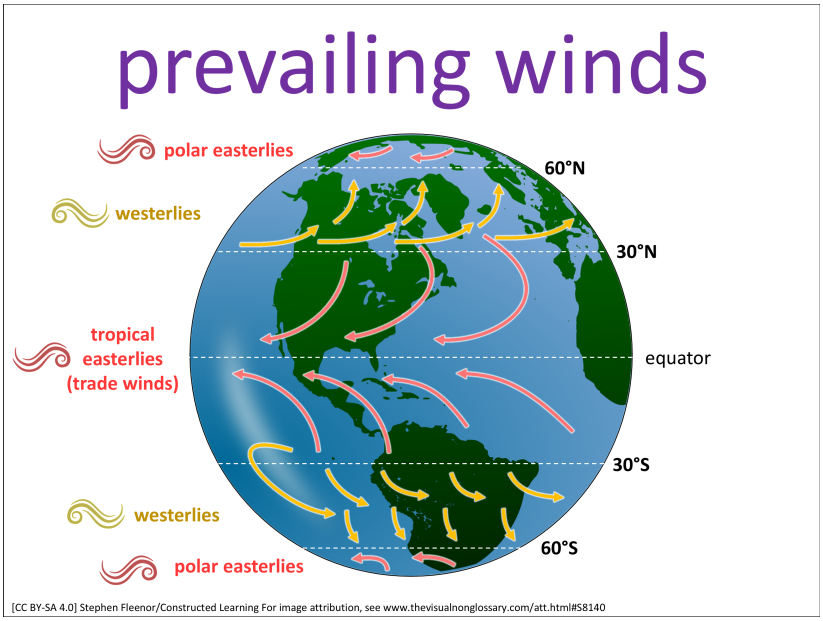
changes the paths the air takes. These combined factors lead to the formation of the wind belts seen on global maps.

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On a global scale, patterns known as **prevailing winds** control the movement of air and influence weather systems. These winds develop in predictable directions within bands of latitude. Near the equator, the trade winds blow steadily from east to west. In mid-latitudes, the westerlies push weather systems from west to east. In polar regions, polar easterlies drive cold air toward lower latitudes.

Air masses—large bodies of air with uniform temperature and humidity—are transported along these wind belts. As they move, they bring their weather characteristics to new locations, sometimes thousands of kilometers from their origin. A warm, moist air mass from the tropics may cause heavy rain in coastal areas, while a cold, dry air mass from the interior of a continent can lead to cooler, clearer weather.

Differences in the amount of **solar energy** received at various latitudes create variations in air temperature and pressure. Warm air tends to rise near the equator, while cooler air sinks closer to the poles. These motions, altered by Earth's rotation,

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produce the curved paths that define global wind belts. The interaction of these factors maintains the **prevailing winds** that help drive global weather patterns.

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