

Global Winds

Name: _____ Date: _____ Core: _____

LT: I can model and explain how winds move in global patterns.

The Relationship Between Air Temperature, Density, and Pressure

In Warm air...

- molecules _____.
- They are _____ dense,
- so the air _____.
- This creates an area of _____ pressure.

In Cold air...

- molecules _____.
- They are _____ dense,
- so the air _____.
- This creates an area of _____ pressure.

Wind is air moving from an area of _____ pressure to an area of _____ pressure!

Simple model of Global Winds



Convection Currents & Coriolis Effect

Convection currents...

- are air moving in big _____.
- They cause _____.
- They are created when air in one spot is warmed and _____, leaving behind an area of _____ pressure (less molecules).
- Then _____, sinking air from nearby rushes in to fill the empty space.
- _____ currents can happen on a small scale, or a global scale

Coriolis Effect...

- The rotation of the Earth causes winds to _____.
- Winds in the Northern hemisphere curve to the _____.
- Winds in the Southern hemisphere curve to the _____.

Actual Model of Global Winds



Topography and Climate

LT: I can explain how geographic landforms affect the weather patterns of an area.

Study the map of major landforms in Oregon. The major factors influencing Oregon's climate are the Pacific Ocean, the Coast Range (~ 3,000 ft elevation) and the Cascade Range (~10,000 ft in elevation). Oregon's climate is generally considered to be mild. West of the Cascade Range, winters are mainly wet and gray. East of the Cascade Range, winters tend to be colder and more dry with some accumulations of snow. Summers in the western area of the state are generally warm and pleasant. The eastern area has warmer days and cooler nights during the summer. Why is this the case? By studying the geographic landforms, we can answer these questions.



Source: Siteatlas.com

1. What happens as a moist air mass rises to go over a mountain range? What phase change occurs?

2. Precipitation at the coast can reach 200 inches of rain for a year. What causes this amount of rainfall?

3. In the Willamette Valley, precipitation is about 40 inches per year. Why is the rainfall less in the Valley than at the coast?

4. Snowfall in the Cascade Range can reach 550 inches per year. Why does so much snow fall in the Cascades?

5. Central and Eastern Oregon are generally relatively dry and are classified as being semi-arid. Many areas receive no more than 12 inches of precipitation per year. Why is this?

6. Why does the amount of precipitation decrease as you move from west to east in Oregon?

7. What landforms affect the climate in Oregon?

8. A region having little rainfall because it is sheltered from the rain-bearing winds by a mountain range is called a rain shadow. What area of Oregon would be considered a rain shadow?

9. Why does the Willamette Valley get more rain than Central and Eastern Oregon?

10. Where else in the world would you see these type of effects on the climate by landforms?

11. The windward side of a mountain range (where the weather is coming from) tends to get heavy precipitation. The leeward side of the mountain remains drier. In Oregon, which is the windward part of the state? What is the leeward side of the state?

12. Can you think of any other geographic landforms that may affect the climate of an area?

Review Convection Currents – Which way will local winds blow?

Imagine it is a hot sunny day at the park. On your Left is a large paved parking lot, and on your right is a big grassy field. Draw & label picture to show your understanding of convection currents & local wind. Which way will the wind blow? How do you know?

Include the following 7 things in your picture:

- Arrows showing direction of air motion (convection current).
- Small dots/circles to represent air molecules.
- Label where there is **warm air** and **cool air**.
- Label where the air is **less dense** and **more dense**.
- Label where the air is **low pressure** and **high pressure**.
- Label where the wind is blowing.
- Give a short **explanation of why** air moves from an area of high pressure to an area of low pressure.

Draw your convection current here:



Explanation:
