EARTH SCIENCE EXPLORED

STUDENT GUIDEBOOK

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Earth Science Explored: Student Guidebook

Journey Homeschool Academy

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LESSON 23

AIR CIRCULATION & WEATHER

Where do the winds come from? Why are some days calm with hardly a breeze while others are filled with huge gusts of wind? Why are some areas breezy most days of the year while other areas are not? In this lesson, we'll be exploring how global air patterns impact the weather around the globe.

Vocabulary

Convection cell
Convection current
Coriolis effect
Doldrums
Horse latitudes
Jet stream
Land breeze
Polar easterlies
Sea breeze
Trade winds
Westerlies

OUTLINE & NOTES
LESSON 23: AIR CIRCULATION & WEATHER

I. Wind Formation

A. Wind is formed by _____ and _____ differences in _____ that meet

1. _____ is a large quantity of air with about the same _____ , _____ , and _____ throughout

2. When two air masses meet, they _____ one another, creating _____

B. Convection currents

1. _____ fluids/gases _____ , and _____ fluids/gases _____

   a) _____ fluids/gases are _____ because they _____ and the molecules _____

   b) _____ fluids/gases _____ because the molecules _____ _____ together, making them _____

2. There would be one large convection current from the _____ toward the _____ if it weren't for the _____

   a) Coriolis effect: _____ of _____ and _____ on Earth causing _____ air and water to _____

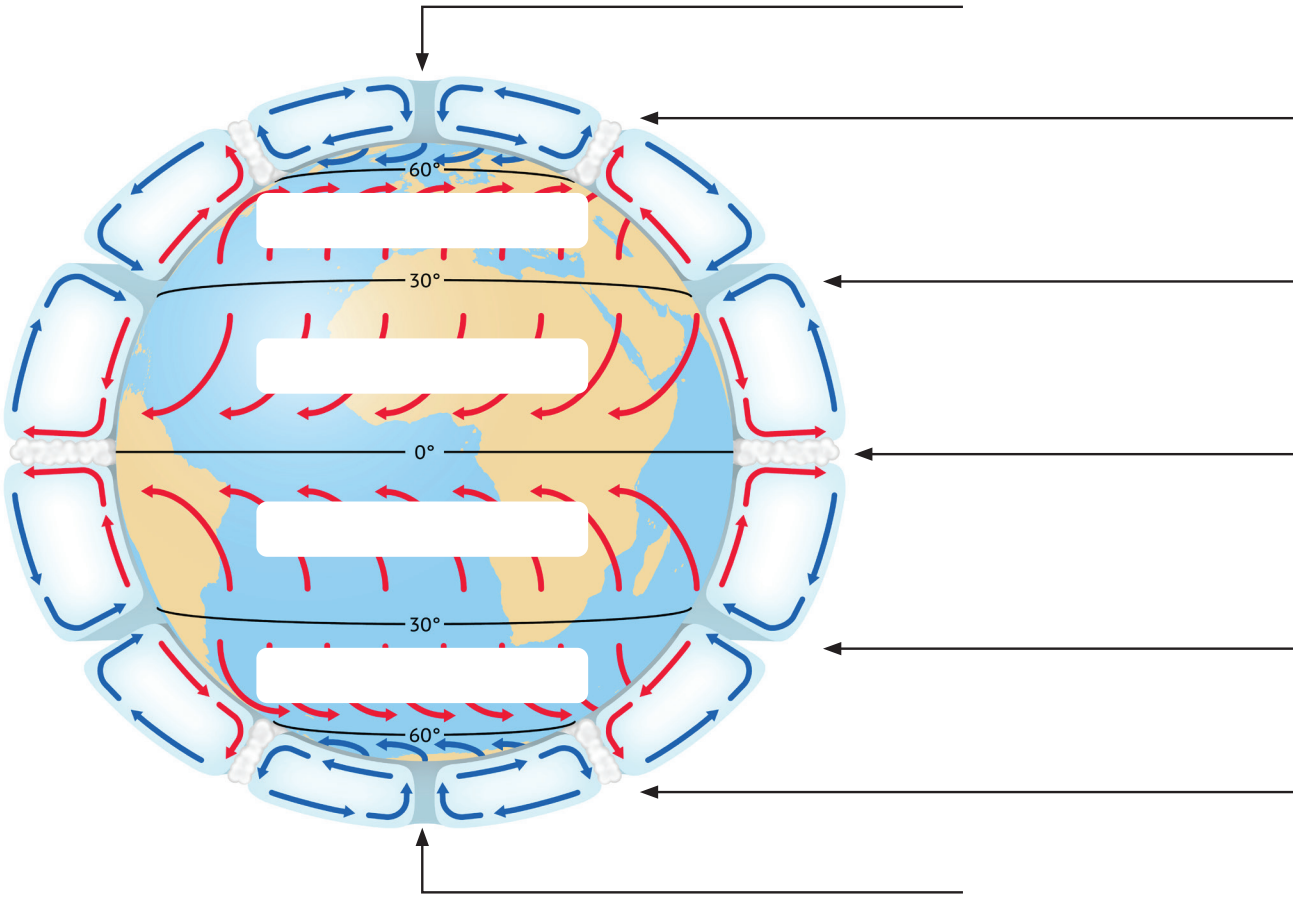
   b) Air is deflected to the _____ in the _____ and to the _____ in the _____ , creating a _____ of movement

II. Global Wind Patterns

A. Convection cells: three major _____ of _____ separated by _____ , areas of higher or lower _____

B. Convection cells are named for the _____ the _____ is coming from

GLOBAL ATMOSPHERIC CIRCULATION



1. Easterlies (0-30° latitude)

   a) Northern hemisphere: _____

   b) Southern hemisphere: _____

   c) Winds travel from _____ to _____

2. Westerlies (30-60° latitude): winds travel from _____ to _____

3. Polar easterlies (60-90° latitude): winds travel from _____ to _____

C. Pressure belts _____ convection cells

1. _____ occur at the _____ where the northern and southern _____ meet

   a) Airflow is _____ creating a _____ near the _____

   b) Since winds are moving _____ , surface winds are _____ and _____

2. _____ are between the _____ and _____

a) The air that flowed _____ from the _____ at the doldrums begins to _____

b) The _____ this _____ area

c) This causes surface winds to be _____ and _____

3. _____ are between _____ and _____

III. Jet Streams

A. Narrow bands of _____

B. Found in the upper _____ and lower _____

C. Jet streams are impacted by areas of _____ where they _____ (over the horse latitudes and polar fronts)

D. Jet streams follow the _____ on the _____

1. In the northern hemisphere, as the _____ more _____ on the horizon, in the spring, the _____ moves to a _____

2. In the northern hemisphere, as as the _____ more _____ on the horizon, in the fall, the _____ moves to a _____

E. _____ jet streams

1. _____ and _____ bands of _____

2. Polar jet streams shift toward the _____ in the _____ , bringing _____ , _____ to mid-latitudes

F. _____ jet streams do not change much in _____ or _____

IV. Land & Sea Breezes in Coastal Areas

A. During the _____

1. The land is _____ than water so the air moves _____ over the land

2. _____ from over the _____ moves in to replace the warm air over land moving upward

3. Creates a breeze that flows from the water to the land called _____

B. During the _____

1. The water is _____ than land so the air moves _____ over the water
2. _____ over the _____ moves out to the water to replace the warm air that is rising over the water
3. Creates a breeze that flows from the land toward the water called _____

NOTES