

WG World Geography

Category 2 – Geography

PHYSICAL ENVIRONMENT AND PHYSICAL PROCESSES

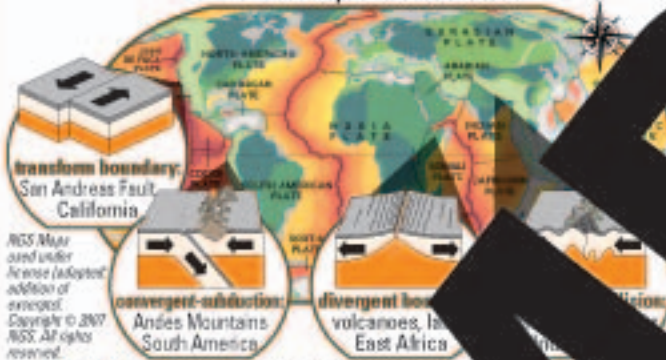
Earth's physical environment or physical geography is often divided into four parts that can be used to describe different regions on Earth:

- **lithosphere:** land or rock part of Earth (including land under water)
Examples: mountain, plain, valley, continental shelf (area around a continent where the ocean is not very deep), canyon, island, mesa
- **atmosphere:** air (gases) that extends about 6,000 miles above Earth's surface; air is about 78% nitrogen, 21% oxygen, and 1% other gases
- **hydrosphere:** water in, on, and above Earth in all its forms
Examples: groundwater, oceans, lakes, ice caps, water vapor, clouds
- **biosphere:** parts of lithosphere, atmosphere, and hydrosphere that support life (living organisms like plants, animals, fungi, and bacteria)

Many physical processes affect Earth's physical geography:

- **tectonic forces:** lithosphere consists of large tectonic plates that move relative to each other; movement causes earthquakes and landforms, such as mountains and volcanoes, at plate boundaries

World Map: Tectonic Plates



- **weathering:** breaking down of rock into smaller pieces (uses forces that cause weathering include weather (wind, flowing water) and freezing and thawing (rock's pores expand when it freezes, putting stress on the rock and causing it to break apart)
- **erosion:** movement of weathered rock (by wind, water, landslides), water, wind, or ice
- **wave action:** waves can be either constructive (add sand to a beach) or destructive (remove, or erode, sand from a beach)
- **soil building:** weathering, erosion, and deposition can result in the accumulation of sediment; organic matter, water, and air combine with sediment to produce soil that can support plant life

LANDFORMS

Physical processes that shape Earth's lithosphere:

Examples: Weathering and erosion create landforms. Deposition of eroded sediment creates a river delta at the river's mouth. Sediment from coastal erosion creates a beach. Wind then creates sand dunes. Tectonic forces create mountains, volcanoes, lakes, and trenches. Underwater volcanic eruptions form islands.

CHANGES IN EARTH'S RELATIONS

Earth's 23.5° tilt and annual rotation around the sun cause changes in the duration of day and night at a given location throughout the year, resulting in seasonal phenomena, and geographic differences in the amount of solar radiation received on Earth's surface.

Earth's seasons are caused by the tilt of Earth's axis. On June 21, the summer solstice, the sun is directly overhead at the Tropic of Cancer. On the longest day of the year, the beginning of summer in northern hemisphere and the end of winter in southern hemisphere.

Example 1: On March 21, the equinox (sun passes over the equator), the lengths of day and night are equal. In the northern hemisphere, the beginning of spring is the end of winter.

Example 3: A hurricane is an extreme weather event that forms over a warm ocean. Air warms up and gains a large amount of water vapor. Hurricanes originate in the tropics during summer months.

- **tropical (low latitude):** between Tropics of Cancer and Capricorn
- **polar (high latitude):** north of Arctic Circle or south of Antarctic Circle
- **temperate (middle latitude):** between tropical zone and polar zones

CLIMATE REGIONS

weather: conditions (wind, precipitation, temperature, humidity) at a particular time and place; can change suddenly; hurricanes, floods, tornadoes, droughts, and blizzards are extreme weather phenomena

climate: seasonal patterns of weather conditions in an area over many years; does not change suddenly; key factors that result in climate regions

Factor	Description	Effect on Climate
latitude	degrees north or south of equator (equator is 0°; north pole is 90°N; south pole is 90°S)	near the equator, there are warm temperatures and high precipitation; near the poles, there are cold temperatures and low precipitation
elevation	height above sea level	higher elevations are cooler
ocean currents	"rivers" within oceans that move warm water from the tropics or cold water from polar zones	warm currents heat the air, increasing temperatures and humidity (water vapor); cold ocean currents cool the air, which can have diverse effects on precipitation
wind direction	wind may bring moist air from the ocean or dry air from the interior	moist air from the ocean is humid; dry air from the interior is arid
mountain range	mountain ranges can block wind and hold less water vapor	windward side of mountain has a position of high precipitation; leeward side of mountain has a position of low precipitation (Föhn effect)

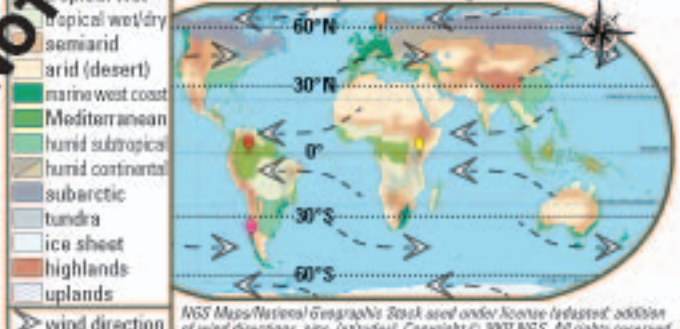
Example 1: Explain the Amazon rainforest's tropical wet climate. Amazon is located at low latitude near the equator. The sun drives high precipitation year-round, by heating warm humid air in the forest. The air rises, cools, and rain falls in the afternoon.

Example 2: Explain Mount Kilimanjaro's year-round ice cap. The mountain is near the equator with a tropical wet/dry climate at its base. The peak is at a high elevation, resulting in many different altitudes along the mountain. Near the top, there is a high-altitude climate (alpine tundra).

Example 3: St. Louis has a much warmer climate (humid continental) than areas of Canada or Russia (subarctic) at same latitude. The North Atlantic current, a warm ocean current, moderates Europe's climates.

Example 4: The coast of Chile has a marine west coast climate. Just inland, across a mountain range (the Andes), the climate is semiarid or arid. Geographic precipitation occurs on the windward (west) side.

World Map: Climate Regions



DISTRIBUTION OF BIOMES

Biomes are large areas of land with similar climate, plants, and animals. The distribution of biomes is determined by climate and geography.

SAMPLE PAGE -- Page 1 of 10

Read reviews and create an eQuote online.

These student course notes are also available via the *DynaNotes Plus* app for student iPads and Android tablets.

DYNA NOTES™
TOOLS FOR EXPLOSIVE LEARNING

Copyright © 2011 DynaStudy, Inc. and/or its licensors. All rights reserved. May not be reproduced or transmitted in any form without written permission from the publisher. www.dynanotes.com ISBN 978-1-935005-31-5

These student course notes are licensed under the Creative Commons Attribution-NonCommercial-ShareAlike license.