**GLOBAL CLIMATES AND BIOMES, pp. 87-114**

There are 7 major components to the distribution of heat and precipitation (and thus climates) on Earth:

1. **Earth’s Atmosphere**
* Explain why atmospheric pressure decreases as altitude increases.
* Identify which of the 5 layers of Earth’s atmosphere fit each description in the table:

|  |  |
| --- | --- |
|  | Aurora Borealis (northern lights) occurs here |
|  | Atmospheric pressure is highest here |
|  | All weather occurs here |
|  | Atmospheric pressure is lowest here |
|  | Atmospheric temperatures are highest here |
|  | Contains the ozone layer |
|  | Layer closest to the surface |
|  | Densest layer of the atmosphere |
|  | Outermost layer of the atmosphere |
|  | Temperature is around 20° at this layer’s lowest point |
|  | The lowest pressure is found in this layer |

* The chemical formula for ozone is \_\_\_\_ and its function in the stratosphere is to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
1. **Unequal Heating of Earth**
* Explain how each of the following factors creates unequal heating of Earth’s surfaces:
	1. Angle of sun to surface:
	2. Solar rays per unit area:
	3. Albedo:
* Explain why the melting of polar ice from global warming will alter Earth’s albedo.
* Generally speaking, the \_\_\_\_\_\_\_\_\_ regions of Earth receive the most light/heat in a year and the \_\_\_\_\_\_\_\_\_ regions receive the least light/heat in a year.

3. **Atmospheric Convection Currents**

* Explain why warm air rises and cool air sinks.
* Explain why rising air associated is with precipitation.
* Identify and describe the types of atmospheric conditions that are found where air sinks back to the surface.
* Draw each of the following on the diagram below:
* Earth’s atmospheric convection cells, with direction of air movement
* The general level of precipitation found at each latitude belt: 0/30/60/90)



* Why does the ITCZ move throughout the year in a regular pattern?
1. **Earth’s Rotation and the Coriolis Effect**
* The Coriolis Effect deflects moving objects (such as wind) in a \_\_\_\_\_\_\_\_ direction in the northern hemisphere and a \_\_\_\_\_\_\_\_\_\_\_\_\_ direction in the southern hemisphere
* Draw arrows indicating the general direction of wind movement between latitudes :



1. **Earth’s Tilt and Seasons**
* In Los Angeles, the longest day of the year occurs in the month of \_\_\_\_\_\_\_ because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* Explain why the northern hemisphere’s summer come during the southern hemisphere’s winter, and vice versa.

1. **Ocean Currents**
* What are gyers, and how are they created?
* Explain how oceanic gyers and atmospheric convection currents redistribute heat around Earth.
* Upwelling is a process in which \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ water is brought to the surface along a coast. It is caused by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is important to humans because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Describe what thermohaline circulation is, and how it transports heat.
* The ENSO is a disruption to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in which warm water and increased precipitation build up in the region of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ while drought and cold water occur in the region of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
1. **Rain Shadows**
* Discuss the difference between the windward and the leeward sides of a mountain range.

**Summarize why latitude is so important in determining climate:**

**Complete the following biome charts for terrestrial and aquatic biomes:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Terrestrial Biomes:** | General Global Location | Annual Weather Patterns | Soils | Distinguishing species |
| 1. Tundra
 |  |  |  |  |
| 1. Boreal Forest
 |  |  |  |  |
| 1. Temperate Rainforest
 |  |  |  |  |
| 1. Temperate Seasonal Forest
 |  |  |  |  |
| 1. Shrubland (Chaparral)
 |  |  |  |  |
| 1. Temperate Grassland
 |  |  |  |  |
| 1. Tropical Rainforest
 |  |  |  |  |
| 1. Tropical Season Forest
 |  |  |  |  |
| 1. Subtropical Desert
 |  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Aquatic Biomes:** | Defining characteristics | Ecological importance: |
| 1. Streams & Rivers
 |  |  |
| 1. Lakes & Ponds
 |  |  |
| 1. Freswater Wetlands
 |  |  |
| 1. Salt Marshes
 |  |  |
| 1. Mangrove Swamps
 |  |  |
| 1. Intertidal Zone
 |  |  |
| 1. Coral Reefs
 |  |  |
| 1. Open Ocean
 |  |  |

**TERMS TO KNOW**

|  |  |  |  |
| --- | --- | --- | --- |
| **TERM** | **Description** | **Illustration** | **Example** |
| Climate |  |  |  |
| Troposphere |  |  |  |
| Stratosphere |  |  |  |
| Albedo |  |  |  |
| Coriolis Effect |  |  |  |
| Gyres |  |  |  |
| Upwelling |  |  |  |
| Thermohaline Circulation |  |  |  |
| El Nino-Southern Oscillation (ENSO) |  |  |  |
| Rain Shadow |  |  |  |
| Biomes |  |  |  |
| Tundra |  |  |  |
| Permafrost |  |  |  |
| Boreal Forest |  |  |  |
| Temperate Rainforest |  |  |  |
| Temperate Seasonal Forest |  |  |  |
| Shrubland (Chaparral) |  |  |  |
| Temperate Grassland/Cold Desert |  |  |  |
| Tropical Rainforests |  |  |  |
| Tropical Seasonal Forests & Savannahs |  |  |  |
| Subtropical Deserts |  |  |  |
| Littoral Zone |  |  |  |
| Limnetic Zone |  |  |  |
| Phytoplankton |  |  |  |
| Profundal Zone |  |  |  |
| Benthic Zone |  |  |  |
| Freshwater Wetlands |  |  |  |
| Salt Marsh |  |  |  |
| Mangrove Swamps |  |  |  |
| Intertidal Zone |  |  |  |
| Coral Reefs |  |  |  |
| Coral Bleaching |  |  |  |
| Photic Zone |  |  |  |
| Aphotic Zone |  |  |  |
| Chemosynthesis |  |  |  |