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Living Earth: Week 6 Assignments → 5/11- 5/18

New unit! We've ended learning about how body systems are organized and work together to maintain balance in our bodies. Now, we are going into our human impact unit. We will be learning how humans are impacting our ecosystems.

Big Ideas We'll be Discussing: Ecosystem Stability in Response to Climate Change

This week's assignments you will be reading/listening to 3 sections in the textbook. These are shorter sections than previous sections you've read so don't freak out.

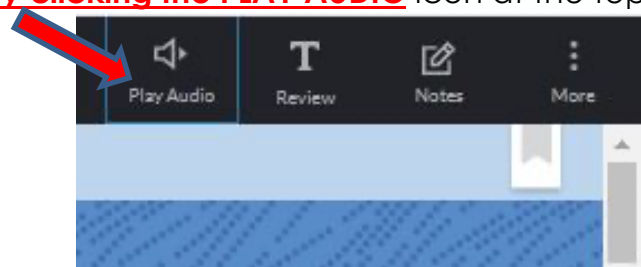
- Within the textbook answer the questions it asks (these will help you on the assignment questions)
- Skip the Hands on Lab and Evidence Notebook sections

Assignment #1- How energy transfers and factors that influence the energy budget of Earth.

Assignment #2- The influences of Earth's climate.

Assignment #3- Both natural and man-made factors that influence climate change.

Remember: **You can get the text read to you by clicking the PLAY AUDIO** icon at the top right corner



✓ Assignment #1: (if you have your paper textbook you can read pages 524-528 instead of step 1)

1. Log into the HMH app via Clever in order to do the assignment

- **Read/listen to the following section in your textbook:**

Unit 8: Explore/Explain 1: Earth's Energy

2. As you are reading/listening to the section answer the questions as you go. It will make the assignment go by faster.

1. How does energy travel from the Sun to Earth?

- Convection
- Conduction
- Radiation
- heat

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2. Which of the following types of energy transfer requires touching of matter?

- Convection
- Conduction
- Radiation
- heat

3. Which type of energy transfer requires a change in density of a liquid or gas?

- Convection
- Conduction
- Radiation
- Heat

4. Fill in the blank: Light, also known as _____, comes in many forms; from highest frequency to lowest they are cosmic rays, gamma rays, x-rays, ultraviolet (UV), Visible (what we see: violet, blue, green, yellow, orange, red) (roygbv rearranged in order from highest frequency to lowest), Infrared (infra=below), microwaves, radio-waves. (Our sun produces all of these types of light.)

- electricity
- magnetism
- radiation
- heat

5. For Earth's average temperature to remain constant which of the following must be true?

- The total incoming and outgoing radiation must be balanced.
- The total incoming and outgoing energy budget must be balanced.
- The total incoming and outgoing albedo must be balanced.
- The total incoming and outgoing number of particles must be balanced.

6. Albedo, meaning 'whiteness' Albedo is measured on a scale: 1 (or 100%) being very white and reflecting most of the incoming light's energy, 0 (or 0%) very dark absorbing most of light's energy. What will happen to the albedo of the North Pole as the North Pole's ice melts?

- The albedo will go up.
- The albedo will go down.
- The albedo will be unchanged.
- The albedo will vary with the amount of light from the sun

7. What part of Earth gets the most sunlight?

- North pole
- South pole
- Equator

Sample albedos

Surface	Typical albedo
Fresh asphalt	0.04 ^[5]
Open ocean	0.06 ^[6]
Worn asphalt	0.12 ^[5]
Conifer forest (Summer)	0.08 ^[7] 0.09 to 0.15 ^[8]
Deciduous trees	0.15 to 0.18 ^[8]
Bare soil	0.17 ^[9]
Green grass	0.25 ^[9]
Desert sand	0.40 ^[10]
New concrete	0.55 ^[9]
Ocean ice	0.50 to 0.70 ^[9]
Fresh snow	0.80 ^[9]

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8. How does energy absorbed by the oceans spread? Check all that apply

- Convection (movement of the oceans water)
- Conduction (touching other objects)
- Radiation (energy in light)
- heat

9. What causes the global wind system?

- convection
- conduction
- Unequal heating of Earth's surface (and atmosphere).
- radiation

10. Insulation, like the stuff a house has in the walls, floor, and ceiling, is used to slow the transfer of heat across the wall. Insulation does not make heat; it just slows the transfer. A blanket on your bed does the same thing; it slows the transfer of heat from your body out into the room; trapping the heat next to your body. Greenhouse gases act like a blanket for Earth; trapping the heat, insulating it from outer space. What will happen to Earth's average temperature if there was less greenhouse gases around Earth?

- Earth's average temperature will rise.
- Earth's average temperature will fall.
- Earth's average temperature will stay the same..
- Earth's average temperature will fluctuate..

Assignment #2: (if you have your paper textbook you can read pages 529-531 instead of step 1)

1. Log into the HMH app via Clever in order to do the assignment

- **Read/listen to the following section in your textbook:**

Unit 8: Explore/Explain 2: Understanding Earth's Climate

2. As you are reading/listening to the section answer the questions as you go. It will make the assignment go by faster.

1. What evidence do scientists use to determine the climate of a region 10,000 years ago? Check all that apply

- Rocks
- fossils
- ice cores
- books recorded by human's of the time

2. True or False: The sun's fluctuating output is the main source of global temperature change.

- True
- False

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3. Land masses sometimes reroute an ocean's convection currents. This would be an example of the _____ effecting the _____.

- biosphere, hydrosphere
- geosphere, biosphere
- atmosphere, hydrosphere
- geosphere, hydrosphere

4. Volcanic eruptions and mountain formation (from tectonic plate movement) bring minerals such as salts of calcium, iron and magnesium up higher in the crust. Weathering then exposes these minerals to carbon dioxide and reacts forming carbonates, such as calcium carbonate; a solid we call limestone. The formation of limestone and other carbonates can help _____ the amount of carbon dioxide in the air.

- increase
- decrease
- eliminate
- exacerbate

5. Which of the following are positive feedback loops occurring now? (check all the are true)

- More carbon dioxide in the air warms Earth and its oceans. As the oceans warm, they can not hold as much carbon dioxide so they release more carbon dioxide into the atmosphere; causing higher temperatures and then more carbon dioxide leaving the ocean.
- Dead frozen prehistoric plants near the Antarctic are thawing because of warmer temperatures. As the dead plant matter decomposes it releases CO₂. The increased CO₂ causes higher temperatures and more thawing.

6. What do scientist use to detect prehistoric CO₂ levels.

- Ice cores drilled from glaciers or ice sheets.
- Ice cores drilled from rock beds.
- Rock cores drilled from glaciers or ice sheets.
- Rock cores drilled from rock beds.

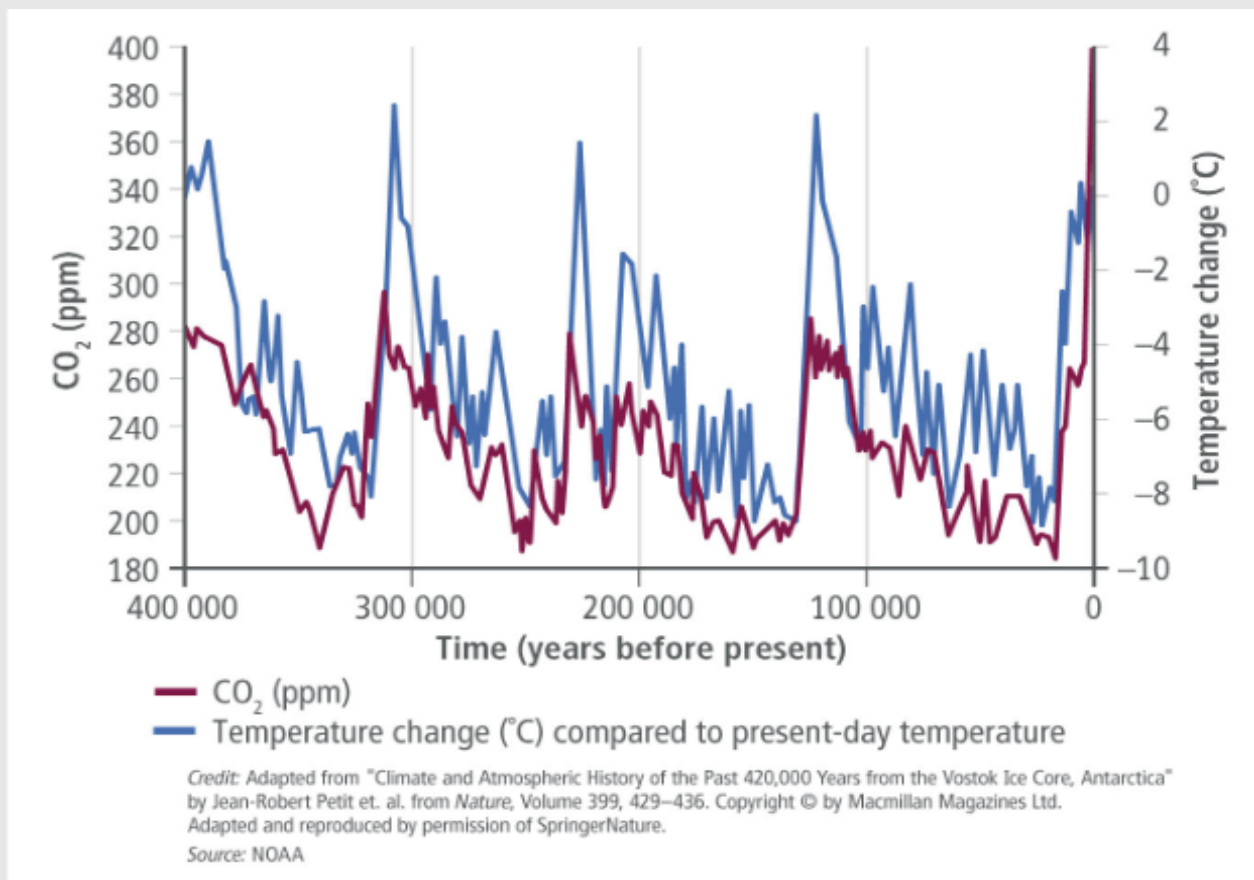
7. From historical data, as CO₂ levels go up, the average temperature of Earth _____.

- goes down
- goes up
- is unchanged
- is on a negative feedback loop.

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8. From the data in your book (copied on this form), excluding the last 200 years, the level of CO₂ in the atmosphere has never been above _____ ppm.

- 380
- 300
- 2.74
- 3.75



Assignment #3: (if you have your paper textbook you can read pages 533-536 instead of step 1)

1. Log into the HMH app via Clever in order to do the assignment

- Read/listen to the following section in your textbook:
Unit 8: Explore/Explain 3: Climate Change
- As you are reading/listening to the section answer the questions as you go. It will make the assignment go by faster.

1. How many years ago did the industrial revolution begin?

- 1750
- 100
- 1886
- 270

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2. What has been the main fuel source of the world since the start of the industrial revolution?

- sunlight
- moonlight
- fossil fuels
- hydroelectric

3. CFC-12 (banned from production in 1995) has a GWP of 10200, Methane has a GWP of 28. The GWP of CFC-12 is how many times the GWP of methane.

- 1
- 2.33
- 364
- Option 4

4. Scientists tend to focus on CO₂ as a greenhouse gas even though Chloroflourocarbons (CFC) are up to 10,200 times more effective (over 100 years) as a greenhouse gas. Which statements make CO₂ a larger focus than CFCs? (select all that apply)

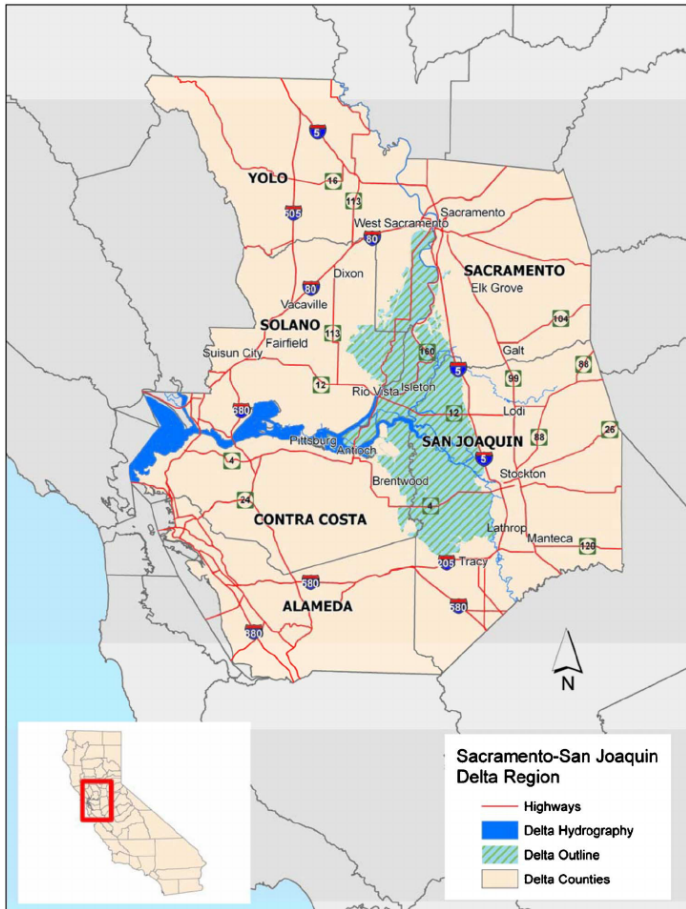
- Current concentrations: CO₂ is at over 400 ppm while CFCs are only at 0.9 ppm
- CO₂ can last up to 3 times as long in the atmosphere
- The amount of CO₂ produced yearly by burning fossil fuels is in the billions of tons while CFCs are in the thousands of tons.
- CFCs are planned to be banned for production by the year 2030.

5. Why do scientists believe storms and hurricanes are more destructive (on average) than those 100 years?

- There is more energy stored in the Earth's oceans.
- Glaciers have been decreasing in size.
- Ice caps (north and south pole) have been decreasing in size.
- water expands when it warms.

6. Scientists have measured land based ice (glaciers) melting into the ocean. What is the second major contributor to ocean level rise?

- Oceans warming causing the water to expand in volume.
- Oceans cooling by the ice melt causing them to expand in volume.
- Oceans becoming less salty causing them to expand in volume.
- Oceans expanding due to absorption of CO₂.



7. Sea levels are predicted to rise by 1 meter by 2100. The area in light blue is the area where scientists believe salt water will reach with a 1 meter rise in ocean levels. Parts of Oakley, Byron, and Discovery Bay will be underwater if levees are not built or built higher. Brentwood currently gets its water from the San Joaquin river near Discovery Bay. That area is predicted to be salt water by 2100. True or False: By 2100, Brentwood will need to find a new source of drinking water.

- True
- False

8. Based on the information in question 10: True or False: In 2100, Brentwood will have ocean front property.

- True
- False

9. Based on the information in question 10: True or False: By 2100, Brentwood will gain new agriculture.

- True
- False

10. Water has a lower albedo than ice or snow. As ice melts, the albedo of that area decreases and as a result that area now absorbs more energy from the sun and warms the water; melting more ice. This is an example of a _____ feedback loop.

- Positive
- Negative
- Worsening
- Exacerbated