

Climate Science



1. What is climatology?
2. Research and create a graph showing the trends in temperature changes during the last 1,000 years by century.
3. Briefly describe the following terms as they relate to climate science and its impact on the environment:
 - a. Climate change
 - b. Greenhouse gases
 - c. Fossil fuels
 - d. Habitat
 - e. Carbon dioxide (CO₂)
 - f. Emissions
 - g. Sea-level rise
 - h. Geoengineering
 - i. Deforestation
4. Discuss what type of education is required for a career related to climate science.
5. Identify and define at least 10 climate science career disciplines.
6. With another person or as a group, discuss the biblical context of the following texts as it relates to our responsibility to care for our environment:
 - a. Genesis 2:15
 - b. Numbers 35:33-34
 - c. Ezekiel 34:18
 - d. Jeremiah 2:7
7. Research and discuss some concerns of changing weather patterns that have been highlighted by climatologists as they relate to rising global temperatures.
8. With reference to the graph created in question 2, show there have been changes in the climate in the past based on the following factors:
 - a. Natural factors that change climate
 - b. Human factors that change climate
9. Based on your research of current events concerning climate science, discuss its impact and effects on wildlife and marine life.
 - a. Wildlife
 - b. Marine life
10. Individually or as a group, create one of the following poster illustrations:
 - a. Create an environmental poster that shows how changes in the earth's climate can affect ecosystems locally and globally.
 - b. Create a poster that illustrates an El Niño vs. a La Niña and their impacts on the earth's climate.
 - c. Create a poster that illustrates the human impact on climate change and describes methods to reverse those effects.
11. Individually or as a group, complete one of the following:
 - a. Create a detailed, relevant plan for a rain garden at your church, home or within your community. Submit your plans and a budget to the appropriate persons for review. Prepare and give an oral presentation to a group on your plan.
 - b. Visit a local environmental impact region and evaluate how it might positively affect the climate.

12. With another person or as a group, discuss each of the following open-ended questions from a Christian perspective. The objective is to provide justification for your response as it pertains to our roles as conscientious Christian inhabitants of the environment.
- a. How should Christians view climate change?
 - b. As Christians, do we have a greater responsibility to maintain a healthy global environment?
Based on your responses, develop a plan designed to incorporate your ideas into an effective project for your church or community. Prepare to give an oral presentation on your findings and the actions that have been taken.
13. There is passionate discussion about the concept of global warming which is a climate change event. What is your point of view on the subject? Please give three reasons that helped you form your point of view.

Skill Level 2

New in 2019

Climate Science, Advanced

1. Earn the Climate Science Honor, and at least one of the following honors:
 - a. Alternative Fuels
 - b. Ecology
 - c. Environmental Conservation
 - d. Recycling
 - e. Renewable Energy
 - f. Rivers and Streams
 - g. Weather
2. What is industrialized agriculture? What are some positive and negative impacts that industrialized agriculture has had on earth's climate? How have industrialized agriculture methods changed over the past 200 years?
3. Name at least two government agencies in your country and three non-government organizations (e.g. UN, IPCC) that provide research associated with climate change for the purposes of influencing government policy. Review a report published by each of these five entities and discuss the similarities and differences of their evidence and conclusions.
4. Research a climate change topic that may be controversial.
 - a. Identify a source from each side of the controversy that utilizes scientific evidence to support the authors' conclusions.
 - b. Outline each argument providing the hypothesis, evidence, and conclusion for each side.
 - c. Examine your outlines to determine if your own personal biases affected your outlines.
 - d. Answer the following question: Can a person examine scientific evidence without allowing their personal biases to affect their examination?
5. What is permafrost? How does the earth's climate affect permafrost? Why is it important for scientists to monitor permafrost?
6. Research your state/provincial government's efforts to address the effects of greenhouse gases. Be prepared to discuss your findings with a group.
7. Renewable energy has been postulated as a solution for reducing greenhouse gases. Do three of the following:
 - a. Illustrate through creative media the process of how greenhouse gases are theorized to effect change to our climate.
 - b. Research what efforts your local state/provincial government is taking to promote the adoption of renewable energy sources.
 - c. List ways you and your family can adopt renewable energy or reduce your energy footprint.
 - d. Where possible, invite a local expert to come speak to your group about climate change and renewable energy.
 - e. Find and review online resources, videos, news reports, and similar media and share them with your group.
8. Individually or as a group, complete one of the following:
 - a. Create a model of a water harvesting system. Prepare and give an oral presentation to a group, presenting your model, its effectiveness, and the local laws concerning gathering rain water.
 - b. Visit a park, museum, science center, or other facility that employs eco-conscious practices. Take a tour, talk to an employee, or in some other way learn about and evaluate the features you see.

Skill Level 3

New in 2019

Nature
North American Division
2019 Update