

OREGON ENVIROTHON CURRENT ISSUE 2023: Adapting to a Changing Climate

Content covered on the test

Oregonians value our natural resources for the beauty, outdoor recreation opportunities and clean air and water they provide and we depend on them economically. Forestry, agriculture, fisheries, energy production and tourism form the foundation for the socio-economic well-being of Oregonians. Climate change is predicted to have direct and indirect impacts on the natural environment on which these resource-based industries depend, as well as our economy, environment, and way of life. These impacts will affect Oregonians throughout the state. Certain populations—including low-income communities, communities of color, and rural areas—are particularly vulnerable and less able to respond to and cope with climate change.

The earth's climate is constantly changing and has been doing so for billions of years. Although long-term fluctuations in temperature are normal and greenhouse gasses are emitted to the atmosphere from both natural and human-generated sources, the vast majority of climate scientists agree that the global warming observed since the mid-20th century (1950s) is cause for immediate concern. Human-induced emissions of greenhouse gasses are being released at a quicker rate than natural processes can remove them. Not only do climate models project an increase in temperature, but the models also predict an increase in the frequency of hot days above 30°C (86°F) as well as changes in sea level, precipitation, extreme weather events, water stress, and ocean acidification. As a result, disruptive changes to ecosystems, the economy, and society are expected to occur on both local and global scales.

The changing climate is one of the most complex issues facing the world today. It spans many disciplines and aspects of everyday life including science, socio-economics, the environment, health, and politics as well as moral and ethical values. The impact on Oregon's economy and quality of life for its citizens will depend on how effectively we plan and prepare for the complex challenges and changes that will occur.

Students will learn about factors contributing to a changing climate, the effects of these changes on the environment and natural resources, and the unique challenges facing natural resource dependent communities. As they explore the impacts on human social and economic systems, they will learn about management strategies for mitigating and adapting to a changing climate, and the roles of innovative technologies and programs in responding to local and global changes.

Key Topics Include:

Key Topic 1: Factors Contributing to a Changing Climate

Key Topic 2: Measuring and Monitoring a Changing Climate

Key Topic 3: Risks and Impacts to Natural Resources and Society from a Changing Climate

Key Topic 4: Policies and Program for Adapting to a Changing Climate.

Learning Objectives

1. Describe climate change and the process through which it occurs.

2. Outline the factors, both anthropogenic and natural, which influence climate and climate change.
3. Describe major economic sectors that contribute to greenhouse gas (GHG) emissions.
4. Describe major energy sources and explain how each contribute to climate change.
5. Outline indicators of climate change.
6. Describe the history of Oregon's climate past.
7. Describe the various sources of scientific data which are used as evidence of climate change and explain how we know this data to be reliable.
8. Evaluate climate data and draw conclusions based on that data.
9. Explain the use of modelling in forecasting climate and the sources of uncertainty in climate projections.
10. Explain the consequences of climate changes on aquatic, forest, wildlife and soil ecosystems.
11. Describe social and economic impact of climate change.
12. Explain how various levels of government, non-governmental organizations, and individuals are involved in mitigating and adapting to climate change at the local level.
13. Describe innovative technologies and programs designed to combat climate change.
14. Explain the importance of natural resource sectors (forestry, agriculture, fisheries) to the economy of Oregon.
15. Describe the unique challenges faced by regions largely dependent on natural resources, and how climate change influences these challenges.
16. Explain how to best apply climate change risk assessment and adaptation measures in regions with natural resource dependent economies.
17. Describe Oregon's Climate Action Plan and the 2035 and 2050 reduced emission goals.
18. Understand Oregon's Climate Protection Program at the Department of Environmental Quality (DEQ).
19. Understand how Oregon is tracking and reporting Climate Change.
20. Explain how a town or city can create a Climate Action Plan.

NCF Envirothon 2023 Adapting to a Changing Climate: envirothon.org/wp-content/uploads/2022/09/2023-Current-Issue-Part-A.pdf

Key Topic 1: Factors Contributing to a Changing Climate

- a. Learning objectives 1-5 are referenced in the Adapting to a Changing Climate, NCF- study guide.

Key Topic 2: Measuring and Monitoring a Changing Climate

- a. Learning objectives 7-9 are referenced in the Adapting to a Changing Climate, NCF- study guide.
- b. OSU Extension Master Naturalist, Oregon in a Changing Climate power point: https://docs.google.com/presentation/d/1JyJ5cLA9QYkVdNyHKBayJXyLGldMymnObjWedyaZjIM/edit#slide=id.g169ac810bb_0_0
- c. Oregon Climate Change Research Institute: <https://blogs.oregonstate.edu/occri/>

Key Topic 3: Risks and Impacts to Natural Resources and Society from a Changing Climate

- a. Learning objectives 10-11 are referenced in the Adapting to a Changing Climate, NCF- study guide.
- b. Oregon Global Warming Commission, Natural and Working Lands Proposal: <https://www.keeporegoncool.org/reports>
- c. NOAA Western Regional Action Plan (WRAP) https://media.fisheries.noaa.gov/dam-migration/rap-west_coast-highlights.pdf
- d. Oregon Climate and Agriculture Networks (OrCAN) <https://www.oregonclimateag.org/>
- e. Oregon Department of Forestry Climate Change and Carbon Plan: <https://www.oregon.gov/odf/forestbenefits/Documents/odf-climate-change-and-carbon-plan-draft.pdf>
- f. Oregon Global Warming Commission, Climate Change in Oregon: <https://www.keeporegoncool.org/climate-change-in-oregon>
- g. Tribal Climate Change Project: <https://tribalclimate.uoregon.edu/tribal-profiles/>
- h. The Status of Tribes and Climate Change Report (STACC): <https://sites.google.com/view/stacc2021-itep/how-to-access-report?authuser=0>
- i. Indigenous peoples and Northwest Climate Initiatives: https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/tribes_NPLCC-1l8h7sr.pdf

Key Topic 4: Policies and Program for Adapting to a Changing Climate

- a. Oregon Department of Land and Conservation and Development, Land use planning and climate change: <https://www.oregon.gov/lcd/CL/Pages/index.aspx>
- j. Learning objectives 13 are referenced in the Adapting to a Changing Climate, NCF- study guide.
- k. Climate adaptation and mitigations efforts: <https://regeneration.org/>
- l. The Nature Conservancy: Forest and Farms can fight climate change: <https://www.nature.org/en-us/about-us/where-we-work/united-states/oregon/stories-in-oregon/forests-farms-fight-climate-change/>
- m. Oregon Department of Energy: Reducing carbon emissions: <https://www.oregon.gov/energy/energy-oregon/Pages/Greenhouse-Gases.aspx>
- n. 2021 Oregon Climate Change Adaptation Framework: https://www.oregon.gov/lcd/CL/Documents/2021_CLIMATE_CHANGE_ADAPTATION_FRAMEWORKandBlueprint.pdf
- o. Oregon's Climate Action Plan: <https://oeconline.org/oregon-climate-action-plan/>
- p. Department of Environmental Quality, Oregon's Climate Protection Program: <https://www.oregon.gov/deq/rulemaking/pages/rghgcr2021.aspx>
- q. Oregon Global warming commission, biennial report to the legislator: <https://static1.squarespace.com/static/59c554e0f09ca40655ea6eb0/t/5fe137fac70e3835b6e8f58e/1608595458463/2020-OGWC-Biennial-Report-Legislature.pdf>
- r. Oregon's Climate Resources: <https://www.oregon.gov/lcd/CL/Pages/Climate-Change-Resources.aspx>