Climate change taking toll on Oregon, but state has many options for adaptation

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The effects of a changing climate continue to significantly affect Oregonians and the state's resources and infrastructure, the latest biennial report released today by the Oregon Climate Change Research Institute concludes.

In addition, the legislatively mandated Oregon Climate Assessment, which references many peer-reviewed studies, sheds light on growing racial and economic disparities in exposure to climate extremes and the natural hazards associated with them.

"New evidence is consistent with observations about temperature and precipitation that were reported in previous assessments," said Erica Fleishman, director of the Oregon Climate Change Research Institute and one of the editors of the report. "Average annual temperature in Oregon is increasing and is likely to continue increasing, especially in summer. And the intensity of major storms is likely to increase, which may lead to more flooding."

OCCRI is housed in the College of Earth, Ocean, and Atmospheric Science at Oregon State University. More than 30 collaborators affiliated with OCCRI, including OSU, OSU-Cascades, Portland State University, the University of Oregon, multiple governmental agencies and other organizations, worked together to compile the fifth Oregon Climate Assessment.

Issued four months after wildfires of historic proportions occurred throughout Oregon, the report projects that the number of large fires in the state and throughout the West will increase as the climate continues to change. It notes that in some cases, however, prescribed fire, including traditional Indigenous burning practices, may help reduce future blazes' size and intensity.

"The report complements key messages in Oregon's draft 2020 Climate Change Adaptation Framework that both mitigation and adaptation actions can help Oregon's residents reduce the short- and long-term risks of climate change, while revitalizing the state's economy and increasing environmental equity," said Fleishman, who is also a professor at OSU. "This assessment, like previous assessments, illustrates the consensus

among a diverse group of scientists and public servants that climate change likely will continue to have profound effects on natural hazards and human communities in Oregon."

It is increasingly clear, she added, that climate change can act as a multiplier on the negative effects of other stressors, such as a pandemic, and vice versa.

"It also is becoming more and more apparent that simultaneously addressing health inequities and climate-related natural hazards will contribute to Oregon's resiliency and quality of life," Fleishman said. "Racial and economic disparities in exposure to climate extremes and related natural hazards, and ensuing effects on physical and mental health of Oregon's residents, are becoming more pronounced. Tribal Knowledges and an emphasis on equity and inclusion in the development of adaptation strategies have potential to reduce negative health outcomes associated with climate change."

In line with the four previous assessments, recent research suggests that the frequency and severity of droughts in Oregon are likely to increase, especially as precipitation continues to trend toward rain and away from snow; melting snowpack is what feeds streams and other water resources during dry parts of the year.

The new report also sheds light on climate-change-related stresses to Oregon's infrastructure, key examples being the pipes and treatment plants that deal with sewage and stormwater during winter, and electricity supplies during increasingly hot summers.

"These stresses may be alleviated to some extent by greater use of wind and solar power, incentives for management of electric-vehicle charging schedules and green infrastructure," Fleishman said.

Other key points from the assessment:

- The number and intensity of heavy precipitation events, particularly in winter, are projected to increase throughout the current century. Snowpack around the state likely will melt more quickly.
- The frequency of days warmer than 90 degrees is increasing. The frequency, duration, and intensity of extreme heat events is expected to increase throughout the 21st century.
- Over the next 50 to 100 years, area burned by wildfires is projected to increase substantially, initially east of the Cascades and then on the west side.
- Flood magnitudes are likely to increase in a warmer climate. The proportion of precipitation falling as rain is likely to increase, and rainfall-driven floods tend to have higher peaks than snowmelt-driven floods.
- As sea level rises, coastal storms and high tides are likely to increase the frequency and severity of coastal flooding. By 2050, relative sea level at Newport is likely to rise between 0.6 and 1.8 feet, and at least one flood is likely to exceed 4 feet above mean high tide.
- Projected continued warming of ocean water has the potential to affect many other drivers of ocean change, such as by increasing the toxicity of harmful algal blooms. Ocean acidity also is projected to rise, which is likely to affect shell formation in diverse species of commercial, recreational and cultural value.
- Climate change is affecting the timing of seasonal events in the life cycle of plants and animals. The ability of Oregon's species to adapt behaviorally, physically or genetically to climate change in part depends on the speed of climate change.
- Projected increases in sea level and precipitation intensities are expected to strain levees and tide gates as well as sewer and stormwater infrastructure. Data-driven, science-based capital

planning that engages stakeholders can help foster important infrastructure adaptations.

- Fifty percent of Oregon households spend 30% or more of their income on rent or a mortgage. Displacement and income loss associated with climate impacts will increase the risk of homelessness, food insecurity and mental health challenges.
- Tribes throughout Oregon may experience impacts of climate change that relate to their cultures, identities, histories, relations with other governments and land-holding status. Tribes are building climate change resiliency plans around priority topics such as access to first foods, community health, changes in the distributions or status of native species, and wetland alterations.
- The costs of adaptations to climate change in the agricultural sector likely will be passed on to consumers, exacerbating the existing challenges some Oregonians face in buying affordable produce. Agricultural laborers' incidence of heat-related illnesses and exposure to wildfire smoke is expected to increase; in Oregon, 28% of agricultural workers are undocumented immigrants who may be unable or reluctant to seek health care.

More information: Oregon Climate Assessments: blogs.oregonstate.edu/occri/or … climate-assessments/

Provided by Oregon State University

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