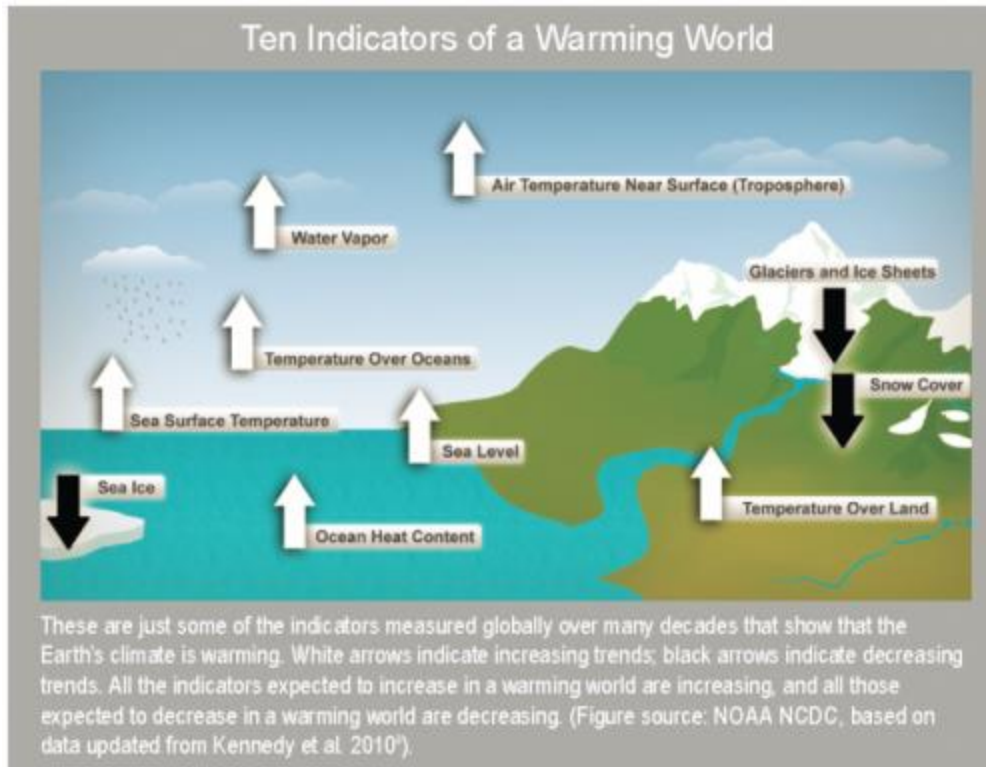


Climate Change

Climate change is already affecting the American people in far-reaching ways. Certain types of extreme weather events with links to climate change have become more frequent and/or intense, including prolonged periods of heat, heavy downpours, and, in some regions, floods and droughts. In addition, warming is causing sea level to rise and glaciers and Arctic sea ice to melt, and oceans are becoming more acidic as they absorb carbon dioxide. These and other aspects of climate change are disrupting people's lives and damaging some sectors of our economy.

Scientists and engineers from around the world have meticulously collected this evidence, using satellites and networks of weather balloons, thermometers, buoys, and other observing systems. Evidence of climate change is also visible in the observed and measured changes in location and behavior of species and functioning of ecosystems. Taken together, this evidence tells us that the planet is warming, and over the last half century, this warming has been driven primarily by human activity.

The burning of coal, oil, and gas, and clearing of forests have increased the concentration of carbon dioxide in the atmosphere by more than 40% since the Industrial Revolution, and it has been known for almost two centuries that this carbon dioxide traps heat. Methane and nitrous oxide emissions from agriculture and other human activities add to the atmospheric burden of heat-trapping gases. The pattern of temperature change through the layers of the atmosphere, with warming near the surface and cooling higher up in the stratosphere, further confirms that it is the buildup of heat-trapping gases that has caused most of the Earth's warming over the past half century. [Read more...](#)



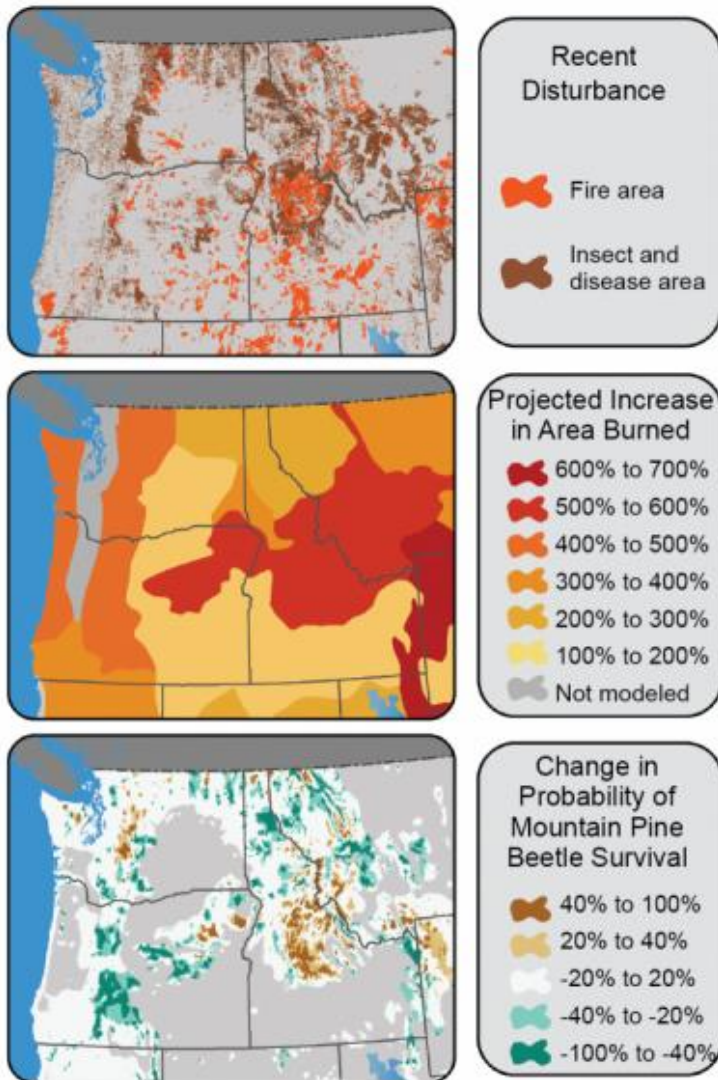
Changing Climate in the Northwest

The Northwest's economy, infrastructure, natural systems, public health, and agriculture sectors all face important climate change related risks. Impacts on infrastructure, natural systems, human health, and economic sectors, combined with issues of social and ecological vulnerability, will unfold quite differently in largely natural areas, like the Cascade Range, than in urban areas like Seattle or Portland.

Water Availability

Seasonal water patterns shape the life cycles of the region's flora and fauna, including iconic salmon and steelhead, and forested ecosystems. Observed regional warming has been linked to changes in the timing and amount of water availability in basins with significant snowmelt contributions to streamflow. By 2050, snow melt is projected to shift three to four weeks earlier than the last century's average, and summer flows are projected to be substantially lower, even for a scenario that assumes emissions reductions. These reduced flows will require trade-offs among reservoir system objectives, especially with the added challenges of summer increases in electric power demand for cooling and additional water consumption by crops and forests.

Insects and Fire in Northwest Forests



Insects and Fire in Northwest Forests

Climate change will alter Northwest forests by increasing wildfire risk, insect and disease outbreaks, and by forcing longer-term shifts in forest types and species. Many impacts will be driven by water deficits, which increase tree stress and mortality, tree vulnerability to insects, and fuel flammability.

Climate Change in Lake County, Oregon

Seventy-eight percent of the land in Lake County is federally managed and designated as national forest or range. Living and working so closely with our natural landscape, we see and feel the impacts of climate change every day. Decades of aggressive fire suppression and old growth logging have created dense, decadent forests and greater risk of uncharacteristically severe wildfires. We are in the third year of extreme drought designation in the Goose Lake Valley. These changes in our climate have severe impacts on the health of our surrounding environment and the stability of our economy.

Local Impacts



Fremont-Winema National Forest brochure on the effects of climate change on our local forest (1/2).
[Click to expand.](#)

In August 2012, the Barry Point fire burned 93,000 acres of pine, juniper, and range land over the course of three weeks on the Fremont-Winema National Forest.

Wildfire occurs naturally and can have benefits in forest ecosystems throughout the west, but due to decades of aggressive fire suppression and old growth logging, we now have dense, decadent forests susceptible to large-scale, torching fires. Large-scale fires, like the [Barry Point fire](#), in western and southeastern states can pump as much carbon dioxide into the atmosphere in a few weeks as the states entire motor vehicle traffic in a year, according to newly published research by scientists at the National Center for Atmospheric Research (NCAR). Overall, the study estimates that U.S. fires release about 290 million metric tons of carbon dioxide a year, the equivalent of 4 to 6 percent of the nation's carbon dioxide emissions from fossil fuel burning.



Fremont-Winema National Forest brochure on the effects of climate change on our local forest (2/2).
Click to expand.

Our efforts to mitigate potential for uncharacteristically severe wildfire are to implement restoration programs that focus on both the application of mechanical treatments and fire, while conserving and promoting old trees and late development forest structures. Restorative projects have been implemented on forests like the Fremont-Winema National Forest on a small scale. After the Barry Point fire missed areas where thinning and fuel reduction have taken place, it is apparent that the pace of the restoration work is too slow.