

BITTERROOT CLIMATE ACTION GROUP

Rav. Co. already experiencing climate change

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BITTERROOT CLIMATE ACTION GROUP

Did you know that the likelihood of lightning strikes will increase because of climate change? Or that the Montana fire season now is 78 days longer than in the 1970s?

This is the first in a series of articles from the Bitterroot Climate Action Group that will explore the topic of climate change and what it will mean for the Bitterroot Valley.

Ravalli County is already experiencing the impacts of changing climate, from warmer winters leading to reduced water storage in our snowpack, to an increase in extreme weather and more severe wildfires. In this article, we will define climate change and describe some of the likely changes that we will experience, based on extrapolating from recent trends.

What is the difference between weather and climate? Weather refers to the condition of the atmosphere at a given time and place. Climate refers to average weather conditions of a region over a longer period of time, with a minimum of 30-year averages. Climate also includes extreme weather occurrences, including extremes in cold and snowstorms. Climate change, therefore, refers to long-term changes in average weather conditions.

The Earth's climate is inherently dynamic and has been changing throughout the planet's history. Past climate changes have been associated with natural causes, such as changes in the earth's orbit, volcanic activity and gradual, peri-

odic shifts in the atmosphere's greenhouse gas concentrations.

However, the recent change in earth's climate has been largely caused by human activity. (Environmental Research Letters, April 13, 2016, Consensus on consensus: a synthesis of consensus estimates on human-caused global warming, John Cook et al)

The Earth's temperature has been tracked since 1850 and shows a rapid rise with the burning of fossil fuels starting during the industrial revolution. A similar increase in CO2 emissions parallels the temperature change. Overall, the earth's temperature has risen 2 degrees F since the 1880s and the higher latitudes are warming faster than the tropics. According to NASA, since 2000, Arctic temperatures have risen about twice as fast as global temperatures.

Bitterroot Valley climate is influenced by the weather patterns of the Pacific Northwest, with cooler summers, milder winters, and more year-round precipitation than central and eastern Montana. Because Ravalli County is a semi-arid region, availability and quality of water are critical for the health of our community and ecosystem. Mountain snowpack is the primary water supply serving our waterways, municipalities, farms, ranches and recreational and tourism industries.

Based on extrapolation from past trends, Bitterroot Valley summers are expected to become hotter and drier with winters and springs warmer and wetter. More precipitation will fall as rain instead of snow. These changes will directly impact our quality of life,

affecting water resources, wildlife, agriculture and the recreation economies that depend on them.

Data from NOAA and analysis in the Montana Climate Assessment (2017) show that northwestern Montana's average annual temperature increased by about 2.5 degrees F since 1950, with the highest rate of warming occurring in the spring. By mid-century, Montana's temperatures are projected to increase 4 to 6 degrees F, which is greater than the national and global changes. There are likely to be between 5-35 more days over 90 degrees. On the positive side, there will likely be a 12-day increase in the growing season.

There have been no changes in average rainfall amount since 1950, but the seasonal pattern is projected to change, with increases in fall, winter and spring, and decreases in summer. Despite recent winters of 2017-2019, when western Montana mountains recorded record-high snowpacks, this is unlikely to be the norm, as warmer temperatures will result in more winter precipitation falling as rain than as snow. This will result in decreasing

snowpack, particularly at mid and lower elevations.

Less snowpack will lead to earlier runoff and lower late summer flows. Hotter, drier conditions will lead to drier plant fuels, increasing the likelihood of wildfires, especially extreme wildfires. Montana FWP has documented the rising temperatures of the Bitterroot watershed from 1993 to 2019 and found that all streams and the river itself are gradually warming. Colder water-loving bull and cutthroat trout are slowly being replaced by brown trout in the warming waters.

Groundwater demand will also likely increase as surface waters and small streams dry. Higher temperatures will worsen persistent drought periods that are part of Montana's climate. This will affect everyone, especially farmers and ranchers.

Preparing for climate change now will allow our valley not just to be resilient in the face of that changing climate, but also in response to the snowstorms, spring floods, droughts, and wildfires that are part of life in this part of Montana. If we plan now, the Bitterroot Valley

and its communities may be able not only to reduce some negative climate impacts, but also to "bounce forward," instead of finding ourselves solely reacting to change.

Kit Tilly is a retired microbiologist and Hillery Daily is a retired health care provider. Both are long-time Bitterroot Valley residents who love the Valley and surrounding mountains. They are Bitterroot Climate Action Group founding members, who hope to help the area be resilient in the face of climate change, by mitigating what we can and adapting to the rest.