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AS COLORADO HEATS UP, WATER SUPPLY AT RISK

Water resource managers may have to prepare for a warmer Colorado and a shift in the timing of runoff in most of the state's river basins, according to a new assessment of Colorado climate change authored by scientists at NOAA's Earth System Research Laboratory, the University of Colorado at Boulder, and Colorado State University.

"Colorado Climate Change: A Synthesis To Support Water Resource Management and Adaptation" was released today by the Colorado Water Conservation Board in connection with this week's Governor's Conference on Managing Drought and Climate Risk. The CU-NOAA Western Water Assessment produced the report on the board's behalf for state water planners.

"This assessment provides the most reliable scientific information available on temperature, precipitation, snowmelt, and runoff for our state and its rivers," said lead author Andrea Ray of NOAA's Earth System Research Laboratory in Boulder. "Taken together, the overwhelming majority of studies agree that temperature increases alone will reduce our water supply by mid-century, even with no change in precipitation," said Ray.

Observations cited in the report indicate Colorado's temperature rose 2° Fahrenheit (F) over the past 30 years. Over the entire western United States, about 1° F of observed warming has likely been caused by the buildup of carbon dioxide and other heat-trapping gases in the atmosphere. Computer models project Colorado will warm another 4° F by 2050.

As a result of this projected warming, by the mid-21st century, current climate regimes may shift, bringing the temperature regimes of the Kansas border westward and upslope to the Front Range. Meanwhile, the climate of the desert Southwest may creep into Western Slope valleys.

In contrast, the scientists found no consistent trend—up or down—in the state's precipitation, which remains highly variable. However, the onset of spring streamflow from melting snow has already shifted about two weeks since 1978 as a result of warmer spring temperatures, while late summer flows have decreased.

Earlier spring melt, increased evaporation, and drier soils will reduce runoff for most of the state's river basins, with a 5% to 20% loss in the Colorado River Basin by the mid-21st century. According to the report, the overwhelming majority of studies agree on a reduction in total water supply by the mid-21st century.

"The population and the environment of Western states depend on Colorado water," said Brad Udall, director of the Western Water Assessment, which is part of the CU-NOAA Cooperative Institute for Research in Environmental Sciences. "This report gives water resource managers a synthesis of the best scientific knowledge of what is expected for Colorado's climate over the next few decades to help them plan now for drought and adaptation to climate change."

The Western Water Assessment is a cooperative program of NOAA and CU-Boulder and is one of seven Regional Integrated Sciences and Assessments funded by the Climate Program Office at NOAA.

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