

As Colorado Heats Up, Water Supply Expected to Be at Risk, Says New Study

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A warming Colorado likely means a reduction in the state's water supply later this century, according to a new assessment by the University of Colorado at Boulder and the National Oceanic and Atmospheric Administration.

(PhysOrg.com) -- 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 by scientists at the National Oceanic and Atmospheric Administration, the University of Colorado at Boulder and Colorado State University.

Titled "Colorado Climate Change: A Synthesis To Support Water Resource Management and Adaptation" the assessment 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."

Observations cited in the report indicate Colorado's temperature rose 2 degrees Fahrenheit 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, according to the assessment.

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

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 stream flow from melting snow has already shifted about two weeks since 1978 as a result of warmer spring temperatures, while late summer flows have decreased, they said.

Earlier spring melt, increased evaporation and drier soils will reduce runoff for most of the state's river basins, with a 5 percent to 20 percent loss in the Colorado River Basin by the mid-21st century, said the authors. 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."

Provided by University of Colorado at Boulder

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