**Investigating potential recharge to the Denver Basin Aquifer System from the Front Range Mountain Block using water stable isotope tracers**

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The Denver Basin Aquifer System (DBAS) is an important groundwater resource for Front Range communities and is increasingly so as populations grow and surface water supplies remain limited. As demand on the DBAS increases, it is necessary to better constrain aquifer recharge mechanisms to enable sustainable use of this resource. In other sedimentary basin aquifer systems, mountain front recharge has been shown to be a significant contributor to local basin groundwater recharge. In the DBAS, inputs from the mountain block are poorly understood, and previous numerical models have treated large segments of the mountain-front boundary as impermeable. However, there exist potential connections between the mountain block and the DBAS, either by direct contact of permeable units, which would facilitate underflow recharge into the basin, or by surface water infiltration to the aquifer units where they outcrop near the mountain front. To observe relationships between mountain block water and DBAS water, we measured the δ2H and δ18O of surface waters, ground waters, and precipitation in and around the Front Range. Using these water stable isotope tracers, we seek to understand the unique signature of mountain-block water and compare these tracers with DBAS water stable isotope data. We hypothesize that the low δ2H and δ18O typical of the high-elevation Front Range will result in DBAS groundwater δ2H and δ18O values that are lower than basinal streams and precipitation. Our initial results indicate that streams originating in the Front Range provide recharge via downward seepage into the basin aquifers, rather than direct recharge from the mountain block aquifer to DBAS units. These results help to better inform models of aquifer recharge and to promote sustainable use of DBAS water resources.