

# **Improving understanding of the Great Salt Lake watershed hydrochemical cycle among underrepresented ethnic student communities in Ogden, UT.**

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The GETUP (Geoscience Education Targeting Underrepresented Populations) is a project supported by NSF designed to assess the effectiveness of a multifaceted approach to education among Earth and Environmental Science (EES) majors from underrepresented minorities at Weber State University (WSU) in Ogden, Utah. The Summer Bridge program ran for two weeks and provided students with an introduction to Great Salt Lake (GSL) basin water resources. Students collected water samples from GSL, local streams, and the well field on WSU's campus. Students then analyzed major element chemistry of sediment and waters with the help of faculty and students in the EES department using lab facilities at WSU.

The Great Salt Lake closed terminal watershed is uniquely suitable to study hydrochemical cycles. Students studied water chemistry of naturally occurring fresh water, of human impacted fresh water, and of geothermal waters, and saline lake waters. Water samples were acidified with nitric acid and filtered through 0.2 micrometer filter. Field in-situ parameters: temperature, pH, ORP, dissolved oxygen, and electric conductance were measured using Troll 9500 probe and concentrations of forty elements were analyzed in ICP-MS. Freshwater samples were mostly calcium-carbonate or calcium-magnesium carbonate dominated. The total dissolved solids evolved from 40 mg/l in springs located in higher elevations, to 170 mg/L in streams in the middle section of the watershed, 6.3 g/L in hot springs, and 180 g/L in Great Salt Lake. Uniquely high values of arsenic and uranium in a human impacted pond, and manganese reflected the local geological and anthropogenic sources. Other elevated concentrations were observed for strontium, barium, titanium, boron, and lithium. River waters and GSL water have also relatively higher concentrations of aluminum, iron, manganese, lead, arsenic, selenium, and mercury.

In a discussion conducted at the end of the Summer Bridge Program students overwhelmingly indicated the importance of this watershed research in their local communities.