

Runoff Processes and the Evolution of Water Chemistry in the Saguache Creek Watershed of the Upper Rio Grande

Marty Frisbee and Fred Phillips (advisor)
Department of Earth and Environmental Sciences
New Mexico Tech

PURPOSE OF STUDY

Snowmelt is a significant source of recharge in the Upper Rio Grande. However, runoff processes that control the partitioning of water during snowmelt are poorly understood. The researchers will use stream and groundwater chemistry to understand runoff processes, residence times, and flowpath length distributions in the Upper Rio Grande.

STUDY UNDERWAY

- By October 2006, the researchers developed a criteria by which a sub-catchment of the Upper Rio Grande was selected. The Saguache Creek watershed in the northern San Luis Valley was selected.
- The researchers will instrument the stream with a water quality sonde at the headwaters and at the lower reaches and will date the spring water using ^{36}Cl and ^3He .

BENEFITS

- The results of this study will aid in understanding the partitioning of water and better distributed models that simulate and predict mountain front recharge at high elevation catchments.

below right: *Marty Frisbee at Big Springs, a low elevation, high-flow spring system that emerges from fractured andesite and a potential long-term monitoring site. Marty Frisbee comes from a small rural community in Vale, North Carolina. He received a masters degree from UNC Charlotte in earth science specializing in hillslope hydrology. Marty is currently pursuing a PhD in hydrology at NM Tech under the supervision of Fred Phillips. He plans to graduate in early 2009.*



left: *This stream is the South Fork of Saguache Creek and one of potential long-term monitoring sites. below: Marty stands on South Fork Trail waiting for his test probes to settle out before for taking chemistry readings.*



above center: *A typical field measurement set-up measuring conductivity, pH, temperature, and chloride in a spring. With the WRRI award, Marty will be able to also measure sodium and calcium.*



WRRI

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