Quantification of stream recharge using continuous $^{222}$Rn measurements during a storm

This summer, the main areas of research for my project that were focused on were the analysis of dissolved ion concentrations within the stream. Multiple trips to Santa Barbara were made utilizing the provided fellowship in order to prepare my collected samples for ICP analysis, to prepare quality check standards, and to eventually run my samples and all standards at the UCSB Materials Research Laboratory on their ICP – AES device. Samples for stable isotope ratios were also prepared and sent off to UC Davis for analysis in their Stable Isotopes laboratory.

The second focus of research for this project over the summer was to analyze $^{222}$Rn activities within a well-studied field area: Sagehen Creek nearby Truckee, CA. At this location, multiple tests were performed using $^{222}$Rn activities to study gas loss due to aeration of the stream over waterfall-like structures as well as further attempts at creating a mixing model between spring water, upstream water, and local groundwater in upper reaches of the stream. First studies were conducted at the local USGS flood control weir and $^{222}$Rn activities were analyzed upstream and downstream of the weir in order to look for changes in $^{222}$Rn activities caused by air loss. Similar studies were also done with the source of the consumed water at Sagehen Field Station and studies were preformed to determine how much air is lost due to transport of the water from the spring to the station.