Introduction
Dissolved oxygen (DO) profoundly influences aquatic systems and is determined primarily by temperature and atmospheric partial pressure of oxygen (PO$_2$; Jacobsen 2008). Rising global temperatures may reduce DO, particularly at high altitudes where PO$_2$ is already low (Fig. 1). Such reductions may compromise high altitude aquatic ecosystems through effects on local populations of aquatic organisms. Aside from direct effects on survival, warming-induced changes in DO may also strongly affect body size of invertebrates, altering size structure of communities. I therefore asked two related questions:

How do characteristics of altitude impact DO concentrations? Does body size of aquatic macroinvertebrates shift with DO?

Results
Morphological measurements and data analysis are still in progress, but we can see that water temperature increases with ambient temperature across sites (Fig. 6). DO did not change with elevation (Fig. 7), likely because reductions in water temperature kept pace with reductions in PO$_2$.

Other studies have observed a relationship between oxygen availability and body size/length in several taxa. In 1,853 species of benthic amphipods ranging from polar, tropical, freshwater, and marine ecosystems, a strong correlation between DO concentrations and amphipod length was discovered (Chapelle & Peck 1999). During my field sampling, I noticed that within phyla, certain species were found more often in higher elevation water systems and others in lower waters. For example, in the North Fork of the Laramie River (3050 m), I found several mayflies belonging to the family Heptageniidae (Flat-Headed Mayfly and Stream Mayfly). These mayflies, compared to Leptophlebiidae mayflies (Prong-gilled Mayflies) which were found more often in lower elevations, appeared to show relatively larger body sizes on average; however, until all of the data is collected and processed, this is only considered field observation.

Conclusion
Understanding how altitude and temperature affect aquatic ecosystems can inform management and conservation strategies to ensure these systems remain healthy. It is crucial that we continue to assess current damage and possible future challenges to these ecosystems due to climate change. Accurate predictions of climate change effects on sensitive areas such as alpine ecosystems will facilitate continued progress in mitigating these effects.