Abstract
As part of the LANL Survival Mortality (SUMO) experiment, individuals of the tree species *Juniperus monosperma* (one-seed juniper) and *Pinus edulis* (piñon pine) have experienced continuous exposure to air temperatures 5°C above ambient levels for six consecutive years. Our aim in this study was to test whether the treated trees have adapted physiologically to living in these elevated temperatures, which simulate projected global temperature rise by the year 2100. In our analysis we sampled branches from five control and five heated trees of each species. Using the Li-6400 gas exchange analyzer, we observed net photosynthesis while systematically varying air temperature around each sample from 10 to 50 degrees C. Temperature response curves will be used to determine whether the optimal temperature for photosynthesis has shifted, and whether the rate of decline in photosynthetic rate with increasing temperature has changed under the warming treatment. Photosynthesis rate over varying CO₂ levels at constant temperature was also measured, from which A-Ci curves can be constructed. From these curves maximum photosynthetic rate and maximum electron transport rate can be assessed to indicate acclimation of the biochemistry of photosynthesis to elevated temperature. In this presentation we will show preliminary results and conclusions from these analyses.