

GLOBAL WARMING: CHANGING GROWTH IN THE DESERT?

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Abstract:

This study was conducted to test if local climate warming influences the creosote bush's (*Larrea tridentata*) LATR increased height at higher elevations by determining if the optimum conditions for the species shift upward in elevation. LATR data plots were collected at 4300 sites from 2007-2014 throughout the Mojave Desert to map vegetation. It was then observed, LATR as having different growth patterns from typical vegetation by the upper end of its distribution appearing to be taller than elsewhere. Typical vegetation is usually more abundant and robust near the middle of their elevation ranges. Out of the 4300 data plots, this was reduced to 400 sites by eliminating factors such as not having significant height to be measured and only areas within the mountain slopes and their associated fans. We then performed linear regressions for LATR height by elevation on all of these ($n = 400$) and further divided these into 14 individual mountain ranges, which resulted in 9 being highly significant ($p < 0.01$) and explained from 25 – 89% of the variation in LATR height. NASA missions NPP, Orbiting Carbon Observation 2, and LANDSAT can benefit from the results through further research. Through improved studies to research the changes that global warming has on local patterns of vegetation, gives critical insights into the future predictions of vegetation growth with certain weather conditions or the impact CO₂ measurements can influence. As global temperatures increase and warmer temperatures move upslope, the results of this study are consistent with the prediction that the zone of optimal climate for LATR is rising upslope.