**Abstract**

Climate change is expected to increase the frequency and duration of extreme dry and wet years. Water is the most limiting resource in the semi-arid Chihuahuan Desert and investigating how semi-arid plants respond to precipitation extremes is pertinent to understanding how desert ecosystems will be altered in the future. To study these responses, I experimentally applied an extreme precipitation treatment to a *Bouteloua eriopoda* dominated grassland during June and July 2018 in the Sevilleta National Wildlife Refuge before the monsoon season. Seven 1 m2 plots received 10 mm water twice per week and seven 1 m2 plots received no treatment. I measured soil moisture, soil stability, and phenology of *B. eriopoda* within all 14 plots. While two natural rain events increased *B. eriopoda* growth in all plots, growth was significantly increased in response to the extreme precipitation treatment. Yet, control plots responded more quickly to natural rain pulses than continuously watered plots. Soil stability was not correlated with total cover of *B. eriopoda*. Soil stability was also measured at two adjacent long-term precipitation manipulation experiments. In comparison with this experiment, soils were more stable at watered plots in the long-term monsoon rainfall addition experiment and control plots in a long-term drought experiment.My results indicate that extreme precipitation events are beneficial for *B. eriopoda* dominated grasslands, and *B. eriopoda* is especially responsive to rain pulses between dry periods. Soil stability analyses show that the length of an experiment is important for more accurate assessment of soil stability. Previous studies found that *B. eriopoda* is sensitive to drought and these findings suggest that further investigation is needed to determine the interaction between *B. eriopoda* and soil stability, which may provide insight for future success of this dominant desert grass.