I extracted local estimates of water stress during the sampling period from NASA's ECOsystem Spaceborne Thermal Radiometer Experiment on Space Station (EcoStress) (Meerdink et al., 2019) data for each site and study period. This 70 m resolution satellite data provides the evaporative stress indicator (ESI), a measure of plant water-stress based on temperature and evapotranspiration.

and calculated deMartonne’s aridity index (aridity = P/(T+10) where P = annual precipitation and T = mean annual precipitation

I used GLMM to model the drivers of ant species richness. Species richness decreases with increasing aridity (p = 0.0168) and differs between the study months (p = 0.0329). Beta-diversity is driven more strongly by the species turnover component than nestedness. Beta-diversity increases with increasing water stress (ESI, p = 0.004). The db-RDA on community weighted mean trait values showed that ESI significantly drives mean trait values (p = 0.001). A Mantel test between the Euclidean distance of ESI and gower dissimilarity in traits showed a significant correlation between traits and ESI (0.056, p = 0.01). Fourth corner analysis with species-level trait values included showed a significant trait \* env interaction (p = 0.04). These preliminary results suggest that water stress acts as an environmental filter on ant communities of the San Joaquin valley.