# Background

- The American Southwest has been in an extreme drought for a majority of the 21st century, with some scientists calling it a megadrought.
- Adaptation to and planning for drought may not consider the long-term nature of current drying trends.

### **Study Objectives**

- . Determine changes in aridity over time across watersheds in the SW U.S.
- 2. Assess ranchers and resource managers' perceptions and experiences of aridification in the SW U.S.
- 3. Design an interactive map to report aridity through time.



We developed a Graphical User Interface (GUI) in Google Earth Engine (GEE) using CRU-TS Potential Evapotranspiration (PET). You can display changes in PET from 1901-2023 in all HUC-8 watersheds of the SW US. You can also graph changes in aridity through time. See the QR code for more information.

## Results

- Inconsistent terminology to discuss long-term drying (Fig.
- Decreased grazing capacity was most commonly reported ecological impact of aridification (Fig. 2).
- Economic hardship was most commonly reported societal impact of aridification (Fig. 3).
- Adaptation strategies tend to address these economic impacts.
- Most reported adaptive management actions will not likely yield results within a year, but have a later return on investment.

# **Perceptions of Aridification and Impacts** on Ranchers and Rangeland Managers in the Southwestern United States **SY21C-2448**

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Drought: short term, discrete periods lacking sufficient moisture.

While there is a lack of consistent language being used in the literature to describe aridification, land managers are developing climate adaptation strategies on the ground.



Southwest Climate Adaptation Science Center



Aridification: long-term changes in average water supply (precipitation) compared to long-term average water demand (evapotranspiration).

> Scan to access the mapping program. GEE account and Cloud **Project required for** access.

### Where was the term "aridification" used?



Out of 16 papers, 5 included "aridification" in their abstract and/or key words. 3 of those use the term further in the main text. In just one of those articles, it is defined as an increase in the PET to P ratio.

# How is aridification impacting rangelands?



Figure 2. Ecological impacts of aridification.



impacts on tourism health risks perceptions on climate change economic hardship none discussed

Figure 3. Societal impacts of aridification.

#### Example map output





