



# Shallow Groundwater Estimation (SAGE) for Groundwater Dependent Ecosystems

## BLM Ely District

Groundwater wells used in SAGE

- ▲ BLM
- ▲ Other

Surface Management Agency

- Bureau of Land Management (BLM)
- BLM Districts

SAGE Groundwater Trend

- Decreasing
- Increasing
- No Significant Trend

The SAGE tool predicts trends in groundwater levels at groundwater-dependent ecosystems using historical groundwater measurements, and wall-to-wall remote sensing and climate data. Time series from 1985 to 2021 of Landsat and Daymet are called in Google Earth Engine to create predictor variables for a Random Forest model. The model determines the relationship between these predictor variables (i.e. surface wetness, vegetation productivity, minimum temperature, etc.) and observed groundwater depths where these data are available. Once the model is trained, it is used to predict groundwater depths where the data are not available. From these predictions, the SAGE tool can estimate a groundwater trend at any location.

Methods and Github repository:  
<https://github.com/tnc-ca-geo/SAGE>

