Using Climate Engine to Prioritize Meadow Restoration and Assess Meadow Conditions

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Upper Onion Valley, photo by Chris Fuller
Goal: Develop a decision-support tool to help prioritize meadow restoration based on vulnerability to climate change

Objective: ACCG establishes priorities for meadow restoration

Project Scientists: Shana Gross (USFS) and Meredith McClure (CPS)

Analysis: Computer analysis of 6000 meadows over time. How do they respond to changing temperature and precipitation?

Funded by California Landscape Conservation Partnership

Work completed in summer 2018

Shana Gross will present to ACCG in February 2019
Sierra Nevada Meadow Restoration Prioritization Process

Vulnerability Assessment

Cornerstone meadows are sensitive to snowpack, rainfall variability

Prelim results presented at 2017 ACCG Monitoring Symposium
Sierra Nevada Meadow Restoration Prioritization Process

ACCG determines other factors important in selection process

American Rivers Scorecard Priorities
Using Climate Engine to evaluate restoration effectiveness

From Hausner et al, 2018
Indian Valley – Climate Engine Data

Application at ClimateEngine.org

Training was provided to ACCG members

NDVI – indicator of plant vigor. Lower values – plant stress
Pre-Restoration Conditions for Meadows

**Graph 1:** Mean NDVI (Landsat 4/5/7/8 SR) vs Total Precipitation (gridMET)

- Data Source 1: METDATA/gridMET 4000 m (1/24-deg) scale daily dataset (University of Idaho)
- Data Source 2: Landsat 4/5/7/8 surface reflectance 30 m scale daily dataset (NASA/USGS) w/ cloud mask

**Graph 2:** Mean NDVI (Landsat 4/5/7/8 SR) vs Total Precipitation (gridMET)

- Data Source 1: METDATA/gridMET 4000 m (1/24-deg) scale daily dataset (University of Idaho)
- Data Source 2: Landsat 4/5/7/8 surface reflectance 30 m scale daily dataset (NASA/USGS) w/ cloud mask
Pre-Restoration Conditions for Meadows

**Upper Onion**

Mean NDVI (Landsat 4/5/7/8 SR) vs Total Precipitation (gridMET)

- Annual Averages for Jan 1 to Dec 31 at Upper Onion
- Data Source 1: METADATA/gridMET 4000 m (1/24-deg) scale daily dataset (University of Idaho)
- Data Source 2: Landsat 4/5/7/8 surface reflectance 30 m scale daily dataset (NASA/LUSGS) w/ cloud mask

**Tyler**

Mean NDVI (Landsat 4/5/7/8 SR) vs Total Precipitation (gridMET)

- Annual Averages for Jan 1 to Dec 31
- 1984–2018
- 1984–2018 Regression Line

Data Source 1: METADATA/gridMET 4000 m (1/24-deg) scale daily dataset (University of Idaho)
Data Source 2: Landsat 4/5/7/8 surface reflectance 30 m scale daily dataset (NASA/LUSGS) w/ cloud mask