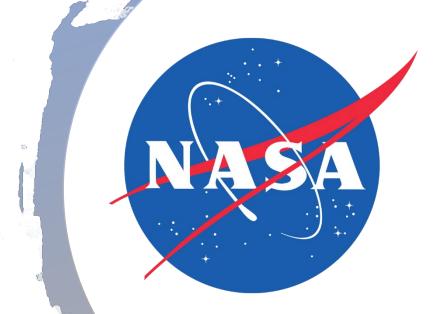**USFS – NASA Virtual Pitch Fest / June 2, 2020**

Bare-Ground Trend Forecasting on Rangelands
Nicholas Klein-Baer

About Me

Biography:

Nicholas Klein-Baer

Remote Sensing Analyst, TEUI Team, Redcastle Resources

Onsite contractor to USDA forest service at GTAC

Work Focus:

- Terrestrial Ecological Unit Inventory (TEUI)
- Digital Soil Mapping
- Other environmental modelling / machine learning applications

Team Members:

- Claire Simpson, Remote Sensing Analyst, TEUI Team, Redcastle Resources
- Rob Vaughan, TEUI Team Leader Redcastle Resources
- Nathan Pugh, Geospatial Specialist – Resource Mapping, Inventory and Monitoring (RMIM), GTAC USFS

The Idea

- **Use historical timeseries data from the Rangeland Analysis Platform (RAP) to model and forecast trends in bare-ground cover in rangelands. Incorporate additional EO data and to understand the drivers causing these changes.**

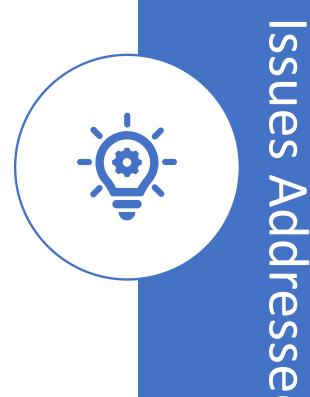- **Regional Scale – RAP data only exists in western states**

The Idea – More Details

- **What is RAP?**
- **Time series analysis and forecasting with ARIMA Model**
- **Look for correlations with additional NASA EO data (ECOSTRESS and SMAP) to understand environmental drivers**
- **Understand how management activities affect bare-ground trends (FACTS or RIPS datasets)**
- **Focus on post-fire recovery**

Issue(s) being addressed
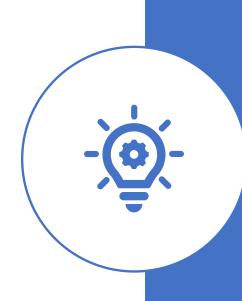
- **Rangeland management**
- Climate and drought
- Wildfire impacts
- Wildfire hazard
- Fuel loading
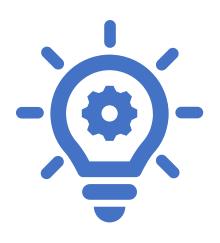- Soil moisture
- Vegetation mapping
- Other

What EO data does your idea utilize?

- ECOSTRESS
- SMAP
- Landsat
- Sentinel-2
- Open to other suggestions

Earth Observation Tools

The Idea – Outcomes / Societal Benefits

- Predict future trends in bare-ground and identify the environmental factors and management practices driving them.
- Identify how post-fire recovery may be impacted by different management activities and how it can be improved.
- Help USFS and other federal, state and private land managers understand where to focus restoration efforts and what types of management activities may be successful.
- Improve overall health of Americas rangelands.

Thank You!