USFS – NASA Virtual Pitch Fest / June 2, 2020

Erosion Potential Predictive Modelling

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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

- **Develop and validate methods to improve erosion modelling on USFS lands**
- **Scope: Local or Regional level as proof of concept with aim of applying nationally**

The Idea – More Details

- **Existing USPED Model:**

$$E = R * K * LS * C * P$$

- **Opportunities for improvement:**
  - **K-factor interpolation for areas with missing SSURGO data**
  - **C-factor: Land-Cover / Vegetation**
  - **LS-factor topography using high resolution LIDAR data**

Issue(s) being addressed

- **Wildfire impacts**
- **Water and aquatic resources**
- **Forest health**
- Forest management
- Timber harvesting
- Recreation planning
- Grazing

Issues Addressed

What EO data does your idea utilize?

- **LiDAR**
- High spatial resolution R-G-B-NIR
- Landsat
- Sentinel-2
- ECOSTRESS
- SMAP
- ICESat-2
- Uncertain - looking for guidance

Earth Observation Tools

The Idea – Outcomes / Societal Benefits

- Improve ability to focus post-fire response to erosion hazards on areas of highest risk/erodibility
- Guide forest planning decisions relating to timber harvests, recreation, grazing, etc.
- Improve watershed health and water quality by allowing land managers to make more informed decisions and prevent excessive erosion.

Thank You!