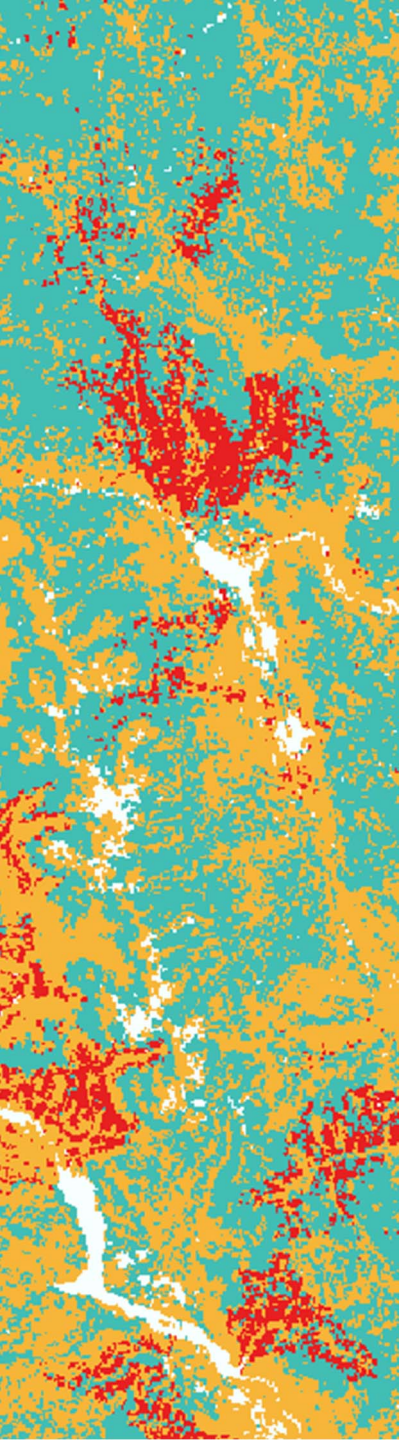


United States Department of Agriculture
Forest Service

Disturbance/Recovery Forecasting

Nathan Pugh, Claire Simpson, Rob Vaughan

Nathan Pugh
Geospatial Specialist – Resource Mapping, Inventory and Monitoring (RMIM)
USDA Forest Service
Nathan.Pugh@USDA.gov

Claire Simpson
Remote Sensing Specialist – Terrestrial Ecological Unit Inventory (TEUI)
RedCastle Resources, onsite contractor to USDA Forest Service
Claire.Simpson@USDA.gov

Rob Vaughan
Remote Sensing/GIS Analyst – TEUI Team Leader
RedCastle Resources, onsite contractor to USDA Forest Service
Robert.Vaughan@USDA.gov

Geospatial Technology and Applications Center | GTAC
USDA Forest Service

GTAC Mapping Our Future Together

Disturbance/Recovery Trend Forecasting Assessment

Key Issues: Forest and rangeland health, vegetation mapping, landcover change, climate and drought

Proposal

- Use satellite imagery in combination with forecasting models to assess the implications of historic trends and variability on forest/rangeland conditions and predict future changes to the these landscapes

Questions

- How can we accurately forecast changes to forests/rangelands given EO archives?
- What are the implications of historical disturbance and recovery patterns on current and future land surfaces?
- How do recent vegetation patterns compare to those forecasted by EO-driven models?
- What are the drivers of forest/rangeland trends in given areas?

Data

- Landsat
- Sentinel-1 & Sentinal-2
- MODIS
- Daymet
- FACTS (Forest Activity Tracking System)

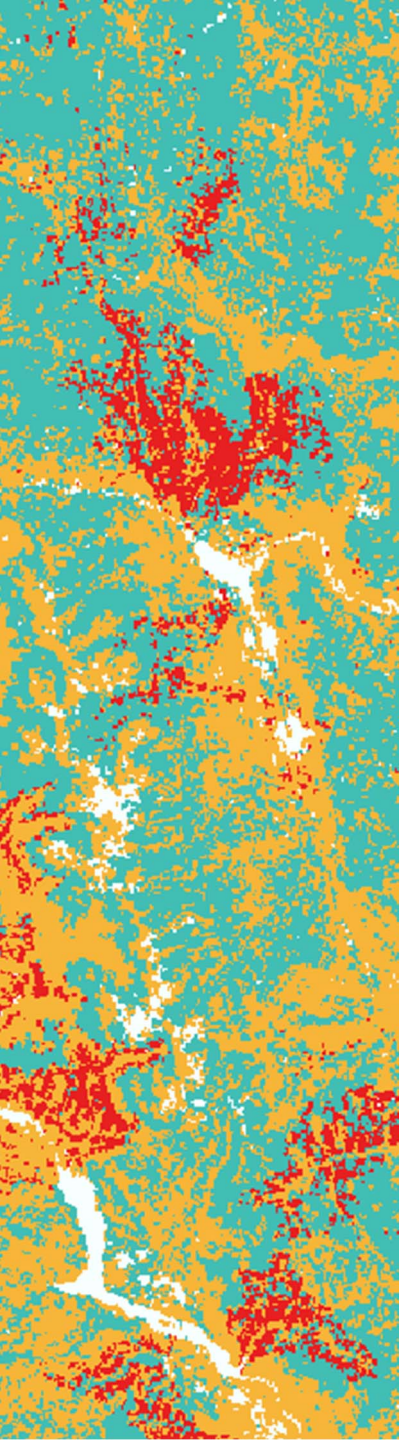
Outcomes

- **Statistical assessment: prediction accuracy of historical EO data of recent vegetation/rangeland trends**
- **Map Products**
  - Current deviation from optimal vegetation condition
  - Forecasted vegetation/rangeland departure and uncertainty
  - Vegetation/rangeland condition stability and probability of disturbance
  - Estimated time to recovery

Societal Benefits

- The results of this work – both maps and condition assessment - will facilitate forest planning and monitoring efforts, affecting harvest and planting plans as well as landuse and recreation planning

- This work will provide mapped predictions of current land surface departures from ideal conditions, and where we can expect to see vegetation recovery, or variable or disturbed conditions. These maps will be useful for directing rehabilitation efforts and/or other management activities



United States Department of Agriculture
Forest Service

Thank you!

Nathan Pugh
Geospatial Specialist – Resource Mapping, Inventory and Monitoring (RMIM)
USDA Forest Service
Nathan.Pugh@USDA.gov

Claire Simpson
Remote Sensing Specialist – Terrestrial Ecological Unit Inventory (TEUI)
RedCastle Resources, onsite contractor to USDA Forest Service
Claire.Simpson@USDA.gov

Rob Vaughan
Remote Sensing/GIS Analyst – TEUI Team Leader
RedCastle Resources, onsite contractor to USDA Forest Service
Robert.Vaughan@USDA.gov

Geospatial Technology and Applications Center | GTAC
USDA Forest Service

GTAC

Mapping Our Future Together

Remote Sensing, Geographic Information Systems, Cartography, Photogrammetry, Training, and Information Services