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Title: NASA Operational Data Extractor Service (NODES)

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About Me

Research Forester, USFS Forest Inventory and Analysis Program (FIA), National Inventory and Monitoring Applications Center (NIMAC)

Forest inventory techniques development, remote sensing and geospatial analysis, technology transfer to developing countries.

I am proposing this alone, although I am inspired by the needs of FIA and NFS staff with whom I have worked across my 20+ years in the Forest Service.

NASA Operational Data Extractor Service (NODES)

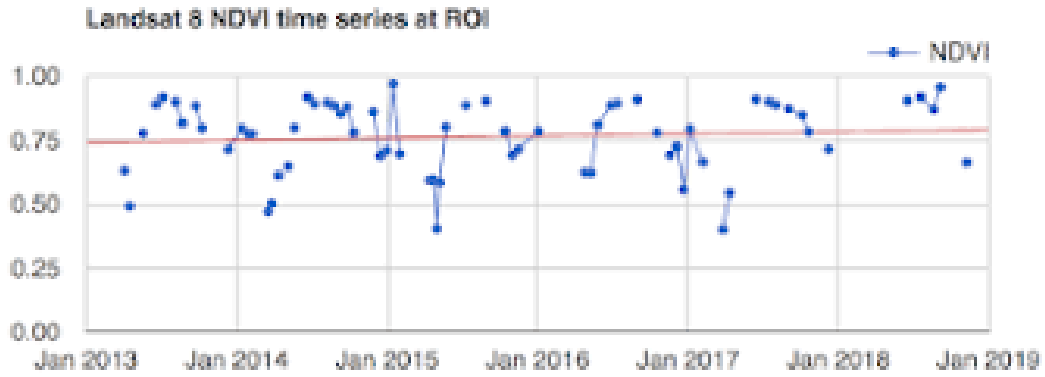
The Idea

- ***The scope of the idea is local-international – anyone with vector AOIs within which they would like to retrieve clean TS data from EO sensors***

The Idea: *NASA Operational Data Extractor Service (NODES)*

- Wall-to-wall maps are unwieldy and limiting to researchers seeking to innovate, and for managers who are not satisfied with “one size fits all” maps.

- NASA and USFS develop a cloud-based system to obtain analysis-ready, clean TS data for each feature of an uploaded AOI, such as temporally smoothed values, band combinations, and pre-computed spectral indices.



RAW

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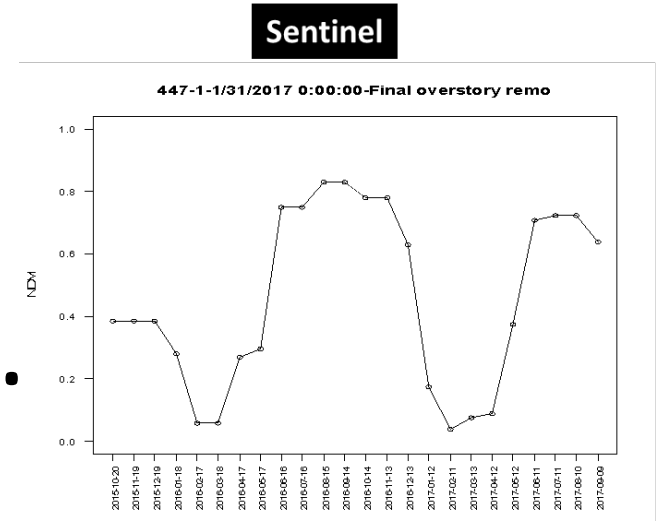

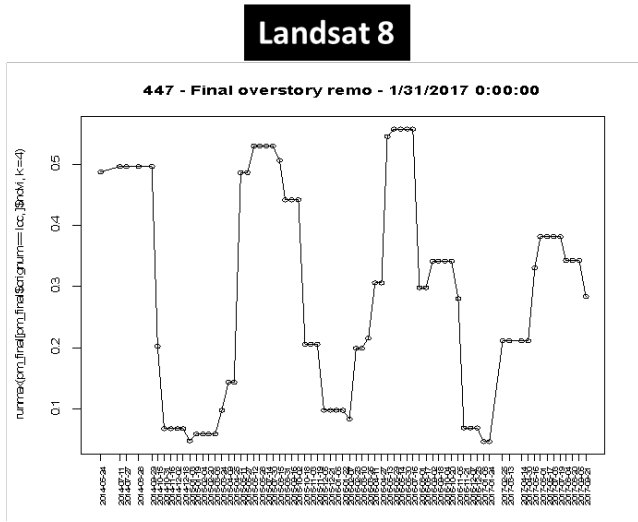

CLEAN

Issue(s) being addressed

The Idea

USFS operational work is often vector-based, such as inventory plots (FIA) and stand boundaries (NFS).

The **wall-to-wall map paradigm** relies on an expert to produce a map, then USFS will intersect their vector layer with this map and then use the map labels applied to features for decisions.

With a **feature-based paradigm**, the user can have the raw materials (clean TS data per feature) to custom-make their application based on only the set of features of interest, without the overhead of having to make or rely upon a map.

NASA programmers and TS Data + USFS vector data with forest attributes = SYNERGY!

Issues Addressed

What EO data does your idea utilize?

- Landsat
- Sentinel-1
- Sentinel-2
- MODIS

Dozens of Indices from the IDB (https://www.indexdatabase.de/)

Any dataset where time series data exist in the cloud and can be cleaned programmatically

Potential platforms include AWS-R, Google Earth Engine (GEE), ESRI raster analytical services, Sentinel Hub

The service could be as simple as working with GEE to make a web app to **securely** perform the tasks, using spectral indices selected from the IDB, as well as temporal smoothing and other cleaning scripts

Earth Observation Tools

The Idea – Outcomes / Societal Benefits

- This will help operationalize the use of NASA EO TS data in USFS by providing clean, vector-based TS data that technical staff can use in monitoring and management applications
- It will stimulate additional research by allowing scientists to explore new TS applications by focusing work on just features of interest
- Lessons learned from vector-based research can be applied by the experts to make wall-to-wall maps.

Thank You!

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