NASA DEVELOP: A Program Introduction

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What is DEVELOP?

NASA Earth Observations
Feasibility Studies
Early Career Professionals
10-week Projects
Enhances Decision Making
NASA Applied Sciences
Discovering Innovative & Practical Applications of NASA Earth Science

- Transportation & Infrastructure
- Disasters
- Urban Development
- Water Resources
- Ecological Forecasting
- Agriculture & Food Security
- Energy
- Health & Air Quality
Capacity Building

Applied Sciences’ Capacity Building Program increases awareness within non-traditional audiences

ARSET  DEVELOP  SERVIR
**NASA Centers**
1. Ames Research Center – Moffett Field, CA
2. Goddard Space Flight Center – Greenbelt, MD
3. Jet Propulsion Laboratory – Pasadena, CA
4. Langley Research Center – Hampton, VA
5. Marshall Space Flight Center – Huntsville, AL

**Regional Locations**
6. BLM at Idaho State University – Pocatello, ID
7. Maricopa County Department of Public Health and Arizona State University – Tempe, AZ
8. Mobile County Health Department – Mobile, AL
9. NOAA National Centers for Environmental Information – Asheville, NC
10. University of Georgia – Athens, GA
11. USGS at Colorado State University – Fort Collins, CO
12. Wise County Clerk of Court’s Office – Wise, VA
13. Boston University – Boston, MA

13 Locations
10 week projects
3 Terms/year
DEVELOP GitHub

End Goal

Process

Examples

**DEVELOP GitHub**

**NASA-DEVELOP**

NASA Langley Research Center

http://develop.larc.nasa.gov

**Repositories 29**

**People 5**

**Projects 0**

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**PrIME**

The software can be used to determine what areas in a region receive the most precipitation, and would thus benefit most from rainwater harvesting.

Updated 2 hours ago

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**CCROP**

Cover Crop Remotely Observed Performance (CCROP): The Maryland Department of Agriculture (MDA) is interested in verifying winter cover crop implementation and analyzing cover crop productivity using satellite imagery. As they do not have the expertise on-site to automate the process, we used a combination of scripting using JavaScript in Google...
Lassen Volcanic NP Disasters

AMES Research Center
Summer and Fall 2017

Project Partner
- Lassen Volcanic NP

Project Collaborator
- U.S. Forest Service

Community Concerns
- Fuel Loading
- Wilderness Stewardship
- Fire Risk Management
End Products

Simple Analysis of Vegetation Trends in Earth Engine (SAVETREE)
Edge effects on surface fire spread at forest-grassland interface.

High canopy understories increase risks of canopy fires due to continuous surface fuels created from ladders.

Fuel treatments at these interfaces can reduce risks to entire forest patches
SAVetree
Methodology

Historical Tree Mortality

Filter GEE Cloud Repository
- Year
- Growing Season (Mid-May ➔ Mid-Aug)
- Study Area

Generate Spectral Indices
- NDVI
- NDMI

Create Growing Season Composite
- Highest NDVI per pixel across Growing Season
- Removes clouds, phenological variation

Calculate Linear Trend
- $\rho = \beta_0 + \beta_1 t + e_t$
- Best fit line of spectral value over time period

Generate Mortality Classification
- $4 + \beta_1 = \text{Growth}$
- $4 - \beta_1 = \text{Mortality}$
- $4 \beta_1 \approx 0 = \text{Stable}$

Repeat for each year in 5 year period
SAVETREE DEMO
Up And Coming

Goddard
An Interactive Model of Mosquito Presence and Distribution to Assist Vector-Borne Disease Management in Western Europe

Idaho
Monitoring and Forecasting Precipitation Patterns and Erosion Potential to Enhance Archaeological Preservation and Decision Making

9 New projects to GitHub
Questions?

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https://develop.larc.nasa.gov/