



United States Department of Agriculture

# Forest Service Geospatial Technology and Applications

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Association of Conservation Engineers - 2016

Presented by Jess Clark

*Geospatial Technology & Applications Center (GTAC)*

*Salt Lake City, Utah*



Forest Service



# Organization

Center Director, 2 AD's, and 7 Programs

GS-15

GS-14

GS-13

50 FTEs, ~70 on-site contract staff

A blend of highly-skilled technical staff who are experts in remote sensing, image processing, GIS, IT, and natural resource management

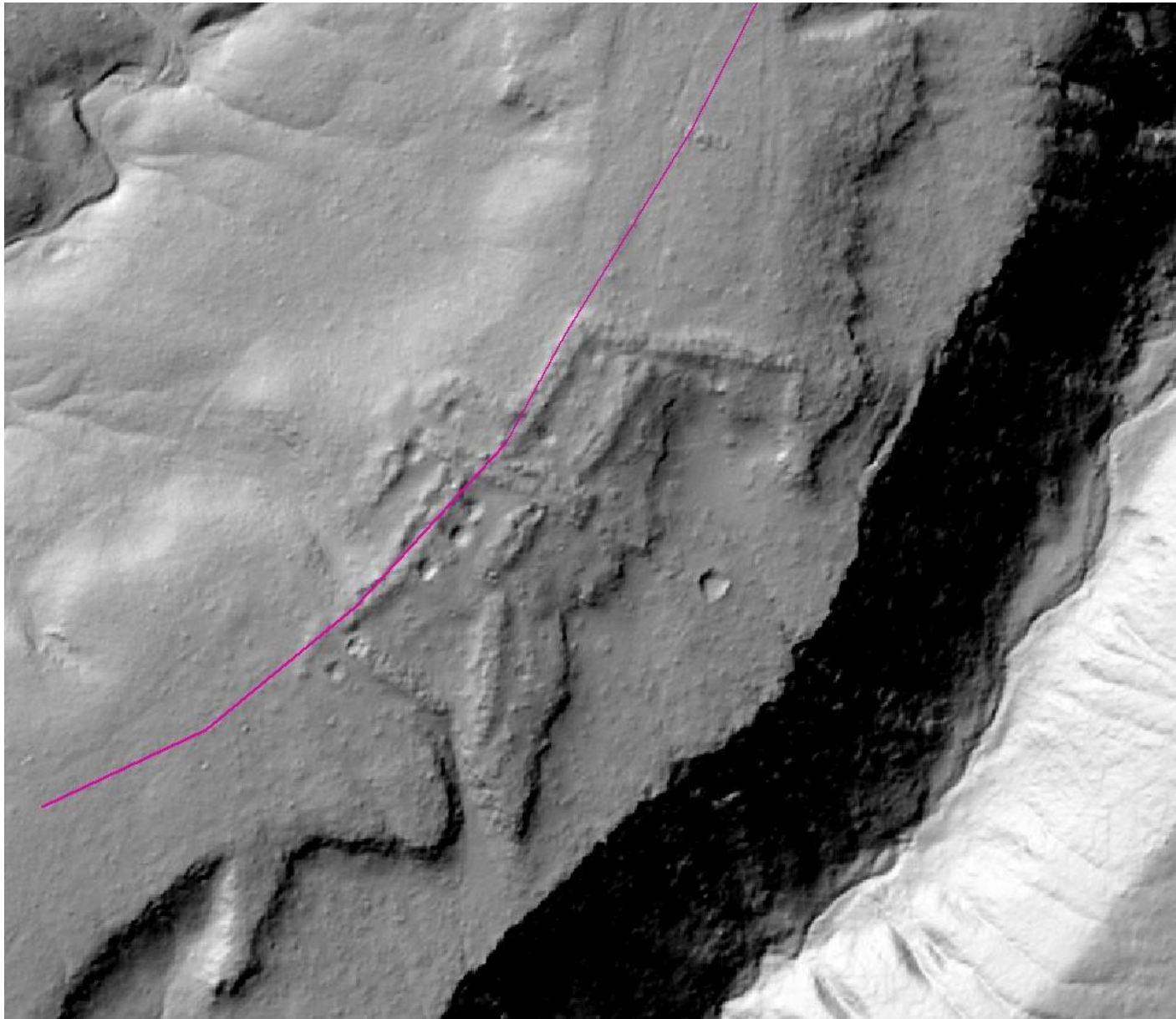




**# Yes, I love technology #**

# Lidar





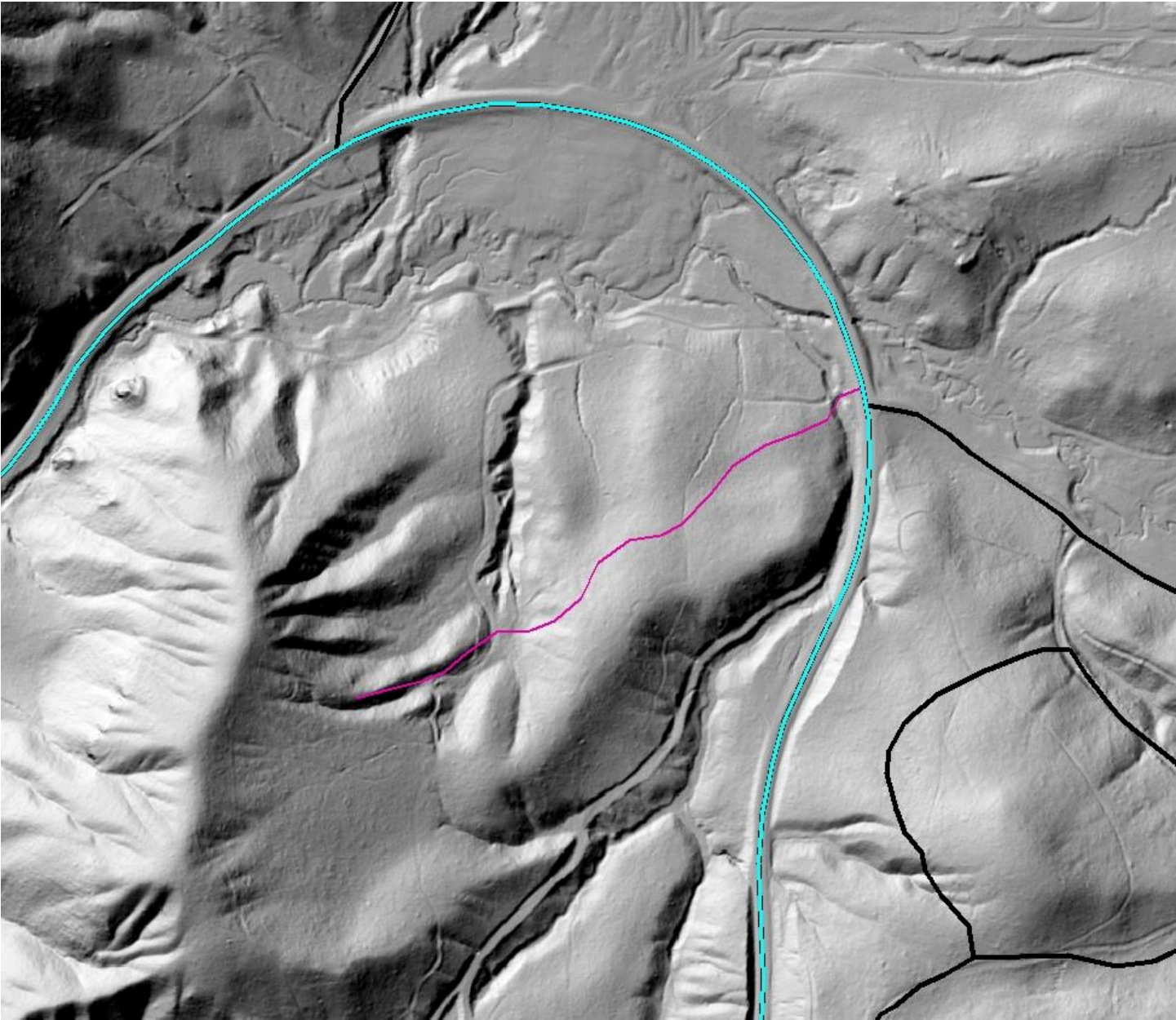


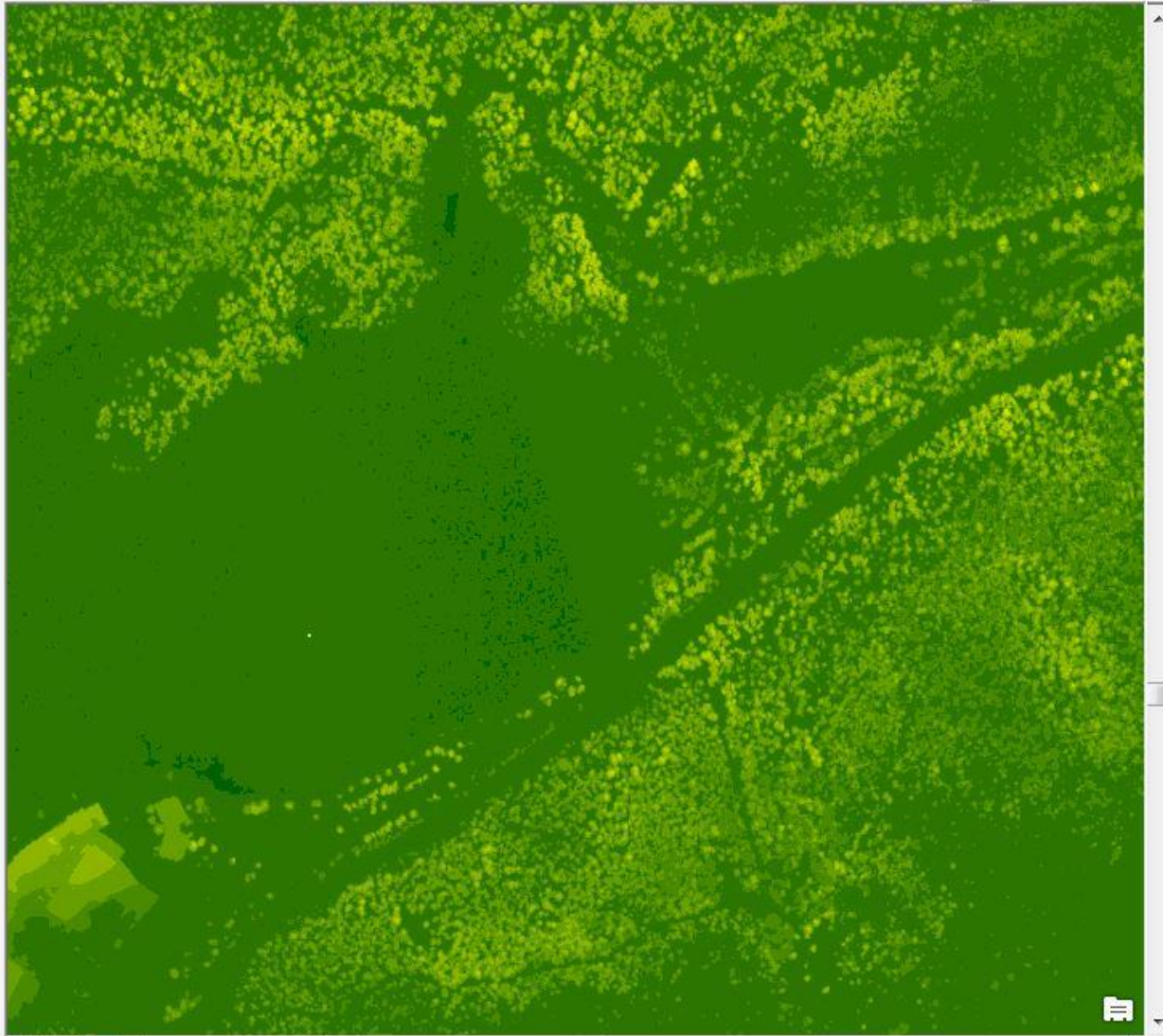


Table Of Contents



Layers

- NM\_Lincoln\_NF\_2016\_CanopyHeight\_UTM
- NM\_Lincoln\_NF\_2016\_BareEarth\_hillshade
- NM\_Lincoln\_NF\_2016\_HighestHit\_hillshade



Host derivatives using Image Services!



# United States Interagency Elevation Inventory

HIDE LAYERS HELP

IDENTIFY BASEMAP SHARE

TOPOGRAPHIC 1 BATHYMETRIC 0 CLEAR

2013 USFS Tahoe National Forest Lidar

DATA SET NAME	2013 USFS Tahoe National Forest Lidar
DATA ACCESS	<a href="#">USFS</a> , 916-640-1275
METADATA ACCESS	Not Provided
COLLECTION DATE	Summer 2013
QUALITY LEVEL	2
PROJECT STATUS	Complete
RESTRICTIONS	Public
DATA TYPE	Lidar-Topo

ZOOM TO STATE/TERRITORY

ZOOM TO COUNTY/ISLAND

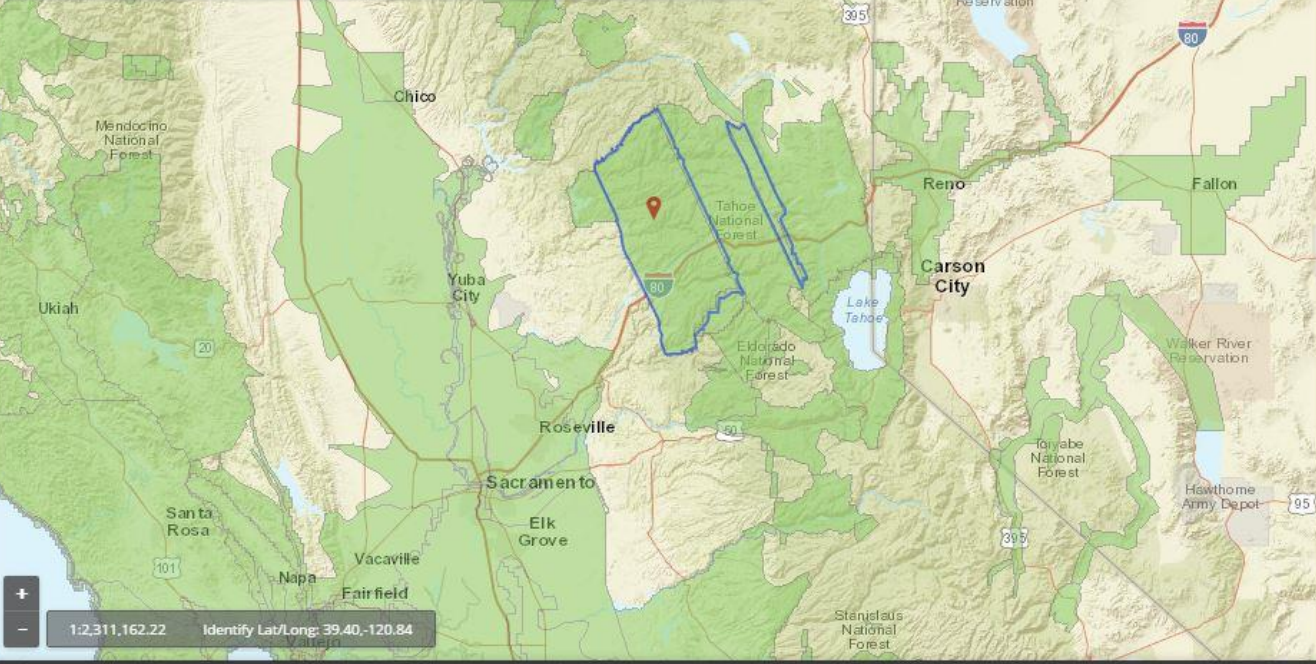
RELATED LINKS

DOWNLOAD MORE INFO FAQ CONTACT

DATA TYPE

DATA INVENTORY CURRENT AS OF MARCH 2016

- Topographic Lidar
- Topobathy Shoreline Lidar
- IfSAR Data
- Bathymetric Lidar
- NOAA Hydrographic Surveys
- USACE Dredge Surveys
- Trackline Bathymetry



1:2,311,162.22 Identify Lat/Long: 39.40, -120.84

MAINTAINED BY



# Phodar and UAS





# UAS Platform

Purpose built hexacopter “Ptarmigan”  
Based on DJI S800 airframe

Gyrostabilized Sony Nex7 and GoPro  
~20 min/flighth (LiPo batteries)



# Point Cloud Reconstruction



# Point Cloud Reconstruction



# Point Cloud Reconstruction



# Point Cloud Reconstruction





# In the Field



# FSTopo – Avenza Maps

<http://data.fs.usda.gov/geodata/rastergateway/states-regions/states.php>

To open the viewer in a separate window, click [here](#).

Please note, the viewer functions best when using Chrome or Firefox. IE users may experience limited functionality.

To view a listing of all quad map files by 1-degree block, click [here](#).





# Avenza Maps

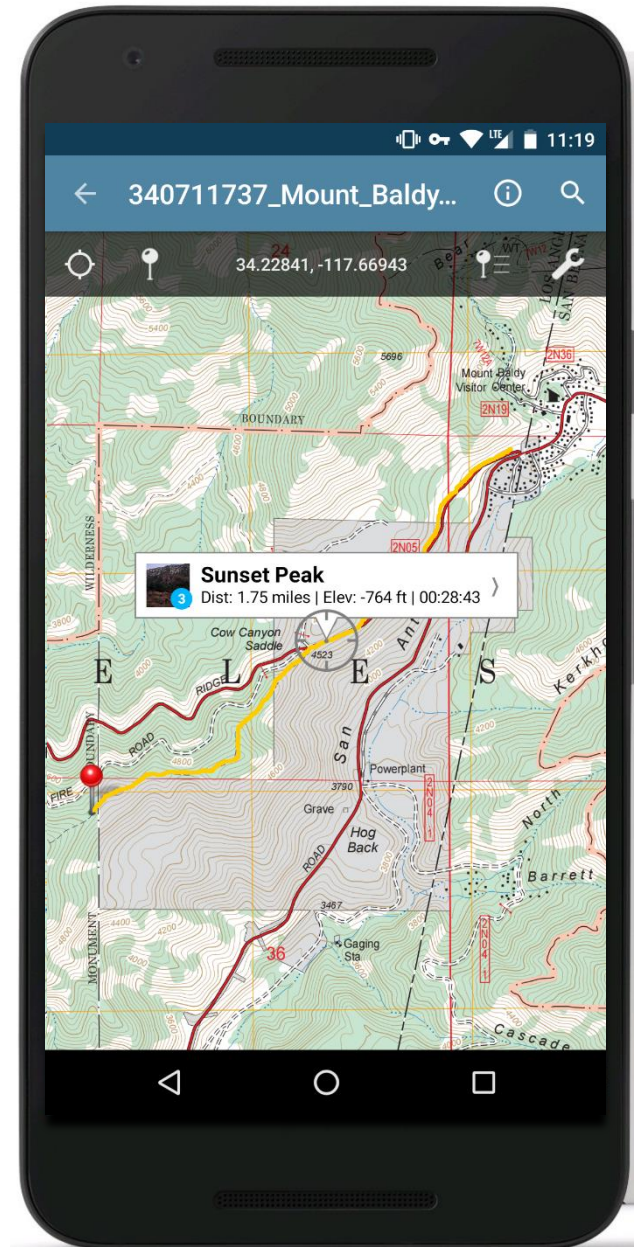
Get the App. Get the Map.®

Winner of multiple awards including

- Best Map Product Worldwide in 2011
- Best Maps for Multimedia Application
- New Technology & New Media Award
- Technology Innovation Award for Mobile Mapping

## Useful for:

- General navigation
- User-created reference maps
- Basic field data collection



# Collector for ArcGIS



Collect and update information in the field and log your current location.



Use Collector for ArcGIS online or offline – regardless of your network availability.



Works on iOS, Android, and Windows.



Supports external receivers for improved spatial accuracy.

[Now in Beta](#)



# Collector for ArcGIS

“It records data directly, in real time to ArcGIS Online, Portal for ArcGIS and ArcGIS Server at sub-meter, decimeter and centimeter accuracies when using the Arrow GNSS receivers. No post-processing or other specialty software is required.”




*<http://gpsworld.com/eos-offers-sub-meter-and-rtk-for-esri-collector-10-4-for-ios/>*



# Sharing Information through ArcGIS Online



# Celebrating 1,000 Culverts - A Grand ReOpening for Fish

A story map   



- Aquatic Organism Passage
- Importance of AOP
- Legacy Roads & Trails Program
- National Map of AOP Work
- Get techiel Dive into AOP data.
- Spotlight Projects

## AOP Spotlight Projects

A story map    

### Where are aquatic organism passage projects?

Where are aquatic organism passage projects on national forest lands?  
The map tour to the right provides a general location of spotlight projects featuring aquatic organism passage.

McGee Creek, Mt Hood National Forest




Skookum Creek, Umatilla National Forest

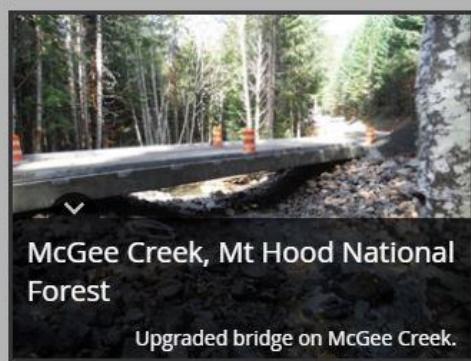
Deep Creek, Wallowa Whitman National Forest

West Pine Creek, Caribou-Targhee National Forest

Bradley Brook, Green Mountain & Finger Lakes National Forest

### AOP Story Map Tour

A story map   



How do I get help?





# Remote Sensing and GIS Training

<http://fsweb.geotraining.fs.fed.us>

## Lightning Talks

- 15-minute, concise introductions

## Awareness

- Overview of new software (e.g., ERDAS, ArcGIS, and Earth Engine)

## Technical

- Hands-on exercises

~3000 annual  
student days!



# Help Desk

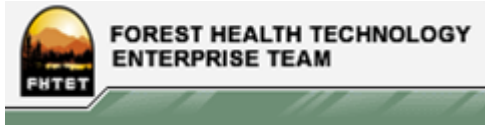
How do I apply the Savitzky-Golay filter to my MODIS 16-day composites in Earth Engine?

Anyone??



Image credit:  
connectwise.com

# Analyst for Hire



*The Nation's Forest Census*



And dozens  
more...



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