

Leveraging GIS for Wildfire Decision Support

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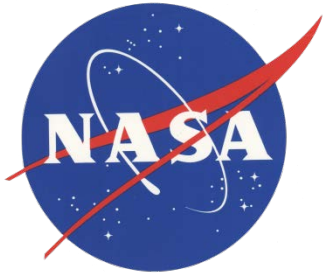
1- ISU GIS TReC

2- NASA Goddard Space Flight Center



What is RECOVER?

- NASA Applied Sciences Program sponsored project



RECOVER is a NASA Applied Sciences sponsored project. K. T. Weber (PI), J. Schnase (Co-PI) and M. Carroll (Co-PI), Goddard Space Flight Center

What is RECOVER?

- Customer-driven, Customer-centric*
- Decision Support System (DSS)
 - Rapid assembly of site-specific data
 - Delivered in customized GIS analysis environment
 - Wildfire focus

* Our “customer” is any wildfire management agency (BLM, NPS, USFS, etc.)



Benefits of RECOVER

Leveraging Common Computing Architecture

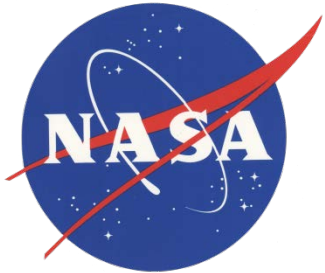


- Works seamlessly across all devices
- Reduces need for custom applications
- Platform for integration with other business systems
- Cross organizational collaboration
- Ready to use content and services
- Content management system



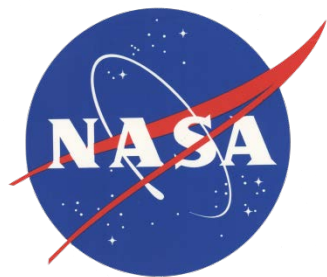
How Does it Work?

- Step 1: Ignition



How Does it Work?

- Step 2: Generate the RECOVER Web Map



Step 1: Import Fire Boundary Shapefile (optional)

Added Shapefiles: 1

Clear

Step 2: Create RECOVER Web Application

State: ID

Upload fire boundary: CharlotteFire.zip [Go back](#)

Area of Interest: [Icons]

Clear

Layers to Clip:

- NHD
- Roads
- Habitat
- LandslidePotential
- PLSS
- Wetlands
- Geology
- WBD
- Fires1950_Present
- Soils_STATSGO
- Soils_SSURGO
- SMA
- Slope_Resample.tif
- Elevation_Resample.tif
- Aspect_Resample.tif
- FRG.tif
- EVT.tif
- EVC.tif
- ESP.tif
- BPS.tif

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[Help](#)



What's Happening

- Our RECOVER server is...
 - Clipping 25 base layers (raster and vector) to the AOI polygon
 - Assembling these layers into a Map Service with uniform symbology/colormaps and naming
 - Creating fire-specific reports

Naming convention of RECOVER Base Layer data	
The following list describes the RECOVER base layers available to our partners along with the standard naming convention applied to the web services hosted at ISU's GIS TRnC (please note the exact name including capitalization and the use of underscores).	
Geology	
Habitat	
LandslidePotential	
NHD	
PLSS	
Roads	
SMA	
Soils_SSURGO	
Soils_STATSGO	
Soils_STATSGO_KFactor	
WatershedsWBD	
Wetlands	
	<u>Past fire datasets</u>
HistoricFires	
HistoricFires_PastDecade	
FRG_FireRegimeGroup	
	<u>Vegetation datasets</u>
BPS_BioPhysicalSetting	
ESP_EnvironmentalSitePotential	
EVC_ExistingVegetationCover	
EVT_ExistingVegetationType	
	<u>Topography datasets</u>
Elevation	
Aspect	
Hillshade	
Slope_degree	
Slope_percent	
SlopesGTE30deg	
* The spatial reference system for these data is USA Contiguous Albers Equal Area Conic USGS version, NAD83, WKID: 102039	

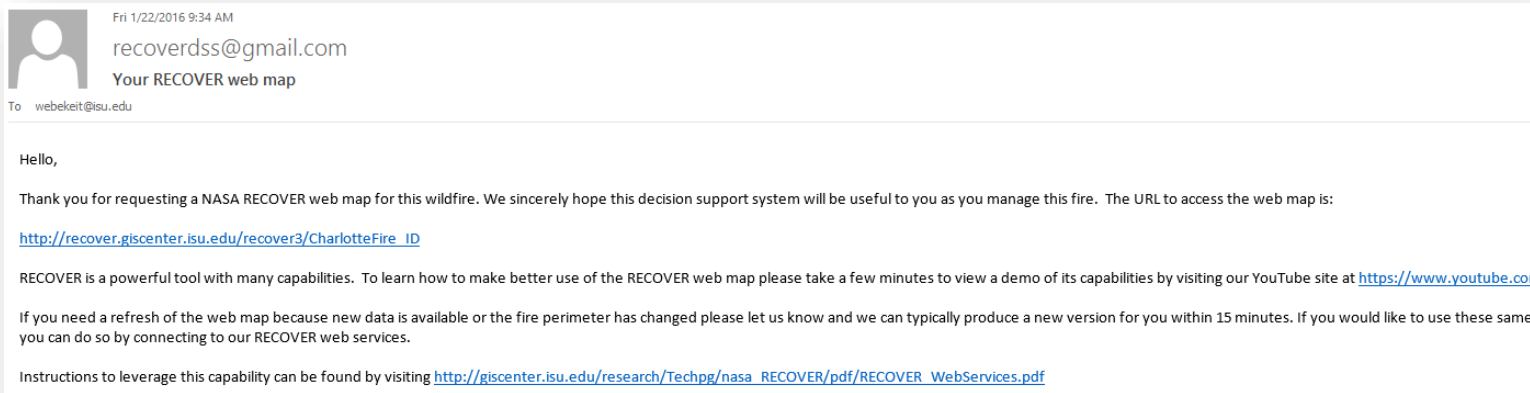
Data Architecture

- RECOVER covers the Western US
- Esri ArcGIS 10.3.1
 - File Geodatabase
 - Vector and raster data
 - Automated Map Services
- Transitioning to 10.4.1



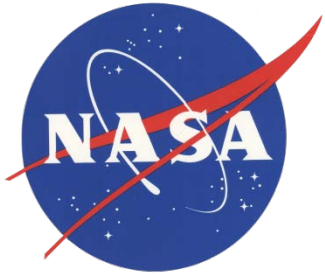
How Does it Work?

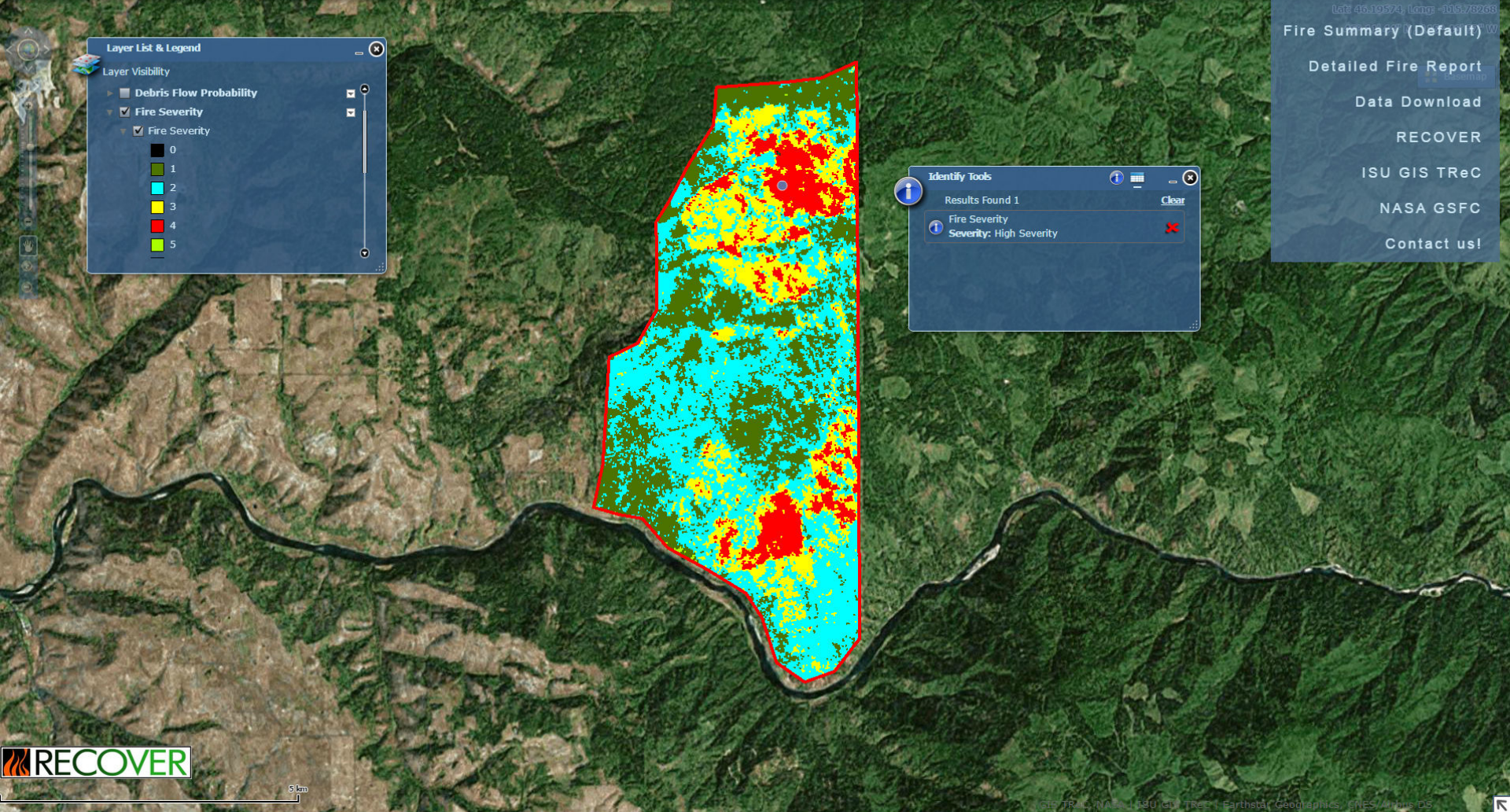
- Step 3: Check your E-mail



How Does it Work?

- Step 4: Visit and use your Web Map





Layer List & Legend

Layer Visibility

- Debris Flow Probability
- Fire Severity
 - 0
 - 1
 - 2
 - 3
 - 4
 - 5

Identify Tools

Results Found 1

Fire Severity
Severity: High Severity

Clear

Lat: 46.19574, Long: -116.78268

Fire Summary (Default) W

Detailed Fire Report

Data Download

RECOVER

ISU GIS TRec

NASA GSFC

Contact us!



5km

GIS TRec, NASA ISU GIS TRec, Earthstar, Geographics, GIES, Idaho ISU

GIS Layers

- Each RECOVER web map contains 25 base layers
- One real-time data feed (Collector)
- Fire-specific reports

Fire-specific Reports

Soda Fire - Summary Report	
Administration Agency	Acres
BLM	227,635
BOR	196
PVT	42,824
ST	12,741
<i>Total Acres</i>	<i>283,396</i>

Soda Fire - Detailed Report			
Admin. Unit Name	Area Symbol	Map Unit Symbol	Acres
Bureau of Land Management	ID665		
		BrB	
		GaB	
		NaB	
		NaC	
		QcB	
		QcD	
		QcE	
		VaD	
		VaE	
	ID675		
		1	
		100	
		11	
		112	
		121	

Ecological Site/Plant Association and Vegetation (ID)					
Owyhee County Area, Idaho					
[Composition of forest understory vegetation is based on canopy cover. Composition of rangeland vegetation is based on dry weight]					
Map symbol and soil name	Ecological site or plant association	Common trees	Forest understory or rangeland characteristic vegetation	Composition	
				Forest	Range
<i>Pct</i>					
1:					
Acrelane	LOAMY 11-13 ARTRT/PSSPS (R025XY043ID)	---	bluebunch wheatgrass basin big sagebrush antelope bitterbrush other shrubs other perennial forbs other perennial grasses	---	50 20 5 5 5 5
Rock outcrop	---	---	---	---	---

USDA Natural Resources Conservation Service

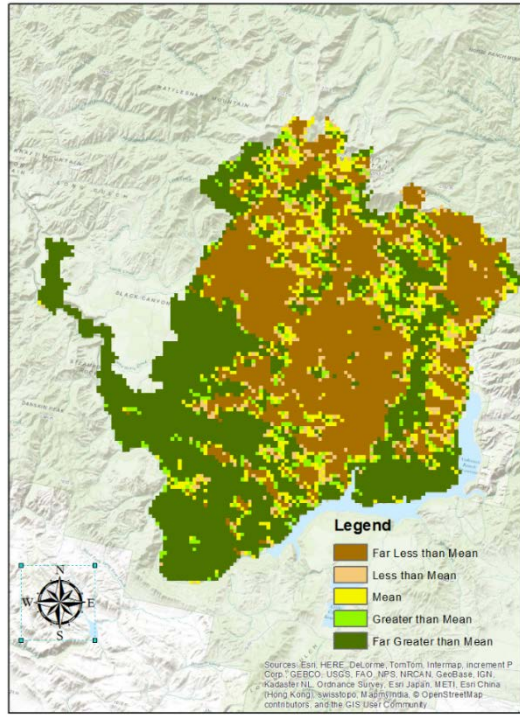
Survey Area Version: 11
Survey Area Version Date: 08/13/2012

Additional data requests

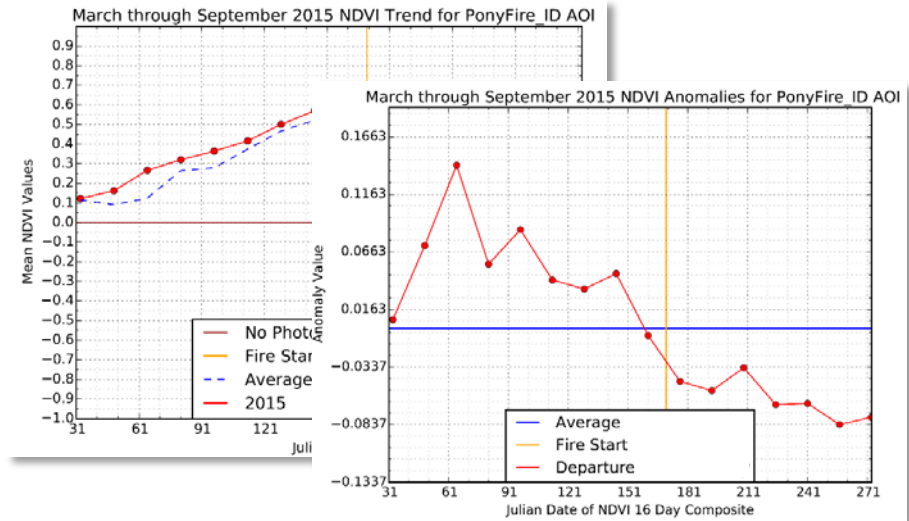
- Fire-affected Vegetation
- Debris-flow probability (AKA mudslide or landslide)
- NDVI vegetation anomaly
 - 16-day MODIS NDVI-composite imagery
 - Long-term average NDVI (2001-present)
 - Current fire season compared against long-term trend

NDVI Anomaly Data

Map layer

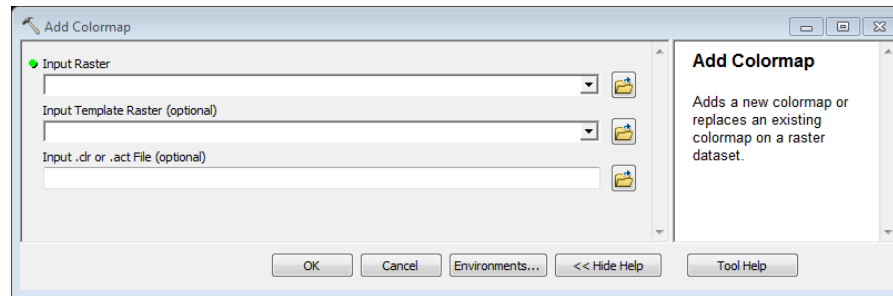


Charts



Transform Data into Information

- Help your data speak to the user
 - Authoritative source data
 - Common sense Colormaps (raster)



- Accepted symbology (Map service and Layer files)

Questions?



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