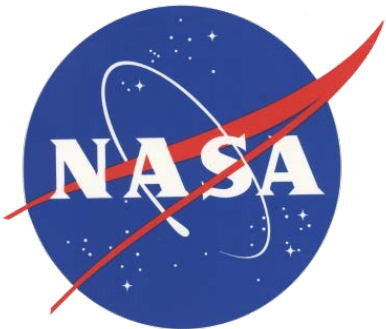


## The NASA RECOVER DSS

Keith T. Weber<sup>1</sup>, GISP and PI NASA RECOVER

Kindra Blair<sup>1</sup>, John Schnase<sup>2</sup>, Mark Carroll<sup>2</sup>, Roger Gill<sup>2</sup>, and Maggie Wooten<sup>2</sup>

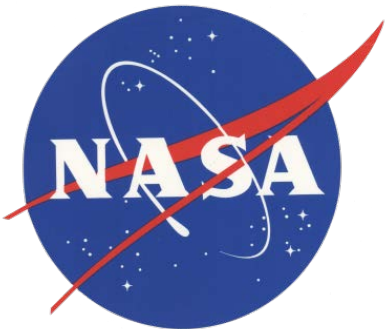


1- Idaho State University- GIS TReC

2- NASA Goddard Space Flight Center

# What is RECOVER?

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



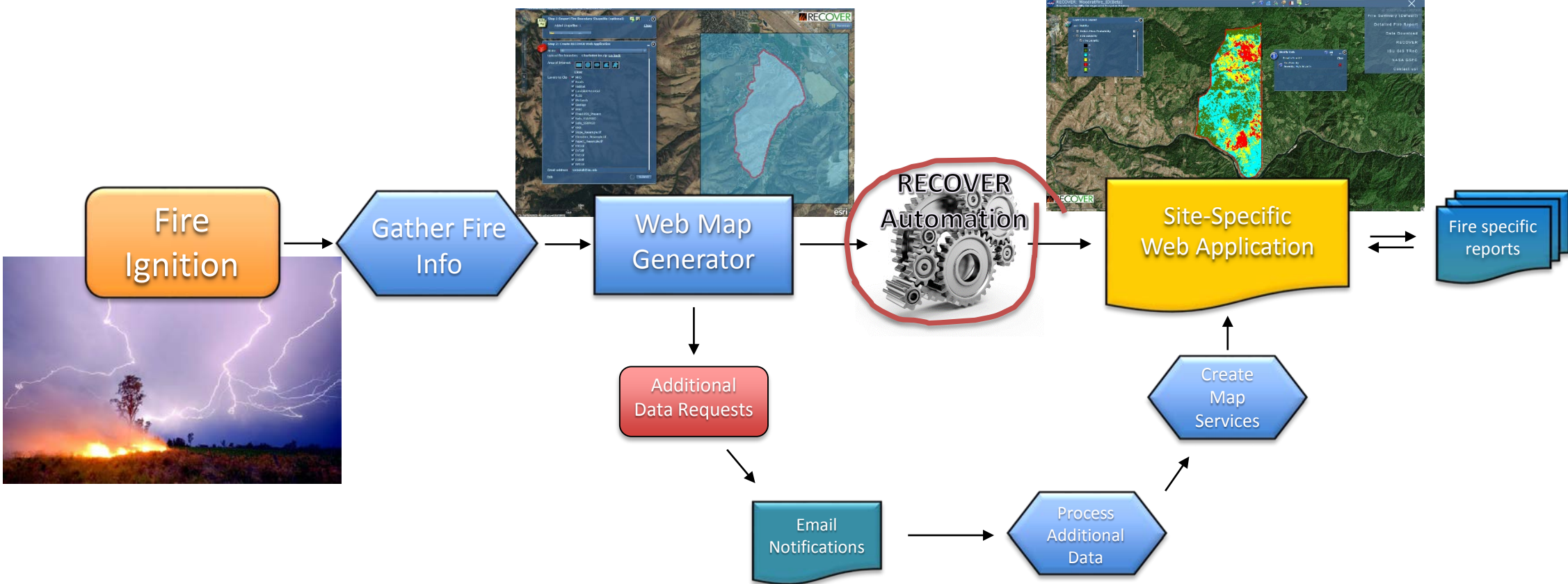
\* Our “customer” is any wildfire management agency (BLM, NPS, USFS, etc.)

# Data Architecture

- RECOVER covers the Western US
- Esri ArcGIS 10.3.1
  - File Geodatabase
  - Vector and raster data
  - Automated Map Services
- Transitioning to 10.5

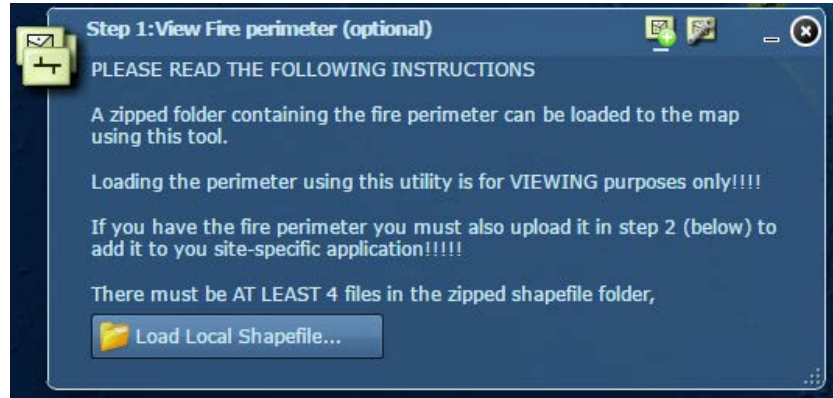


# How Does it Work?

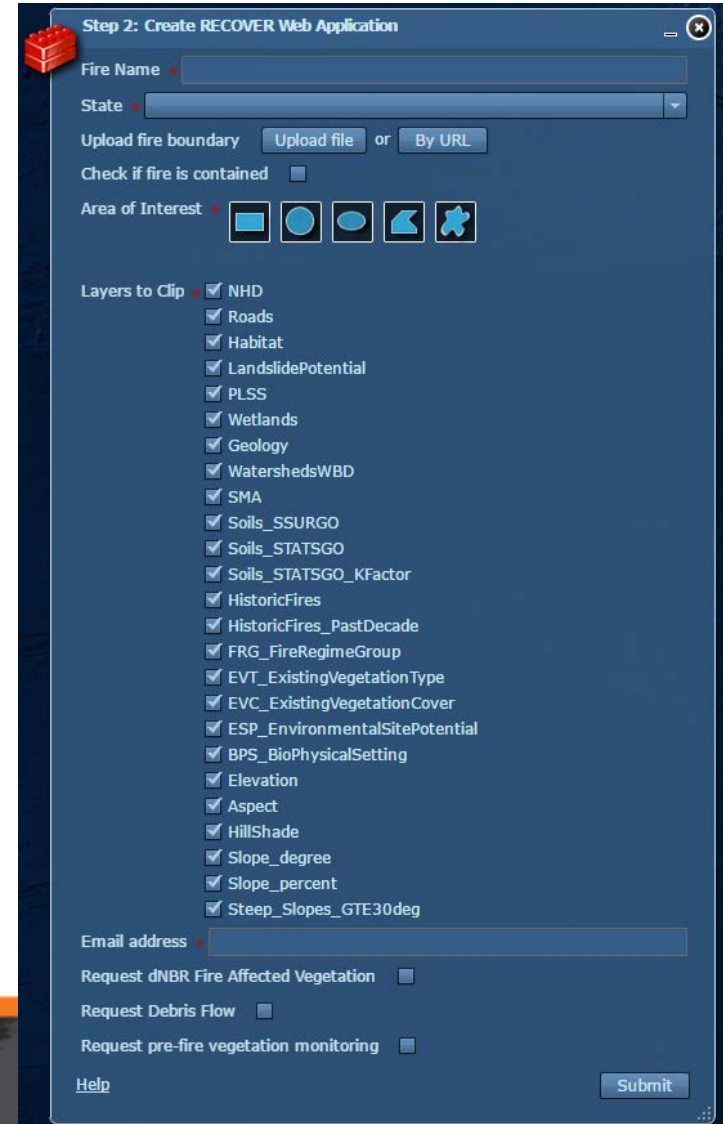


# Generator

Step one



Step two



# GIS Layers

- By default each RECOVER web map contains...
  - 25 base layers automatically clipped to fire extent
  - One real-time data feed (Collector)
  - Fire-specific reports

FireLines	FirePoints
Aerial Hazard - Solid Red line	Aerial Hazard
Air Tanker Foam	Airstrip or Airport
Air Tanker Retardant	Camp
Completed Dozer Line	Drop Point
Completed Line	Fire Origin
Completed Line Break	Fire Station
Explosive Line	First Aid Station
Fire Spread Prediction	Heat Source
Hand Line - Solid black line	Heat Source - Outside of Line
Heat Line (RIN)	Helibase
Helitanker Foam	Helispot
Helitanker Water	Hot Spot
Other	IR Downlink
Planned Fire Break	Incident Base
Planned Fire Line	Incident Command Post
Planned Secondary Line	Lookout
Plow Line	Miscellaneous
Proposed Dozer Line	Mobile Weather Unit
Ridge / Geographic Feature	Mud Pit
Uncontrolled Fire Edge	Repeater
Unknown	Retardant Pickup
<b>AssignmentBreaks</b>	Safety Zone
Sector	Spot Fire
Division	Staging Area
Branch	Telephone
Zone	Unknown
	Water Source
	Wind Speed



**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 TRC (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

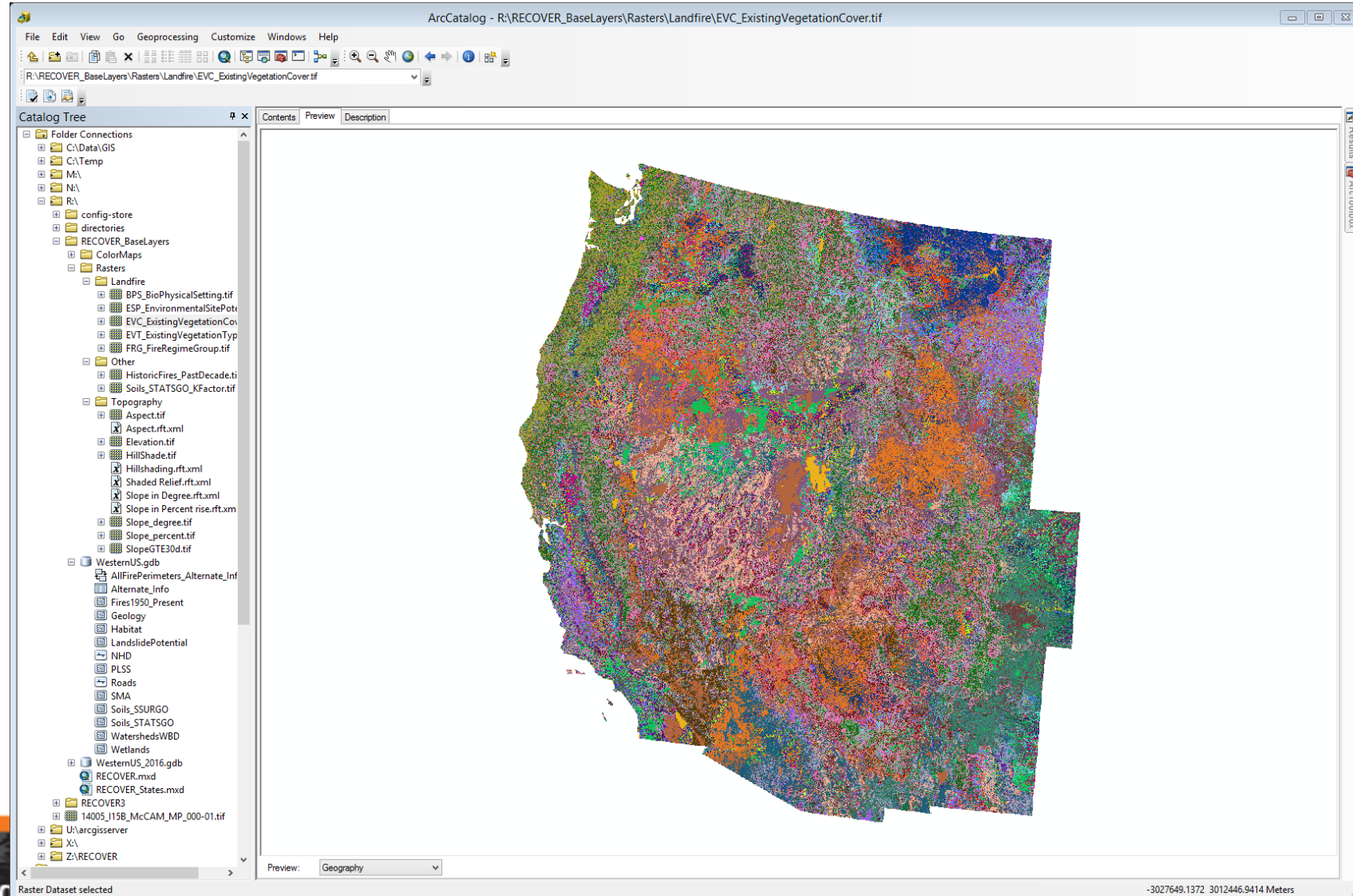
...st fire datasets

...etation datasets

...ography datasets

... USA Contiguous Albers Equal Area Conic USGS version,

# RECOVER GIS Base layers



# Fire-specific Reports

### Soda Fire - Summary Report

Administration Agency	Acres
BLM	227,635
BOR	196
PVT	42,824
ST	12,741
<b>Total Acres</b>	<b>283,396</b>

### Soda Fire - Detailed Report

Admin. Unit Name	Area Symbol	Map Unit Symbol	Acres
Bureau of Land Management	ID665		
	ID675		

### 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	---	---	---	---	---






# Done in 5-minutes!



- Once submitted from our Generator, the web map will be ready in about 5-minutes

# “Check Your E-mail”

 Reply  Reply All  Forward

Tue 3/28/2017 7:29 AM



recoverdss@gmail.com

Your RECOVER web map

To webekeit@isu.edu

Hello,

Thank you for requesting a NASA RECOVER web map for this wildfire. We sincerely hope this decision support system will be useful to you as you manage this fire. The URL to access the web map is:

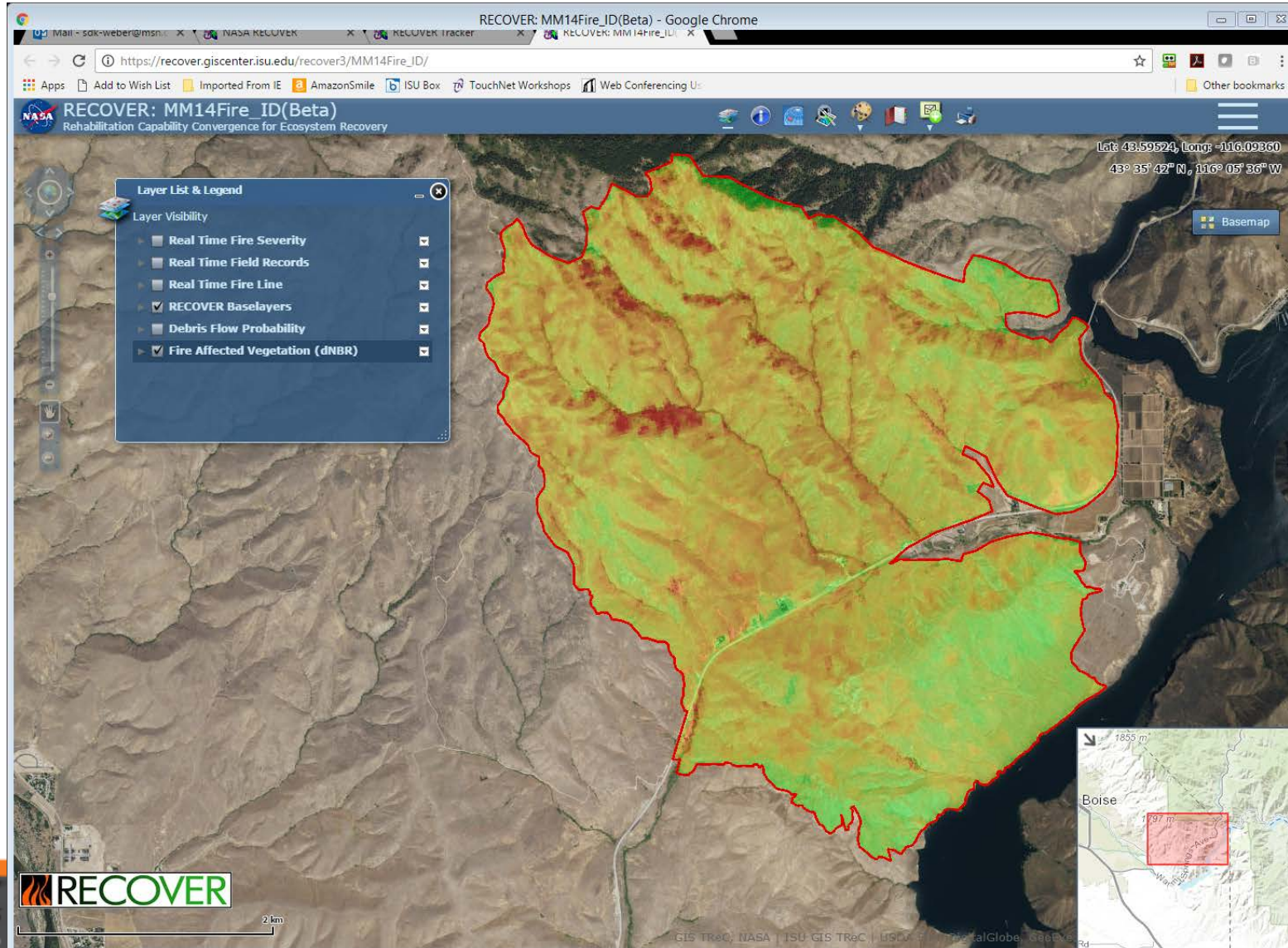
[https://recover.giscenter.isu.edu/recover3/TestMar28\\_01Fire\\_ID](https://recover.giscenter.isu.edu/recover3/TestMar28_01Fire_ID)

RECOVER is a powerful tool with many capabilities. To learn how to make better use of the RECOVER web map please refer to [http://giscenter.isu.edu/research/Techpg/nasa\\_RECOVER/pdf/GettingFamiliarWithRECOVER.pdf](http://giscenter.isu.edu/research/Techpg/nasa_RECOVER/pdf/GettingFamiliarWithRECOVER.pdf)

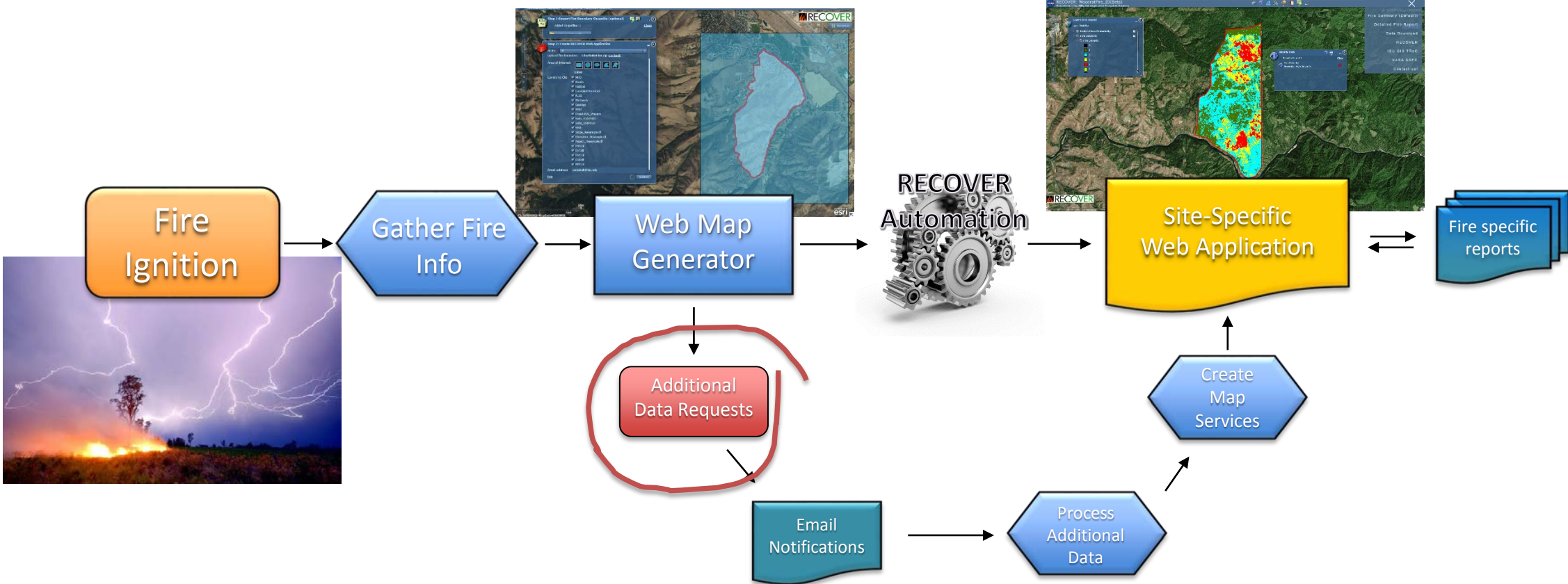
If you need a refresh of the web map because new data is available or the fire perimeter has changed please let us know and we can typically produce a new version for you within 15 minutes. If you would like to use these same RECOVER GIS layers for more sophisticated analysis within ArcGIS, you can do so by downloading the data directly from your web map and launching the ArcMap document found inside the MAPS folder.

Please note. Any additional data requested (NDVI, dNBR, debris flow) is provided for post-fire decision support and will not be processed until the fire is contained.

# A RECOVER Web Map



# How Does it Work?

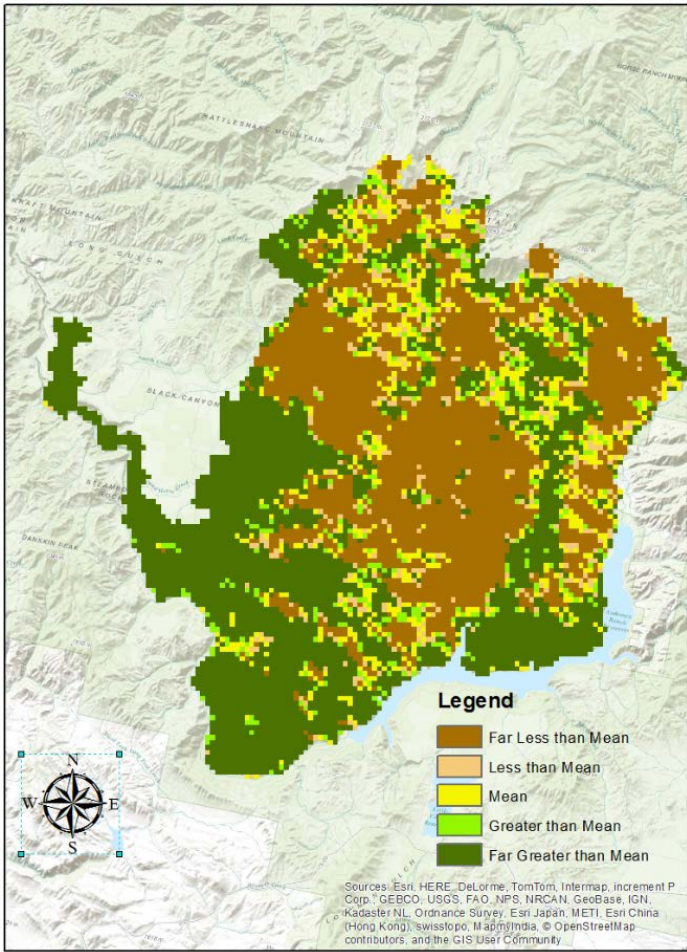


# Additional data requests

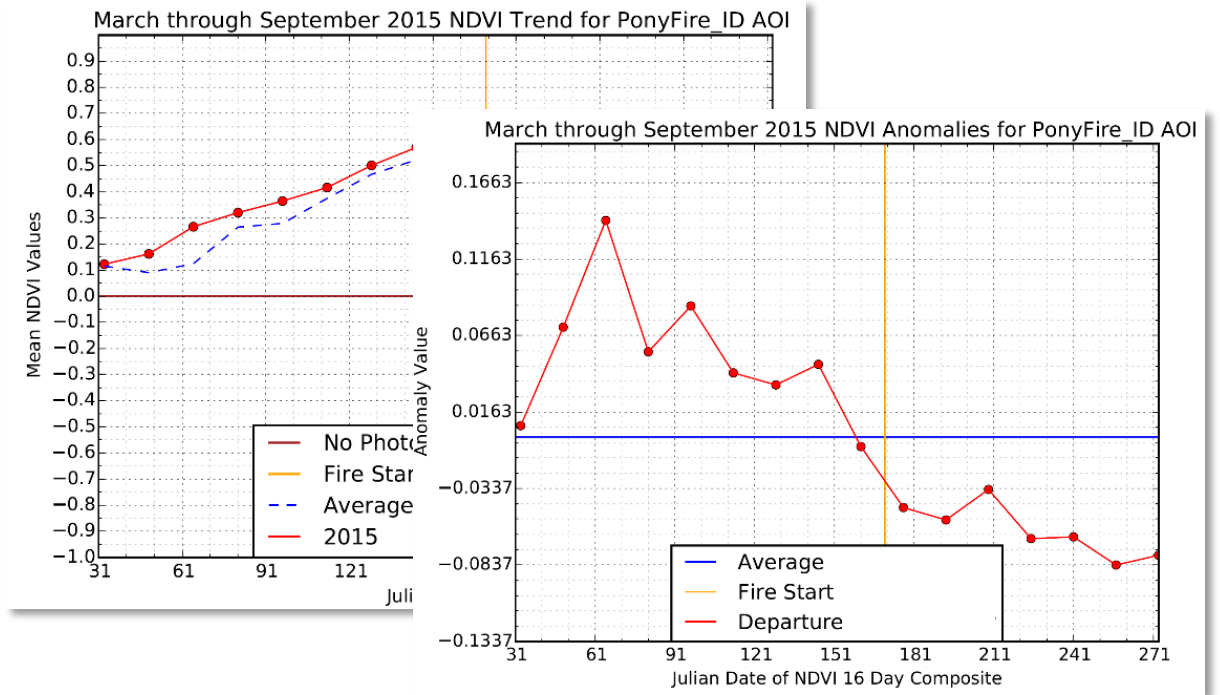
- Fire-affected Vegetation
- Debris-flow probability (AKA mudslide or landslide)
- NDVI vegetation anomaly
  - 16-day MODIS NDVI-composite imagery
  - Long-term average NDVI (2001-present)
  - Current fire season compared against long-term trend

# NDVI Anomaly Data

## Map layer

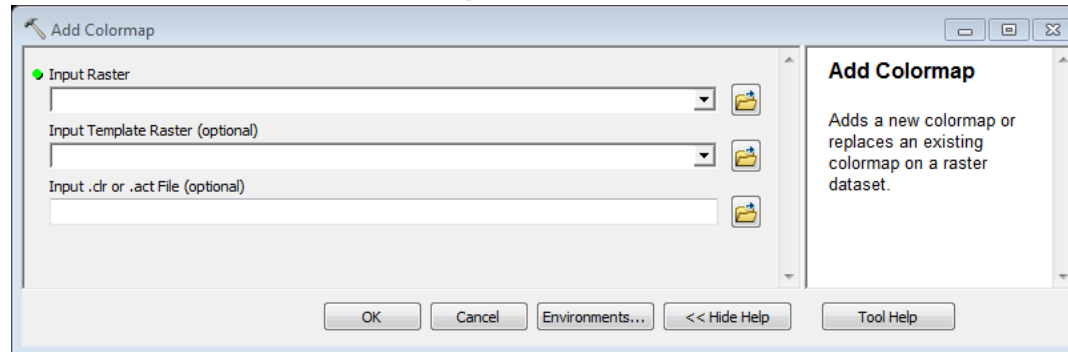


## Charts



# Transform Data into Information

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

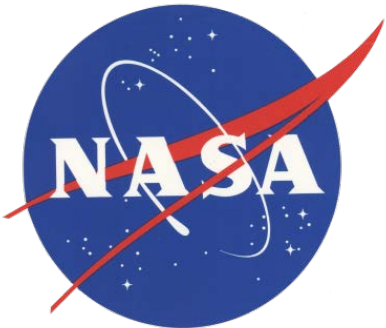


- Accepted symbology (Map service and Layer files)

# Listen to the Customer



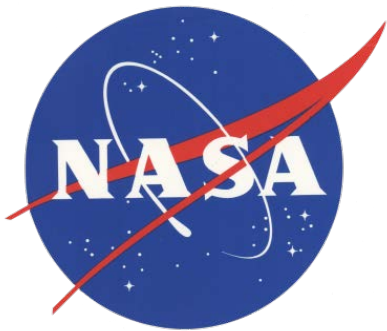
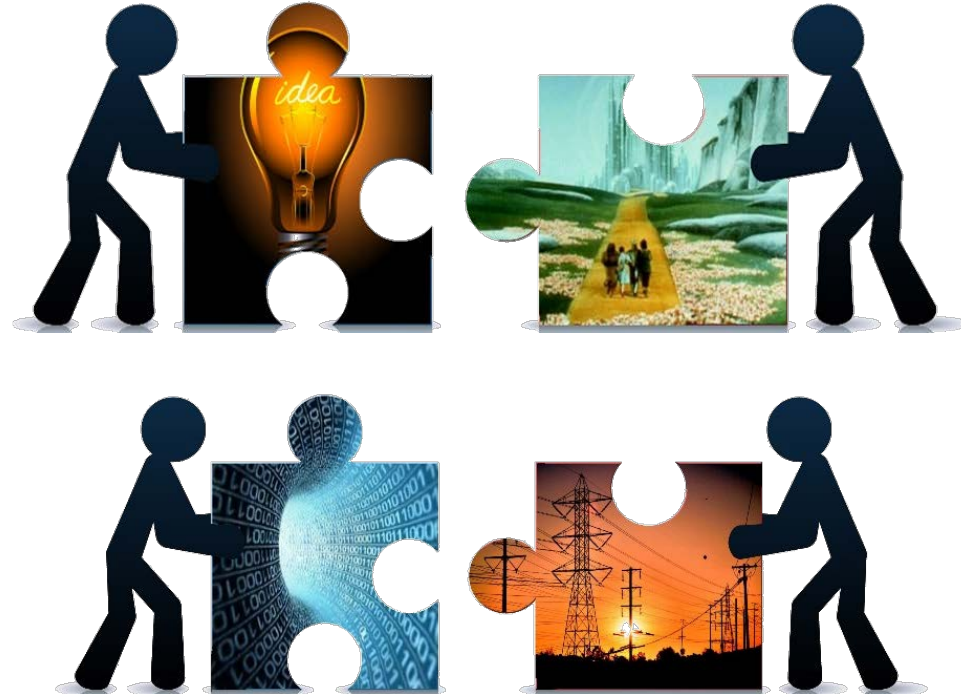
- “Make it mobile”
- “High-resolution is nice, but fast is critical”  
– *NIFC*
- “Drowning in Data, but still thirsting for Information”  
– *USFS RSAC*



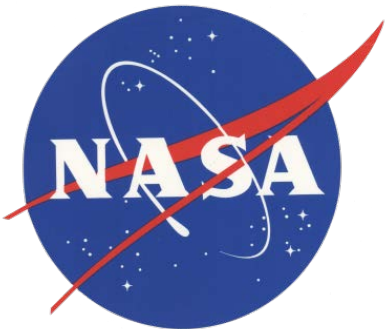


# Assemble a Great Team

- Idea
- Plan
- Infrastructure
- Data
- **People**



# Questions?



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