NASA RECOVER 2.0
Post-fire Decision Support System

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Importance of Spatial Data in Fire Recovery

- Fire Managers and Land Managers need to know:
  - Where “things” are (e.g., structures, infrastructure, and people)
  - Where “things” used to be (i.e., pre-fire landscape)
  - What was the effect of the fire on these “things” (e.g., fire severity)
  - **Maps *can*** show these “things”
  - **Smart maps** show these things + provide actionable information

“This morning, you were preaching to the Choir again… and we’ve had just about enough of that!”

RECOVER 1.0 (beta)

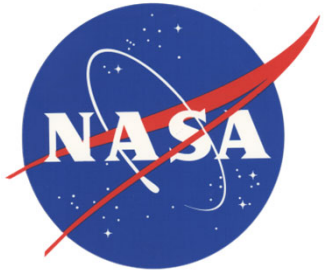
- 2012-2019
- 103 wildland fires
- 11 western states
- 16 different federal & state agencies

Enhancements Provided by RECOVER

- Rapid data acquisition
- Cross-organizational collaboration
  - (breaking down silos)
- Common Operational Picture (uniform geospatial context)

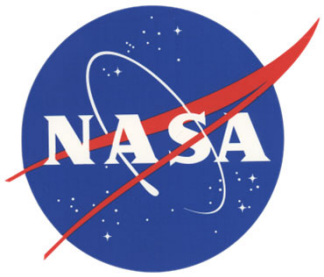
What is RECOVER 2.0?

- A Cloud-based, Smart-Map for Post-wildfire recovery planning and long-term monitoring
- Like the original RECOVER, it remains a Customer-driven, Customer-centric* Decision Support System (DSS)



* Our “customers” are agency/organizational wildfire and land managers at the USDA Forest Service, DOI BLM, NPS, as well as state agencies

RECOVER 2.0



- Made possible by a grant from NASA Earth Sciences Wildland Fire Management Program
  - David S. Green, PhD, Program Manager

RECOVER Online Workshop

- Wednesday April 12th
  - Watch your inbox for registration details

Meet the RECOVER 2.0 Team

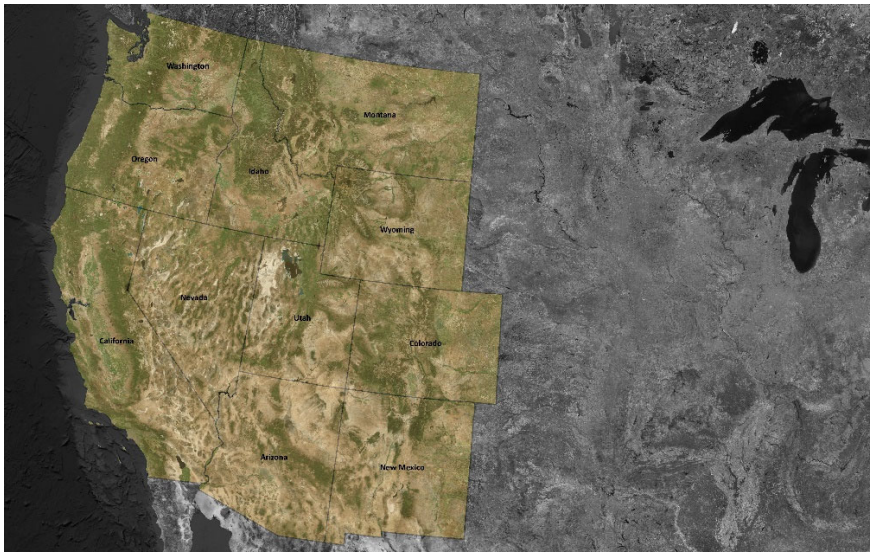
- Keith T. Weber[1]
- Brad Quayle[2]
- Craig Baker[2]
- Ali Reiner[2]
- Kindra Blair[1]
- Austin Thompson[1]
- Madison Hatch[1]

- Visit the RECOVER 2.0 webpage at https://giscenter.isu.edu/research/Techpg/NASA_RECOVER2/

1- Idaho State University GIS Training and Research Center (GIS TReC)
2 – USDA Forest Service Geospatial Technology and Applications Center (GTAC)

Data Architecture

- RECOVER covers the Western US
- Esri ArcGIS Online Cloud
- Leveraging existing, authoritative data streams
- Data packages/File Geodatabase
  - Vector and raster data
  - Automated Map Services



GIS Base Layers

- RECOVER currently provides
  - 29 Base Layers automatically clipped to the fire extent[1] (envelope)

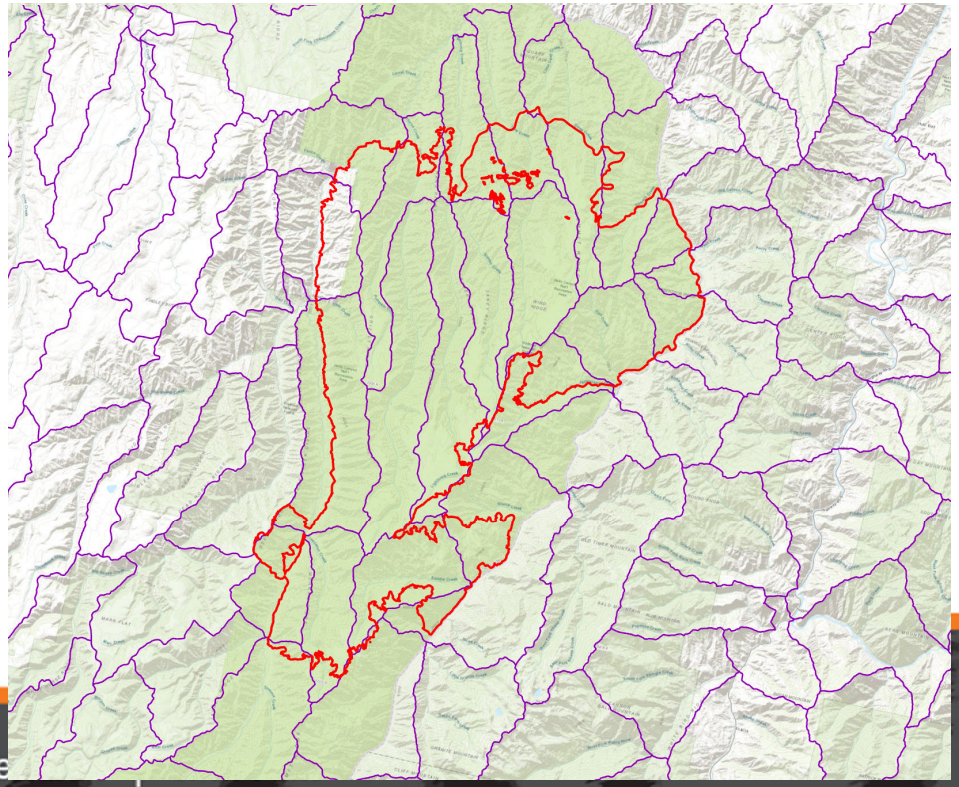
VECTOR DATA (fGDB)
Geology
Habitat
Historic/past fires
LandslidePotential
NHD Rivers and Streams
NHD Surface water bodies
WBD Watershed Boundaries
Post-wildfire debris flow models
State boundaries
County boundaries
PLSS
Roads
SMA
Soils STATSGO
Soils gSSURGO
Wilderness Status

RASTER DATA
Relative Ecosystem Resilience/Resistance
LANDFIRE BPS
LANDFIRE EVC
LANDFIRE EVT
LANDFIRE FVT
Elevation
Aspect
Slope_DEG
Slope_PCT
Steep Slopes >30%
Precipitation forecast
Weather satellite imagery

1- fire extent + 5km buffer

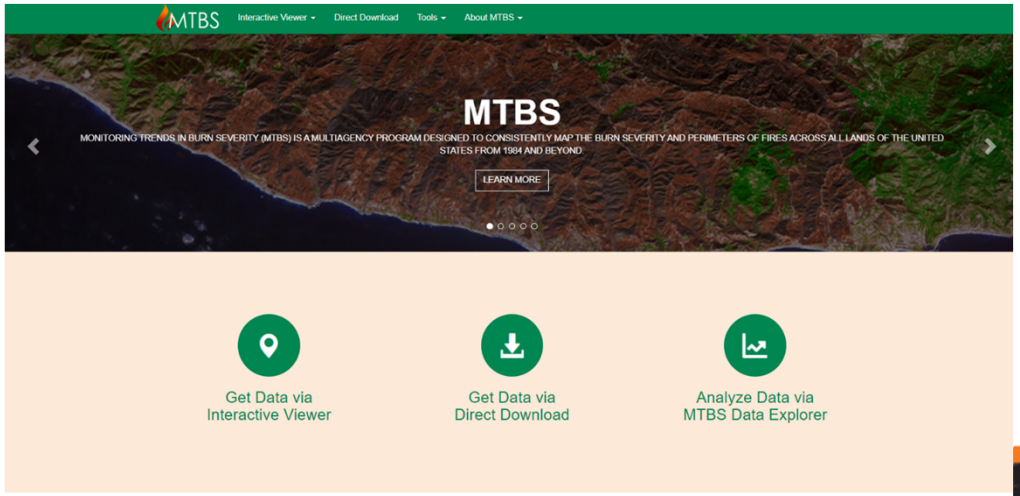
Update!

- An alternative approach to defining the clipping extent



Plus…

- RECOVER will provide (proposed)
  - Fire severity layers dNBR (MTBS) (this is layer #29)
  - Long-term monitoring data



Other Spatial Data

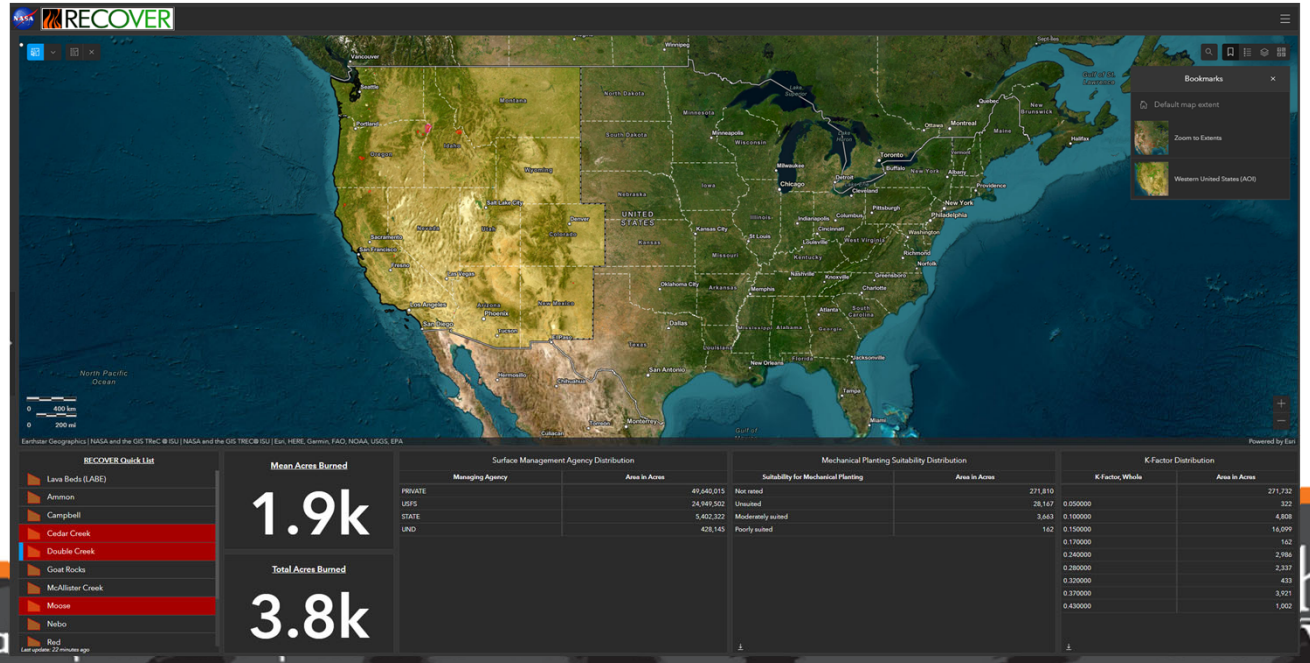
- To suggest additional layers please let us know
  - webekeit@isu.edu
  - brad.quayle@usda.gov

Making RECOVER Even Faster

- Pre-emptive automation processing using our **Large Fire Trigger** automates data package development and updating
  - ArcGIS Python scripting
  - Output data package (ZIP)
  - Quick and easy download from RECOVER's dashboard

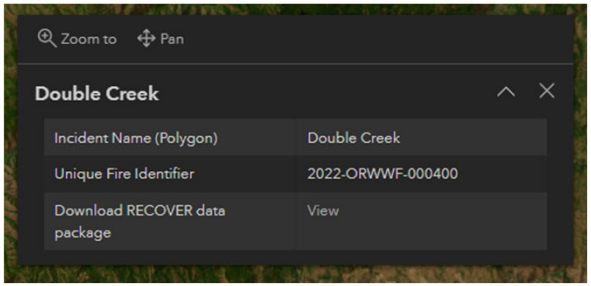
RECOVER 2.0 Workflow

- A wildfire has occurred
- Visit the RECOVER dashboard
  - Select the fire from the RECOVER Quick List

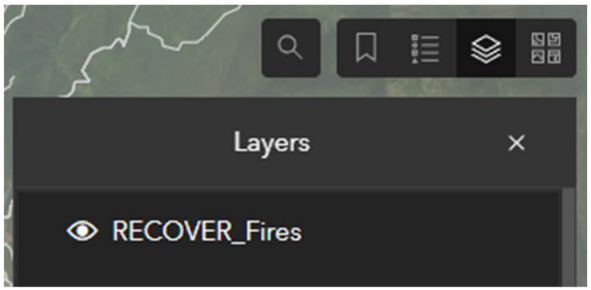


Interacting with RECOVER

- Click the fire polygon to reveal its pop-up
  - Optionally, download the Data Package



- Expand the Layers list to explore the fire area

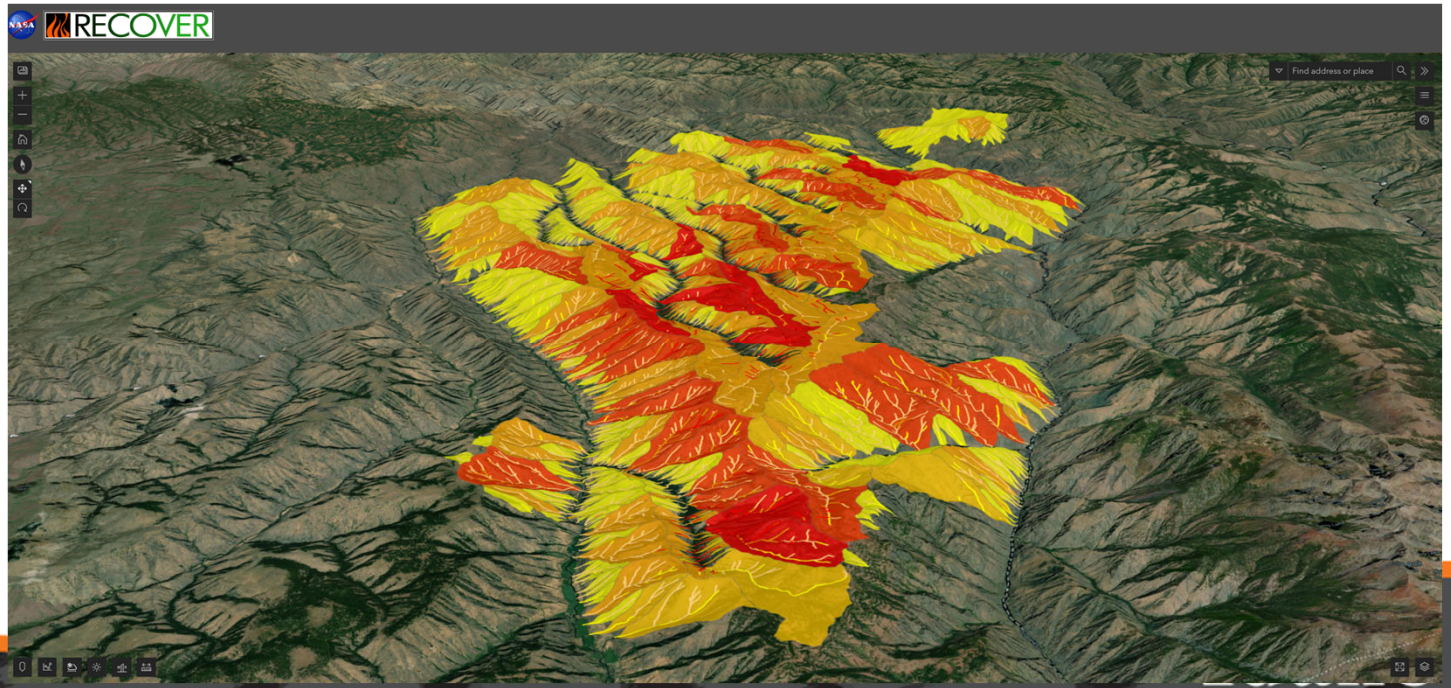


29 Data Layers

- Currently, RECOVER provides 29 data layers from authoritative sources (USGS, NASA, NOAA, etc.)
- These are referred to as RECOVER Base Layers
  - Turn layers on/off to visualize these data
  - Click a feature to view attributes describing that feature or pixel
  - View the legend/key for all displayed layers

Explore RECOVER in 3D

- Using the menu (upper-right corner), open the RECOVER 3D Viewer



What if…

- A fire AOI is not shown in the dashboard?
  - We have new geoprocessing models to run SUBMITTED fires
- I have other data to add for a specific fire?
  - This is under construction but already possible
- Contact us! Using the RECOVER web page at

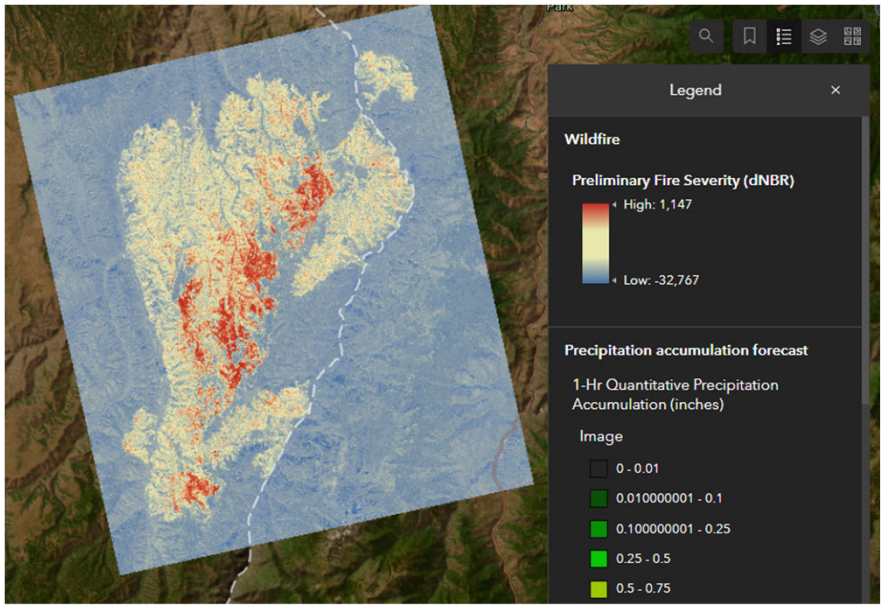
https://giscenter.isu.edu/research/Techpg/nasa_RECOVER2/index.htm

Still Under Construction…

- Summary reports/Dashboard widgets
- ~~Unclassified or Preclassified fire severity (dNBR)~~
- Long-term vegetation monitoring post-fire (Regeneration Index RI)
- Sign in/log in

Let's Talk About This…

- Making unclassified/preliminary fire severity raster layers available to the fire community as soon as possible
  - Intended to assist BAER teams, land managers, and emergency managers to better understand the burned landscape and
  - Direct field locations to visit/sample



Example Workflow

- We have created an Image Service in ArcGIS
  - File Geodatabase
  - Mosaic Dataset (MD)
  - Downloaded and dNBR.tif layers
  - Added these as rasters to the MD
  - Update the Image Service
- Can we streamline this process?

Questions & Discussion?

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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