The RECOVER Post-fire Planning Project

Keith T. Weber, GISP

GIS Director, ISU

George Haskett, Tess Gardner

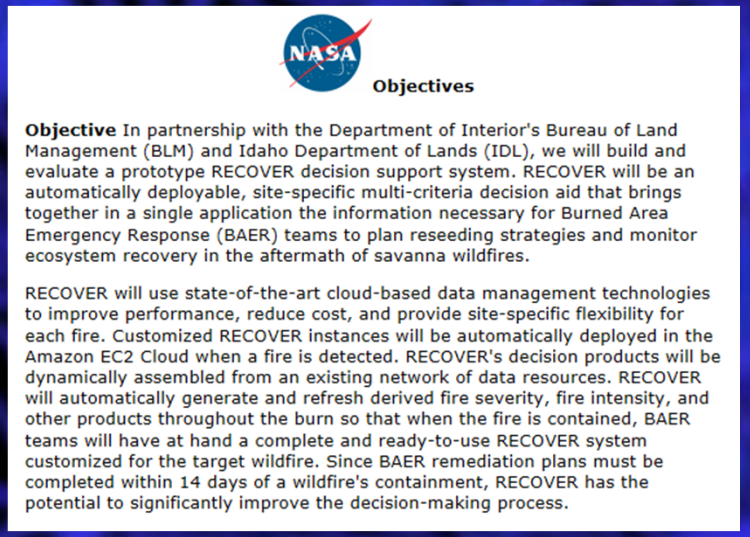
John Schnase, Roger Gill, Mark Carroll, and Molly Brown

Acknowledgements

- Operational End-User Partners

Overview

- Decision Support System (DSS)
  - Support for:
    - USDI BLM fire managers and BAER teams
    - Idaho Dept. of Lands (IDL) fire management



Objectives

Objective In partnership with the Department of Interior's Bureau of Land Management (BLM) and Idaho Department of Lands (IDL), we will build and evaluate a prototype RECOVER decision support system. RECOVER will be an automatically deployable, site-specific multi-criteria decision aid that brings together in a single application the information necessary for Burned Area Emergency Response (BAER) teams to plan reseeding strategies and monitor ecosystem recovery in the aftermath of savanna wildfires.

RECOVER will use state-of-the-art cloud-based data management technologies to improve performance, reduce cost, and provide site-specific flexibility for each fire. Customized RECOVER instances will be automatically deployed in the Amazon EC2 Cloud when a fire is detected. RECOVER's decision products will be dynamically assembled from an existing network of data resources. RECOVER will automatically generate and refresh derived fire severity, fire intensity, and other products throughout the burn so that when the fire is contained, BAER teams will have at hand a complete and ready-to-use RECOVER system customized for the target wildfire. Since BAER remediation plans must be completed within 14 days of a wildfire's containment, RECOVER has the potential to significantly improve the decision-making process.

A Role for GIS

- Improved planning can result from
  - Base data[1] that has already been prepared for Idaho, and
  - Made available as web services

1- Critical wildlife habitat areas, vegetation, past fire history, slope, aspect, soils, land ownership, etc.

Goals

- To improve landscape rehabilitation following wildfire by improving the decision *process*
  - More/better data…data all in one place →
  - More/better information →
  - Better informed decisions

GIS is Data Driven…

- Statewide Layers
  - Visualization
    - DRG
    - NAIP
    - Hillshade
  - Evaluation
    - Surface mgmt.
    - Ecological site desc.
    - Fire history
    - Wetlands
  - Quantitative analysis
    - Fire severity (fire-specific)
    - Fire intensity (fire-specific)
    - Slope
    - Aspect
    - Soils
    - Wildlife habitat (e.g., sage grouse)

Into the hopper they go…

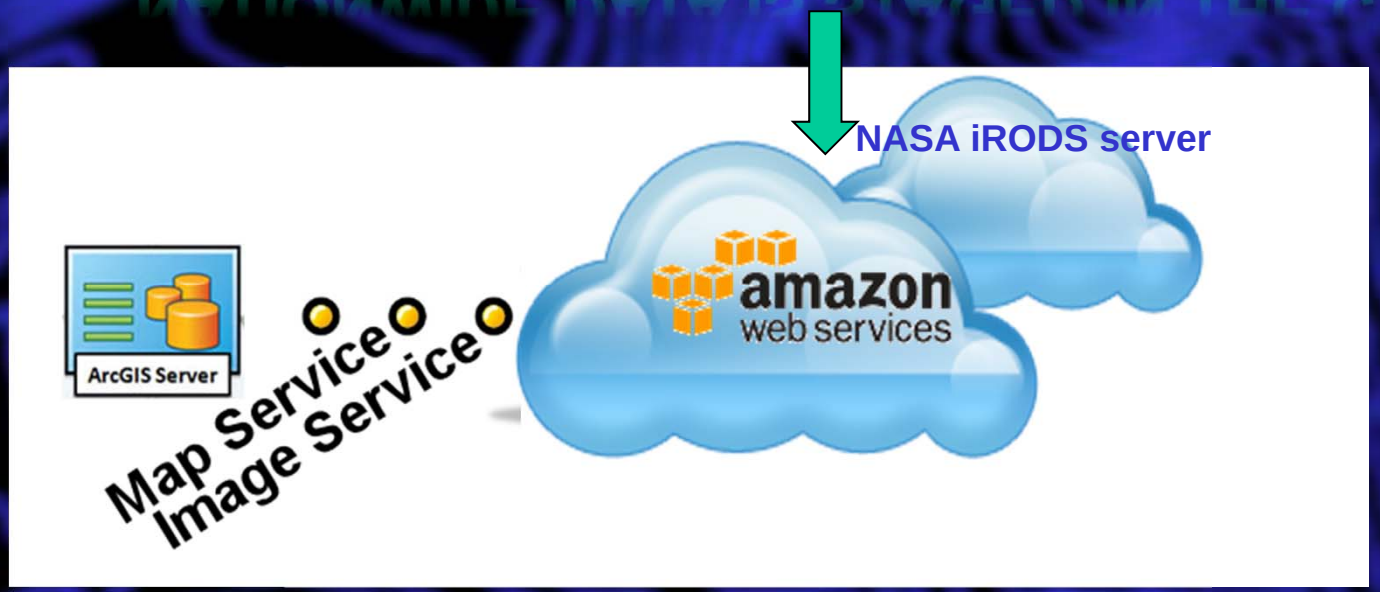
Create an ArcGIS image service and WCS of statewide base layers

Typical Delivery of Web Map Apps

- End-users interact with the web map through a browser

Nationwide Deployment

- The Big Picture



How RECOVER Responds to a Fire…

- Knowing the spatial extent (min, max XY) of a fire, a request is made to iRODS…

Sort of Like DropBox

- Each fire will have its own *box* of clipped base layers and…
- Fire-specific layers

Back at the GIS TReC

- We have a synchronized copy of iRODS fire-specific data on *our* server

- Fire-specific layers become image services for high-performance, rapid response

What Does the User Get?

- A DSS including a quantified multi-criteria evaluation (MCE) →
  - Rehabilitation Priority Map (RPM)
  - Using Geoprocessing Services

Timeline

- Began October 1, 2012
- FINISHED- Base layers and service[1]
- FINISHED- Service consumption into iRODS
- Prototype of on-line service planned for early summer 2013

1. These layers may be changed/updated to better suit our end-user team

Questions?

- http://giscenter.isu.edu/research/Techpg/nasa_RECOVER
- webekeit@isu.edu