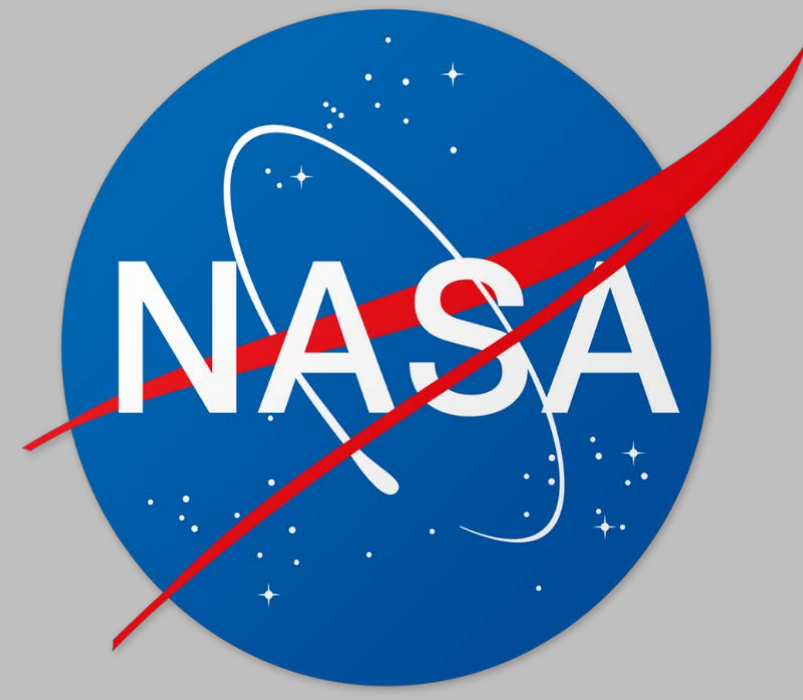


Evaluating The Socioeconomic Impacts of Geospatial Data for Emergency Response Planning



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Abstract

This project uses the NASA RECOVER wildfire decision support system as a case study to assess the socioeconomic impact of geospatial data for emergency response planning and to aid in the development of objective and defensible science. NASA RECOVER provides geospatial data as actionable information to support development of post-fire rehabilitation plans. To accomplish this, RECOVER makes extensive use of earth observing satellite imagery and derived products along with a suite of other geospatial data layers. As a result, RECOVER provides an ideal framework for exploratory and crosscutting research on the socioeconomic impacts of geospatial data. This transdisciplinary project uses the *Measuring Socioeconomic Impacts of Earth Observations: A Primer* as a framework to quantify the socioeconomic impact that RECOVER has had up to now (retrospective analysis) and will project potential future impacts (prospective analysis). The poster outlines the project, its workflow, and the approach that is being used.

Key Components of RECOVER

- Designed as a post-wildfire DSS
- Rapid assembly of site-specific data
- Delivered in a customized GIS Web map
- Extensive use of earth observing satellite system imagery & derived products (NDVI, dNBR, LANDFIRE, etc.)

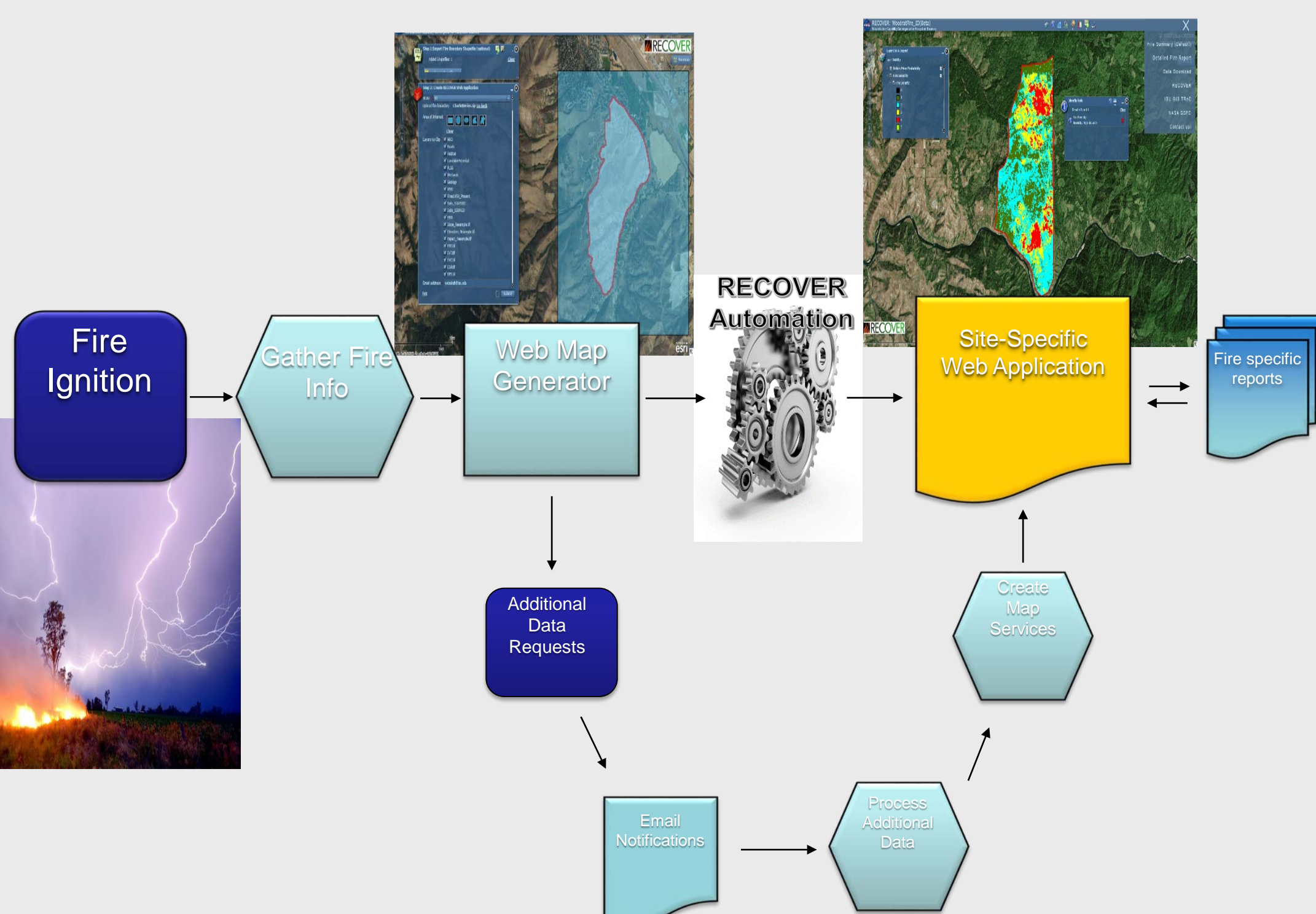
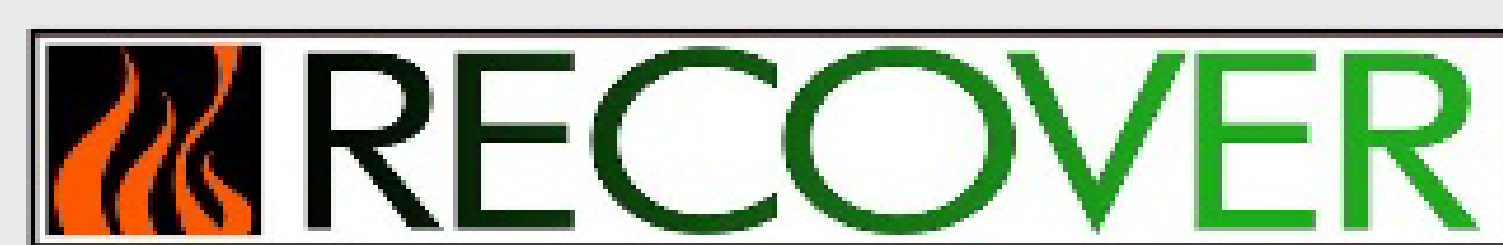


Figure 1. RECOVER DSS process

Purpose

Purpose of Study

To assess the socioeconomic impact of geospatial data for emergency response planning and aid in the development of objective and defensible science

Key Observations

- Increase in Annual:
 - Fire Frequency (FIG. 2),
 - Acreage Burned (FIG. 3)
 - Extreme Wildfire Events
- Number of federal land managers remain stagnant

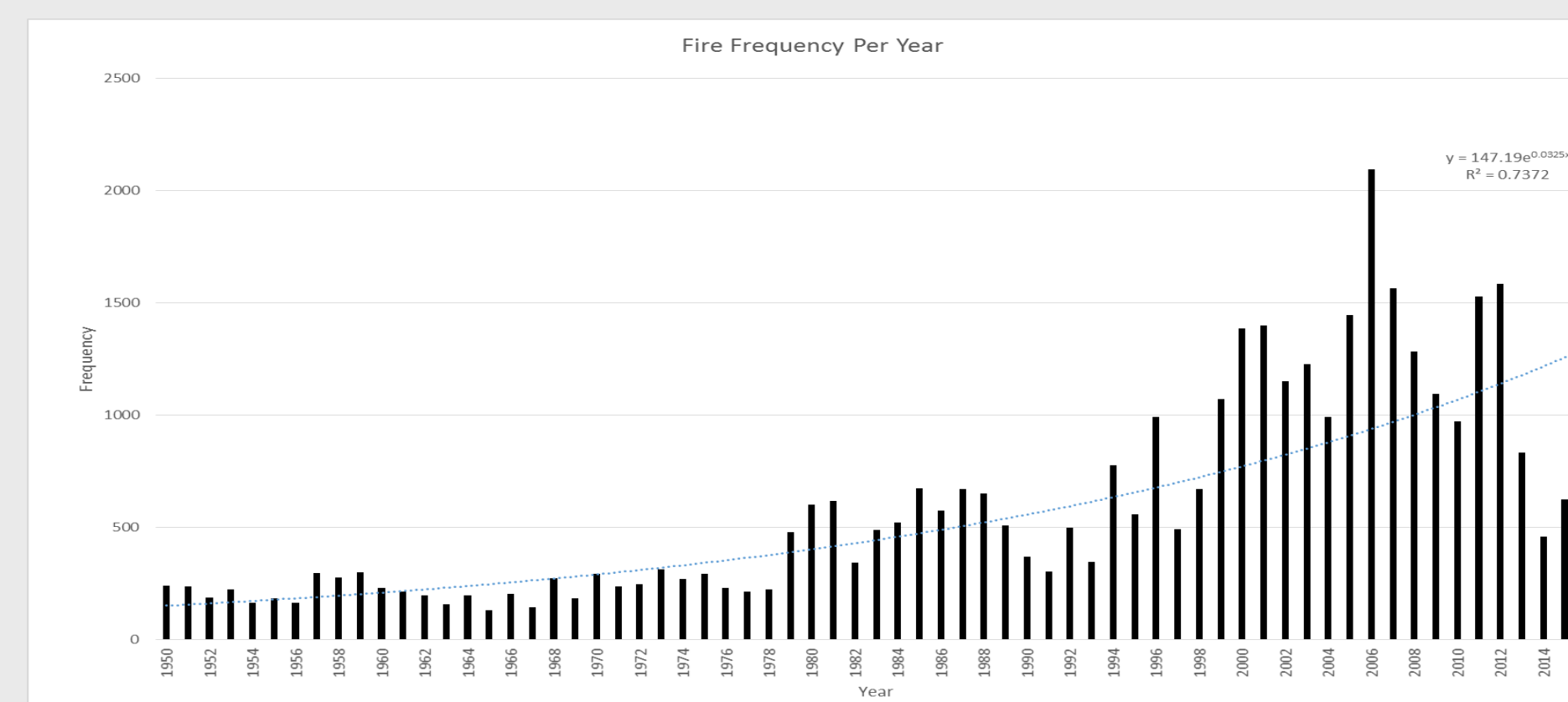


Figure 2. Annual fire frequency in the United States, 1950-2016

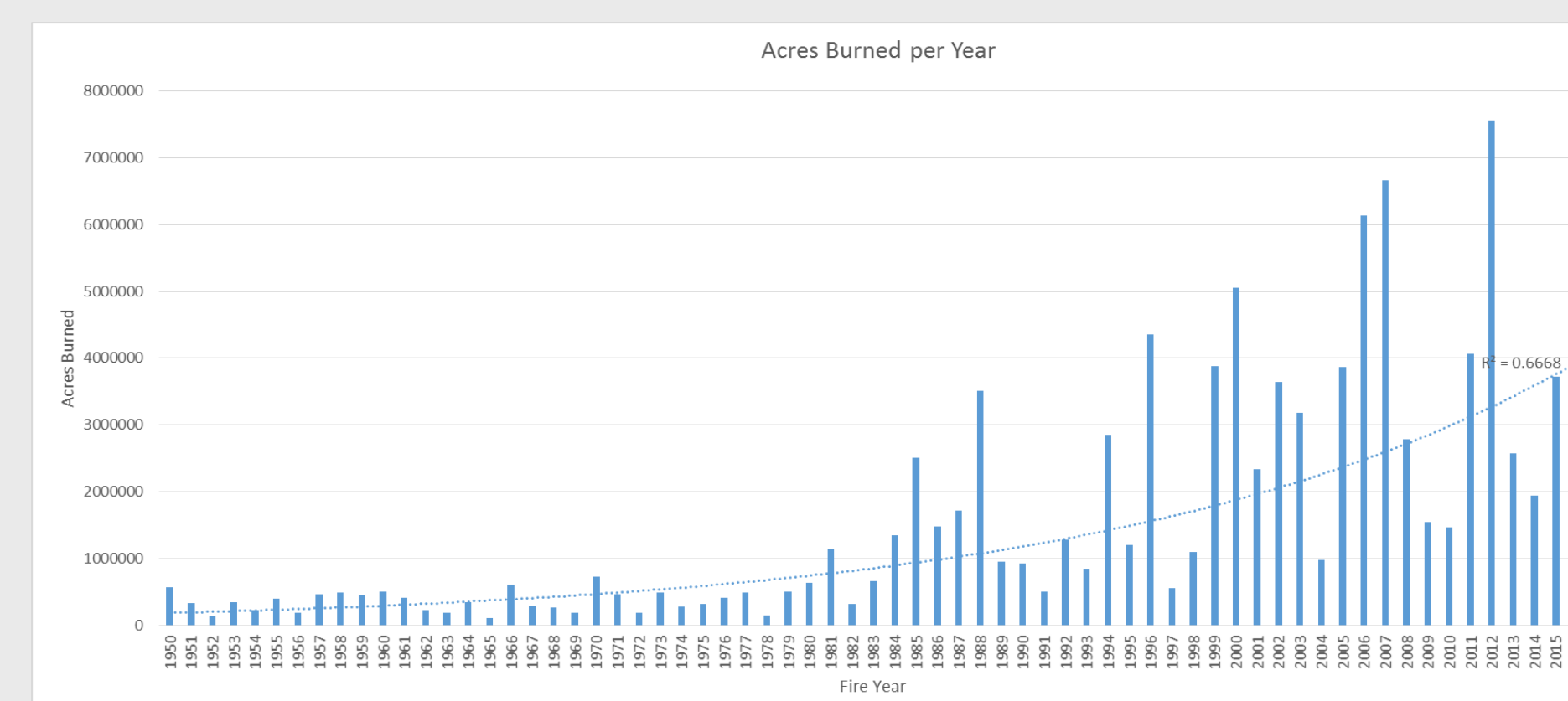


Figure 3. Annual acreage burned in the United States, 1950-2016

Key Benefits of RECOVER

- Rapid (5 min.) production of wildfire web map
- Interactive, GIS-based
- Cuts time and cost for decision-makers
- Provides instant, actionable information
- Better-informed decisions

Approach

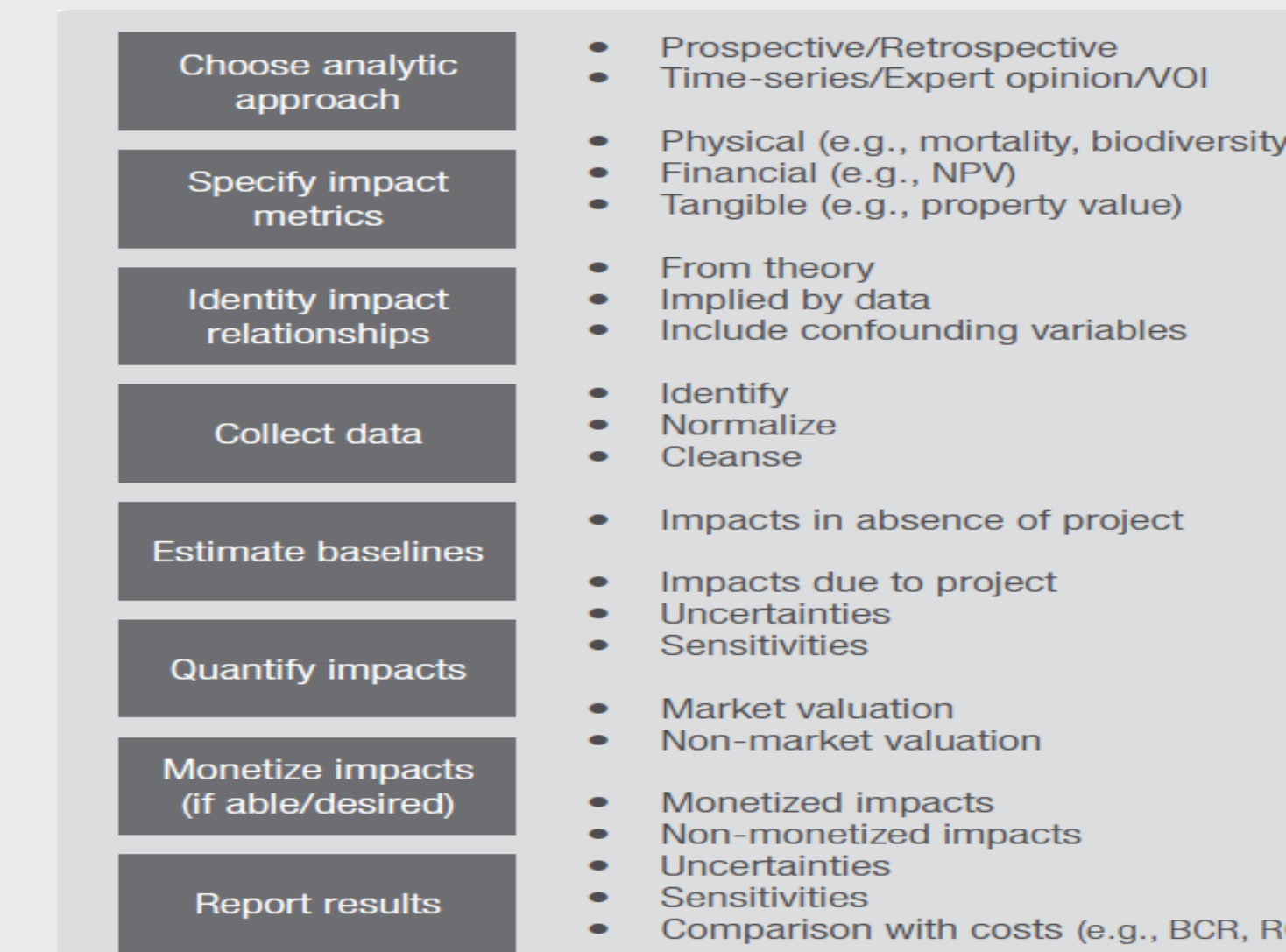


Figure 4. Socioeconomic impact analysis flow

Method

- Historical data will be used to create a baseline projection
- Check for changes after RECOVER's use
- Socioeconomic impact that RECOVER has had to date (Retrospective analysis)
- Projected potential socioeconomic impact that RECOVER will have in the future (Prospective analysis)
- Quantify the economic results of RECOVER's use
- Conduct qualitative analysis

Data Collection

- RECOVER has been used to assist in rehabilitation planning for 34 wildfires
- Structured stakeholder interviews of RECOVER users

Direct Benefits

- Time saved in wildfire rehabilitation planning
- Better-informed decisions by land managers
- More effective and efficient rehabilitation techniques and strategies
 - Reseeding and mulch applications
 - Watershed and hillslope treatment

Indirect Benefits

- Key market and nonmarket benefits related to:
 - Rangeland
 - Timber
 - Recreational use
 - Cultural heritage

Preliminary Results

- Six interviews completed
- Up to 40hrs staff time saved per fire
- Average \$3K saved per fire
- Up to \$500K saved by making better-informed decisions on treatment methods

Timeline

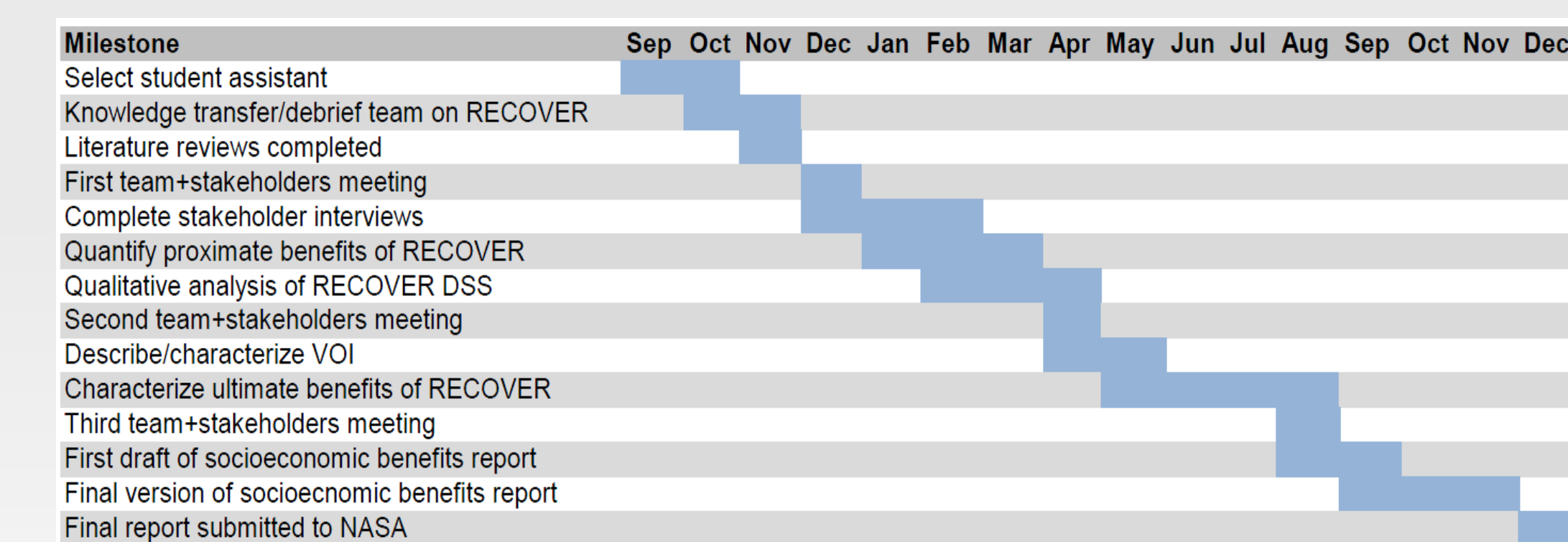


Figure 5. Timeline for the socioeconomic impact study

Partners



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