

# PALMS

## Park Analysis of Landscapes and Monitoring Support



### Background

Most park units are subjected to rapid changes in and near park boundaries that affect the area or quality of critical habitats, modify water quality, quantity or flow, and alter disturbances caused by fire, storms, or floods. These landscape-scale factors are critical to understanding key threats to park ecosystems and to evaluating appropriate responses to change.

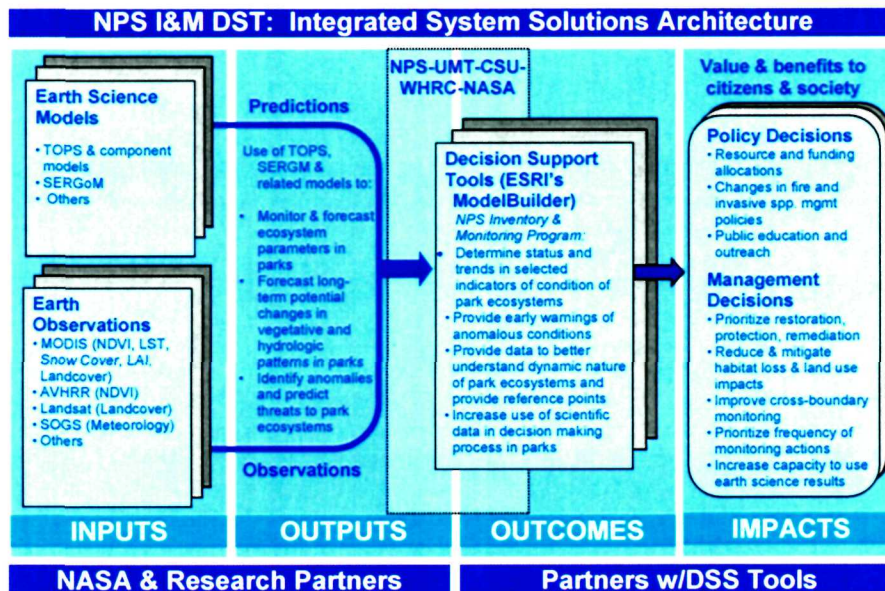
The overall goal of the PALMS project is to provide tools and expertise that increase the value of landscape scale data, ecosystem models, and land use models to managers of protected areas. By so doing, we hope to inform and thereby improve park management.

### Products

- A small set of core landscape-level indicators of park condition.
- A process to identify the boundaries of the 'greater park ecosystem' appropriate for the indicators.
- Procedures to incorporate existing spatial data and products from the Terrestrial Observation and Prediction System (TOPS) and other sources.
- Analyses and reports on changes in land use/cover, climate, ecosystem productivity, hydrology, biodiversity, and their effects on core indicators.
- Forecasts of likely ecosystem changes given alternative decision scenarios.

**Core indicators** were selected to address land cover and land use, hydrology, ecosystem productivity, and biodiversity. Core indicators are:

- Extent of greater park ecosystem
- Extent of major ecosystems
- Extent of key biodiversity-related habitats
- Impervious cover change
- Stream health
- Housing density
- Landscape pattern
- Land use change



Conceptual overview of selected project elements and the sequential 'value adding' as data is consumed and transformed by models and expertise. The focus of the project is to better use existing data and tools to inform and support park management.

- Extent of major ecosystems
- Extreme disturbance
- Primary production
- Groundwater dynamics
- Climate change via plant phenology
- Visitorshed and demographics

PALMS relies on existing data and models to forecast land use and land cover changes, including changes in the distribution of dwellings and the associated infrastructure. TOPS provides forecasts, at a variety of scales of time and space, for a broad range of ecosystem variables that include forest productivity, soil moisture, and hydrologic dynamics. These attributes can contribute to evaluating effects of climate change scenarios on park ecosystems, biodiversity, and ecological services. A major focus of the project is to evaluate climate changes and its interaction with other landscape-scale changes, and how these will be reflected in the core landscape indicators.

### Pilot Parks and I&M Networks

Development of the indicators and procedures will focus on four parks and Networks as pilots: Delaware Water Gap National Recreation Area, Rocky

Mountain National Park, Yellowstone National Park, and Yosemite National Park. We selected these parks as pilot sites because park holdings include the data needed to efficiently and economically complete the project. In the future, we hope to expand the scope of the project to include additional sites and ecosystem types.

### More Information

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