RANGELAND
ANALYSIS PLATFORM

REVOLUTIONIZING RANGELAND MONITORING

FACT SHEET

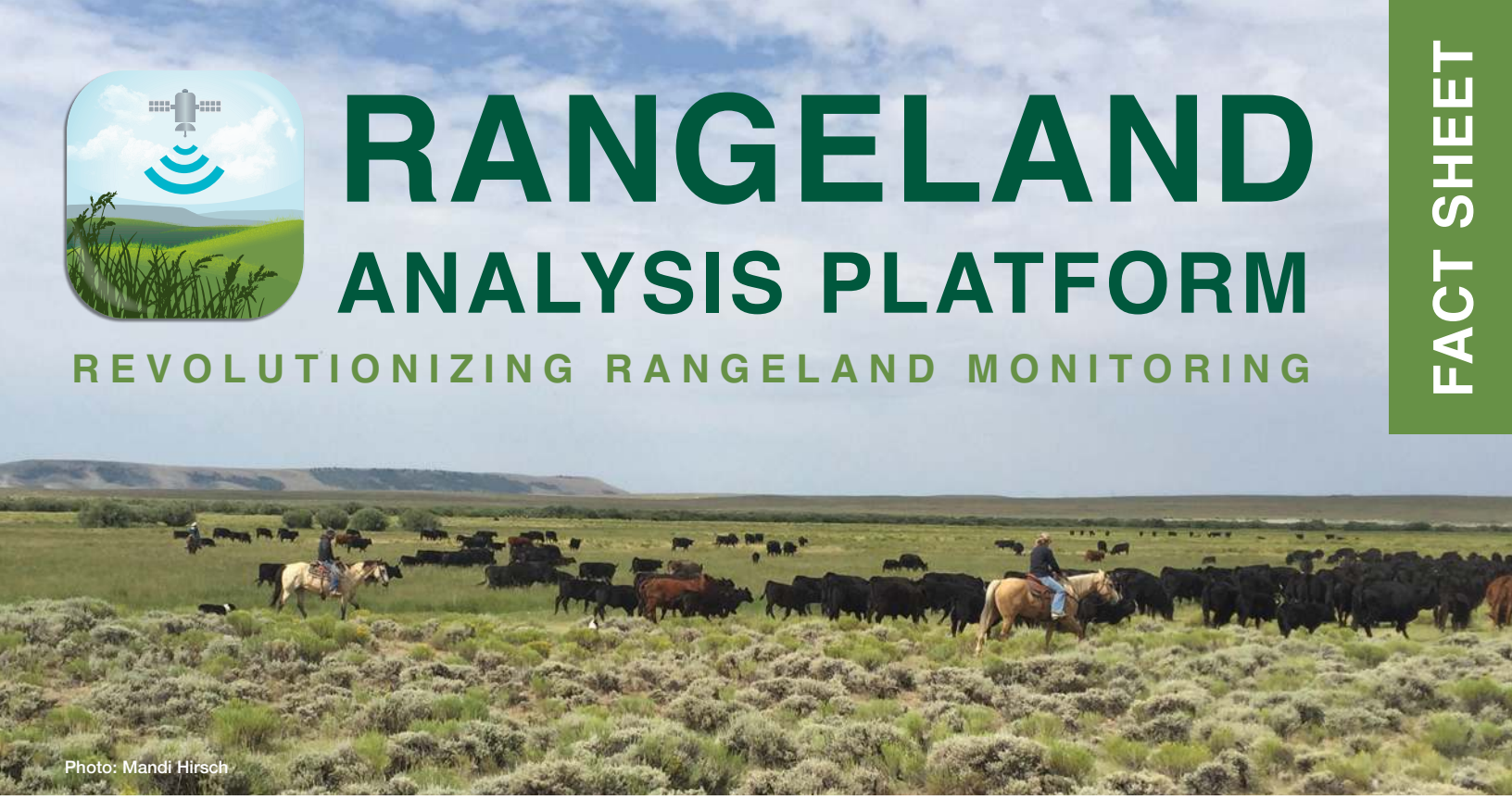


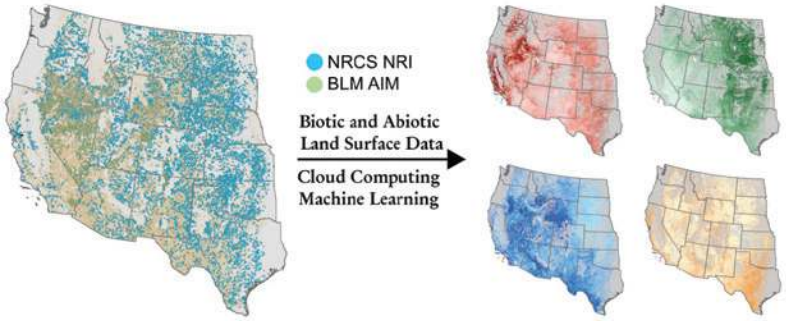
Photo: Mandi Hirsch

In Brief: The Rangeland Analysis Platform (RAP) is a free online tool that empowers landowners and resource managers to track vegetation through time, equipping people with the information they need to improve America's grazing lands.

Plants provide the foundation for profitable livestock production, sustainable wildlife habitat, healthy soils, and clean water. Powered by Google Earth Engine, RAP merges machine learning and cloud-based computing with remote sensing and field data to provide the first-ever annual vegetation cover maps of rangeland vegetation on U.S. grazing lands.

This easy-to-use mapping technology allows people to view trends in rangeland resources through an unprecedented blend of ***space*** (from the Great Plains to the Pacific Ocean), ***time*** (1984 to present) and ***scale*** (at the ranch, county, or watershed level).

RAP helps people develop strategies that improve rangeland productivity and sustainability. Designed to be combined with local knowledge, RAP helps users analyze the outcomes of land management actions. For instance, it can help: ***visualize*** the impacts of drought on perennial forage, ***identify*** where to reduce woody encroachment, or ***evaluate*** the effectiveness of weed control treatments.



UNIVERSITY OF MONTANA

LAUNCH THE APP

https://rangelands.app

Questions: info@rangelands.app

RAP In Action: Across the West, invasive woody plants are expanding due to the lack of fire. Forage for livestock and habitat for grassland-dependent birds is reduced as trees take over rangeland. Ranchers and partners are implementing conservation practices to restore range health (photo right). The graph, produced by RAP, illustrates how vegetation responded to a prescribed fire in 2015, which was designed to improve forage for livestock and wildlife: average tree cover decreased from 18% to 2% post-fire, making more room for perennial grasses and forbs.

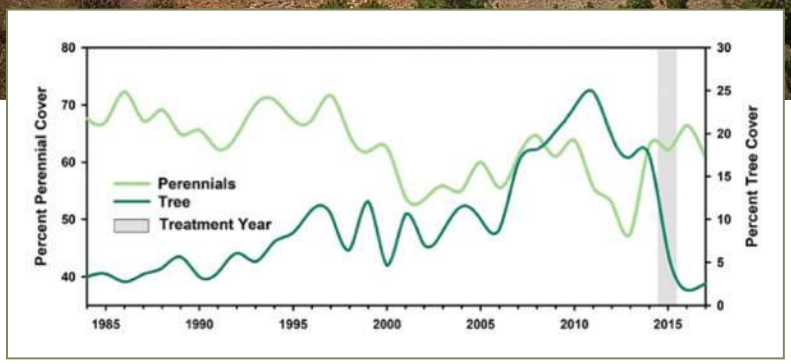


Photo: Jeremy Roberts/Conservation Media

What is RAP?

The Rangeland Analysis Platform is an interactive web application designed to assist in managing and monitoring America's valuable rangelands. This free tool allows users to instantaneously visualize and estimate the percent vegetation cover of annual grasses and forbs, perennial grasses and forbs, shrubs, trees, and bare ground.

Why is it useful?

The vast grazing lands that span the western states are irreplaceable assets that produce food, support rural economies, generate recreation revenues, and sustain wildlife. Managing land for livestock and wildlife requires understanding how vegetation responds to human- or natural-caused changes through time, such as drought, irrigation, grazing, or wildfire.

RAP is a revolutionary new way to monitor rangelands, which will help landowners and managers to keep them profitable and productive for future generations. Information available through RAP can help sustain valuable water and soil resources, improve forage for livestock and wildlife, or manage weed treatments and post-wildfire rehabilitation projects.

Who can use it?

This free tool was developed for landowners, managers, and conservationists to quickly and easily access information to guide land management decisions. RAP is designed to be used in conjunction with on-the-ground data and site-specific knowledge to plan management actions that improve agricultural operations, enhance rangelands, or boost wildlife habitat.

Why is it innovative?

The rise of cloud computing and machine learning technology allows RAP to instantaneously monitor rangelands across time and space. By combining field data and massive satellite imagery archives, **RAP is the first all-encompassing view of millions of acres of rangelands.** The online app monitors rangeland vegetation from 1984 to present at any scale, from ranches to regions. That's nearly four decades of detailed data available as fast as the click of a mouse!

How does it work?

RAP combines over 30,000 field plots from the U.S. Department of Agriculture's NRCS National Resources Inventory (NRI) and the Bureau of Land Management's Assessment, Inventory, and Monitoring (AIM) datasets with the historical Landsat satellite record, gridded meteorology, and abiotic land surface data (e.g., elevation, soils). Utilizing the computation power of Google Earth Engine, RAP produces charts and maps across the western half of the U.S. at 30x30 meter resolution. This means that each pixel is slightly larger than a baseball diamond.

Who developed it?

RAP was developed by the University of Montana in collaboration with the USDA's Natural Resources Conservation Service and the Department of Interior's Bureau of Land Management.

USDA United States Department of Agriculture

Natural Resources Conservation Service

U.S. DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT