

Purpose

LANDFIRE will develop a comprehensive suite of standardized, scientifically credible, multi-scale spatial data layers and software needed to support implementation of the National Fire Plan, Cohesive Strategy, and the President's Healthy Forest Initiative across the United States. LANDFIRE models and methods are currently being developed and tested in two large prototype areas in the western United States: Central Utah and the Northern Rocky Mountains at 30-meter pixel resolution. By maintaining focus on scientific credibility and multi-scale local-to-national applications, LANDFIRE builds on existing coarse maps of Fire Regime Condition Class created in 1999 by Colin Hardy and other scientists at the Fire Sciences Laboratory in Missoula, Montana. Fire regime condition class, a categorical measure of departure from historical fire regimes, is the index used to allocate fire funding and resources, prioritize treatments, and evaluate success of wildfire management activities. LANDFIRE provides higher resolution data for application in landscape level prioritization of fuel treatments and strategic wildfire management planning at broad scales.



Methods

Many tasks must be completed to successfully meet the objectives of LANDFIRE.

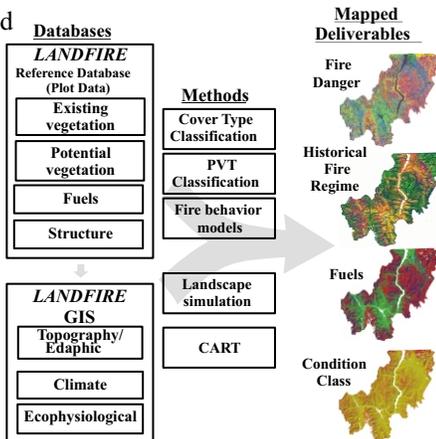
A database containing all available field data for each map zone will be compiled. This database forms the basis for all additional LANDFIRE tasks.

Maps of vegetation composition and structure and ecological characteristics are created from field data, satellite imagery, and ecosystem simulation to describe existing vegetation and ecological characteristics for each map zone.

New fuel models will be developed and mapped for each map zone for prediction of fire behavior and effects.

Succession models will be developed to simulate fire and vegetation dynamics over time to characterize fire regimes and compute fire regime condition class.

FIREHARM, will be used to integrate vegetation, fire, and fuel dynamics over time to create maps of fire danger and potential fire behavior. These data layers may then be implemented in project level planning or for broader scale prioritization of land and fire management.



Deliverables

LANDFIRE will deliver a comprehensive package for developing condition class maps at any scale for the entire US. The following GIS layers, databases, and computer tools will be developed for the two prototype areas as a demonstration that the methods and protocols developed by the LANDFIRE project can be applied nationwide.

Vegetation GIS

layers: cover type, structural stage, stand height, canopy cover, fuels

Environmental GIS

layers: biophysical settings, potential vegetation types, fire regime (frequency, fire severity, condition class), soils characteristics

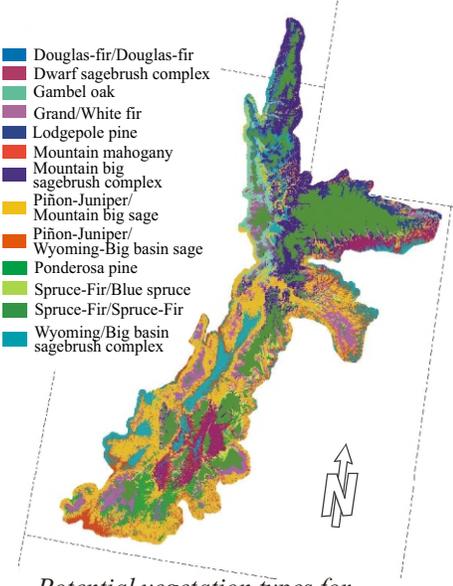
Databases: DAYMET spatial database 18-year daily weather, field database, successional pathway and disturbance information.

Computer Models: LF-BGC a biogeochemical simulation model, LANDSUM landscape fire succession model

Computer programs: WXFIRE fire weather summary program, FIREHARM-Fire hazard Rating program

Fuels information: new set of fire behavior fuel models, set of fuel loading models, crown fuel models

- Douglas-fir/Douglas-fir
- Dwarf sagebrush complex
- Gambel oak
- Grand/White fir
- Lodgepole pine
- Mountain mahogany
- Mountain big sagebrush complex
- Piñon-Juniper/Mountain big sage
- Piñon-Juniper/Wyoming-Big basin sage
- Ponderosa pine
- Spruce-Fir/Blue spruce
- Spruce-Fir/Spruce-Fir
- Wyoming/Big basin sagebrush complex



Potential vegetation types for the Central Utah map zone

Collaboration

LANDFIRE will involve many government agencies, universities, and private contractors. Most modeling and ecological/ fuels mapping will be conducted at the USDA Forest Service Rocky Mountain Research Station Fire Sciences Laboratory in Missoula, MT. Vegetation mapping will be conducted at the USDI USGS EROS Data Center in Sioux Falls, SD. Coarse scale biophysical mapping will be conducted at USDA Forest Service Pacific Northwest Research Station Forest Sciences Laboratory in Wenatchee, WA. University of Montana NTSG Laboratory will develop the daily weather DAYMET database. The non-profit organization Systems for Environmental Management (SEM) will develop a legacy field database and many utility programs for GIS and field data analysis.

Schedule and Budget

The LANDFIRE prototype began April 1st, 2002 and will end April 1st, 2005 costing \$1.2 million per year for Fire Sciences Lab tasks and \$0.8 million per year for EROS Data Center tasks.

Status

Currently the prototype is on schedule and budget with the Central Utah area scheduled to be completed by Summer 2004 and the Northern Rocky Mountain area by Fall 2004. Implementation for the Western US could begin as early as Winter 2004, with products online by Summer 2005.



Contacts:
zhu@usgs.gov
mrollins@fs.fed.us
www.landfire.gov