Topic & Title of Incident

Use of LANDFIRE Data in Wildland Fire Incident Management: Dammeron & Valley Road Fires

Date of Incident

2005

Background

By the fire season of 2005, some of the first LANDFIRE zones had been mapped and data were available. LANDFIRE data products were used on the Dammeron Fire in southwest Utah (Dixie National Forest and St. George BLM Field Area, mostly within the Pine Valley Wilderness area) and on the Valley Road Fire in southern Idaho (Sawtooth National Recreation Area, Sawtooth National Forest). The Valley Road Fire posed risks to several small wildland-urban interface (WUI) developments, a power grid, and a locally significant transportation corridor in central Idaho. Suppression efforts were focused on the WUI areas and several isolated ranches. Most of the remainder of the fire was in roadless, primitive areas, some of which was in the proposed Boulder-White Clouds wilderness area. These fires stretched over interagency lands of the Forest Service, Bureau of Land Management (BLM), state, and private. LANDFIRE fire behavior fuels data were analyzed using FARSITE (a model that predicts fire progression) and FSPro (a model that estimates the probability of fire spread) along with local fire weather inputs. The results from these analyses were used to support the management team's decisions.

Key Points

Description of data assessment LANDFIRE data were used to develop long-term assessments of fire spread. LANDFIRE fire behavior fuels data were analyzed using FARSITE and FSPro models (see figure 2). Inputs to the new FSPro application are similar to those for the established FARSITE application: surface fuel model, aspect, elevation, slope, and canopy characteristics. These landscape characteristics are used in conjunction with historical energy release component and wind data from a representative remote-automated weather station as key model inputs. LANDFIRE data served as critical input to the modeling process by providing crucial details for the long-term assessment of fire spread. The assessments could not have been accomplished in a timely manner without LANDFIRE data. These assessments were evaluated considering various suppression strategies and tactics. The analysis supported fire fighting resources prioritization and assisted in developing tactical operations, thus supporting Standard Firefighting Order number three: "Base all actions on current and expected behavior of the fire."

Data that saves time Because LANDFIRE data are based on remote sensing imagery from circa 2001, editing of the LANDFIRE fuels and vegetation data was required based on changes that had occurred to the vegetated landscape. However, having data that provided a starting point saved analysts 2-4 days of data preparation for each fire, allowing for more timely results in the incident management process.

LANDFIRE data can be modeled LANDFIRE data products, used in concert with modeling tools such as FARSITE and FSPro, proved highly useful by allowing rapid, accurate risk quantification. LANDFIRE provided the only continuous (or seamless) data set covering all lands affected by the fires, which included Forest Service, BLM, state, and private lands.

Data that supports reduction of hazards & costs LANDFIRE data supported wildland fire incident management by:

- Reducing firefighter exposure to hazards
- Reducing hazard to values at risk
- Reducing costs of perimeter fireline construction by two-thirds, estimated to be a cost difference of 2 to 4 million for the management of the fires

Fire management cost savings Dammeron Fire incident managers estimate a $2 million savings and Valley Road Fire incident managers estimate a $4-6 million savings as a result of modified tactical decisions based upon better informed fire progression and spread predictions.

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Key Points, continued...

Results / summary Because the Dammeron Fire perimeter was mostly within wilderness, a fireline was not created. Steep, rocky terrain posed firefighter risks and difficult logistical support. Substantial aviation operations and their attendant risks and costs were avoided, and it was determined that wilderness values were better served by not building a fireline and helispots and instead keeping firefighter activity limited to field observations.

After obtaining a long-term assessment on the Valley Road Fire, a strategy was approved that limited line construction to less than 24 miles of the 75-mile fire perimeter. This strategy significantly reduced firefighter exposure to hazards, limited costly aviation operations, and avoided lasting impacts to the roadless, primitive areas.

The assessment process using LANDFIRE data allowed for better recommendations in a timely manner for the decision-making process. This critical information provided sound decision support for the agency administrators, allowing them to select strategies that did not require full perimeter containment and develop more accurate emergency response approaches.

Recommendations

Seamless, accurate data required Incident management, fire spread assessments, and predictive techniques require seamless, accurate fuels and vegetation data to improve the quality of the modeling analysis and results.

Figure 1 *- The plume of the Valley Road Fire in the Sawtooth Valley 15 miles south of Stanley, ID. The fire burned over 40,000 acres.*

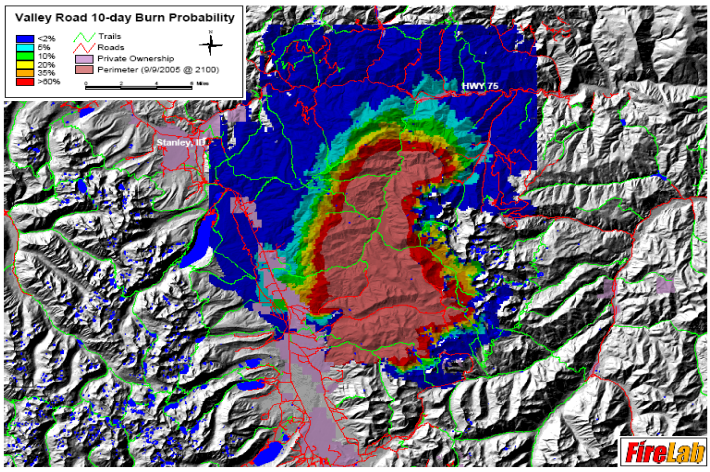

Figure 2 *- Fire Spread Probability (FSPro) fire behavior projection showing the spatial output of the model. FSPro calculates the probability of fire spread from a current fire perimeter or ignition point for a specified time period.*