Keeping LANDFIRE Data Current – It's a Matter of Disturbance

LANDFIRE's latest directive is to provide agency leaders and managers with common "all-lands" datasets for strategic fire and resource management planning and analysis covering the 50 united states, Puerto Rico, and insular territories on an annual basis. This requires near-continuous mapping of landscape-level change (i.e., disturbance) and updating more than twenty geospatial products at 30m pixel spacing. Included are geospatial data from various federal and state land-management agencies, and fire severity information from large-scale fire-mapping programs.

LANDFIRE's disturbance products reflect abrupt inter-annual changes originating from either human or natural incidents but also include agency-submitted "Events" that capture **vegetation/fuel treatment activity**. Disturbances not provided as Events are captured via remote sensing
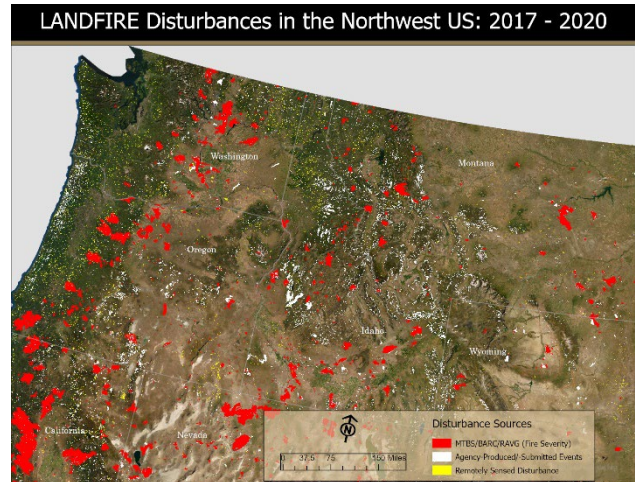

Figure 1: Changes are both plentiful and extensive in the northwest US. Knowing when and where disturbances have occurred is valuable information for land managers and researchers across disciplines.

with the lion's share of imagery coming from Landsat's 5-9. To ensure LANDFIRE disturbance products are high-quality, meticulous analyses and verification are made by team members. When elements like high haze or rain-soaked ground get flagged as change the analyst's knowledge and experience discern whether a change is valid, like forest thinning (keep), or perhaps a short-term condition such as temporary flooding (remove).

The scope of landscape change across the US can be difficult to perceive unless it's visualized. The provided graphic highlights the NW US to emphasize the extent and number of changes that can occur over a relatively short period of time. In this four-year timespan LANDFIRE staff mapped 98,328,675 acres of land as changed/managed (CONUS) equating to just under 5% of all lands, or approximately 1.24% per year.

Recent advancements in change-detection algorithms, data access, and image processing have led to multiple improvements. Nevertheless, free and open access to the Landsat archive combined with image processing on high performance computers has been the most impactful. Rather than scanning through search-and-order engines for the "best" single Landsat scenes we now algorithmically take the cloud- and shadow-free pixels from large stacks of single scenes to make cloud-free image composites in a fraction of the time.

LANDFIRE disturbance data is applicable across disciplines. Habitat suitability, forest health, carbon stock accounting, storm damage, etc., are a few examples. It's the range of applications that has positioned disturbance products as some of LANDFIRE's most popular. In 2022 alone, we have recorded over 4,500 CONUS-wide downloads. If your work can benefit from knowing where land-cover changes have occurred we encourage you to give LANDFIRE disturbance data a visit at our website, or from LANDFIRE's Data Distribution Site (DDS).