

LANDFIRE National Eastern Milestone Overall Quality Assessment Report

The LANDFIRE National Eastern Milestone Overall Quality Assessment Summary is a product of the LANDFIRE Product Quality Working Team (PQWT). The PQWT is composed of individuals from the major LANDFIRE production teams, and external experts. The LANDFIRE Product Quality Assessment Report provides potential users access to information about the quality of the LANDFIRE data so that the LANDFIRE products may be fully and appropriately used. There were no specific quality targets or requirements in the LANDFIRE Charter for LANDFIRE National milestones, but the production teams strived to create the highest quality products possible under the project budget and schedule constraints. Details of the quality control processes used in the project can be found in the Product Quality and Control Assessment (PQCA) Plan on www.landfire.gov. Note that another report focusing on analyzing LANDFIRE Super Zone agreement will be developed and also be distributed. We will also make individual Map Zone contingency tables available for download in the future. Users must be cautious when interpreting this information because sample sizes are often problematic.

As with all quality assessments, it is important that the user understand the limitations of the assessment process. To assess the “accuracy” of a product, a comparable product considered to be “true” (often called “reference” in the literature) must be available. For LANDFIRE, no “true” data existed, so we used a sample (called holdout plots) of the LANDFIRE Reference Data Base ground plots that were not used to develop the products. Because there were numerous issues with the holdout plots, such as total sample size, plot classification methodology, variable plot quality, etc., we chose to use the term “agreement” rather than “accuracy”. This distinction is common in the literature.

Because the holdout plots were the only reference data available for the agreement assessments, only the products that were directly developed from the LANDFIRE Reference Data Base (LFRDB) [Existing Vegetation Type (EVT)] could be quantitatively assessed. Because of a change in methodology, we could not conduct a quantitative assessment on Environmental Site Potential (ESP) as we did for Western Milestone map zones. The PQCA plan also included the assessment of model quality using Cross Validation (CV) statistics for Canopy Base Height (CBH) and Canopy Bulk Density (CBD) in zones where there were a sufficient number of plots to make the CV statistic meaningful. However, users should NOT interpret CV as final product agreement, and CV results are not included in this report. The quality of some LANDFIRE products, such as Fire Regime Condition Class, will be assessed in the 10 Nature Conservancy LANDFIRE Application Projects scattered around the country. The results of these projects are not yet available, and are not included in these reports.

**Overall Agreement for LANDFIRE National
Existing Vegetation Type in the Eastern Milestone Super Zones**

Super Zone	Existing Vegetation Agreement (%)	# of EVT Classes Assessed	# of plots
Great Lakes	52	35	570
Northeast	64	50	883
Northern Plains	68	65	621
South Central East	83	25	633
South Central West	56	70	406
Southeast	51	34	627
Southern Appalachians	66	35	470
OVERALL	63	~300	4210

Assessment Highlights

- The overall agreement between LANDFIRE EVT and hold-out plots was over 60% for the approximately 300 mapped classes in the Eastern Milestone map zones.
- LANDFIRE was designed as a strategic data product, but we are evaluating its quality using a per-pixel (30m) assessment. These agreement results do not indicate how well LANDFIRE supports strategic analyses.
- Overall, EVT agreement is higher in the Eastern Milestone Super Zones than Western Milestone Super Zones. While it is impossible to identify the specific factors leading to improved agreement, we can suppose that plot distributions were more reflective of the vegetation being mapped, or that the vegetation types are inherently more “identifiable” with LANDSAT TM imagery and data mining techniques.
- There is some variability in agreement across Super Zones, primarily due to differences in the number and distribution of plots used to develop the classification, and the inherent map-ability of the categories being mapped in different geographies.
- Overall agreement only tells part of the story. Users are encouraged to review the actual contingency tables and class-specific agreements for each Super Zone (included in an upcoming report) to fully understand the results of the assessment.
- Fire Behavior Fuel Model (FBFM13) is an important LANDFIRE product. However, there is no method or data available to quantitatively assess its quality. Given the number of FBFM categories (13), and that the results are “calibrated” by local experts, the LANDFIRE PQWT predicts that on average FBFM13 agreement will match or exceed EVT agreement results. The tendency of local users to “adjust” FBFM13 for current conditions does make this prediction difficult to verify.