"LANDFIRE 101"

September 19, 2014
Randy Swaty, Ecologist,
The Nature Conservancy

TPOS and Lake States Fire Science Consortia

- LANDFIRE and the TPOS/Lake States Consortia offer these webinars to talk about and illustrate LANDFIRE products and processes that can support large land management and planning.
- Others: Northwest Fire Science Consortium and the Northern/Southern Rockies Fire Science Networks on YouTube/Conservation Gateway.
- Southern Fire Science under way now

Today: LANDFIRE 101- Randy Swaty, Ecologist with The Nature Conservancy, explains the suite of tools that are available those who need science-based data in order to restore/conserve/manage large landscapes in the U.S.

Coming up:
October 8: Assessing Needs - Tracy Hmielowski, Fire Information Specialist, presents *Where should we burn? A Fire Needs Assessment for Wisconsin*.
October 29: Customizing Data - Don Helmbrecht, Wildland Fire Analyst, USDA Forest Service, TEAMS Enterprise Unit, presents *Local Customization of Fuels Data on the Huron-Manistee and Hiawatha National Forests*.
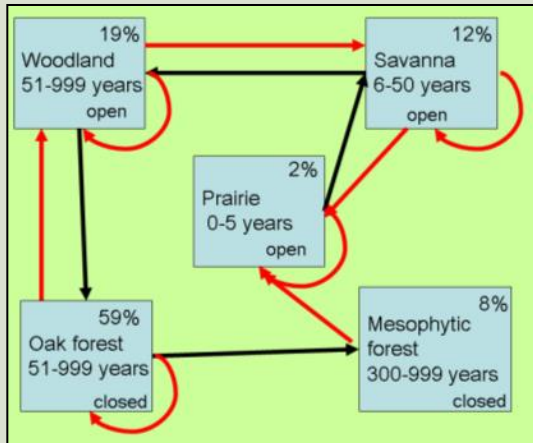
Greg Seamon

Today's Agenda

- LANDFIRE Primer
- Where and how to get products
- The Refresh process
- How you can use LANDFIRE
- How to get more information

Randy Swaty
rswaty@tnc.org

What is LANDFIRE?

Partnership between DOI, USFS and TNC aimed to characterize fire, fuels and vegetation conditions across the country.

Introduction to LANDFIRE

LANDFIRE is…

an innovative project designed to create and periodically update comprehensive vegetation, fire and fuel characteristics data using a consistent process for the entire United States.

KEYWORDS: nationwide, consistent, ecological models, GIS data, tools, fire/non-fire, spatial data

Introduction to

- Aspatial models and descriptions
- Tons of spatial datasets
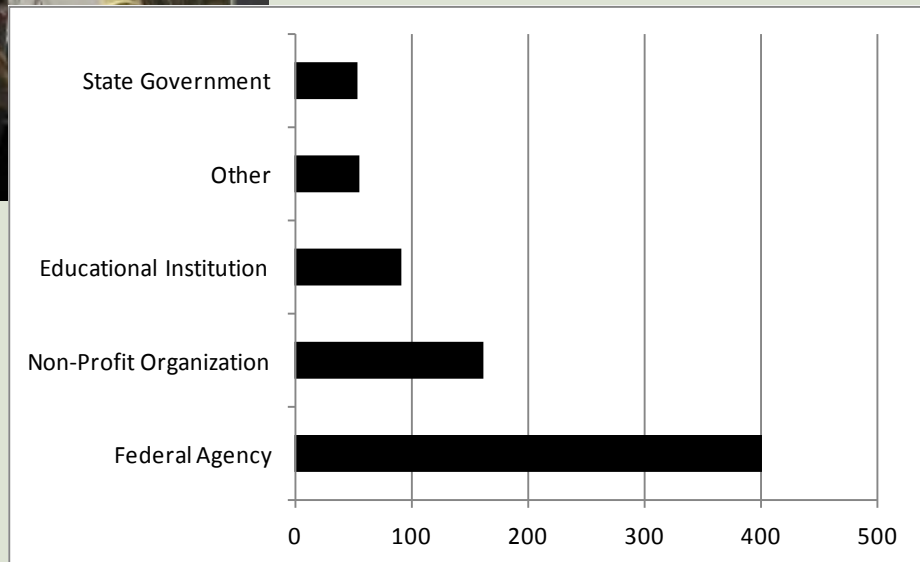- Software and GIS extensions
- A way of thinking
- A vibrant community of users/hackers/contributors

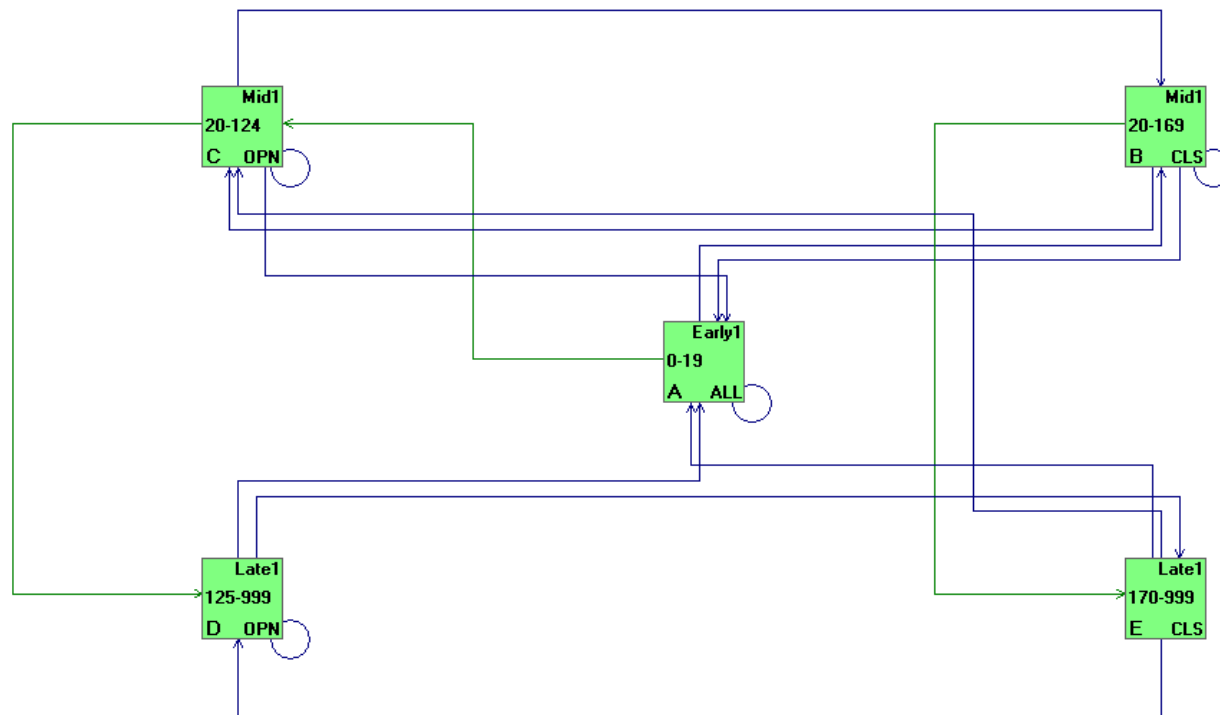*More than fire, more than GIS, more than a "toolbox"*

Model Development

TNC had a cooperative agreement to describe and model "Reference Conditions" for the ecosystems of the US
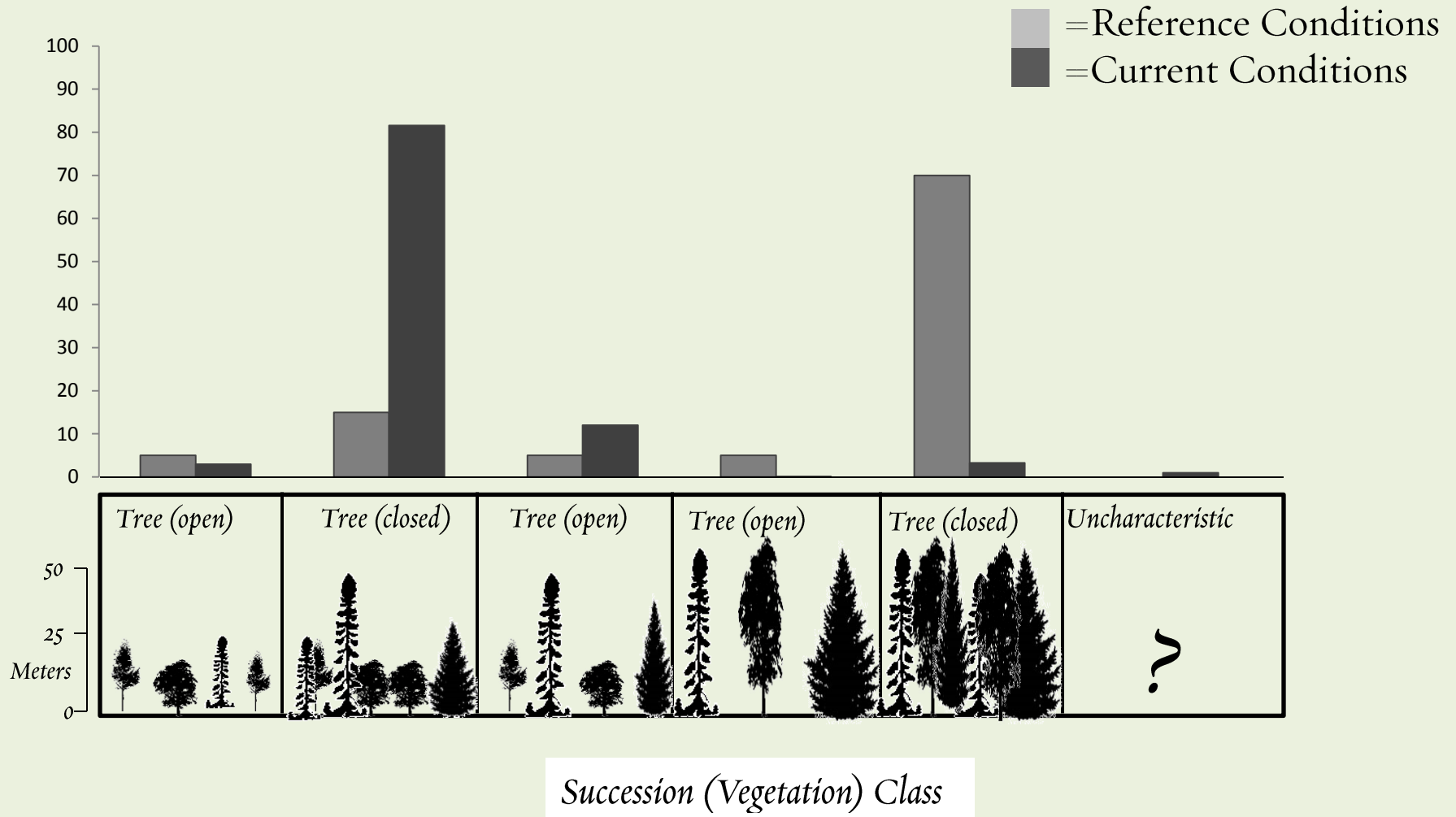

http://landfire.gov/NationalProductDescriptions24.php

Vegetation Dynamics Models

Western hemlock

=Reference Conditions
=Current Conditions

Succession (Vegetation) Class

Getting the Models

Model Description

LANDFIRE Biophysical Setting Model

Biophysical Setting: 0710080   **North Pacific Oak Woodland**

☐ *This BPS is lumped with:*
☐ *This BPS is split into multiple models:*

General Information

Contributors   (also see the Comments field)   **Date**   7/28/2005

Modeler 1 Robin Wills	robin_wills@nps.gov	**Reviewer**	Diane White,Charley Martin,Ed Reilly	dewhite01@fs.fed.us
Modeler 2 Kyle Merriam	kmerriam@fs.fed.us	**Reviewer**	Frank Price	Frank_Price@or.blm.gov
Modeler 3 Dana Sandifer	Dana_Sandifer@nps.gov	**Reviewer**	Bruce Hostetler	bhostetler@fs.fed.us

Vegetation Type

Forest and Woodland

Dominant Species*

QUGA4
PSME

General Model Sources

☑ Literature
☑ Local Data
☑ Expert Estimate

Map Zone

7

Model Zone

☐ Alaska
☑ California
☐ Great Basin
☐ Great Lakes
☐ Northeast
☐ Northern Plains

☐ N-Cent.Rockies
☑ Pacific Northwest
☐ South Central
☐ Southeast
☐ S. Appalachians
☐ Southwest

Geographic Range

This BpS is limited to the southern portions of the North Pacific region. It occurs primarily in the Puget Trough and Willamette Valley, but trickles down into the Klamath ecoregion and northern California

The Models Summarized

- Represent how the ecosystems of the US worked prior to major European settlement
- Two parts: the model and the description
- Not a prescription for how things should be today or tomorrow
- Models can be hacked or modified
- Not rocket science to modify

LANDFIRE Products

Vegetation

Environmental Site Potential
Biophysical Settings
Existing Vegetation Type
Existing Vegetation Height
Existing Vegetation Cover
Vegetation Dynamics Models*
Reference Database*

Fire Regime

Fire Regime Groups
Mean Fire Return Interval
% Low-severity Fire
% Mixed-severity Fire
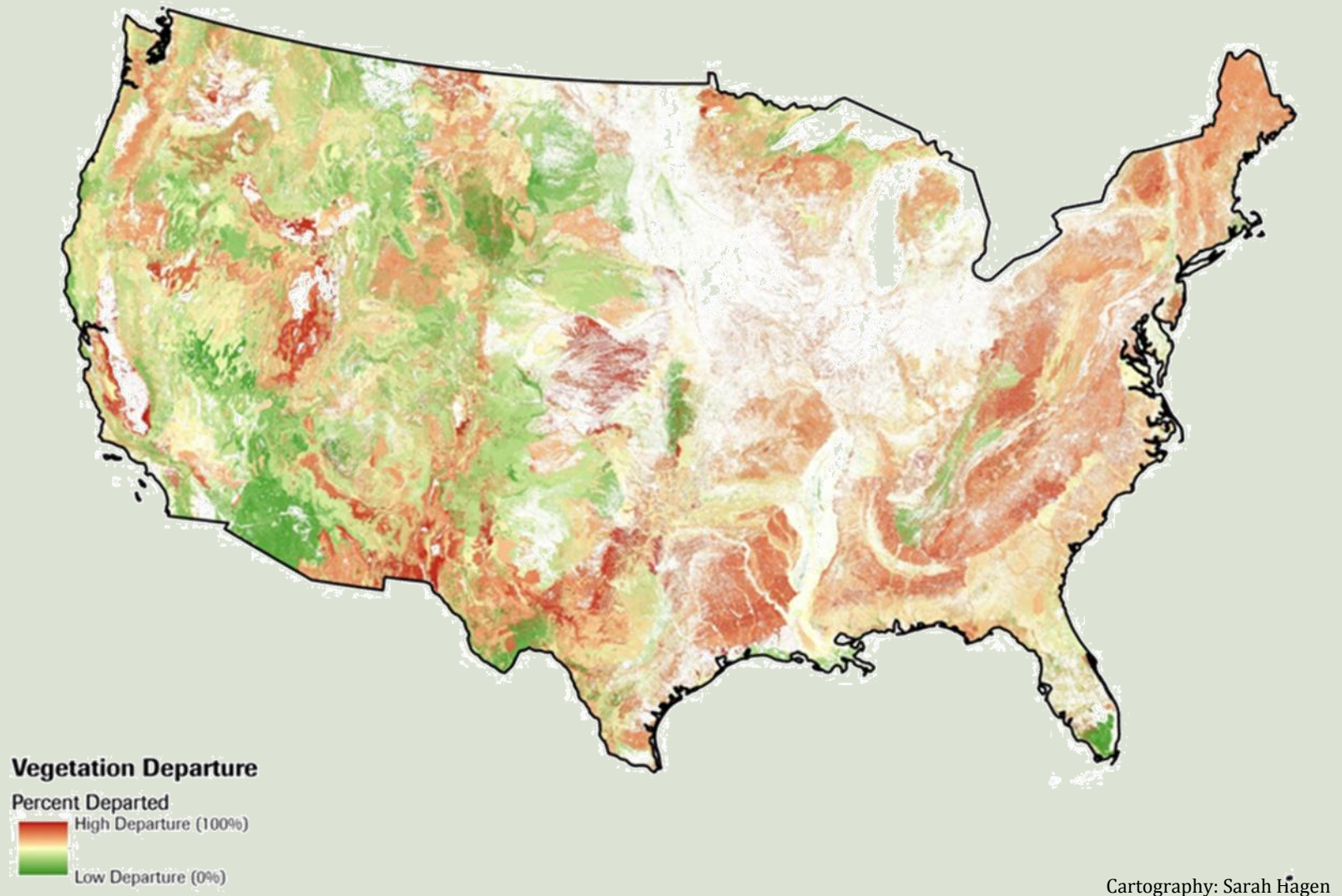% Replacement-severity Fire
Succession Classes

Fuel

13 Fire Behavior Fuel Models
40 Fire Behavior Fuel Models
Canadian Forest Fire Danger Rating System
Fuel Characteristic Classification System Fuelbeds
Fuel Loading Models
Forest Canopy Cover
Forest Canopy Height
Forest Canopy Bulk Density
Forest Canopy Base Height

Disturbance

Disturbance 1990-2008
Fuel Disturbance
Vegetation Disturbance
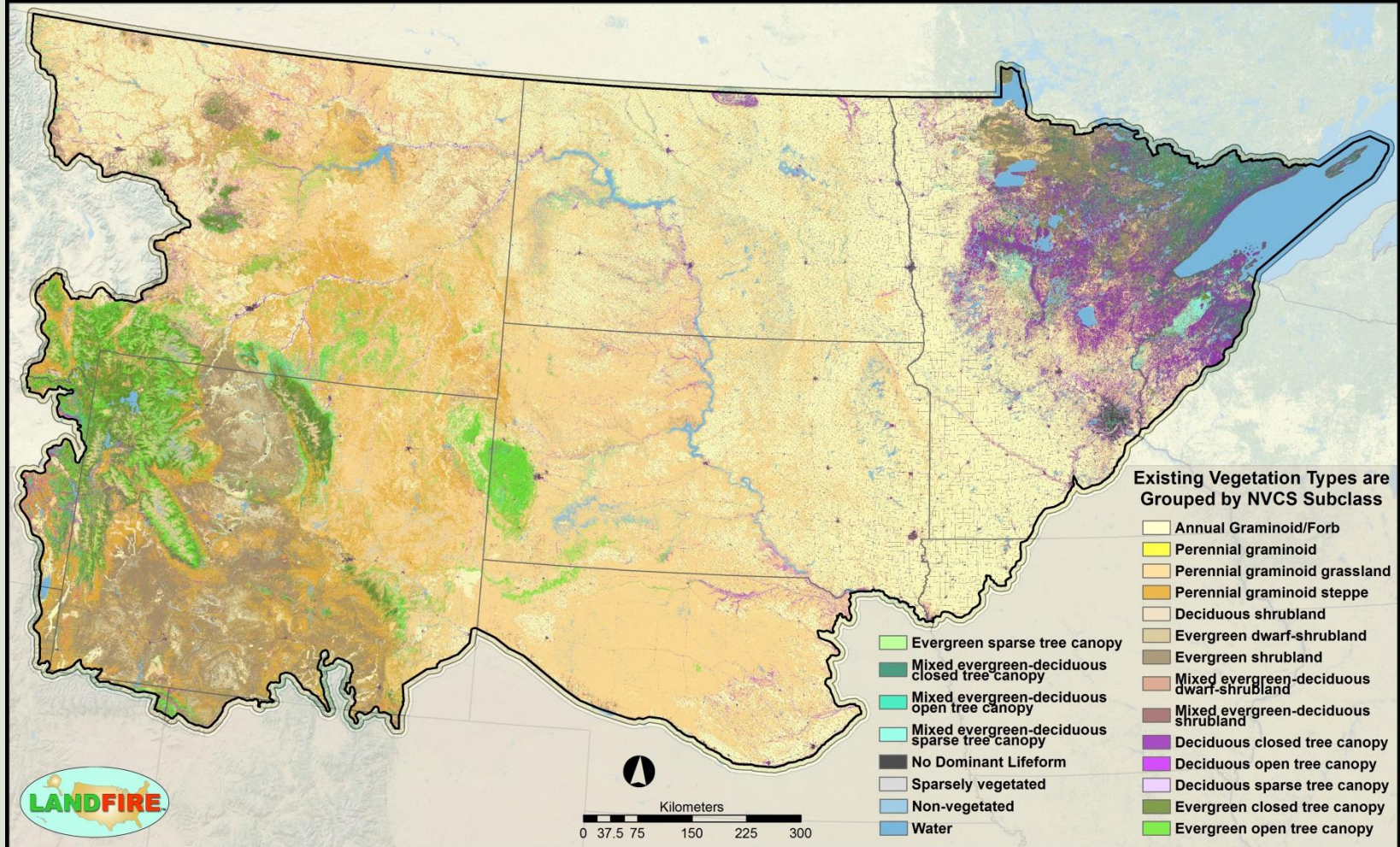Public Events Geodatabase*

*Denotes products that are not delivered as a spatial data grid.

Some Characteristics of the Data

Vegetation Departure

Percent Departed

High Departure (100%)

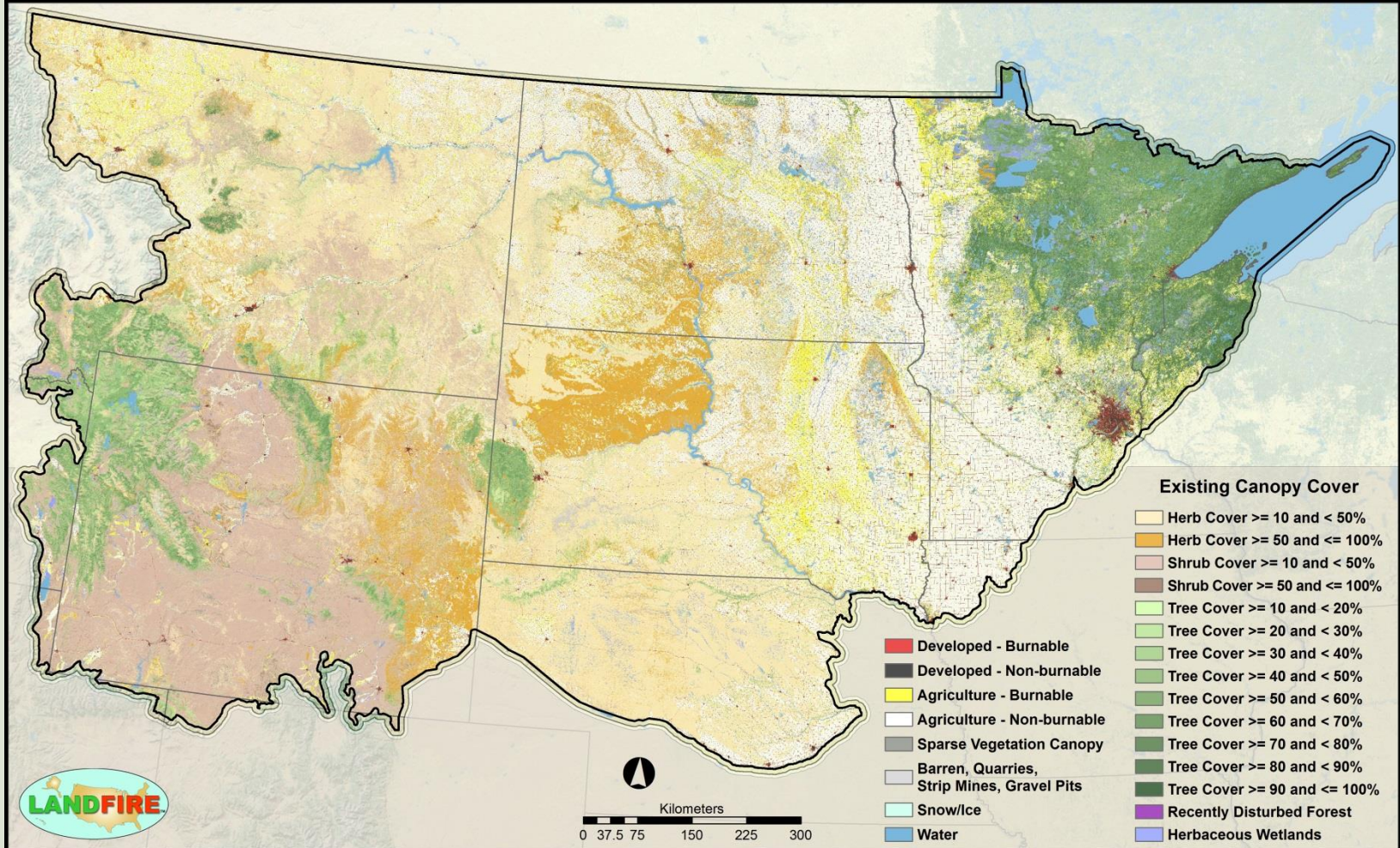Low Departure (0%)

Cartography: Sarah Hagen

LANDFIRE Existing Vegetation Type

LANDFIRE 2008 Refresh Updates: Existing Vegetation Type for the North Central
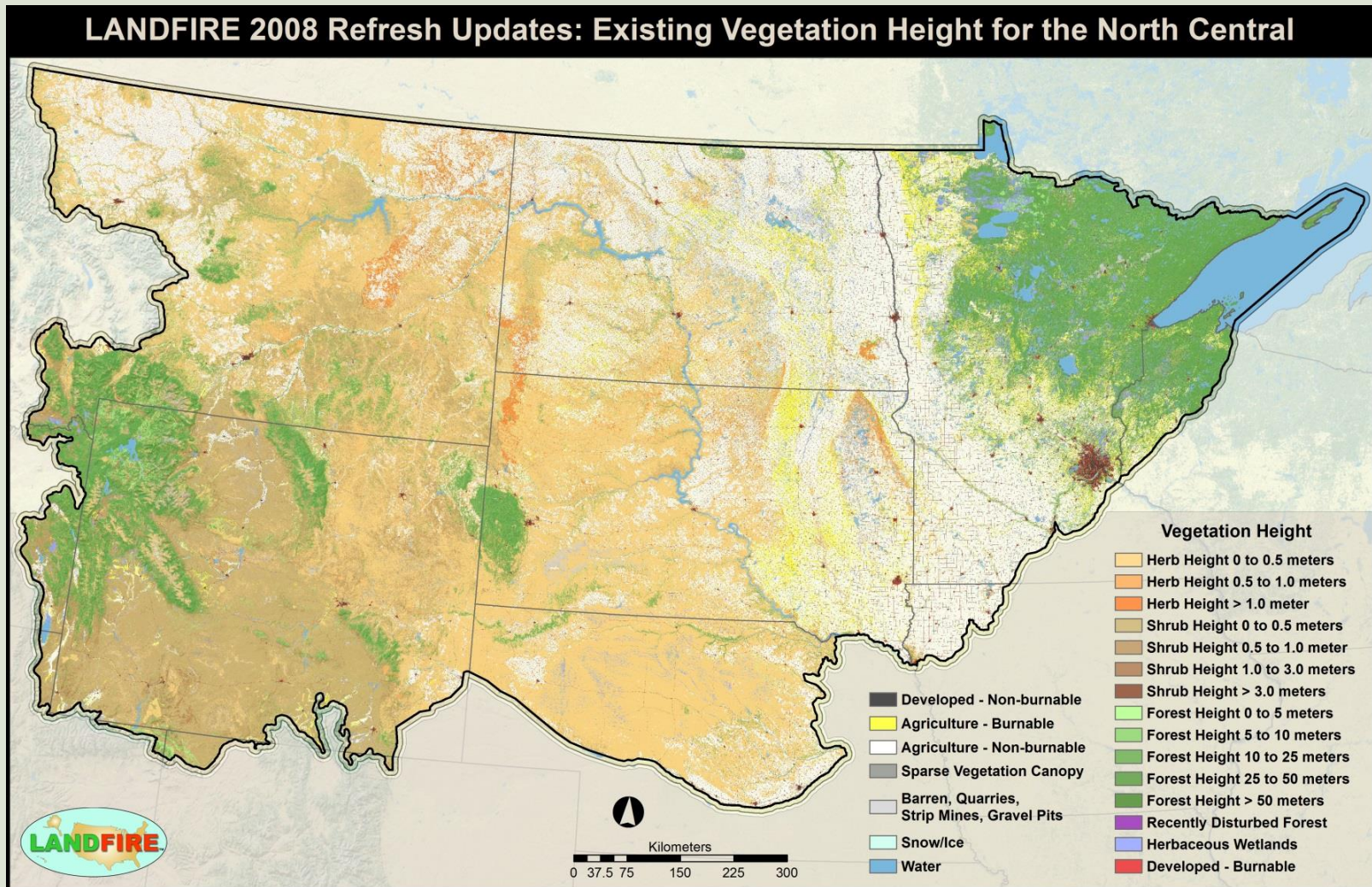
LANDFIRE Existing Vegetation Cover

LANDFIRE 2008 Refresh Updates: Existing Vegetation Cover for the North Central
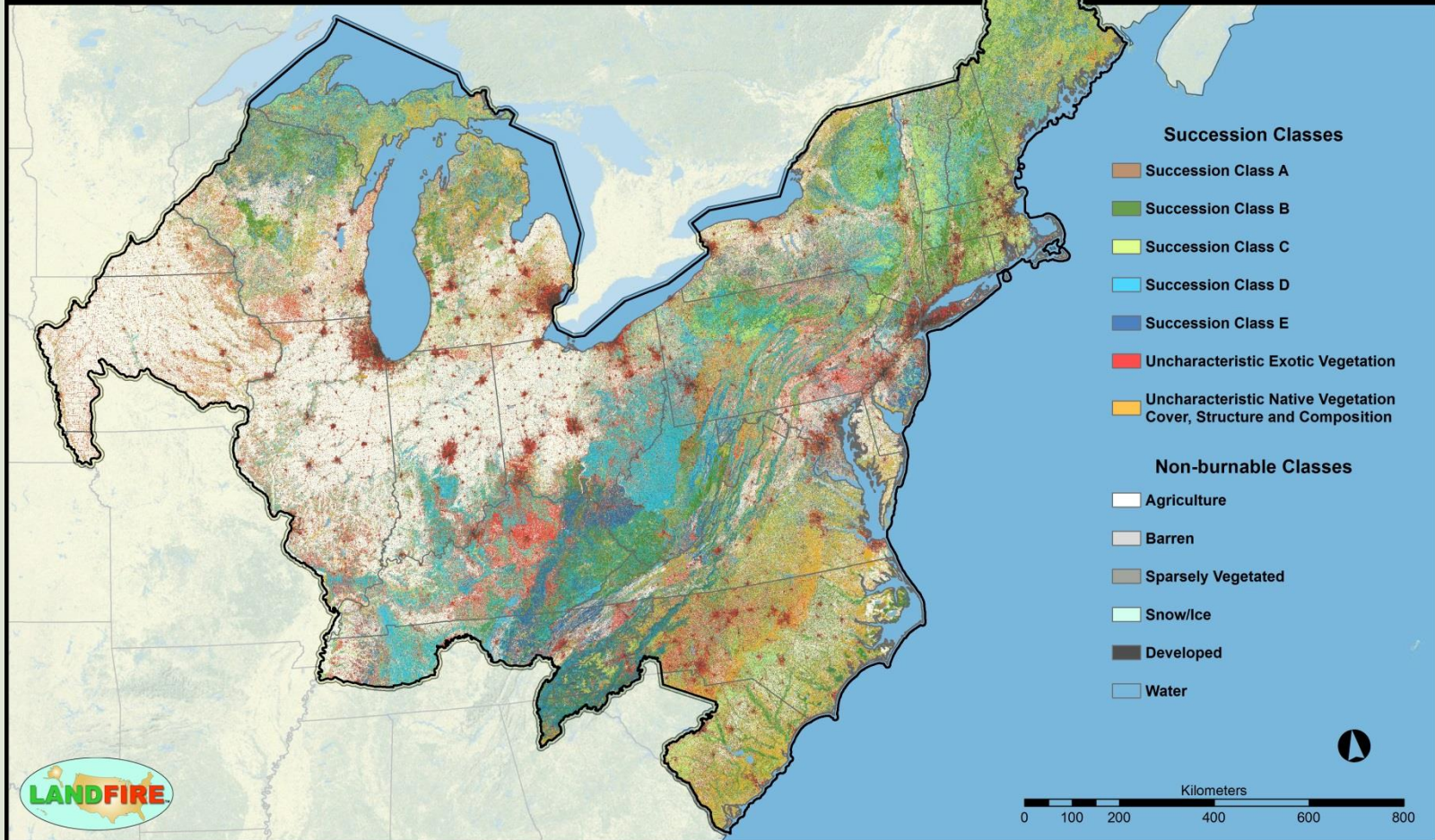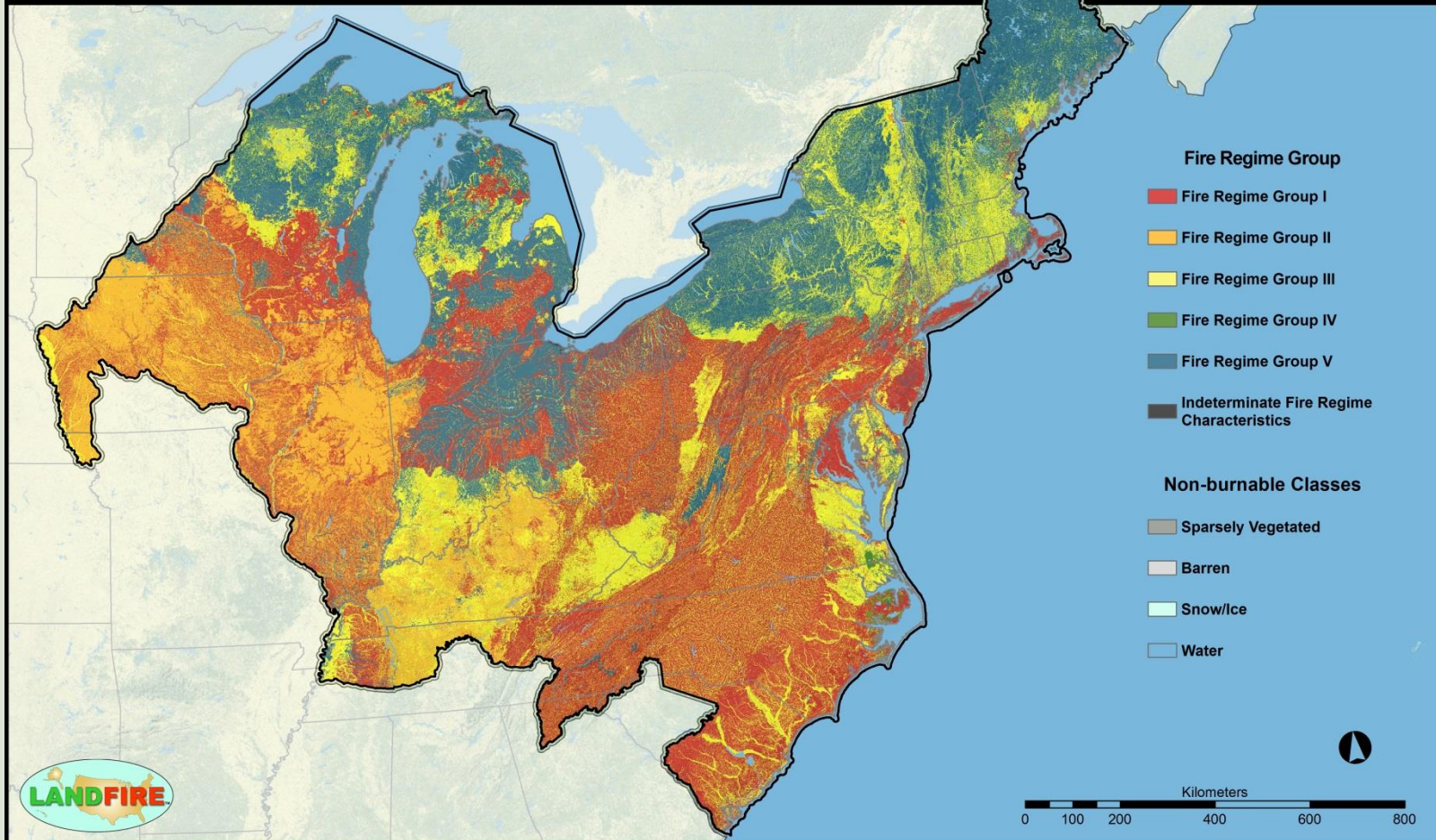
LANDFIRE Existing Vegetation Height

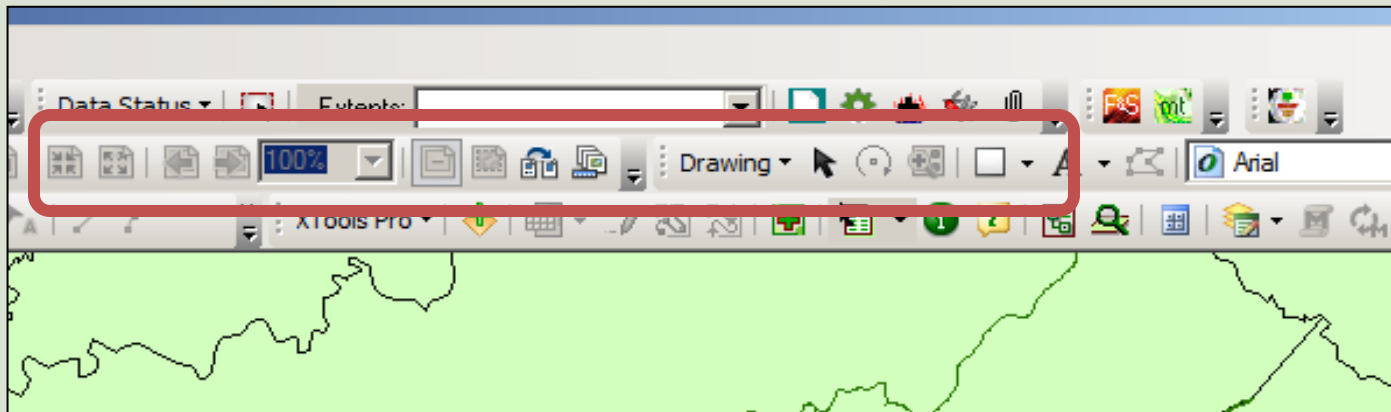LANDFIRE 2008 Refresh Updates: Existing Vegetation Height for the North Central

LANDFIRE Succession Classes

LANDFIRE Fire Regime Groups

Getting the Spatial Data

My favorite way:

- the LANDFIRE Data Access Tool

- alternatively use the LANDFIRE Data Distribution site

- both can be found at www.landfire.gov

Our LANDFIRE YouTube Channel has tutorials on both methods

The Spatial Data Summarized

- Dozens of 30m pixel raster datasets

- Data designed for large landscape analysis

- LANDFIRE delivers numerous vegetation (current and historic), fire and other datasets

- One of the most used is the Topographic dataset

Data Are Updated!

LANDFIRE Versions

Product Versions

	National	2001	2008	2010
Description	Original products	Systematic improvements & existing vegetation	Disturbances & succession	Disturbances & succession
Completed	2009	2011	2011	2013
Imagery Date	Circa 2001	Circa 2001	Circa 2001+ change detection through 2008	Circa 2001+ change detection through 2010
Current as of	Circa 2001	Circa 2001	Circa 2008	Circa 2010

Remote Sensing Change Detection

Wildland Fire Databases
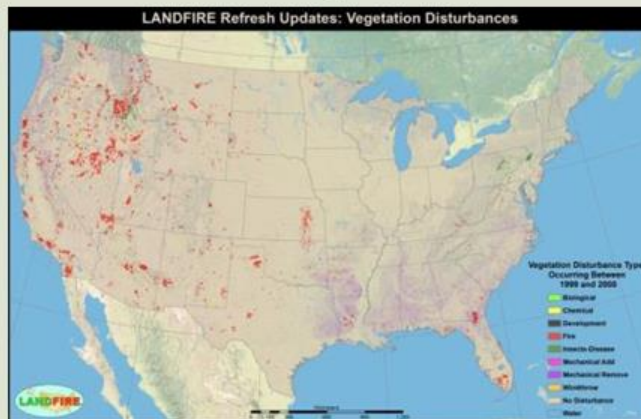
Events from Users

Areas of change

Fire severity, extent

Event type, cause, year

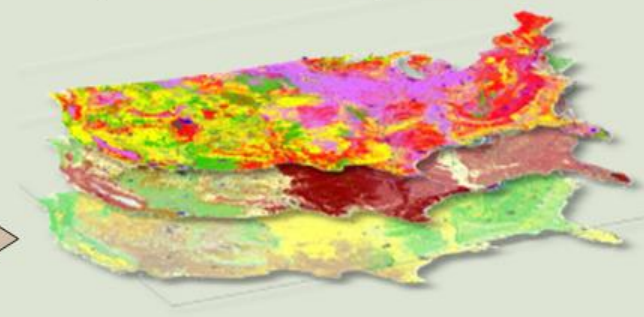LANDFIRE Refresh Updates: Vegetation Disturbances

Updated maps of existing vegetation type, cover & height
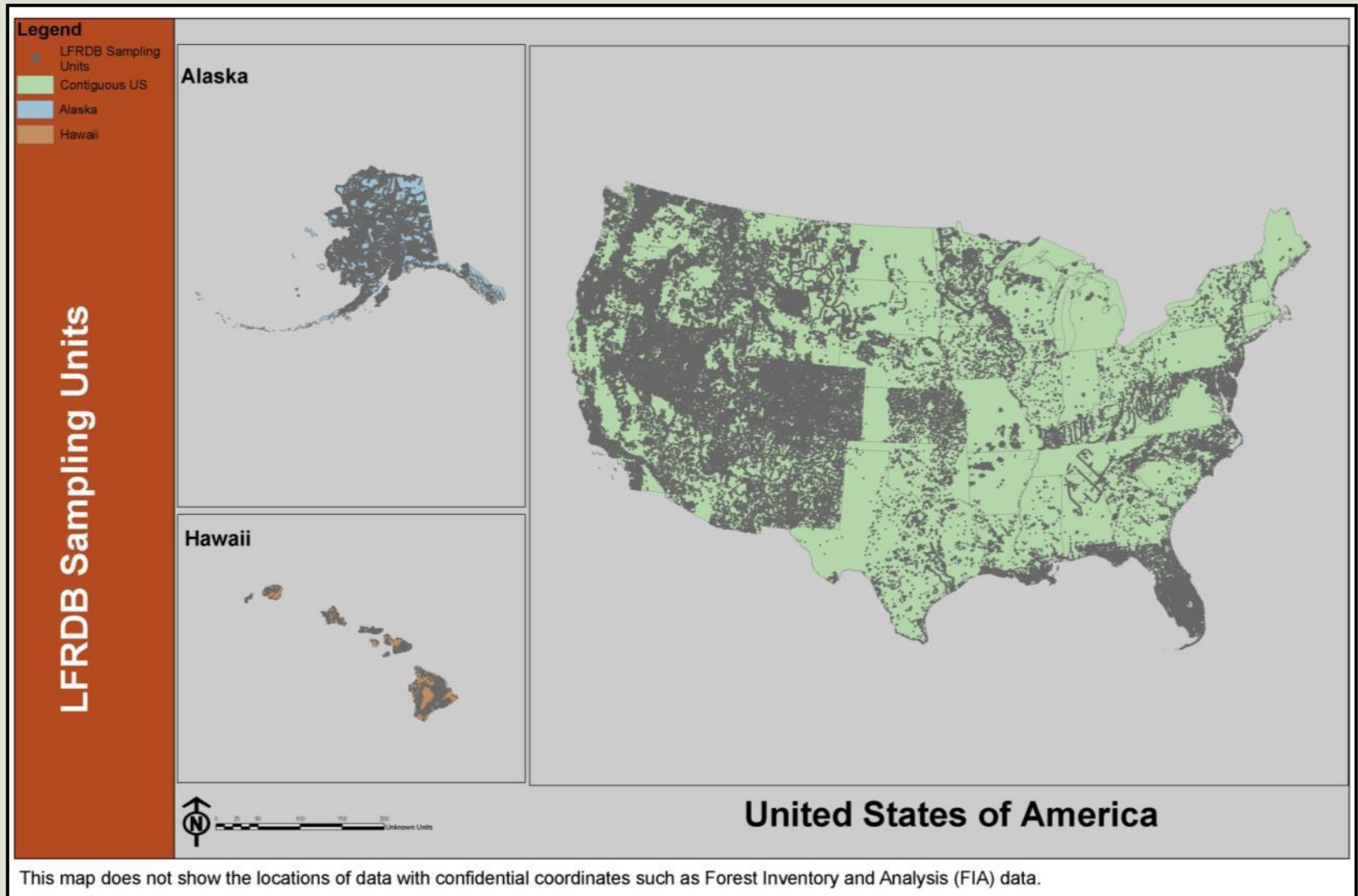
Vegetation Transition Database
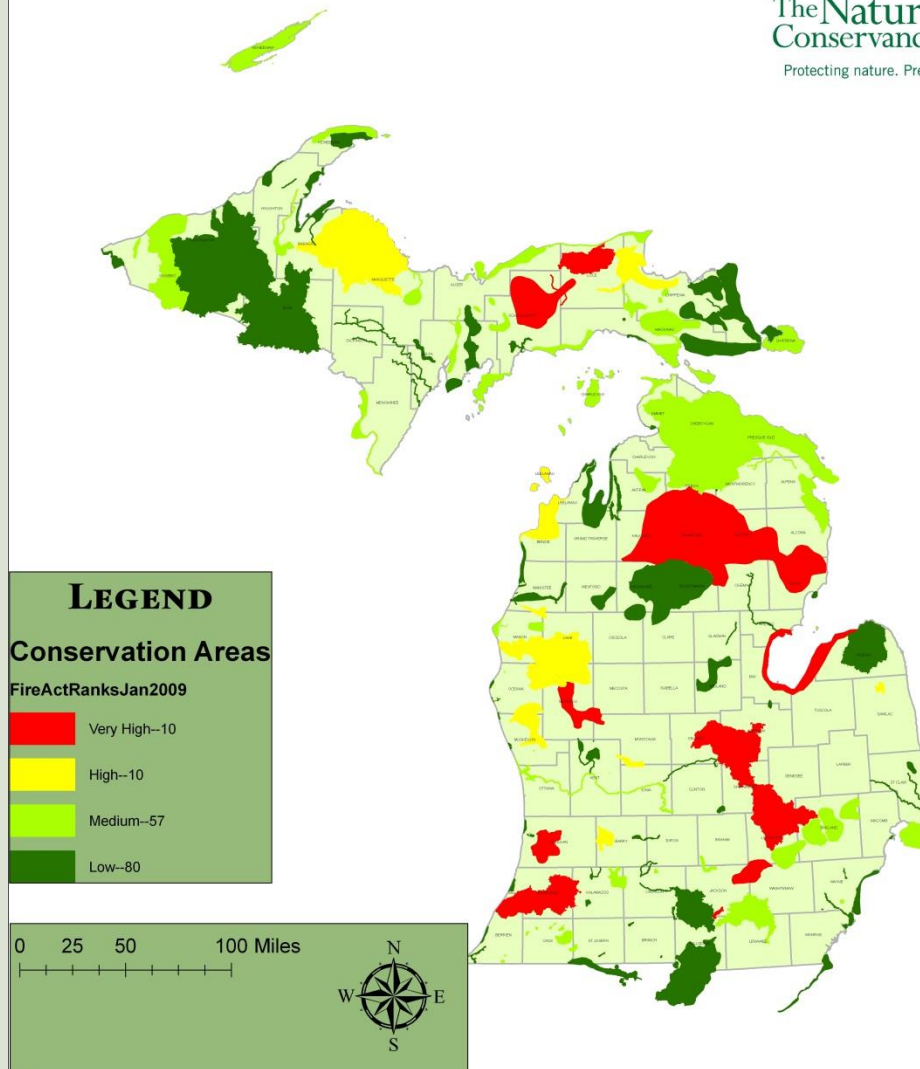
Updates to related products
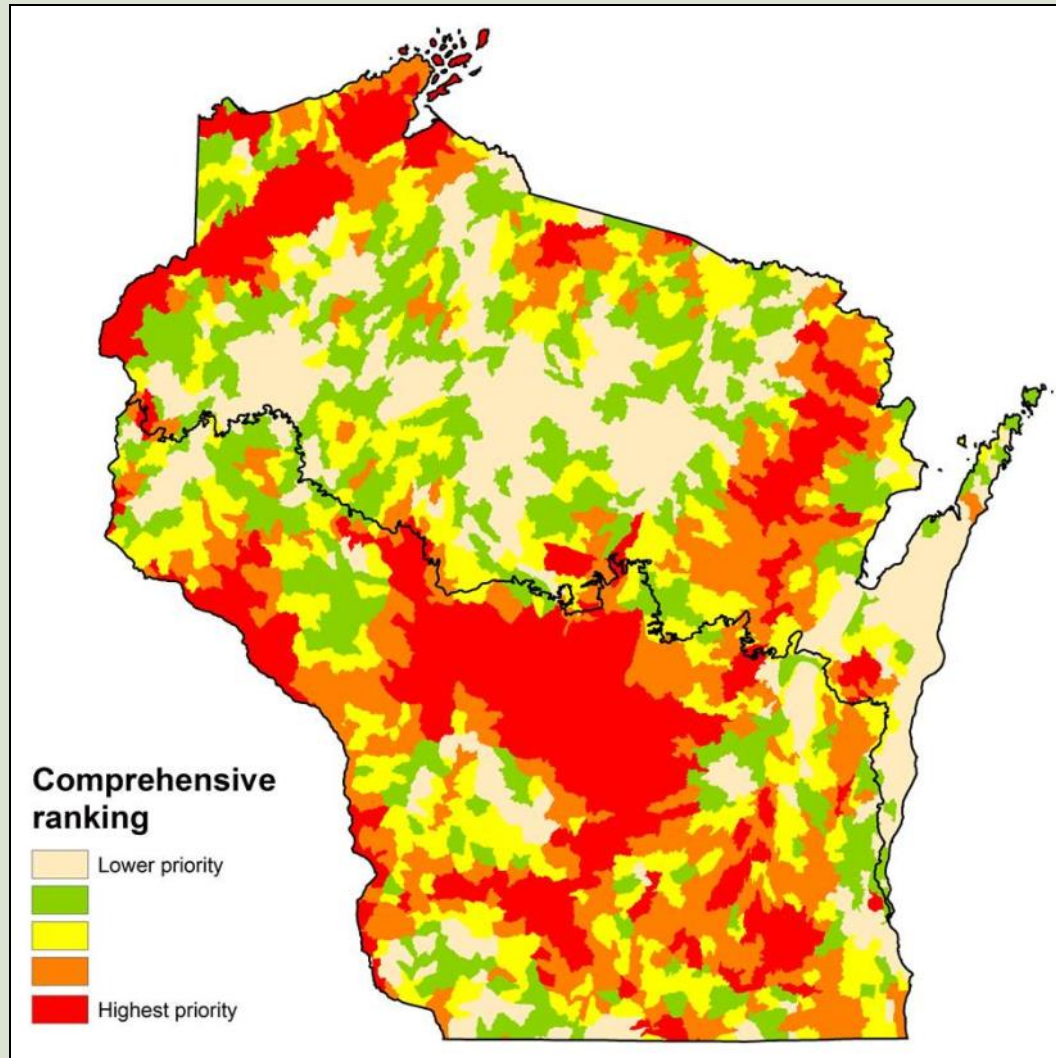
NEW: Insular Areas

LANDFIRE + Users = Better Products

Legend
- LFRDB Sampling Units
- Contiguous US
- Alaska
- Hawaii

LFRDB Sampling Units

Alaska

Hawaii

United States of America

This map does not show the locations of data with confidential coordinates such as Forest Inventory and Analysis (FIA) data.

Example of LANDFIRE Use

Example of LANDFIRE Use

Comprehensive ranking

- Lower priority
- (green)
- (yellow)
- (orange)
- Highest priority

LANDFIRE Applications

WHAM! http://maps.tnc.org/landfire

- *Models & Spatial Data*

- *Support*

- *Applications*

- *Maps/GIS*

- *Library*

- *News & Updates*

- *Contacts*

http://nature.ly/landfire

In Summary

LANDFIRE is huge repository, a living program, a community that delivers ...

- Reference condition models and descriptions
- Vegetation, fire and fuels spatial data
- Dozens if not hundreds of research and other papers
- Tutorials, documentation, adaptation
- Updates

Next in the TPOS/Lake States Series

October 8: Assessing Needs - Tracy Hmielowski presents "Where should we burn? A Fire Needs Assessment for Wisconsin."

Given the limitations on prescribed fire resources the Fire Science Consortia have developed model, also known as the Fire Needs Assessment, to identify high priority areas for management with prescribed fire. We mapped fire dependent vegetation using the LANDFIRE Existing Vegetation Layer (EVT), and ranked management units based on the potential benefits, effort, and challenges associated with using prescribed fire on the landscape.

Tracy will show how open access data and stakeholder involvement have shaped this project, and share the initial results of the Fire Needs Assessment.

Tracy is a Fire Information Specialist with the Tallgrass Prairie & Oak Savanna Fire Science Consortium. She is with the Nelson Institute for Environmental Studies at the University of Wisconsin, Madison.

Next in the TPOS/Lake States Series

October 29: Customizing Data - Don Helmbrecht presents "Local Customization of Fuels Data on the Huron-Manistee and Hiawatha National Forests."

Off-the-shelf LANDFIRE data is intended to support broad sub-regional-to-regional scale strategic planning efforts but may be 3-5 years out of date at the time of application. Don will show how local knowledge and expertise can be used to update LANDFIRE data for applicability at finer scales with examples from work on the Huron-Manistee and Hiawatha National Forests.

Don is a Wildland Fire Analyst with USDA Forest Service TEAMS Enterprise Unit

LANDFIRE Online

 LANDFIRE National
www.landfire.gov

 Conservation Gateway:
http: //nature.ly.landfire

 @nature_LANDFIRE

 Key Word: **LANDFIRE**

Email: **LANDFIRE@tnc.org**

Newsletter? Write us!

Questions? Comments?

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