LANDFIRE BpS Review

What is it? How does it work? Why does it matter?

Randy Swaty, Ecologist
The Nature Conservancy LANDFIRE Team

Presented to

Southwest Fire Science Consortium
January 20, 2016

*LANDFIRE's mission is to provide agency leaders and managers with a common **"all-lands" data set** of vegetation and wildland fire/fuels information for strategic **fire and resource management** planning and analysis.*

Today's Agenda

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- The what and how about LANDFIRE BpS models
- A bit about BpS review: why it's necessary, and how it will work
- How you can be involved
- Where to go for more information and help

BpS = Biophysical Settings

Introduction to LANDFIRE

LANDFIRE

Landscape Fire and Resource Management Planning Tools Project

An innovative program 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

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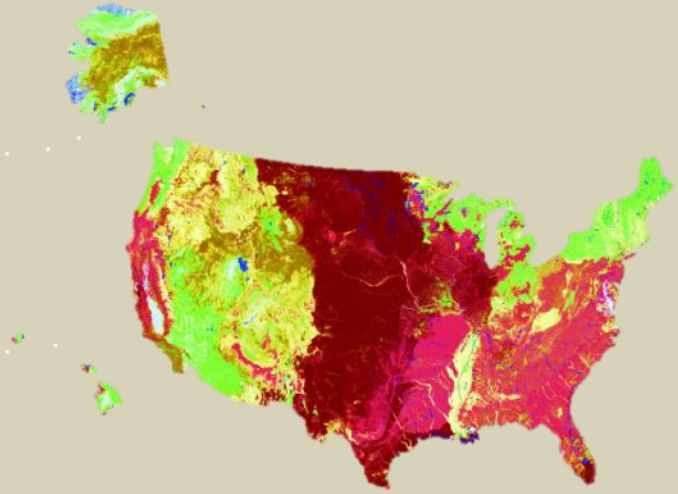
Spatial Datasets

LANDFIRE

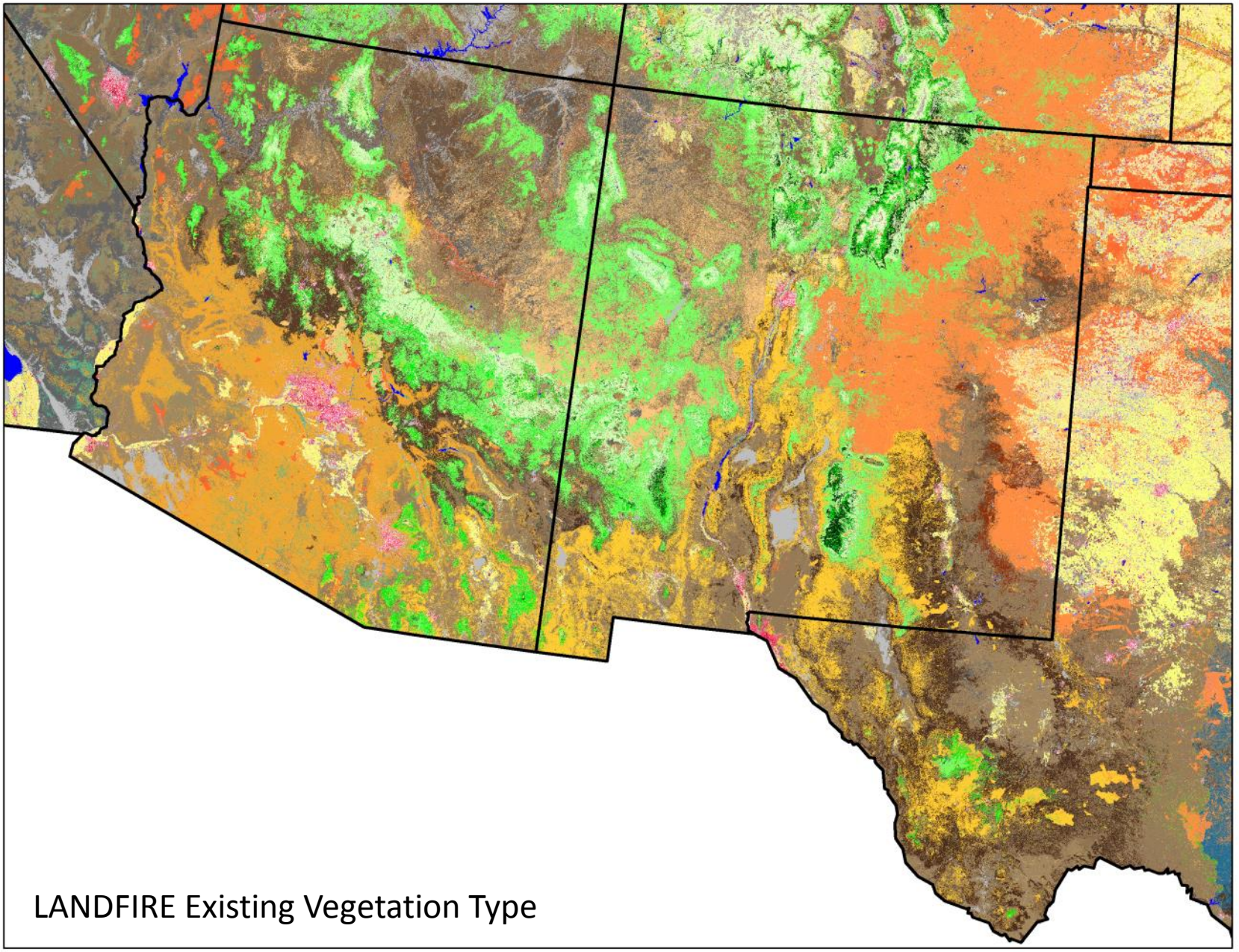
- Uses peer-reviewed, consistent, repeatable scientific methods
- Delivers an “all-lands” spatial dataset of vegetation

LANDFIRE Products

- Vegetation-not just fire
- Fire Regimes
- References and Baselines
- Fuels (Models and Measurements)
- Disturbance Characteristics
- Topographic and GIS Spatial Analysis

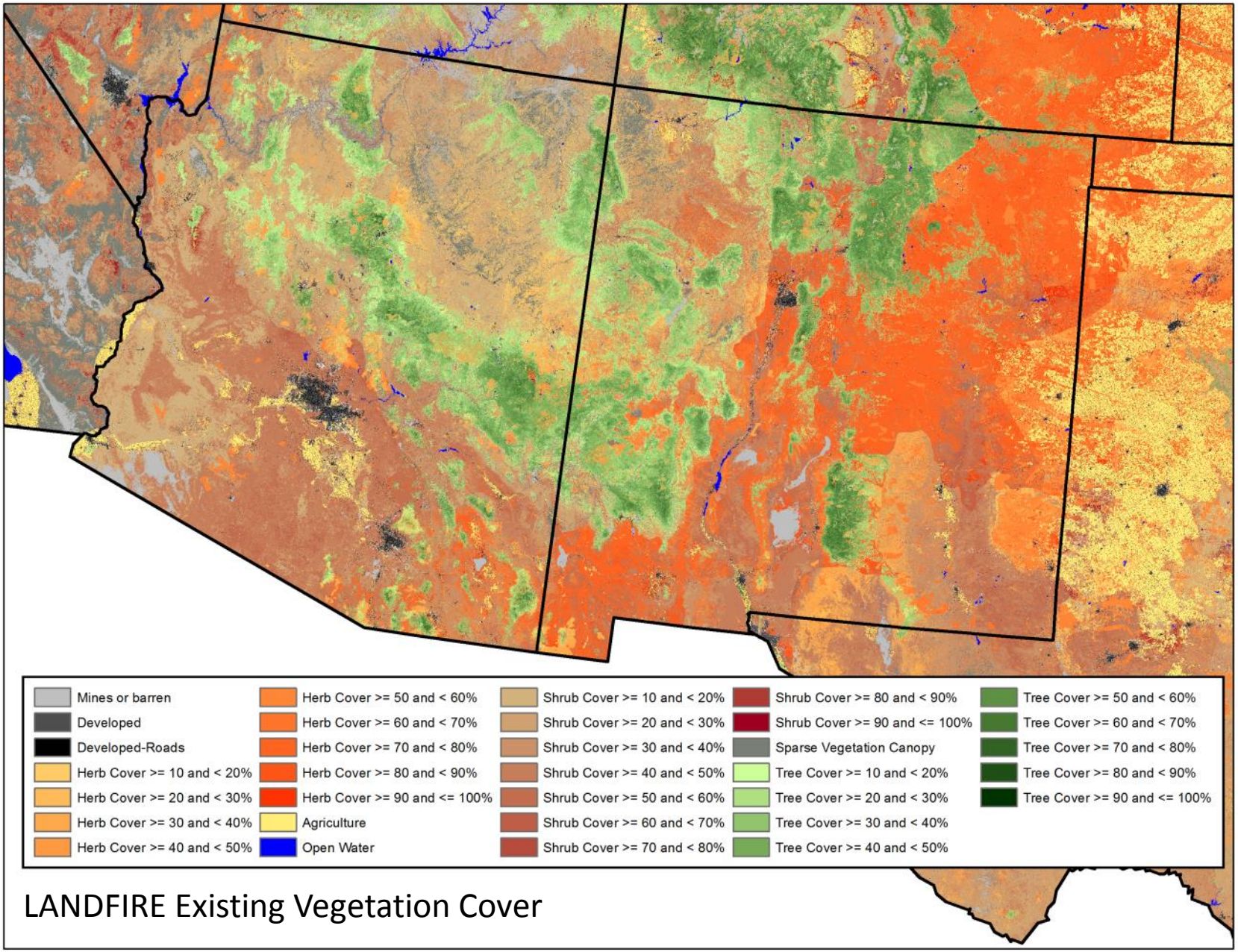


Spatial Datasets



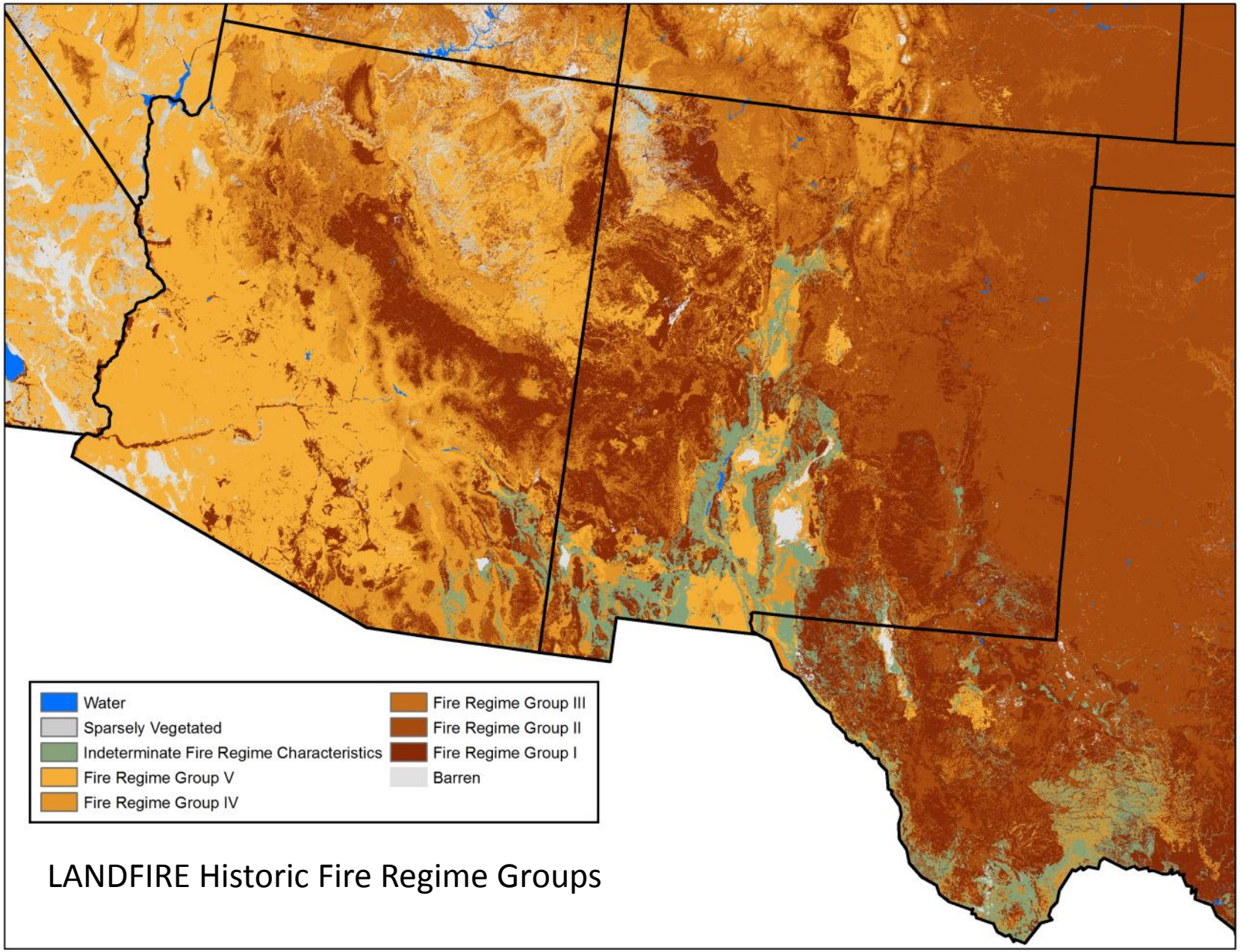
LANDFIRE Existing Vegetation Type

Spatial Datasets



LANDFIRE Existing Vegetation Cover

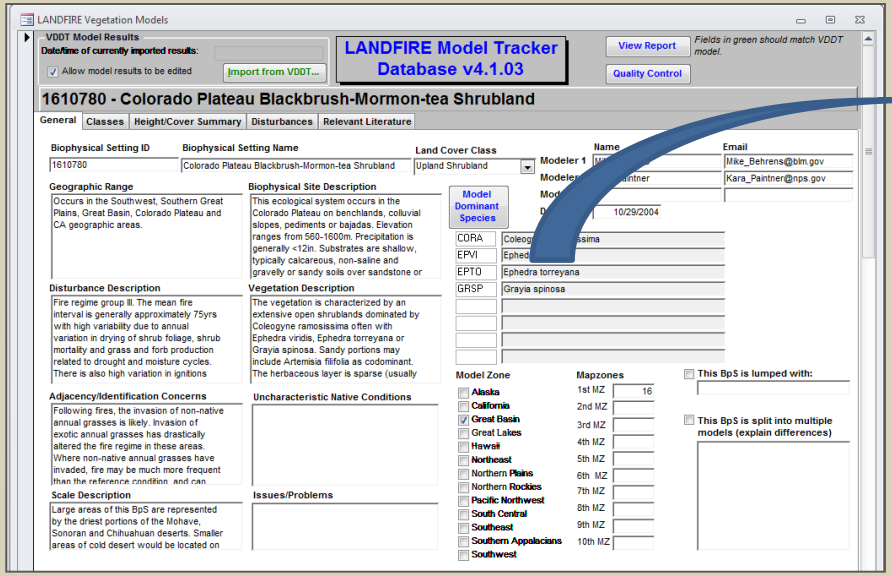
Spatial Datasets

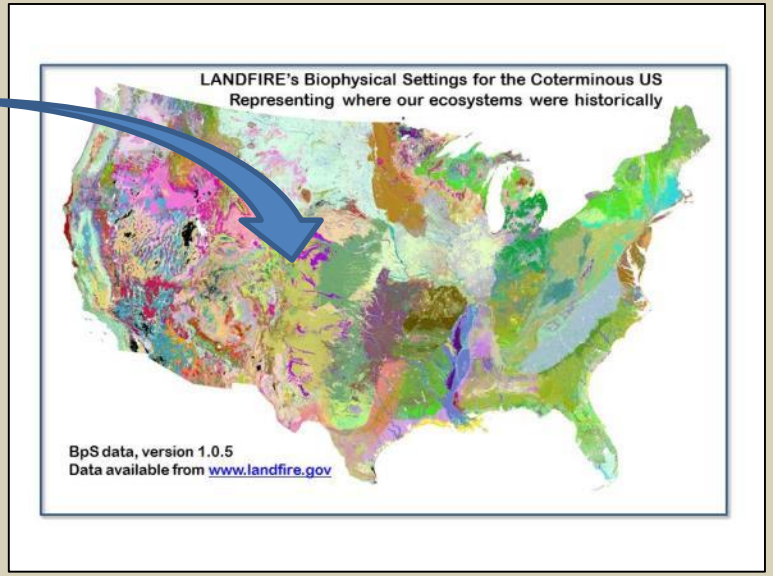


LANDFIRE Historic Fire Regime Groups

The link…

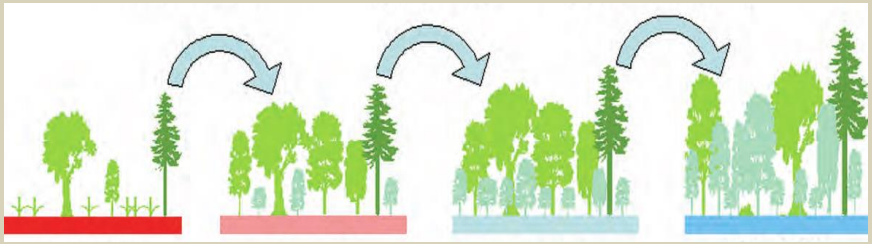
- The Biophysical Settings Model and Description bundles are linked to many spatial data sets
- Spatial datasets are not perfect-we are always working to improve
- Some areas for improvement are linked to the BpS descriptions





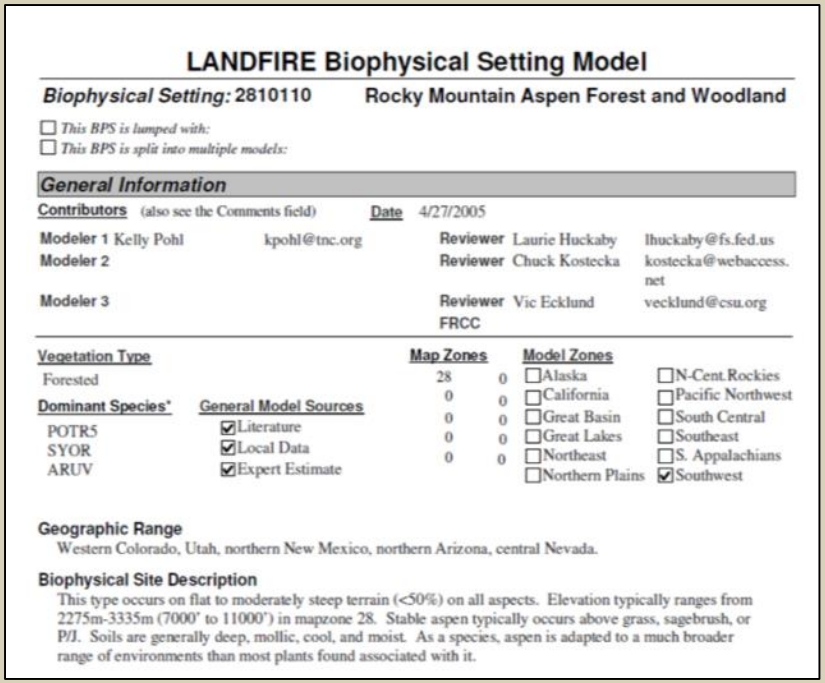
Vegetation Model & Description Bundle

- **WHAT:** describe how ecosystems (Biophysical Settings) looked and functioned prior to major European Settlement
- **WHY:** to use as a reference to compare current conditions to (READ-not a prescription)
- **HOW:** worked with hundreds of experts to describe and model, followed by expert review, incorporation of feedback then QA/QC
- **WHEN: ~ 2,000** models and descriptions completed in 2008. TNC's LANDFIRE team submitted 200-400 pages of documentation and associated models every two weeks.



WHAT

Two-part bundle



LANDFIRE Biophysical Setting Model

Biophysical Setting: **2810110** **Rocky Mountain Aspen Forest and Woodland**

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

General Information

Contributors (also see the Comments field) **Date** 4/27/2005

Modeler 1 Kelly Pohl	kpohl@tnc.org	**Reviewer**	Laurie Huckaby	lhuckaby@fs.fed.us
Modeler 2		**Reviewer**	Chuck Kostecka	kostecka@webaccess.net
Modeler 3		**Reviewer**	Vic Ecklund	vecklund@csu.org
		FRCC		

Vegetation Type
Forested

Dominant Species*
POTR5
SYOR
ARUV

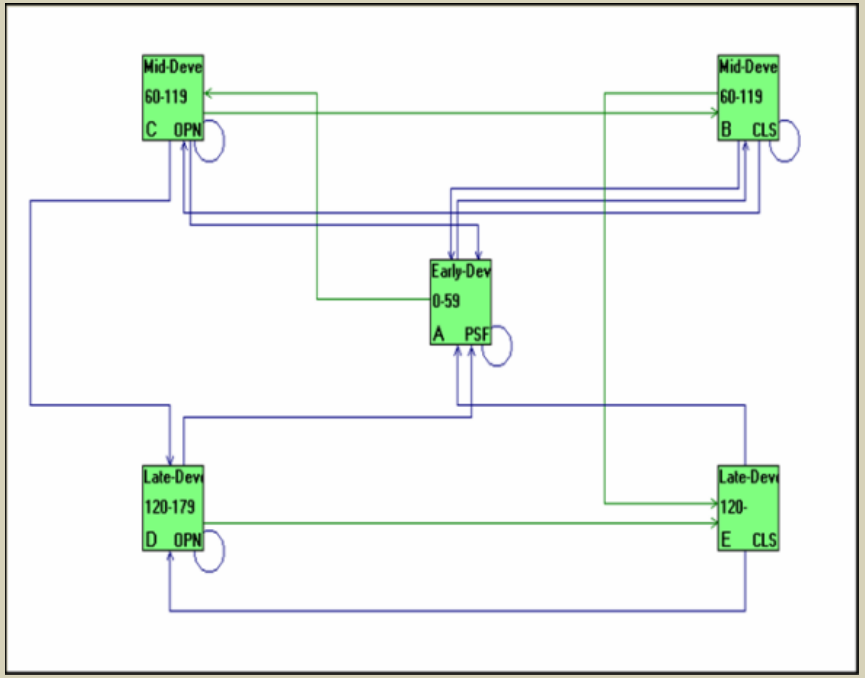
General Model Sources
☑ Literature
☑ Local Data
☑ Expert Estimate

Map Zones
28 0
0 0
0 0
0 0
0 0

Model Zones
☐ Alaska ☐ N-Cent.Rockies
☐ California ☐ Pacific Northwest
☐ Great Basin ☐ South Central
☐ Great Lakes ☐ Southeast
☐ Northeast ☐ S. Appalachians
☐ Northern Plains ☑ Southwest

Geographic Range
Western Colorado, Utah, northern New Mexico, northern Arizona, central Nevada.

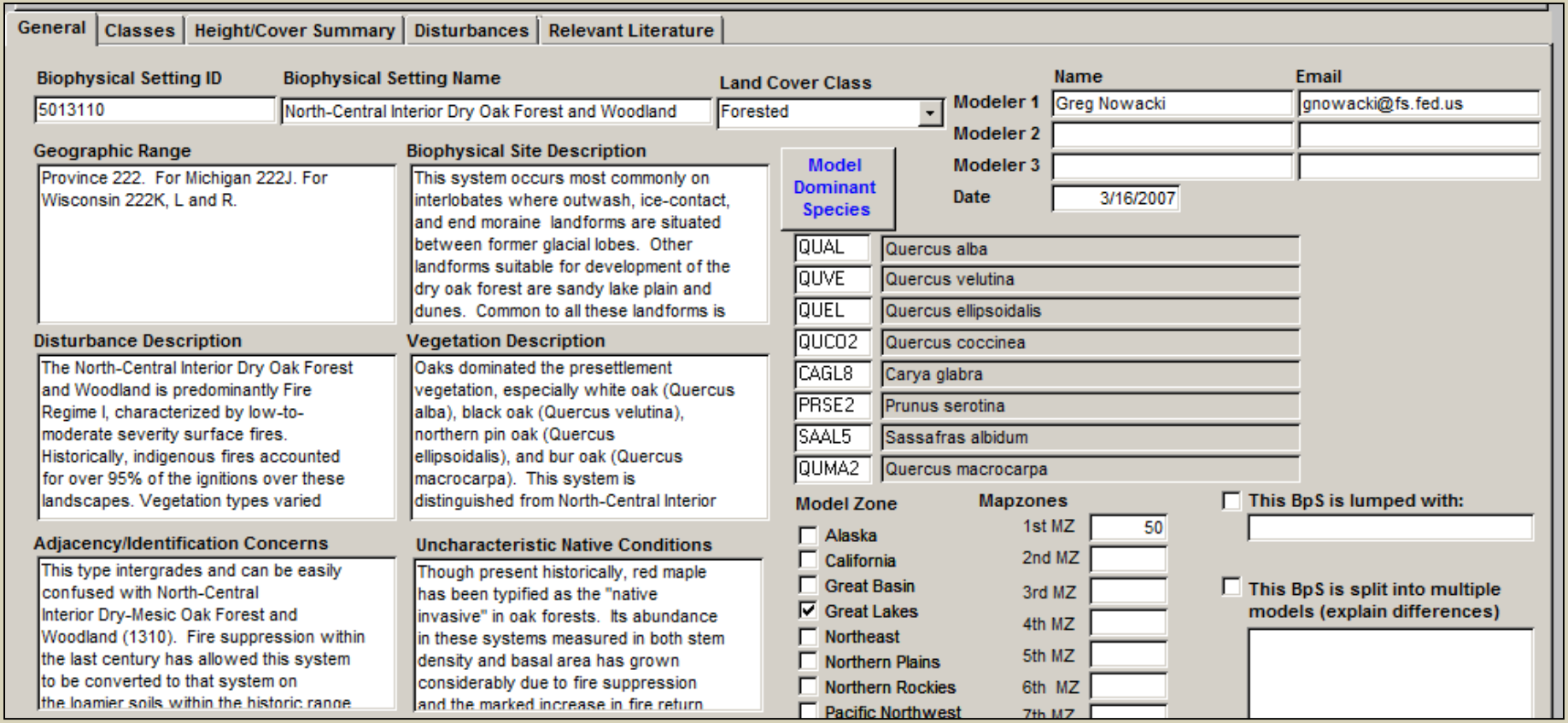
Biophysical Site Description
This type occurs on flat to moderately steep terrain (<50%) on all aspects. Elevation typically ranges from 2275m-3335m (7000' to 11000') in mapzone 28. Stable aspen typically occurs above grass, sagebrush, or PJ. Soils are generally deep, mollic, cool, and moist. As a species, aspen is adapted to a much broader range of environments than most plants found associated with it.



Textual description informed by ecological model

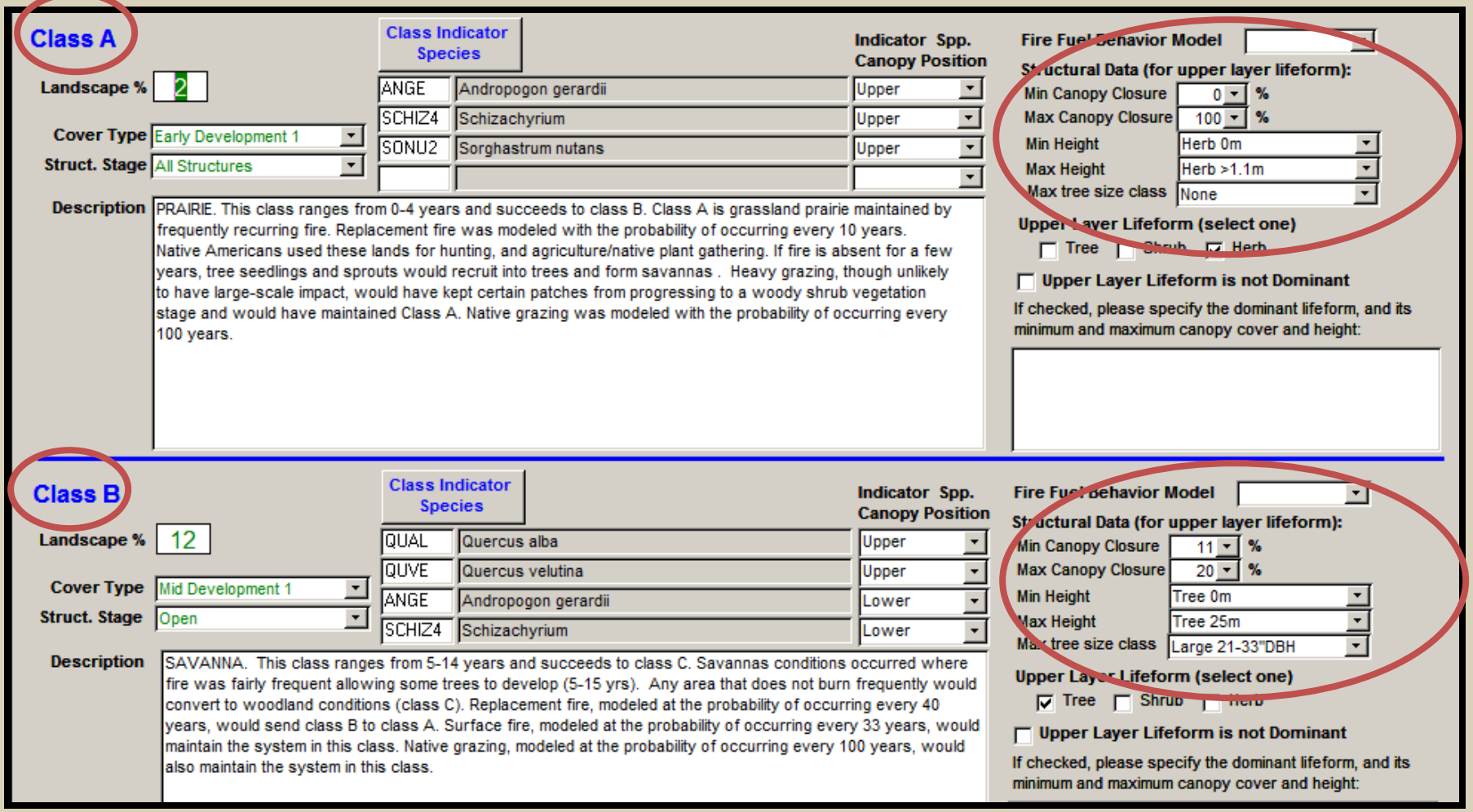
State-and-transition ecological model

Description: the Basics

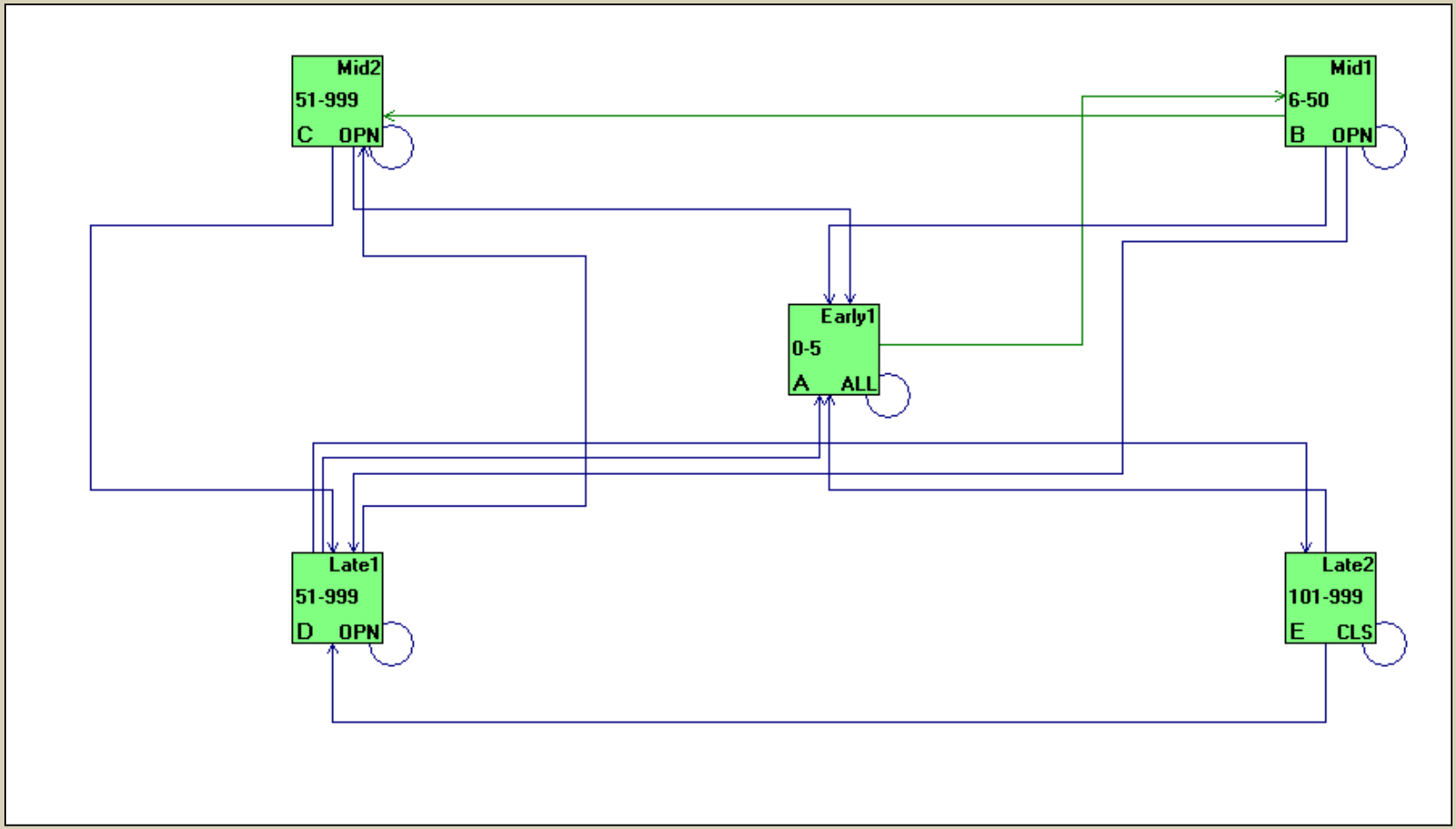


Originally captured in the “Model Tracker Database”

Description: Succession Classes



Modeling: Succession Class Percent



Boxes = Succession classes. Lines = disturbances or succession

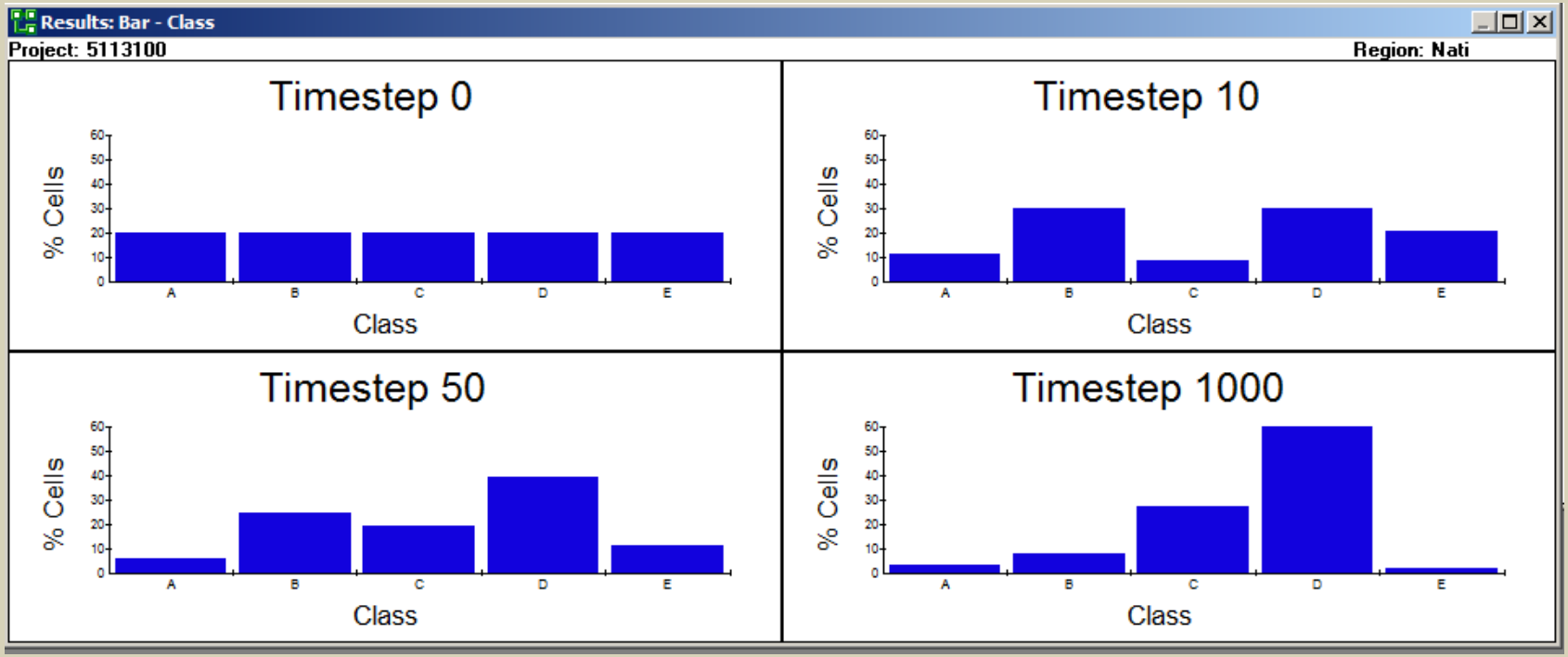
Modeling: Succession Class Percent

Inputs for VDDT modeling included:

- basic parameters for each Succession Class (structure, start and end age)
- types and annual probability of disturbances
- what happens when there is not a disturbance

Models were run:

- 10 times for 1,000 cells, 1,000 years



Modeling: Review

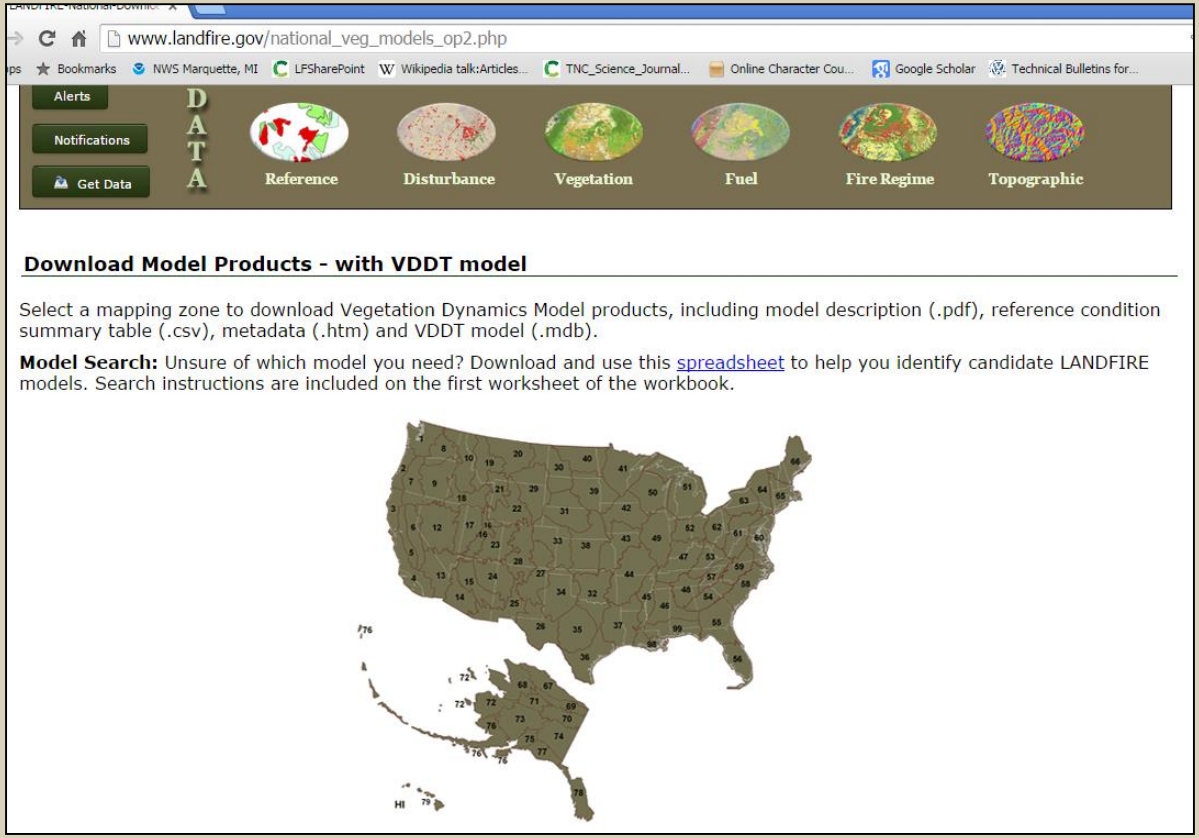
“High-touch” hands-on process

1. Experts reviewed models and descriptions
2. Reviews were incorporated into the descriptions & models
3. Automated and manual quality assurance and quality control.

Not perfect!

Delivered

- Description and Model bundles delivered every two weeks
- First cog in the machine of BpS, S-Class, Vegetation Departure and other mapping processes



Uses

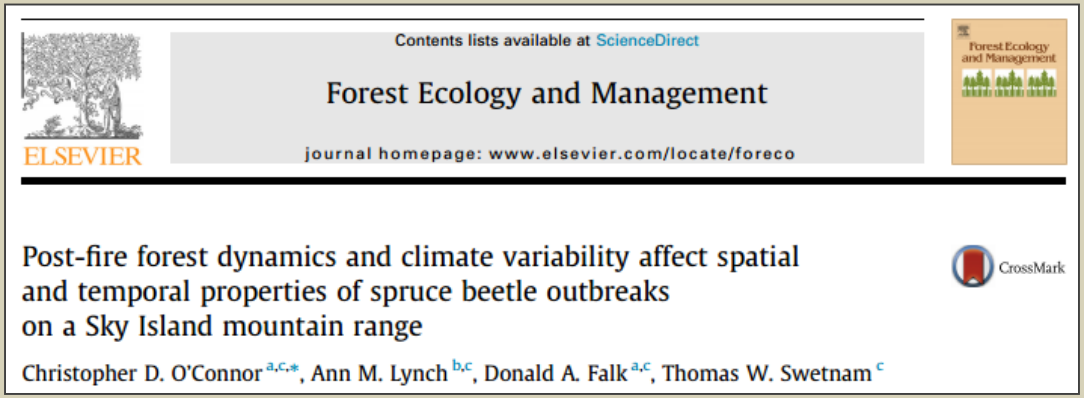
ELSEVIER

Journal of Arid Environments

Volume 124, January 2016, Pages 388–397

Precipitation regime classification for the Mojave Desert: Implications for fire occurrence

Jerry Tagestad[a], Matthew Brooks[b], Valerie Cullinan[a], Janelle Downs[a], Randy McKinley[b]



ELSEVIER

Contents lists available at ScienceDirect

Forest Ecology and Management

journal homepage: www.elsevier.com/locate/foreco

Post-fire forest dynamics and climate variability affect spatial and temporal properties of spruce beetle outbreaks on a Sky Island mountain range

Christopher D. O'Connor[a,c,*], Ann M. Lynch[b,c], Donald A. Falk[a,c], Thomas W. Swetnam[c]

Ecosystems
DOI: 10.1007/s10021-013-9704-x

ECOSYSTEMS

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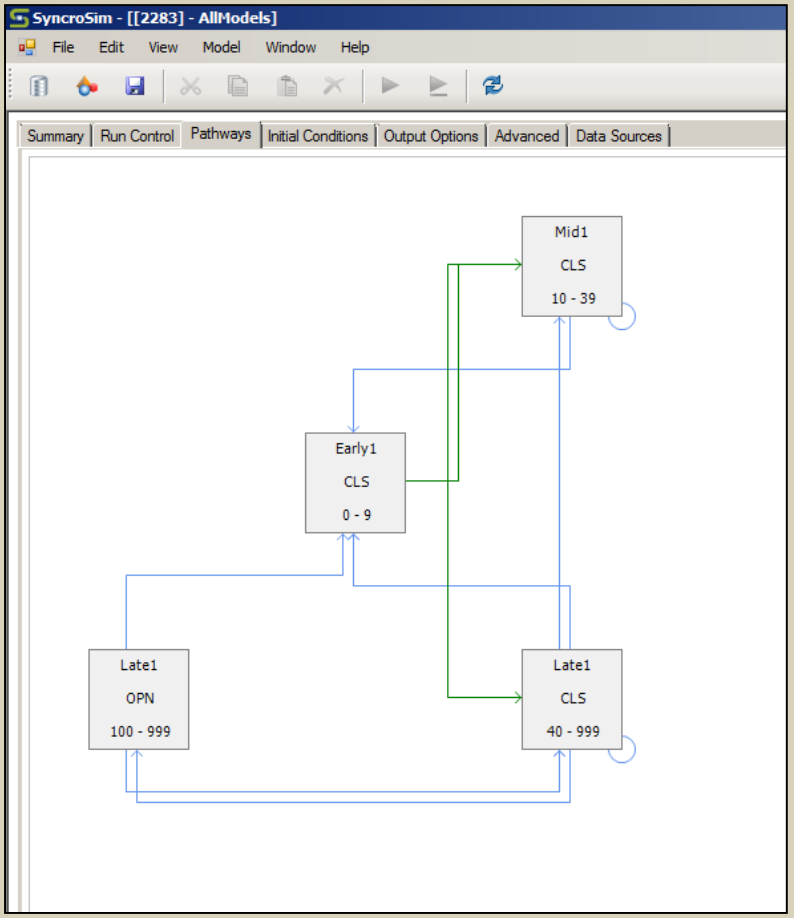
Previous Fires Moderate Burn Severity of Subsequent Wildland Fires in Two Large Western US Wilderness Areas

Sean A. Parks,[1,2]* Carol Miller,[1] Cara R. Nelson,[2] and Zachary A. Holden[3]

- Research
- Conservation planning
- Input for other models
- Fire management planning
- Ecological assessment

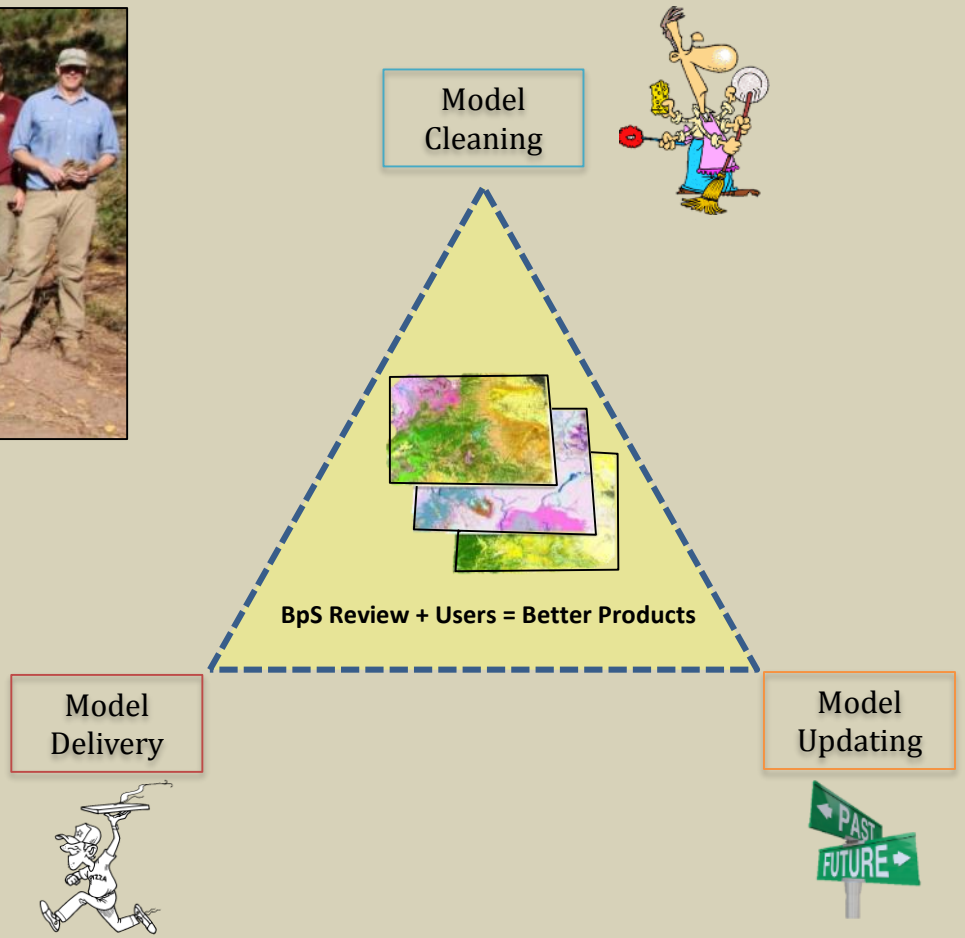
Why Review?

- “Blunders” e.g. typos, inconsistencies, and so on
- New science
- Missed opportunities
- Potential for upgraded delivery system
- Updated modeling software



Our Philosophy

BpS Review + Users = Better Products



BpS Review Process

- We are currently “cleaning” the BpS list, removing duplicates and near duplicates.
- We will post those documents, ~1200 of them, to a dedicated BpS Review website.
- We will then invite review. Contributors will have option to review only a Word document, or can do the document and the model.
- Most review will be conducted in contributors’ locations, e.g. office desk, laptop, etc., though the LANDFIRE team will hold WebEx sessions and be available to help.
- **Review will be incorporated and delivered via a Web Site (TBD).**

Online Connections

LANDFIRE Program Home http://www.landfire.gov

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

Twitter: @nature_LANDFIRE

YouTube: LANDFIREvideo

Bulletins/Post cards via e-mail

- Opt in: http://eepurl.com/baJ_BH

Email: LANDFIRE@tnc.org