

# LANDFIRE Webinar

New LANDFIRE Products for the  
Southwestern United States



*Presented to Conservation Biology Institute*

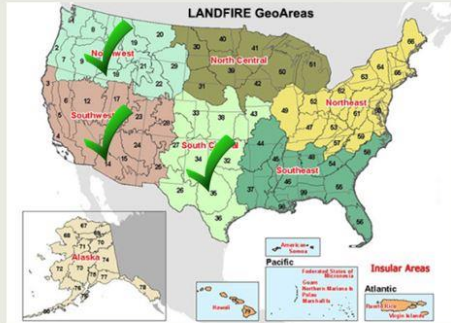
by Jim Smith and Kori Blankenship – The Nature Conservancy's LANDFIRE Team  
September 26, 2019



On behalf of the TNC LANDFIRE Team and the entire LANDFIRE Program, Kori and I thank you for the opportunity to present this webinar describing the status and plans for the LANDFIRE Program.

# AGENDA

- Background: The Past
- LF Remap: The Present
- LF Update: The Future
- Impacts
- BpS Review
- Support/Resources



Review agenda

## Who is LANDFIRE?



*Department of the Interior, USGS Production Team,  
Program Leaders, GAP*



*The Nature Conservancy  
LANDIRE Team*

An innovative program designed to create and periodically update comprehensive **vegetation**, **fire**, and **fuel** characteristics data using a consistent process for the entire U.S.



LANDFIRE is a partnership between the U.S. Forest Service and the U.S. Department of Interior, and TNC. On the left is a significant part of the LF Production team at EROS, and the right is the TNC team.

## Past: The LANDFIRE Foundation

LANDFIRE Charter establishes 4-C's:

- **Comprehensive**
- **Compatible**
- **Consistent**
- **Current**

.... which are our design criteria/design constraints for

20+ current and historic vegetation/fuels/condition 30m, spatial data layers and 800+ quantitative state-and-transition BpS models and descriptions.

Delivered versions circa 2000/1 (LF National/Improved), updates in 2008, 2010, 2012 and 2014, and now **Remap 2016**.



### LANDFIRE program products

- are created for every acre in CONUS, AK, HI and the Island Territories - comprehensive
- match thematically and geometrically - compatible
- are produced using similar data sets and processes across time and space - consistent (there are changes due to feedback and product improvement desires)
- are produced and delivered as rapidly as possible - current

These criteria have tangible impacts on what the products are, when we can deliver them, and how well they represent ground conditions.

The LANDFIRE product suite consists of nearly 2 dozen 30-meter spatial data sets (veg, fuels, etc.) and 800+ quantitative state-and-transition models in 5 (1 original + 4 temporal updates) completed delivered versions, and 1 partial delivery (Remap)

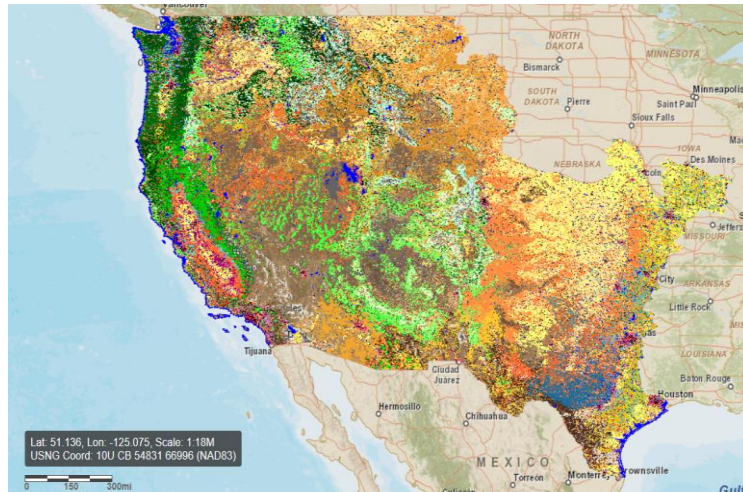
# Past: The LANDFIRE Foundation

[L.F. Version Descriptions](#)

Under each column, links are provided to download full extent mosaics or databases. Please note that mosaics are not available until the full extent is complete. Data availability is shown on L.F.'s [Data Distribution Site \(DDS\)](#), which offers data downloads at selected extents.

Product Name	Address	Theme	DOM	1F 2004 L.F. 2.0	1F 2008 L.F. 2.5	1F 2010 L.F. 3.0	1F 2012 L.F. 3.5	1F 2014 L.F. 4.0	1F Range L.F. 4.5
1F Fuelbase Database	FRS0	Reference	x	<a href="#">US 1 00</a>	n/a	n/a	n/a	n/a	n/a
Risk Events Database_2009_2016	Events	Reference	x	---	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Forest Vegetation Simulator Results Database	FVSDB	Reference	---	---	---	---	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	---
Disturbance	Disturbance	Disturbance	x	---	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Vegetation Disturbance	VegetDist	Disturbance	x	---	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Historical Disturbance	HDist	Disturbance	---	---	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Vegetation Transition Map/Slide	VTran	Disturbance	x	---	---	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	---
Forest Vegetation Transition Database	FVTD	Disturbance	---	---	---	---	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	n/a
Non-forest Vegetation Transition Database	NVTD	Disturbance	---	---	---	---	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	n/a
Fuel Disturbance	FDisturb	Disturbance	x	---	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Forest Vegetation Simulator Disturbance Database	FVSDB	Disturbance	---	---	---	---	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	---
Ecological Settings	ES	Vegetation	x	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Environmental Risk Potential	ERP	Vegetation	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Existing Vegetation Cover	EV	Vegetation	x	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Existing Vegetation Height	EVH	Vegetation	x	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Existing Vegetation Type	EVType	Vegetation	x	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
National Vegetation Classification	NVC	Vegetation	---	---	---	---	---	---	---
National Settings Model and Descriptions	NSM	Vegetation	---	<a href="#">US 1 00</a>	n/a	n/a	n/a	n/a	n/a
Ecological Settings Model and Descriptions	ESM	Vegetation	---	<a href="#">US 1 00</a>	n/a	n/a	n/a	n/a	n/a
13 Anderson Fire Behavior Fuel Models	FBM13	Fuel	x	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
40 South and Sargent Fire Behavior Fuel Models	FBM40	Fuel	x	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Canadian Forest Fire Danger Rating System	CFDRS	Fuel	x	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Forest Canopy Bulk Density	CB	Fuel	x	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Forest Canopy Base Height	CBH	Fuel	x	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Forest Canopy Cover	CC	Fuel	x	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Forest Canopy Height	CH	Fuel	x	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Fuel Characteristic Classification System Fuelbase	FCCS	Fuel	x	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Fuel Loading Models	FLM	Fuel	x	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	---	---	---	---
Fuel Vegetation Cover	FVC	Fuel	---	---	---	---	---	---	---
Fuel Vegetation Height	FVH	Fuel	---	---	---	---	---	---	---
Fuel Vegetation Type	FVT	Fuel	---	---	---	---	---	---	---
Fuel Specific Database	---	---	---	---	---	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>	<a href="#">US 1 00</a>
Fire Regime Groups	FRG	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	n/a
Head Fire Spread Potential	HSP	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Luminosity Fire	FL	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuel Moisture Fire	FFM	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM2	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM3	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM4	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM5	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM6	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
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Forest Fuelbed Moisture Fire	FFM8	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM9	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
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Forest Fuelbed Moisture Fire	FFM12	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM13	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
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Forest Fuelbed Moisture Fire	FFM16	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM17	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM18	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM19	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
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Forest Fuelbed Moisture Fire	FFM22	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
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Forest Fuelbed Moisture Fire	FFM25	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM26	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
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Forest Fuelbed Moisture Fire	FFM28	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM29	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM30	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
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Forest Fuelbed Moisture Fire	FFM32	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM33	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM34	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM35	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
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Forest Fuelbed Moisture Fire	FFM37	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM38	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM39	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM40	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM41	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM42	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM43	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM44	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM45	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM46	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM47	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM48	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM49	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM50	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM51	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
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Forest Fuelbed Moisture Fire	FFM57	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM58	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM59	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM60	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
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Forest Fuelbed Moisture Fire	FFM65	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
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Forest Fuelbed Moisture Fire	FFM69	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM70	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM71	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM72	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM73	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM74	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM75	Fire Regime	x	<a href="#">US 1 00</a>	n/a	<a href="#">US 1 00</a>	n/a	n/a	---
Forest Fuelbed Moisture Fire	FFM76	Fire Regime	x	<a href="#">US</a>					

## Present: Remap 2016



Remap is NOT an update...it is a re-creation of the majority of the product suite from scratch...new plots, new imagery, new processes, etc.

NW, SW, and South Central U.S. GeoArea Vegetation and Fuels (EVT, EVC, EVH, FBFM, Canopy Fuels, BpS) have been delivered.

Fire Regime data will be created and delivered when veg and fuels are complete for CONUS.

## LF Remap – What Remains the Same?

LANDFIRE Program has the **same design criteria/constraints**: comprehensive, compatible, consistent and current.

The **basic product suite is the same**, but there are changes to mapping processes and thematic content intended to improve product usability.

Should still be considered a large landscape, regional, national data set as delivered out-of-the-box.



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## LF Remap – What’s New?

- Mapping footprints based on **Omernik Level III** ecoregions instead of NLCD Map Zones.
- New **compositing/tiling/masking methods** that provide an improved and more consistent image base.
- New, **improved plot “Auto-Keys”** for assigning vegetation type to field plots.
- Landsat 8 imagery and Landsat Analysis Ready Data Sets (**image stacks**).
- Included **external review** of the Existing Vegetation Type legend and draft products.
- Independently mapped **NVC Group**.





## LF Remap – What's New?

- Many more **field-plots** and more diverse field-plots to support mapping.
- Incorporation of **lidar** data sets to improve the thematic resolution of structure products.
- Incorporation of **NLCD** Continuous Shrub Cover mapping project processes/products.
- Review of **Biophysical Settings** models and descriptions.
- **New products**: Historic disturbance, Year-Capable Fuels Products.
- New, **backwardly compatible** Fire Regime Group schema.



## New Fire Regime Group Schema

Original Fire Regime Group	New Group Designation	All Fire Fire Return Interval	% Replacement Fire
I	I-A	0 - 5 years	Less than 66.7%
	I-B	6 - 15 years	
	I-C	16 - 35 years	
II	II-A	0 - 5 years	66.7% or greater
	II-B	6 - 15 years	
	II-C	16 - 35 years	
III	III-A	36 - 100 years	Less than 80%
	III-B	101- 200 years	Less than 66.7%
IV	IV-A	36 - 100 years	80% or greater
	IV-B	101- 200 years	66.7% or greater
V	V-A	201 to 500 years	Any severity
	V-B	501+ years	



Based on user comments from previous versions the FRG schema was often problematic....insufficient FRI resolution

Wendel Hann LF did an analysis of FRG, and then developed a new, backwardly compatible FRG definitions that we hope is more useful.

## LF Remap Quality

- EVT assessments for Ecological Systems, NVC Group, NVC Macrogroup, and SAF/SRM cover type.
- Thousands of independent plots.
- Traditional Contingency Table.
- Category Agreement Table.
- Example of how to collapse categories in the contingency table now included.
- Planning on an assessment of Vegetation Cover (EVC) and Vegetation Height (EVH), and perhaps FBFM.

# Vegetation Height (EVH)---and exploring FBFM

## LANDFIRE Future

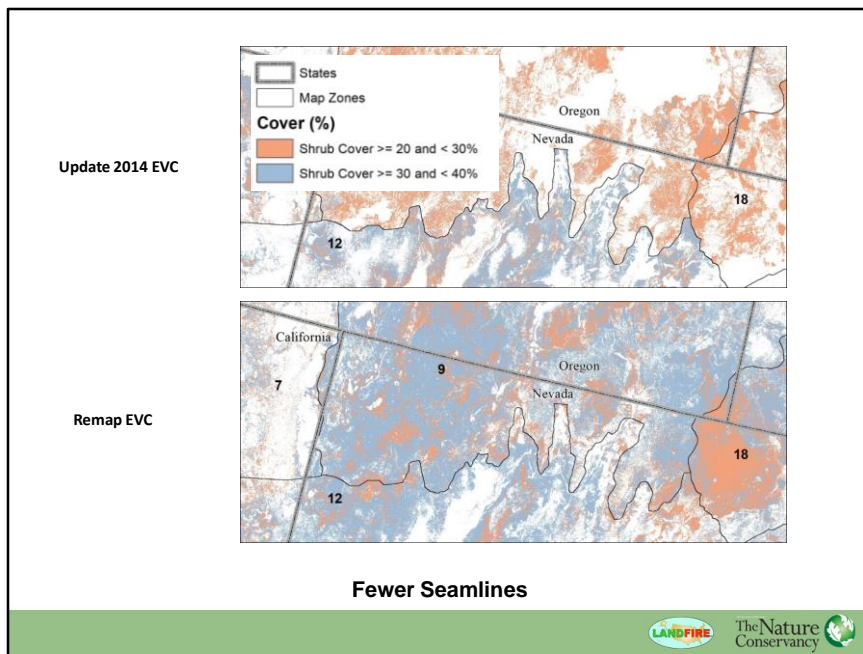
- Remap 2016 will wrap up in CONUS during the summer of 2020, and then Alaska, Hawai'i, and the island territories over the following months.
- Because “remapping” is more expensive than “updating,” we may not be able to conduct another remap in the future.
- The goal is to find a way to provide more frequent updates (annually, delivered within a few months) along with more complete updates, perhaps bi-annually.



- We expect to complete Remap in CONUS, followed by AK, HI and Insular areas
- Then we will begin an update cycle, final plan impacted by budget
- Updating alternatives being explored
  - Annual, next year rapid updates based on submitted disturbances/landscape changes
  - Bi-annual updates based on submitted disturbances + remotely sensed landscape change
- Communications and support---listening as much as talking
- Now I will turn over the presentation duties to Kori Blankenship, Fire Ecologist on our team and a NW native

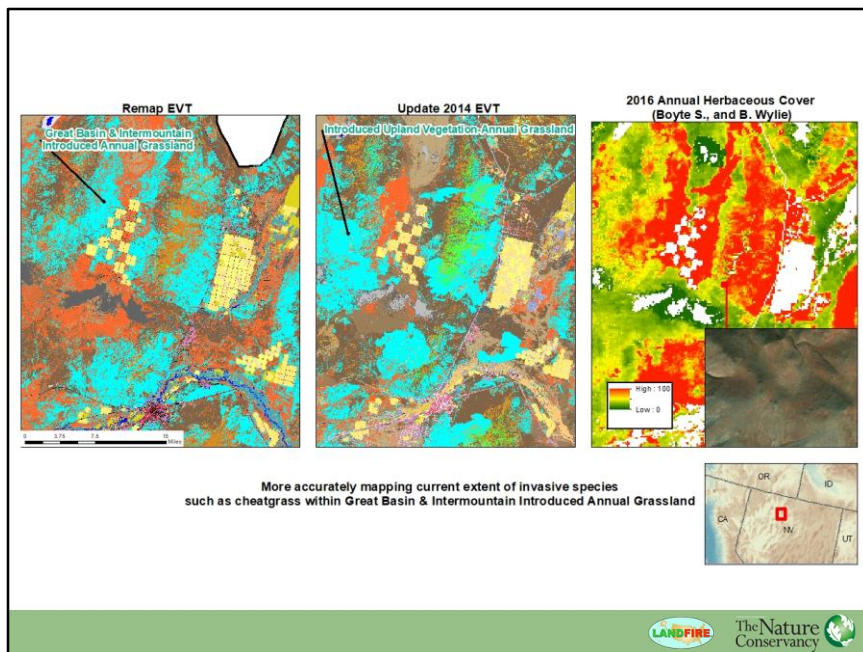
# Remap Improvements





## Fewer Seamlines

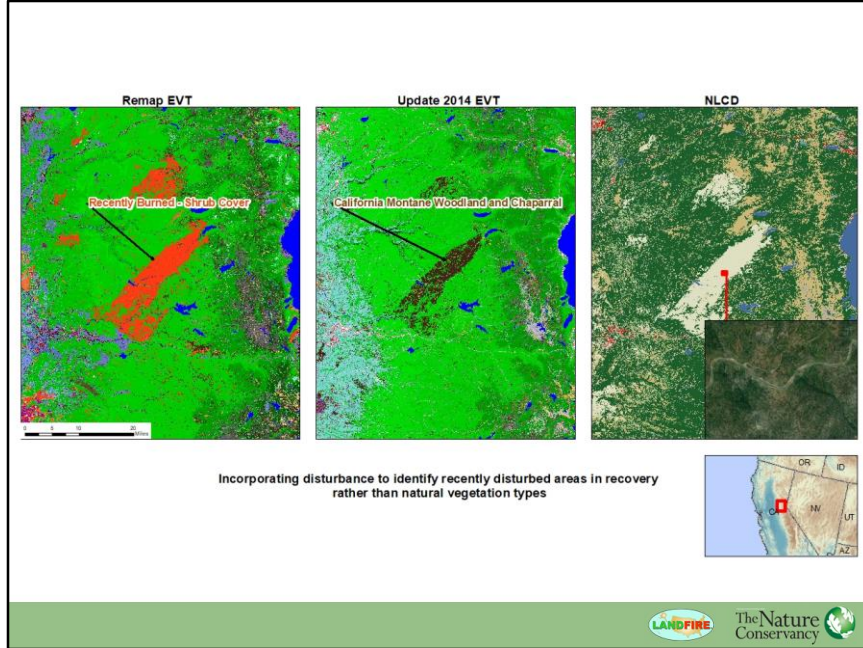
- As mentioned previously by Jim the way we process the imagery now (e.g. using tiling, larger processing unit) leads to fewer seamlines.
- Here you can see a seamline created at the mapzone border where shrub cover abruptly changes in the 2014 cover product.
- In Remap, the seamline is not evident due to improvements in how LANDIFRE mapping teams process the imagery.



### Improved Mapping of Invasives

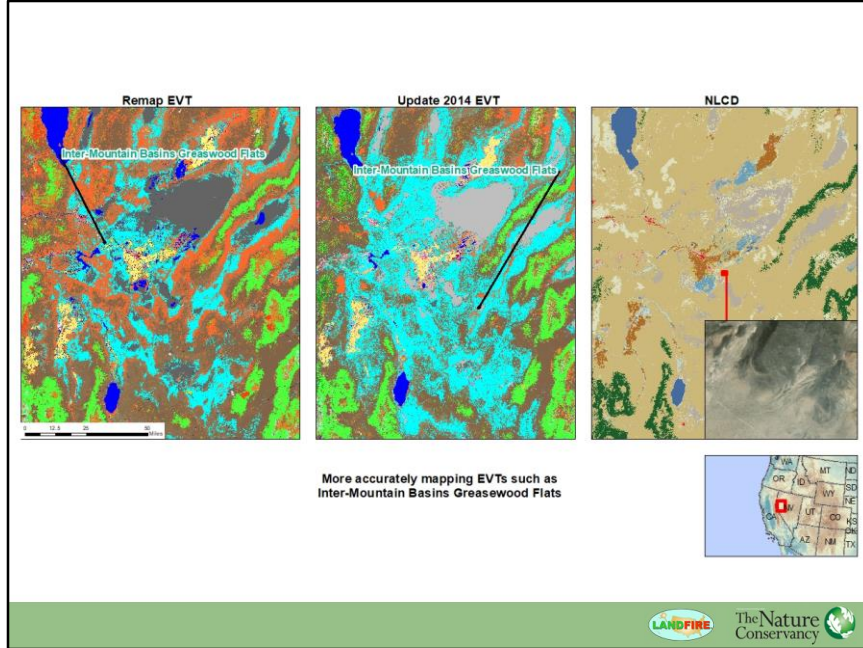
- Mappers made an effort to improve the mapping of invasive species such as cheatgrass.
- Here you see a comparison of Remap (left) and 2014 EVT (middle) to the Near Real Time Annual Herbaceous Cover product (on the right; Boyte and Wylie). You can see the Remap product aligns more closely with the Near Real Time product.





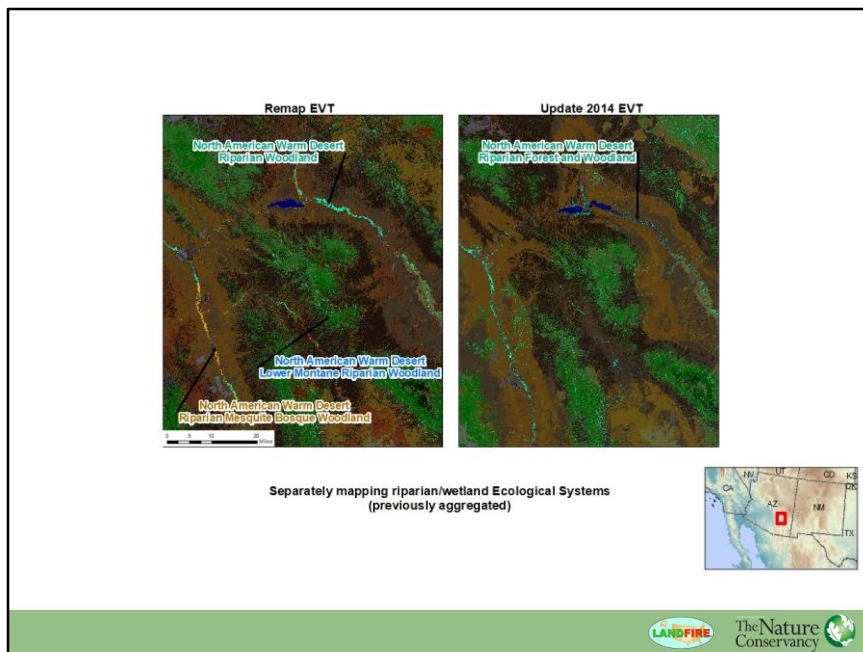
### Improved EVT Mapping in Disturbed Areas

- In previous LF versions natural EVTs were mapped regardless of disturbance history.
- We've changed that in Remap to more accurately reflect the vegetation on the ground post-disturbance.
- In this example, starting on the right you can see an area mapped as shrub by NLCD. In 2014, shown in the middle, we mapped the area as CA Montane Woodland and Chaparral.
- Based on LF disturbance data we know that this area was recently burned and so in the Remap product, shown on the left, we have assigned it to the EVT class Recently Burned – Shrub Cover, more accurately reflecting the vegetation currently on the ground.



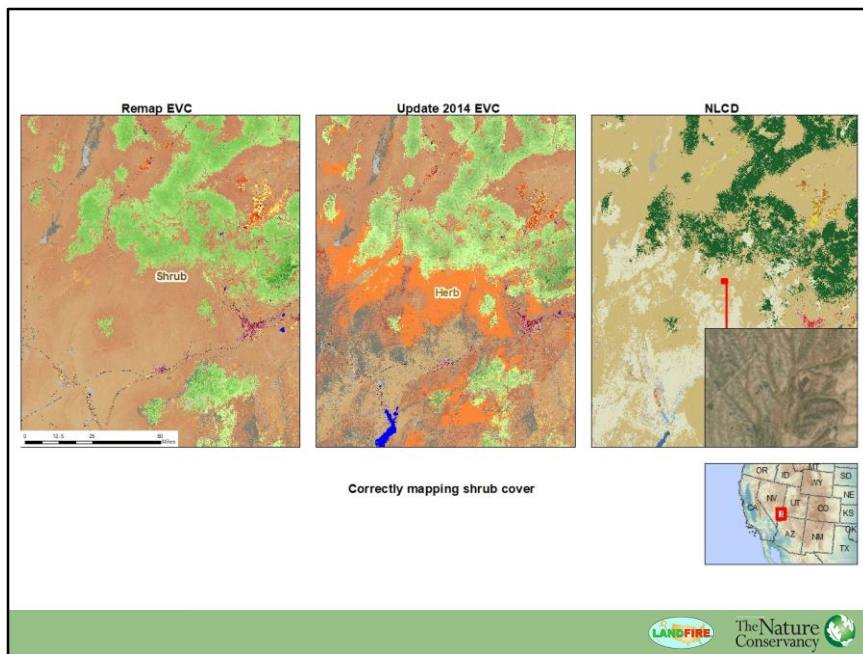
### Improved EVT

- In previous LF versions Greasewood Flat was mapped in higher slope positions where other shrub types are more appropriate. In Remap, mappers restricted it to lower slopes.



### Finer Level Distinctions in Aggregate Types

- In previous LANDFIRE versions riparian and wetland types were aggregated into coarse types.
- Here you can see how we have split out some previously aggregated types: for example what we mapped in 2014 as N.A. Warm Desert Riparian Forest and Woodland is now mapped as Riparian Woodland, Lower Montane Riparian Woodland and Riparian Mesquite Bosque Woodland types.
- A similar change was made to aggregate Barren types. In the Remap legend you'll find areas previously mapped as Barren mapped into finer classes such as Bedrock and Scree or Playa.



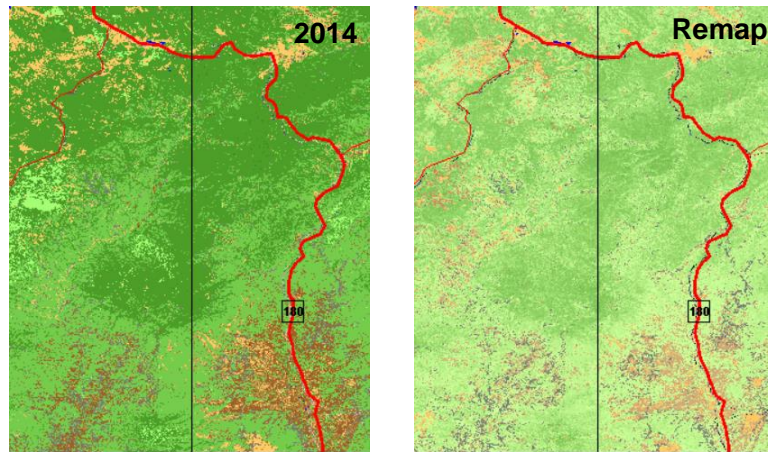
### Improved Shrub Cover

- NLCD produces a continuous shrub cover product based on very high resolution imagery that LF has incorporated into its process for Remap.
- Here you can see an area mapped in 2014 as herb is mapped as shrub in Remap
- In arid areas, like the one shown here, we are doing a better job of identifying low shrub cover using new methods.

*Note: "NLCD 2016 Shrub Component products characterize the percentage of each 30-meter pixel in the Western United States covered by shrub, herbaceous, bare ground, litter, sagebrush, big sagebrush and annual herbaceous, along with estimating shrub height and sagebrush height."*



## Continuous Height Comparison



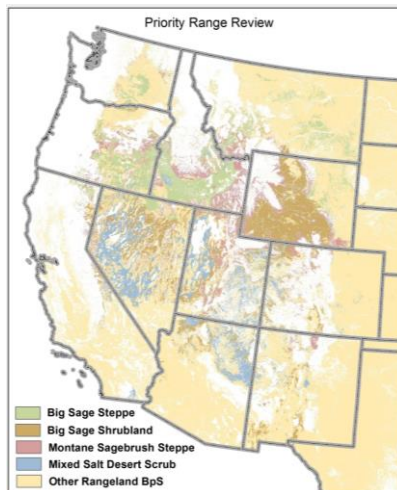
- 2014 EVH data on the left is dominated by two shades of green representing forest.
- Remap EVH data on the right show many shades of green representing more fine scaled variation in height.
- Similar patterns are shown in the brown tones that represent shrubs.

# BpS Review

- BpS updated with new science
- Succession class mapping rules completed
- New model description document
- User-friendly data access website

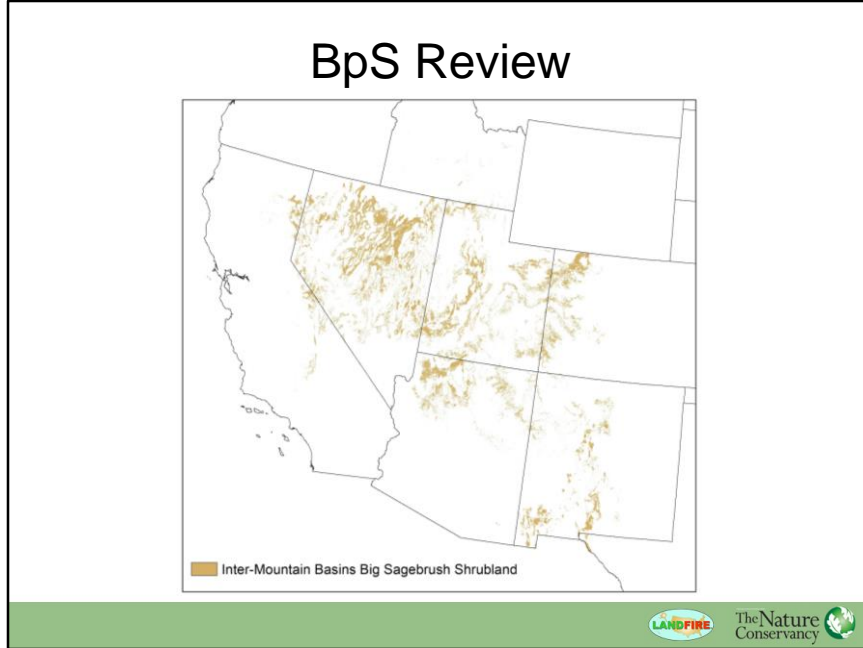


## BpS Review

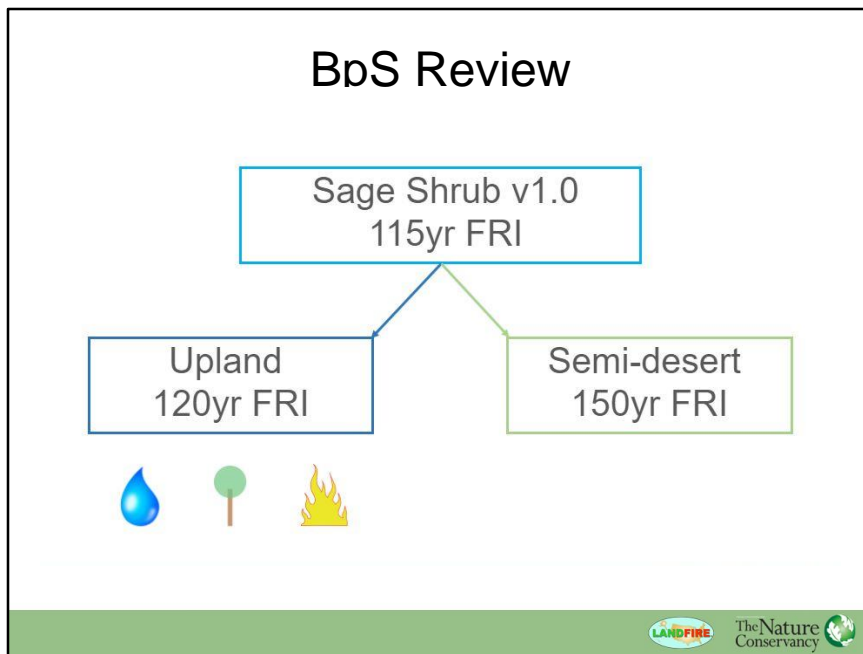


- We made a special effort to get review of major western rangeland types.
- 4 BpS were part of a what we call a “macro review” effort where we looked at the logical consistency between models for widespread systems.
- For example, LANDFIRE mapped the Inter-Mountain Basins Big Sagebrush Shrubland BpS (shown here in brown) on nearly 52 million acres. We created 12 unique BpS models to represent the system throughout its range.
- We felt it was important to review all the models for this type as a set.
- The review focused on several key questions:
  - Does the set of models encompass the full range of variability we see across the range of the type?
  - Do the models accurately reflect ecological differences?
  - Is the relationship between models logically consistent? For example, does the fire regime change as expected as models change north to south and east to west?



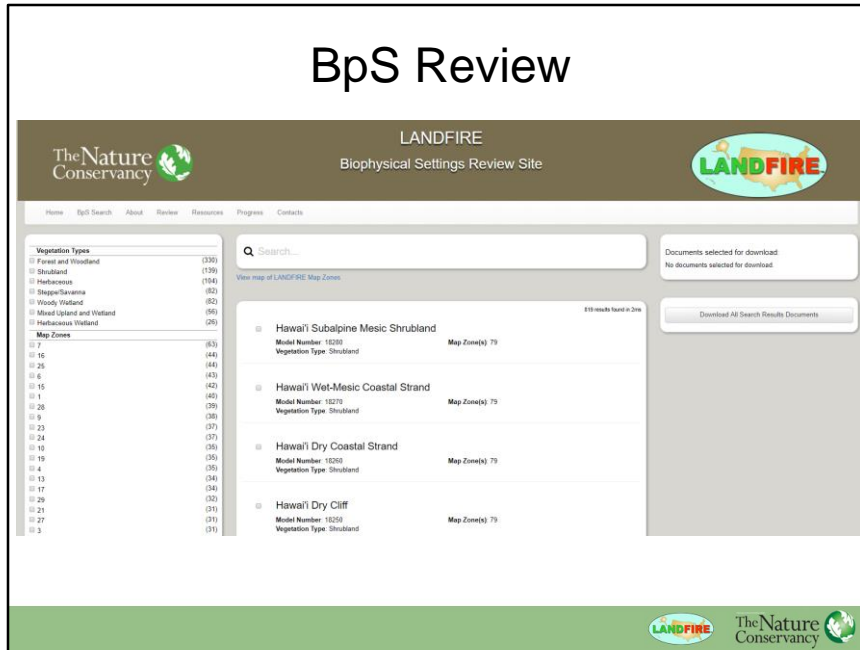


- Many improvements were made to the BpS models.
- I'll illustrate the types of changes users can expect using one example – Inter-Mountain Basins Big Sagebrush Shrubland in the great basin



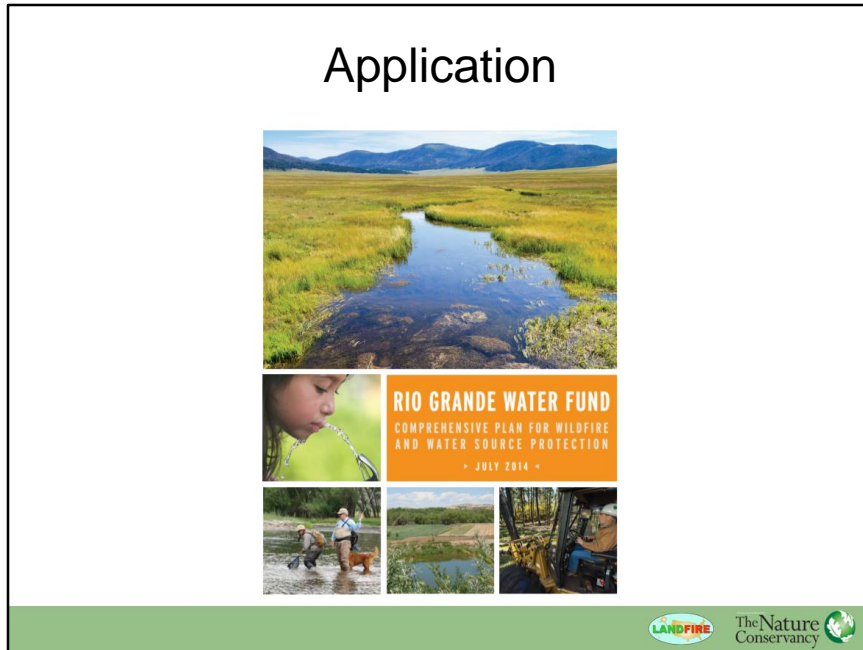
- The big sage brush shrubland BpS for the Great Basin was reviewed by a group of Nature Conservancy scientists. They indicated that the original model encompasses a lot of variability and would be more useful for managers if it were divided into two types.
- Based on this feedback we split the model into two variants:
  - 1) Upland Soils type - receives enough moisture (>10 inches annual) to support pinyon and juniper trees.
  - 2) Semi-Desert soils - found in areas with 8-10 inches of annual precipitation, generally too dry to support trees
  - The two types have different indicator species, different fire frequencies, different management strategies.
- The models were refined to reflect these differences.

# BpS Review



- LANDFIRE has developed a new, searchable, user interface for downloading model information.
- The reviewed and updated BpS model dataset for CONUS and HI are complete, but not publicly available yet.
- AK models are still being finalized.

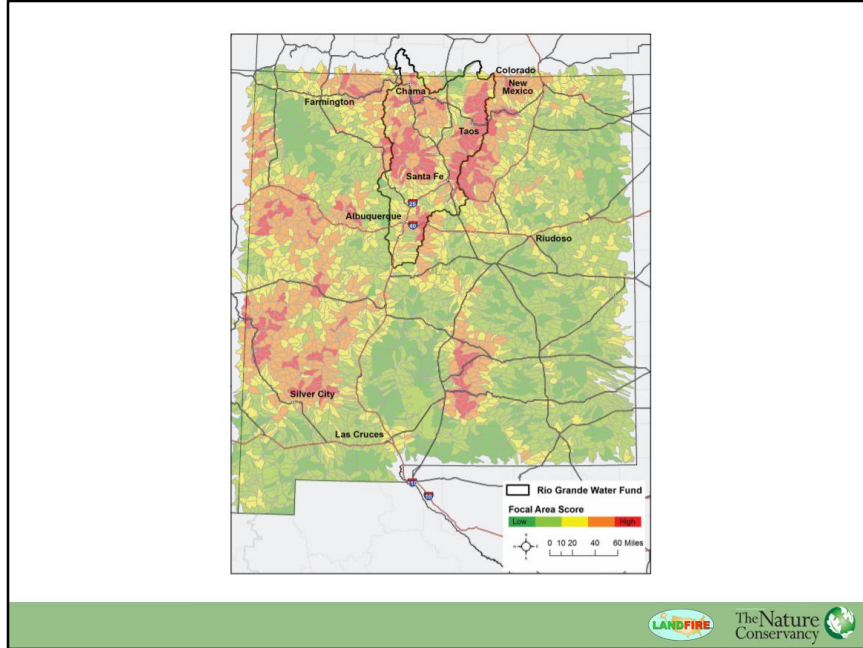
## Application



- The Rio Grande Water Fund is an effort in New Mexico to protect municipal water supplies through improved management of the watershed.
- The Nature Conservancy and partners developed the “Rio Grande Comprehensive Plan for Wildfire and Water Source Protection.”
- The Plan uses the best available data to describe the current wildfire threat to water sources and forested watersheds and prioritizes where treatments will help reduce wildfire

impacts such as post-fire erosion.

- LANDFIRE spatial data were key this effort providing ready to go data for the entire state.



- A focal areas analysis was used to identify areas where water supply were at risk.
- Data about forest conditions, water supplies and users, potential for wood use, and social and economic importance to the state were the bases for identifying focal areas
- LANDFIRE fuels data were used in the wildfire risk portion of the analysis to model fire behavior.
- Here you see areas in need of restoration treatment to protect water supplies shown in red and areas with a lower need for treatment in

green.

- The focal areas map can be used to ensure that the water funds are allocated to the areas where the risk to water supplies is greatest and where restoration actions have the highest probability of success.

## Take-home Messages

### LANDFIRE products

- are comprehensive, compatible, consistent and current. (4 C's)
- are designed for use at regional and national scales.
- can be modified for local use.


LF Remap incorporated new processes and data sets to improve usability of the products, and represents conditions in 2016.

User can help improve LANDFIRE products by providing plots and data + feedback.






# Feedback



E-mail: [helpdesk@landfire.gov](mailto:helpdesk@landfire.gov)

Website:  
<https://landfire.gov/contactus.php>



The screenshot shows the LANDFIRE website's contact page. It features a navigation bar with links for Home, About, Data Products, Contact Us, Network & Applications, and Publications. Below the navigation bar are several circular icons representing different data products. The main content area is titled "Contact Us" and includes a form with fields for First Name, Last Name, Email, Subject, and Feedback/Concerns. A "Submit" button is located at the bottom of the form.



LANDFIRE welcomes feedback. Contact the helpdesk and/or provide feedback via the LANDFIRE website.

## Our Contact Information



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# LANDFIRE ONLINE



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