

An overview of past, current,
and future LANDFIRE data
products and methods

Matt Rollins
USGS Wildland Fire Science Coordinator
Reston Virginia

Overview

- Thoughts on LANDFIRE
- History of LANDFIRE
- LANDFIRE 1.0
- LANDFIRE Refresh 1.0.5 & 1.1.0
- LANDFIRE Refresh 1.2.0
- 'The Future'
- Wrap-up



Briefings and bureaucracy



Scoping and expectations

Thoughts on LANDFIRE?

- ❑ How many of you have heard of LANDFIRE before today?
- ❑ How many of you have used LANDFIRE?
 - ❑ Directly
 - ❑ Indirectly
- ❑ Are National seamless maps and databases needed?
- ❑ How many of you feel the quality of LANDFIRE is good / poor?
- ❑ How many of you have evaluated the quality of LANDFIRE?
- ❑ How many of you have contributed data?
 - ❑ Point
 - ❑ Polygon
 - ❑ Structured Feedback

Background

- GAO Reports from 1999 – 2007 called for a cohesive approach to wildfire business, management, and response.
- “ ... *federal land management agencies do not have adequate data for making informed decisions and measuring the agencies’ progress in reducing fuels.*”



Healthy skepticism



Healthy skepticism

Background

- LANDFIRE was conceived as a wall-to-wall set of geospatial data products that could serve as a foundation for cohesive fire business, management, and response.
- The intent was to provide geospatial data for national programs such as FPA & WFDSS.
- Now LANDFIRE is used by these programs as well as new programs and applications like HFPAS, IFT-DSS, and the national risk assessment and trade-off analyses being conducted by the Cohesive Strategy.

Background

Timeline

1999 - Missoula fire lab developed first nationally consistent layers for fire management planning (coarse scale data).

2000 – Asked to provide a plan for developing finer scale data layers.

2003 – MFSL and EROS Completed LF prototype.



Valley Complex
Bitterroot Valley
August 2000



LANDFIRE Prototype

Background

Timeline

2004 – National implementation

2009 – CONUS Completed

2011 – Refresh 1.0.5 Completed

2012 – Refresh 1.1.0 Completed

2013 – Refresh 1.2.0 Underway

2014 – LF National Re-map?



Roberts Fire
Glacier National Park
August 2003



Evolving Business Models

LANDFIRE – Geographic Areas



LANDFIRE in One Page

Objectives

A national assessment of vegetation, fuel and ecosystem conditions.

Integrated, consistent, comprehensive, repeatable.

Landsat-based, 30m nominal resolution nationwide.

24 primary data products

Vegetation, wildland fuels, and fire regime condition class.

Program currently in maintenance and updating mode.

Intended applications

Cohesive wildfire management.

- Landscape restoration and maintenance.
- Hazardous fuel management.
- Wildfire incident support.

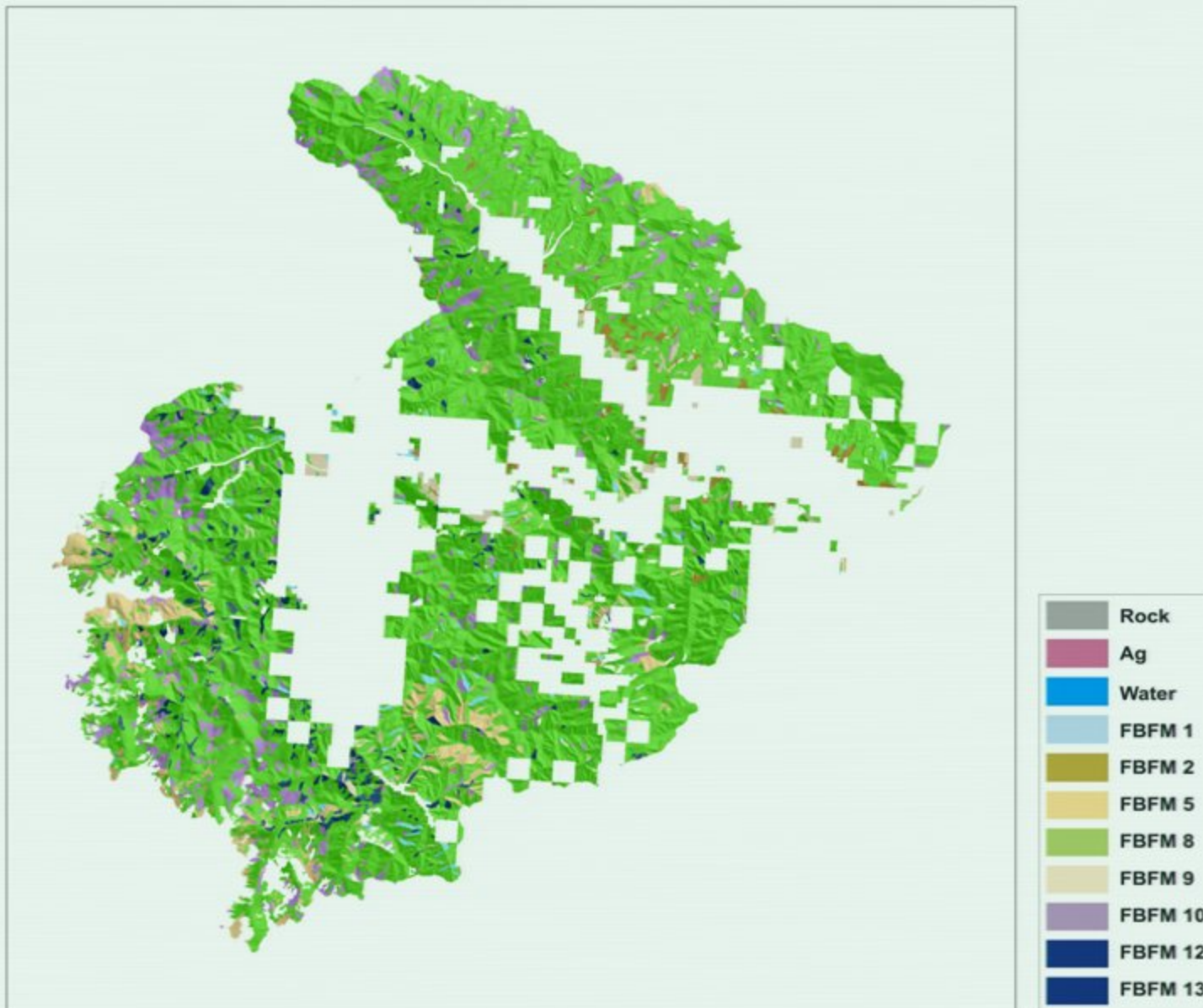
National strategic planning

Other land management applications.

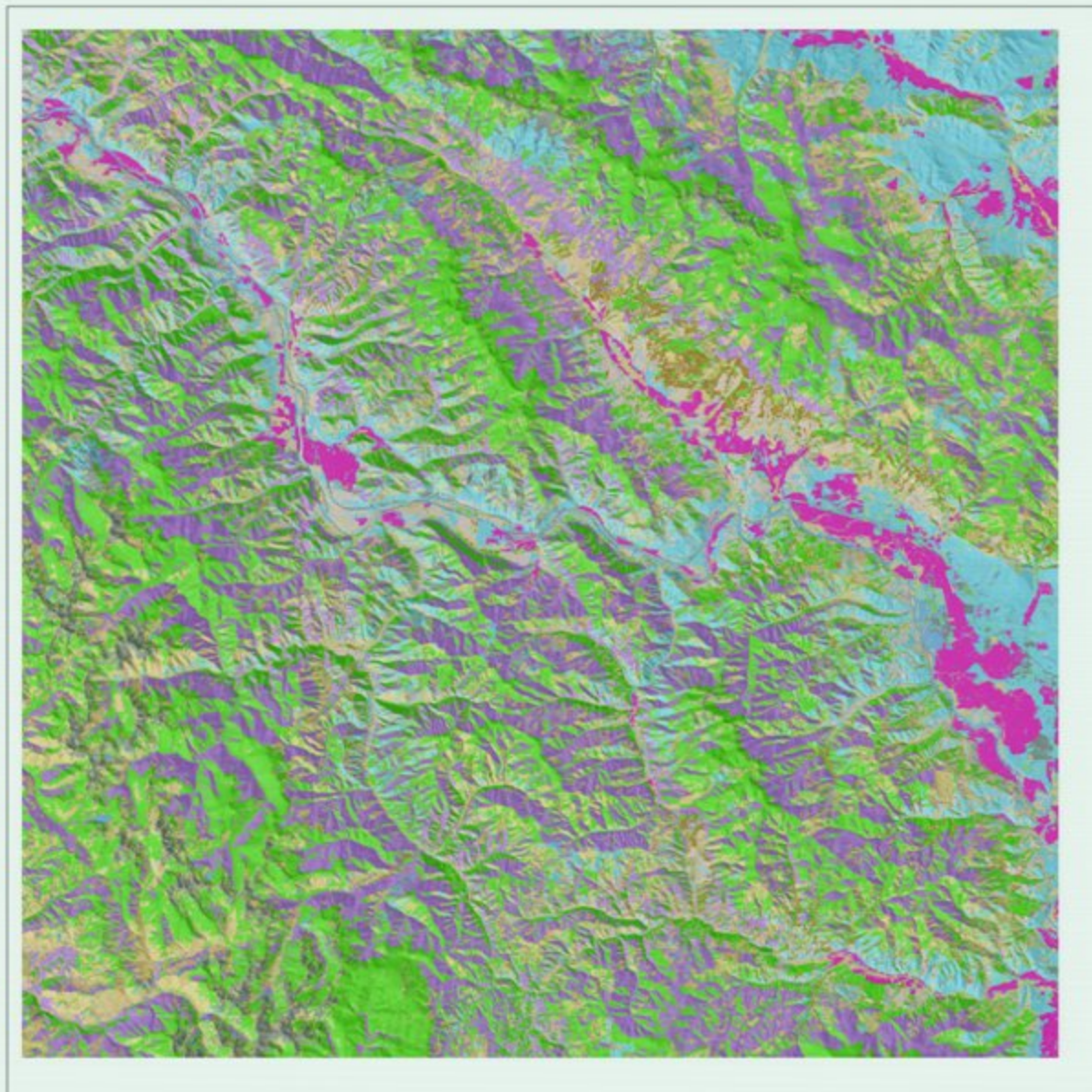


<http://www.landfire.gov>

9-Mile Ranger District, Lolo National Forest INFORMS/FSVEG Fuels

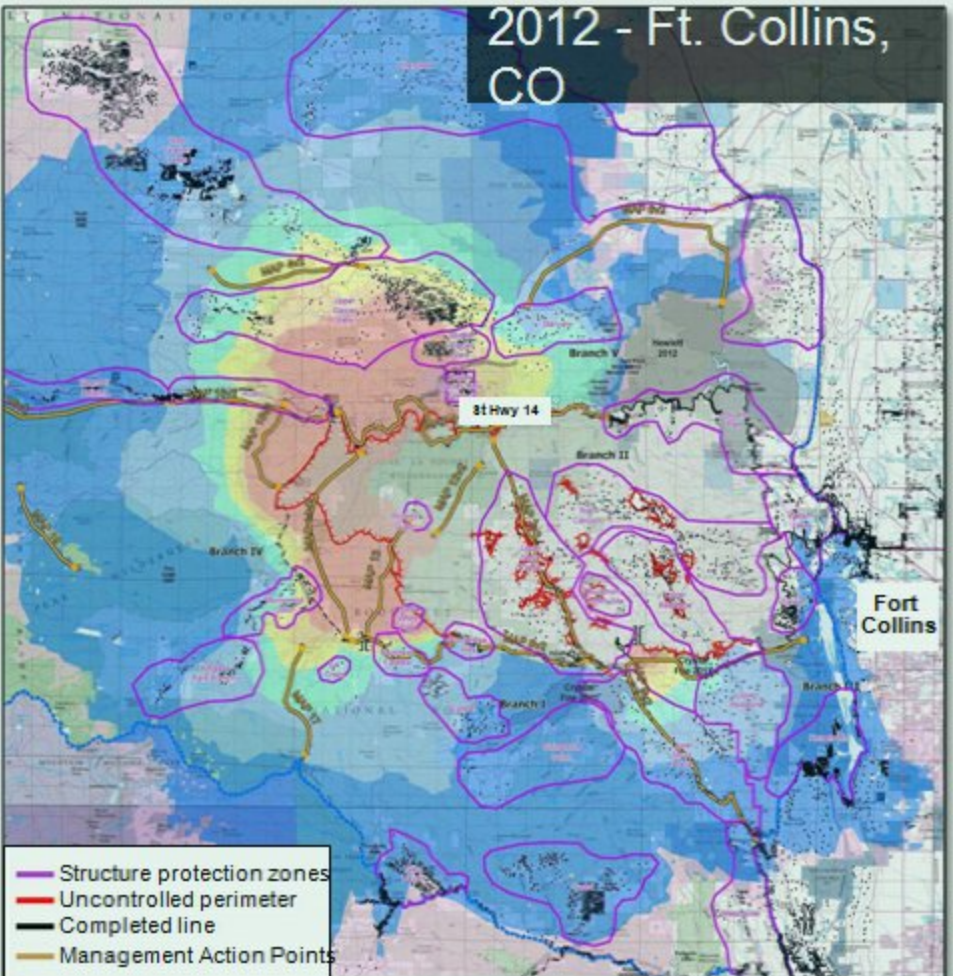


9-Mile Ranger District, Lolo National Forest LANDFIRE Fuels



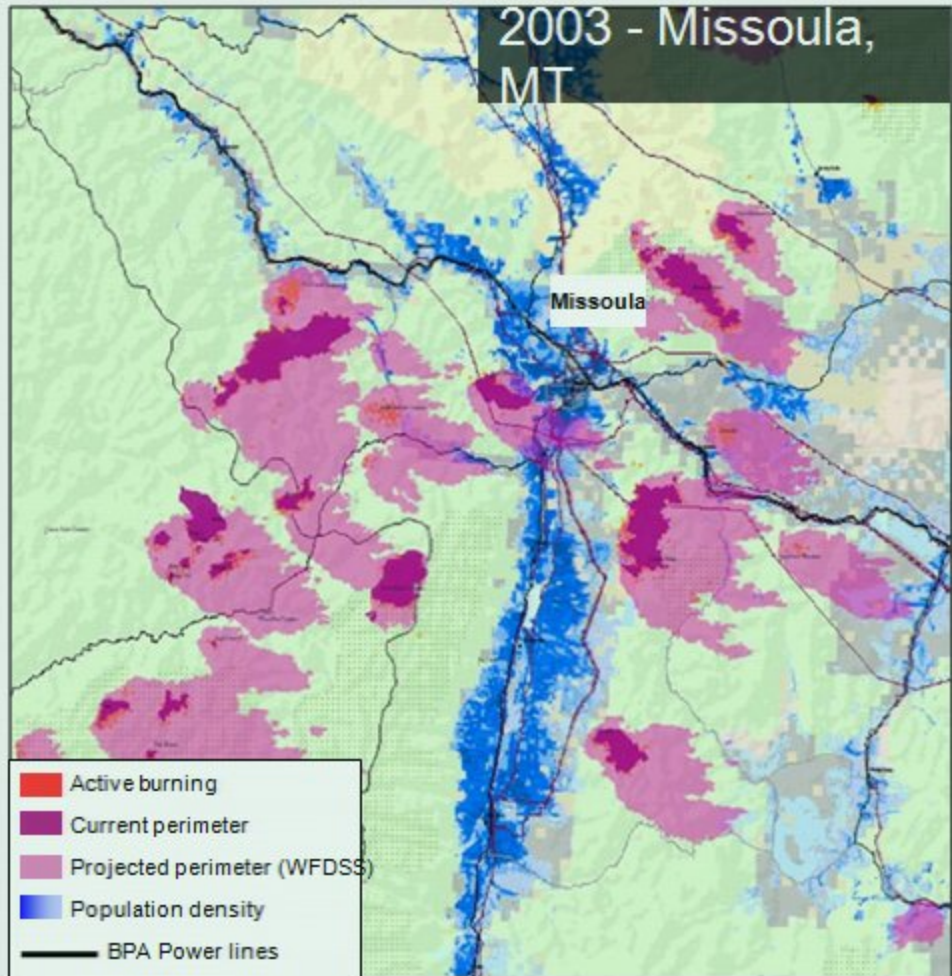
USGS Geospatial Data for Wildland Fire Decision Support GeoMAC & LANDFIRE

Local Level



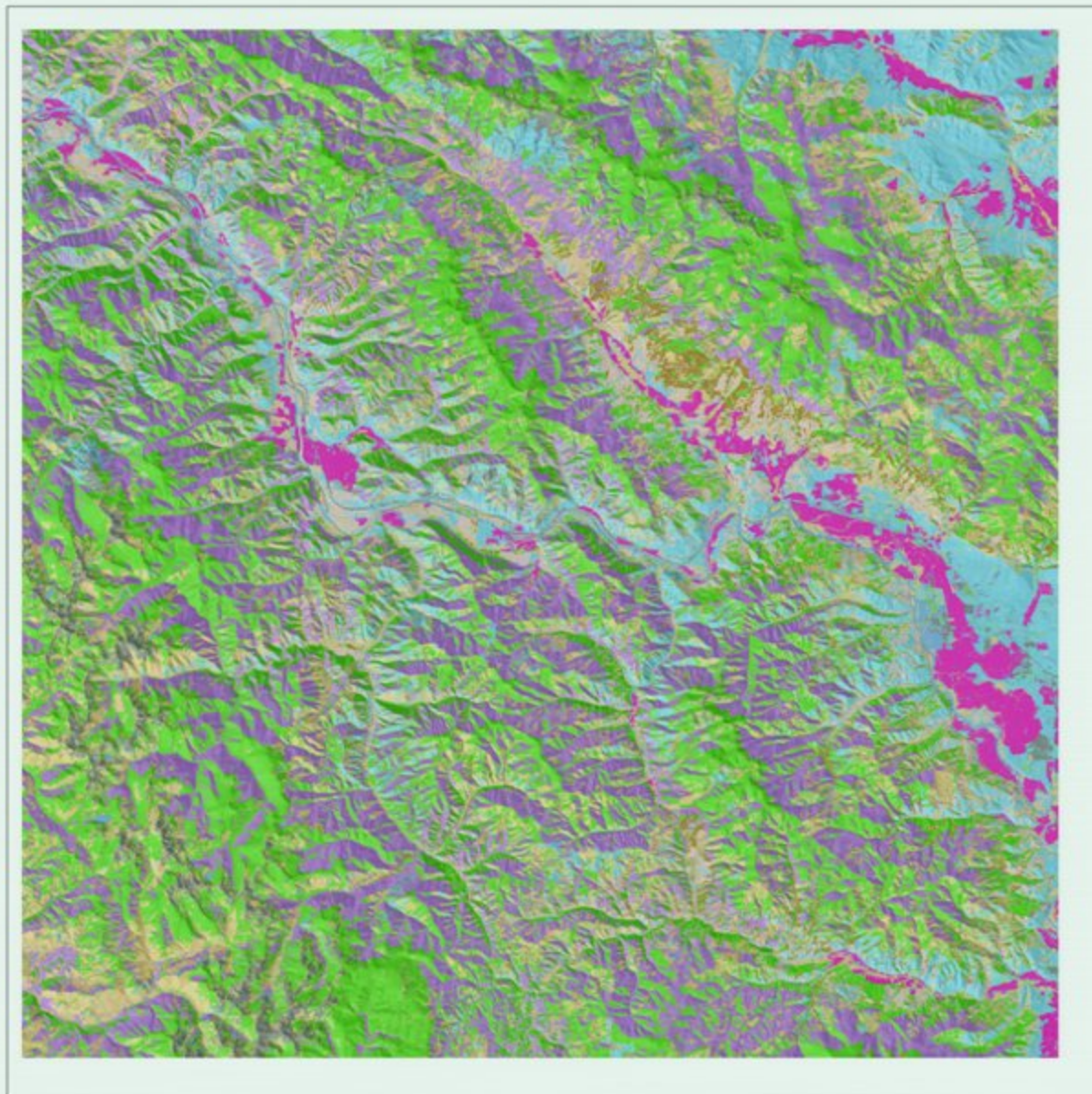
0 2 4 6 Miles

Regional Level



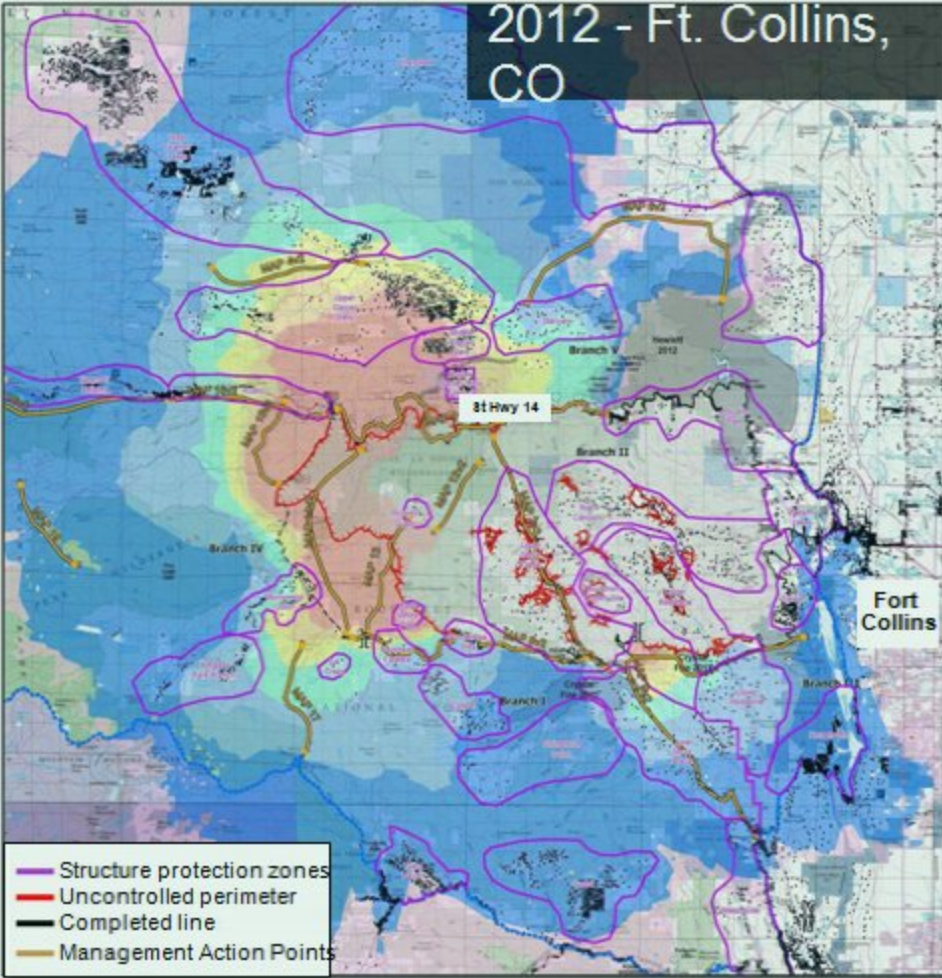
0 10 20 Miles

9-Mile Ranger District, Lolo National Forest LANDFIRE Fuels



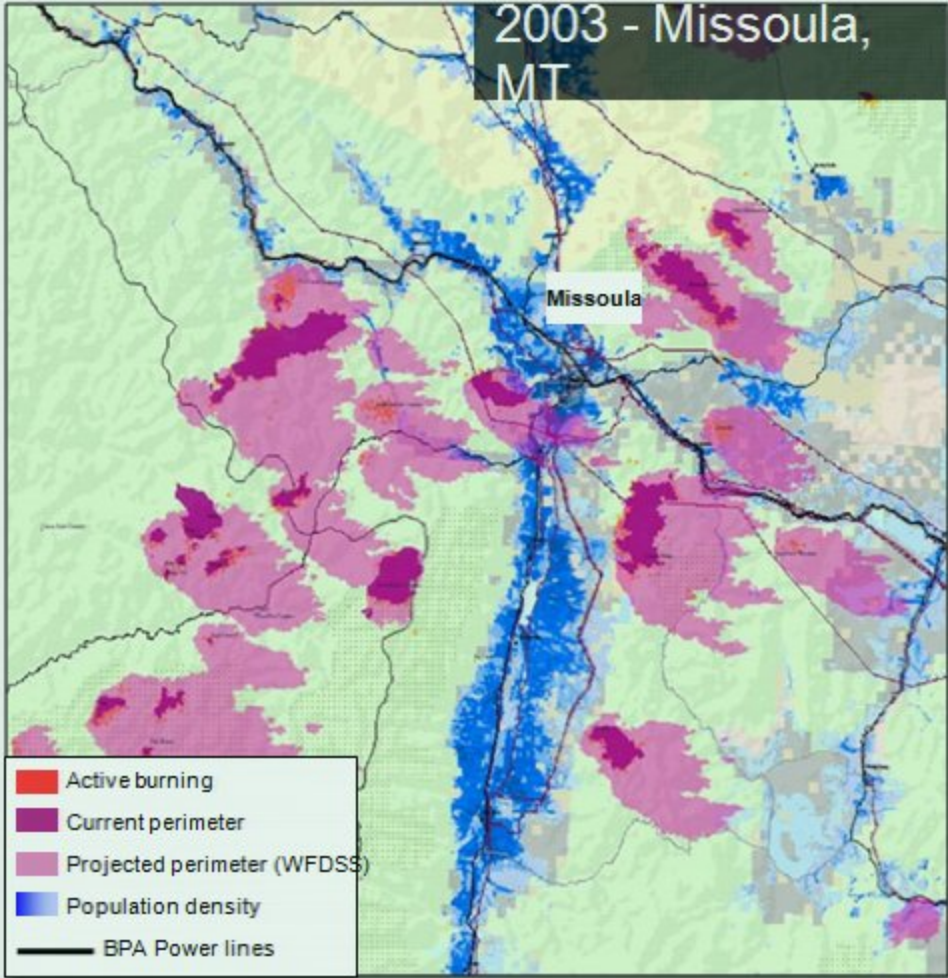
USGS Geospatial Data for Wildland Fire Decision Support GeoMAC & LANDFIRE

Local Level



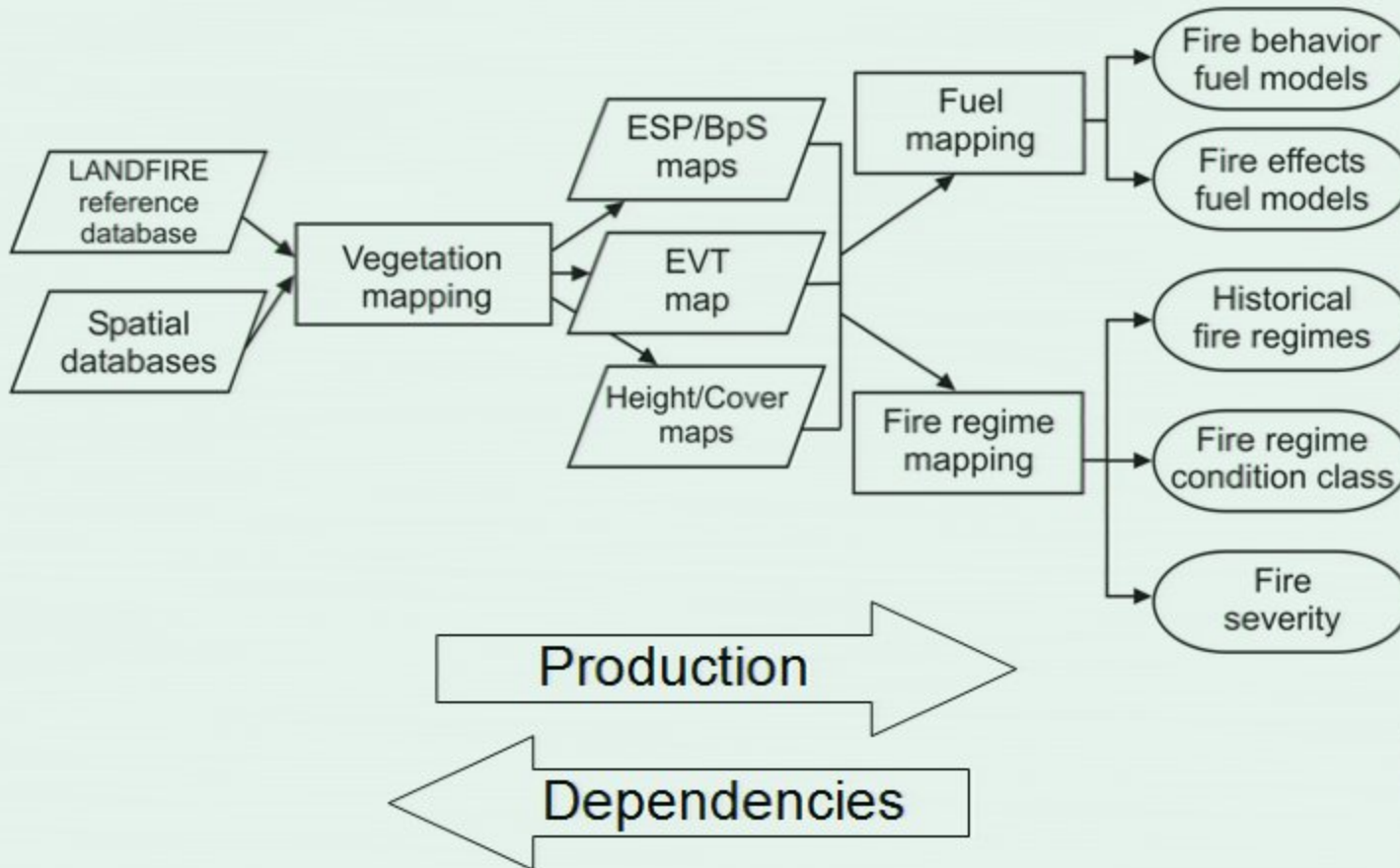
0 2 4 6 Miles

Regional Level



0 10 20 Miles

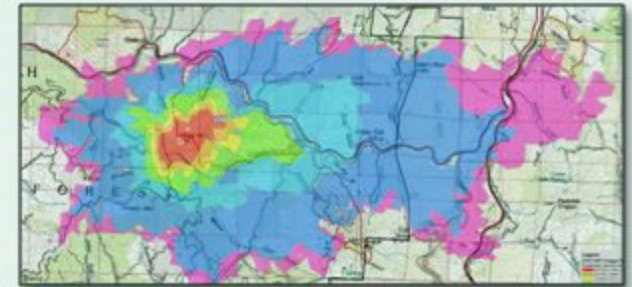
The LANDFIRE process



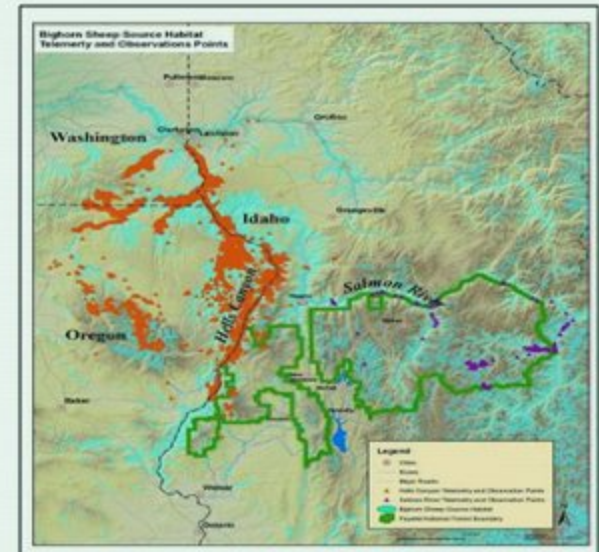
Abbreviated timelines

LF National 1.0

- Methods from prototype evolved & adapted for National implementation.
- Vegetation Classifications.
- Imagery (NAPP, Google Earth).
- FRCC – Successional models.
- Fire behavior and effects models.



Fire management applications



Habitat assessments

LF Refresh 1.0.5 – ca. 2001

Focused on 5 systematic shortcomings of LF 1.0:

1. Incomplete data coverage along international borders
2. Extent and nature of riparian and wetlands features
3. Increasing 'burnability' of Agricultural and Urban types
4. Extent of barren and water classes - Barriers
5. Biophysical Settings (BPS) in western rangelands using Soil Survey Geographic Database (SSURGO)
6. An Extra: Evaluating Ecological Systems as the National Vegetation Classification for LF.

LF Refresh 1.1.0 – ca. 2008

Mapped landscape change in the United States 2001-2008, and remapped LF products for these areas. This included:

- Growth in shrub and wetland cover
- Landscape change from natural disturbances (e.g., wildfires) and management activities using data compiled as an 'Events Database' which included:
 - User contributed data defining changed areas.
 - Wildfires from Monitoring Trends in Burn Severity (MTBS)
 - A Landsat based change detection application, VCT.

LF Refresh 1.0.5 – ca. 2001

Focused on 5 systematic shortcomings of LF 1.0:

1. Incomplete data coverage along international borders
2. Extent and nature of riparian and wetlands features
3. Increasing 'burnability' of Agricultural and Urban types
4. Extent of barren and water classes - Barriers
5. Biophysical Settings (BPS) in western rangelands using Soil Survey Geographic Database (SSURGO)
6. An Extra: Evaluating Ecological Systems as the National Vegetation Classification for LF.

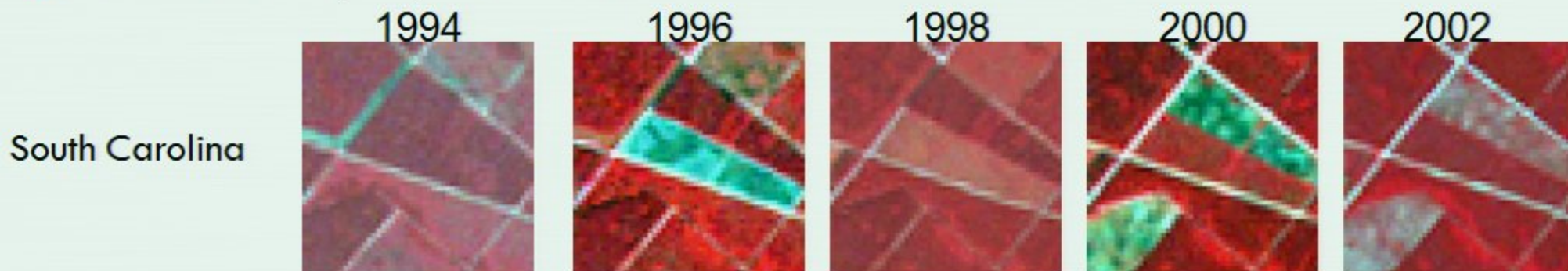
LF Refresh 1.1.0 – ca. 2008

Mapped landscape change in the United States 2001-2008, and remapped LF products for these areas. This included:

- Growth in shrub and wetland cover
- Landscape change from natural disturbances (e.g., wildfires) and management activities using data compiled as an 'Events Database' which included:
 - User contributed data defining changed areas.
 - Wildfires from Monitoring Trends in Burn Severity (MTBS)
 - A Landsat based change detection application, VCT.

LF 2008 Objectives

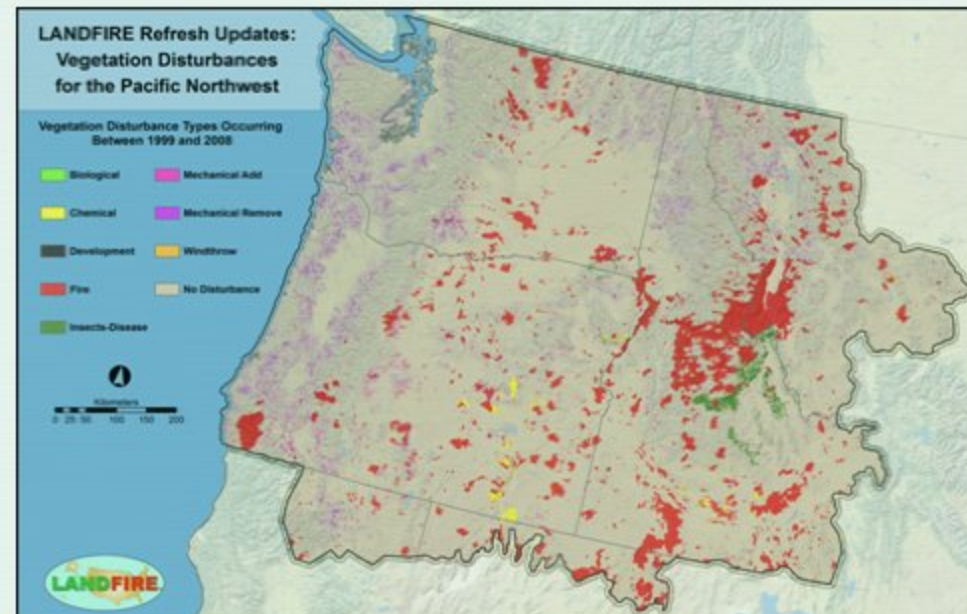
- Account for disturbances occurring in 1999-2008
 - ▣ Disturbance type
 - ▣ Disturbance severity
- Transition vegetation types (EVT, EVC, EVH) affected by disturbance
- Incorporate succession processes – “grow” vegetation to 2008 conditions
- “Refresh” / updated fire and fuel characteristics



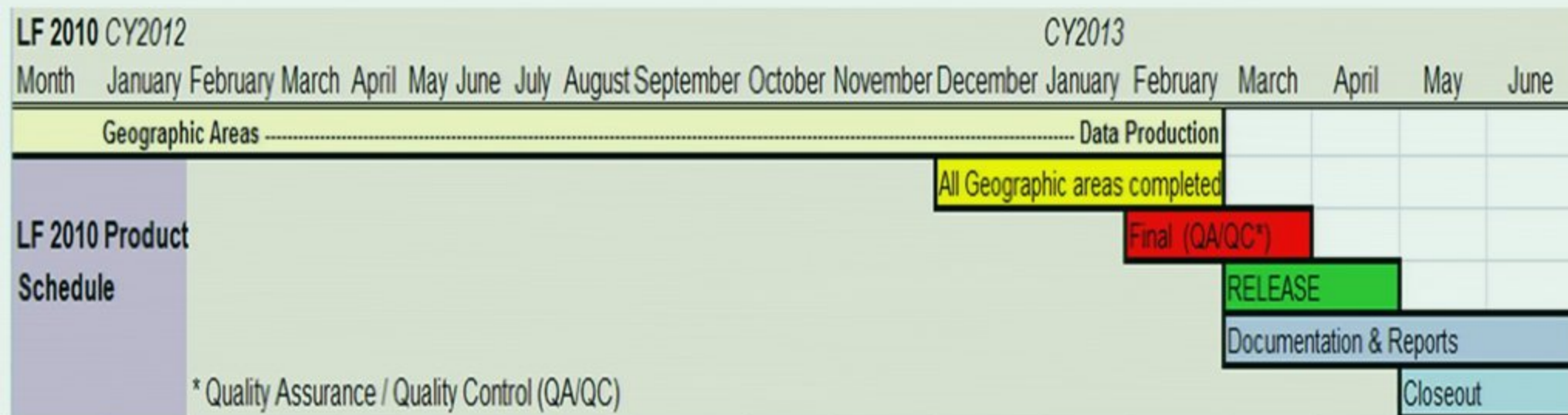
LF 2008 Methods – Disturbance Mapping








- Disturbance Types (causality)
 - Fire
 - Mechanical treatments that do not remove material from the site (Mechanical Add)
 - Mechanical treatments that do remove material from the site (Mechanical Remove)
 - Wind
 - Insect and disease
 - Biological
 - Chemical
 - Development



LANDFIRE 2010 – Production Flow



	LF National	LF 2001	LF 2008	LF 2010
Description	Original products	Refresh update: Existing vegetation type, cover, height <u>Improvements – Conus</u> [^] International boundary, burnable agriculture - urban, rock/water	Refresh update: Disturbances*, succession, fire, and fuels	Update: Vegetation, disturbances*, succession, fire, fuels, and Islands~
Completed	2009	2011	2011	ETA 2013
Imagery Date	1999-2003	1999-2003	1999-2003 *1999-2008	1999-2003 *1999-2010
Extent		[^] 		[~] 
Products	All	All	All	Majority
Veg. Cond. Class (VCC) – Ref. Conditions	LANDSUM (conus), Veg. Dynamic Dev. Tool {VDDT} (AK/HI)	VDDT	VDDT	(- Fire Regime, users apply field guide book method to develop Veg Cond. Class {VCC}/FRCC)
VCC Summary Units	ECOMAP subsections & Map Zones	Hydrologic Unit Codes (HUCs)	HUCs	

Getting Help and What's Next?

- LANDFIRE Website (www.landfire.gov)
- LANDFIRE Help Desk (helpdesk@landfire.gov)
- Training/Tools (www.nifftt.gov)
- Guides/videos (www.conservationgateway.org)
- Monthly User Calls (contact Help Desk for schedule)
- Removal of previous versions from Data Distribution Site
 - ▣ Rapid Assessment, Rapid Refresh, Improvements
- LF 2010
 - ▣ Will incorporate 2 more years of succession & disturbance
 - ▣ Delivery – spring 2013
 - ▣ Data deliverables
 - May Eliminate – Vegetation Departure, Vegetation Condition Class
- Revision of website - www.landfire.gov

Collaborating w/ LANDFIRE

- Data contribution due annually on November 15th
 - ▣ Disturbance polygons
 - Include disturbance type, date, and severity (if feasible)
 - ▣ Update corporate databases – be diligent about whether project is actually completed (not planned, not under contract, but actually done on the ground)
 - ▣ Data issues – communicate problems that you would like us to “improve”
- Monthly LF Users Call

TAKE HOME MESSAGES

- LANDFIRE continues to improve (either alone or with you)
- Use most recent LANDFIRE data
- Provide data & feedback to improve LANDFIRE
- Use LANDFIRE support (helpdesk@landfire.gov)

Thoughts on LANDFIRE?

- How many of you have heard of LANDFIRE before today?
- How many of you have your thoughts or feelings about LANDFIRE changed based on this special session?
 - What information do you need to better understand LANDFIRE?
 - What are you going to do to improve LANDFIRE?
- How many of you feel the quality of LANDFIRE is good / poor?
- How many of you have evaluated the quality of LANDFIRE?
- How many of you have contributed data?
 - Point
 - Polygon
 - Structured Feedback