



© ark odfrey

What You Need to Know About LANDFIRE

TNC LANDFIRE Team



Kori Blankenship
Fire Ecologist
Bend, OR



Sarah Hagen
GIS Analyst
Minneapolis, MN



Jim Smith
Project Lead
Jacksonville, FL



Randy Swaty
Ecologist
Marquette, MI



Jeannie Patton
Program Coordinator
Boulder, CO

Presentation Purpose

Ultimately, we want SRFSN participants to be able to make an intelligent decision about whether or not to use LANDFIRE products by informing you about:

- the current suite of products,
- plans for improvement and updating,
- application ideas, and
- how you can participate

Why a LANDFIRE Project?

- There was a lack of data to support regional and national fire program analyses and decisions.
- Office of Management and Budget (OMB) did not feel that the agencies had what they needed to justify the level and distribution of allocations.
- Some fire program funding was potentially at risk.

USFS

- Fire and Aviation Management
- Fire Management Institute/MFSL

DOI

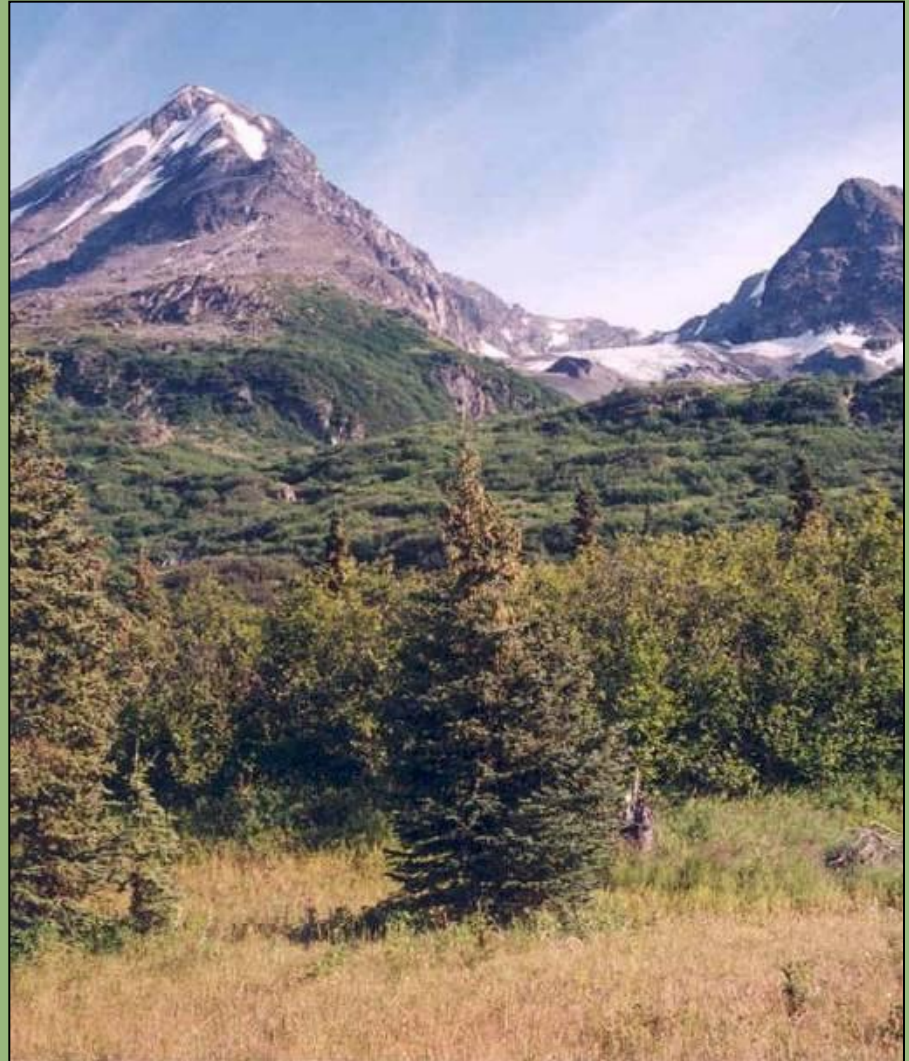
- Office of Wildland Fire Coordination
- EROS-Fire Science Team

The Nature Conservancy

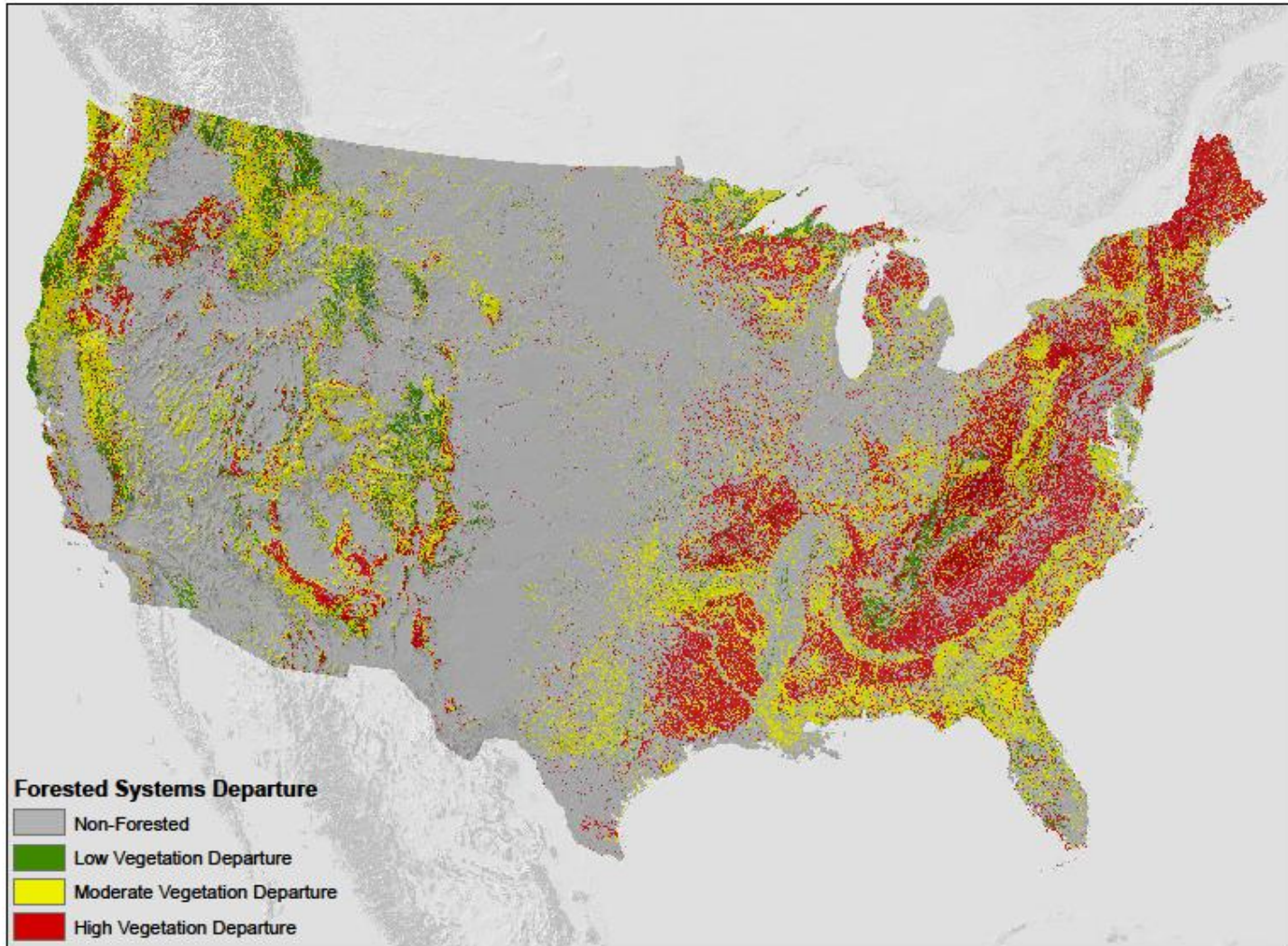
- North American Region Science-TNC
LANDFIRE Team

LANDFIRE Products: Design Criteria

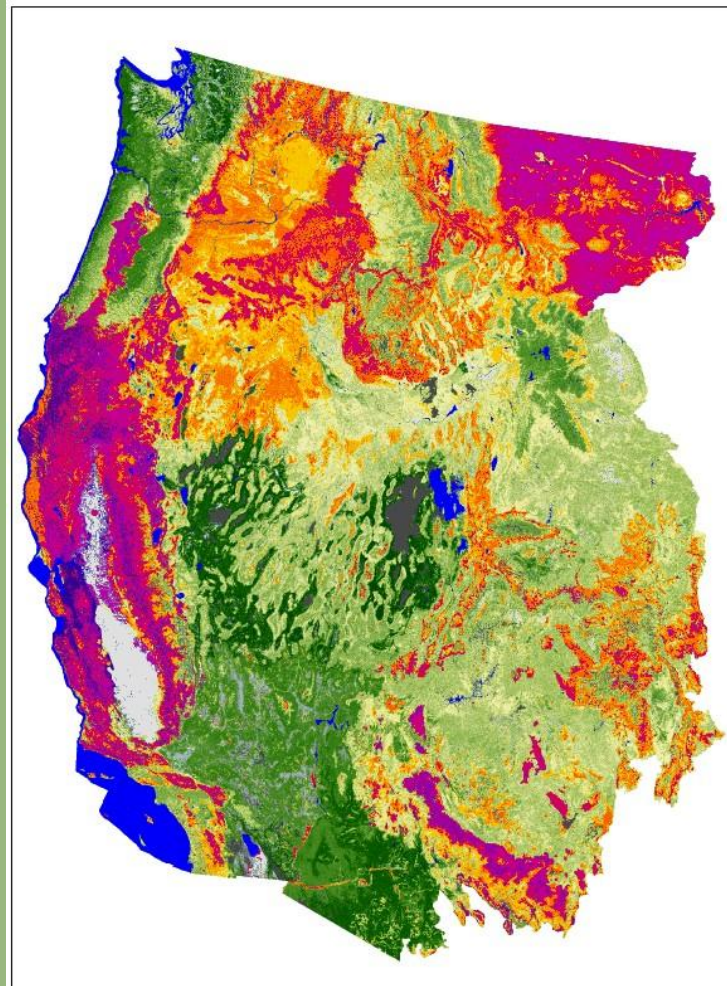
- Consistent
- Compatible
- Comprehensive
- Complete
- Accessible
- Adaptable
- Best quality possible



National Products-FRCC

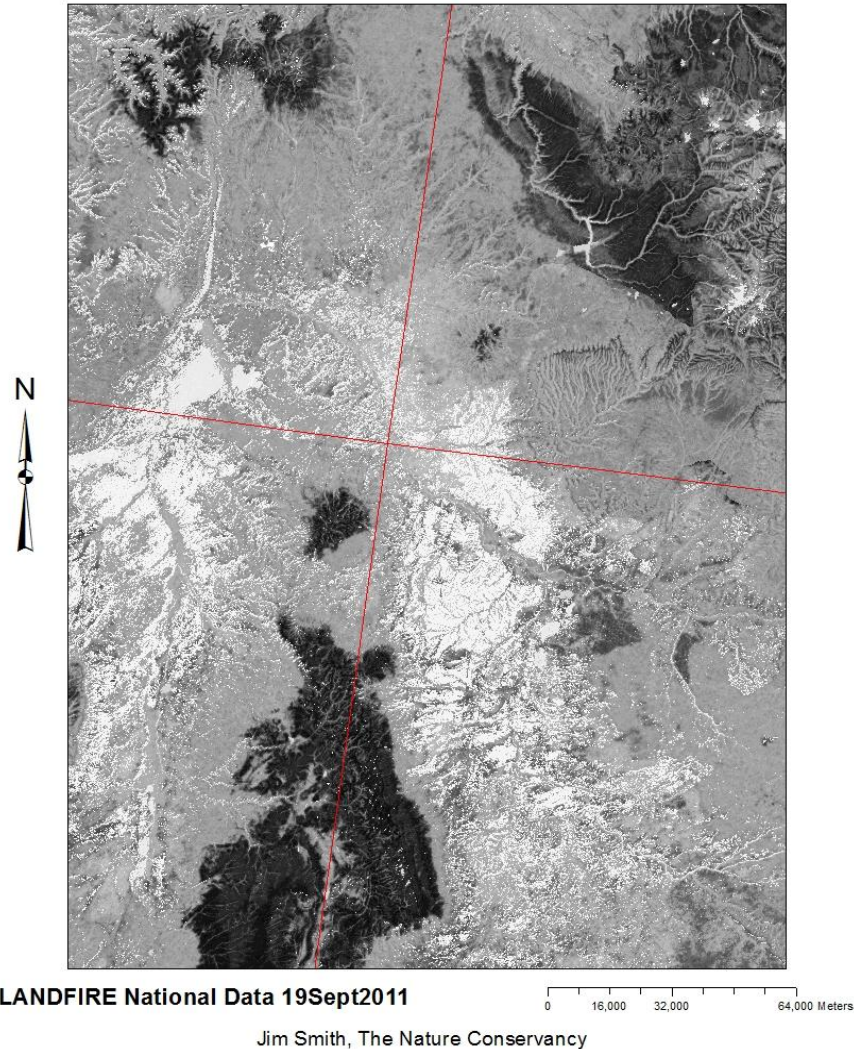


Large Regions-Fire Regime Group



SubRegional-Historic Mean Fire Return Interval

Four Corners Historic Mean Fire Return Interval



Fire Regime Condition Class

Legend

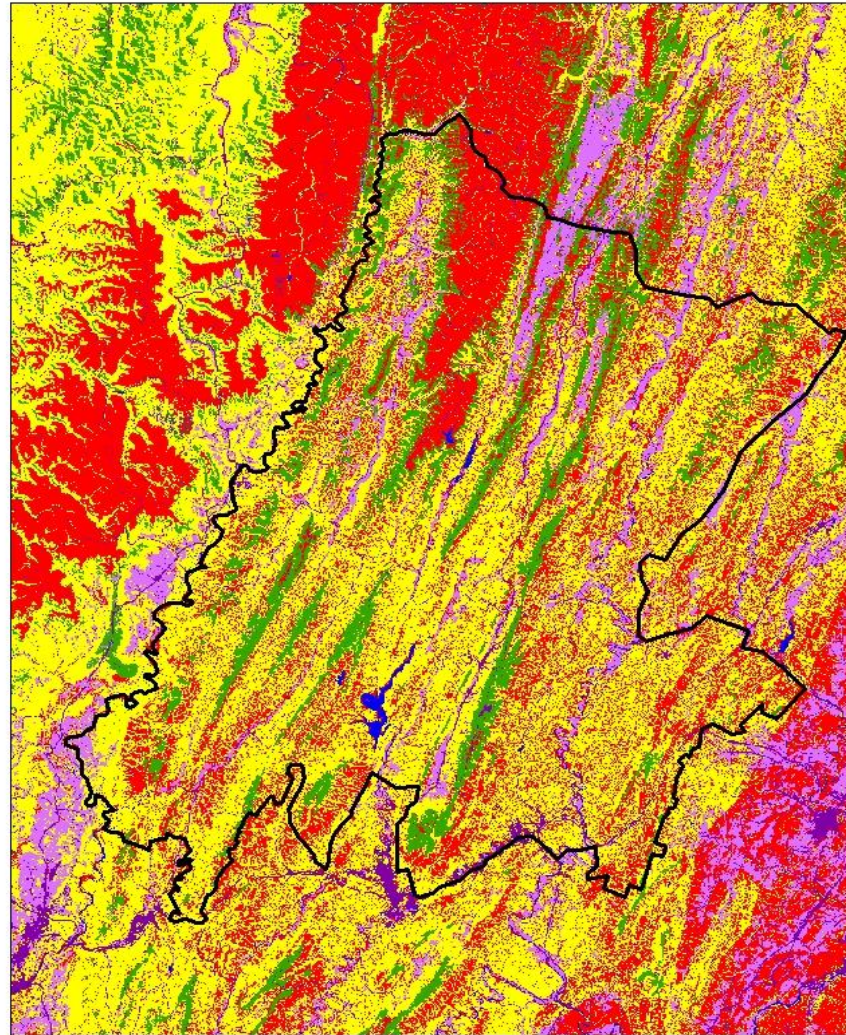
frcc_1

LABEL

-  Agriculture
-  Barren
-  Fire Regime Condition Class I
-  Fire Regime Condition Class II
-  Fire Regime Condition Class III
-  Urban
-  Water



0 6,500 13,000 26,000 39,000 52,000 Meters



Questions?

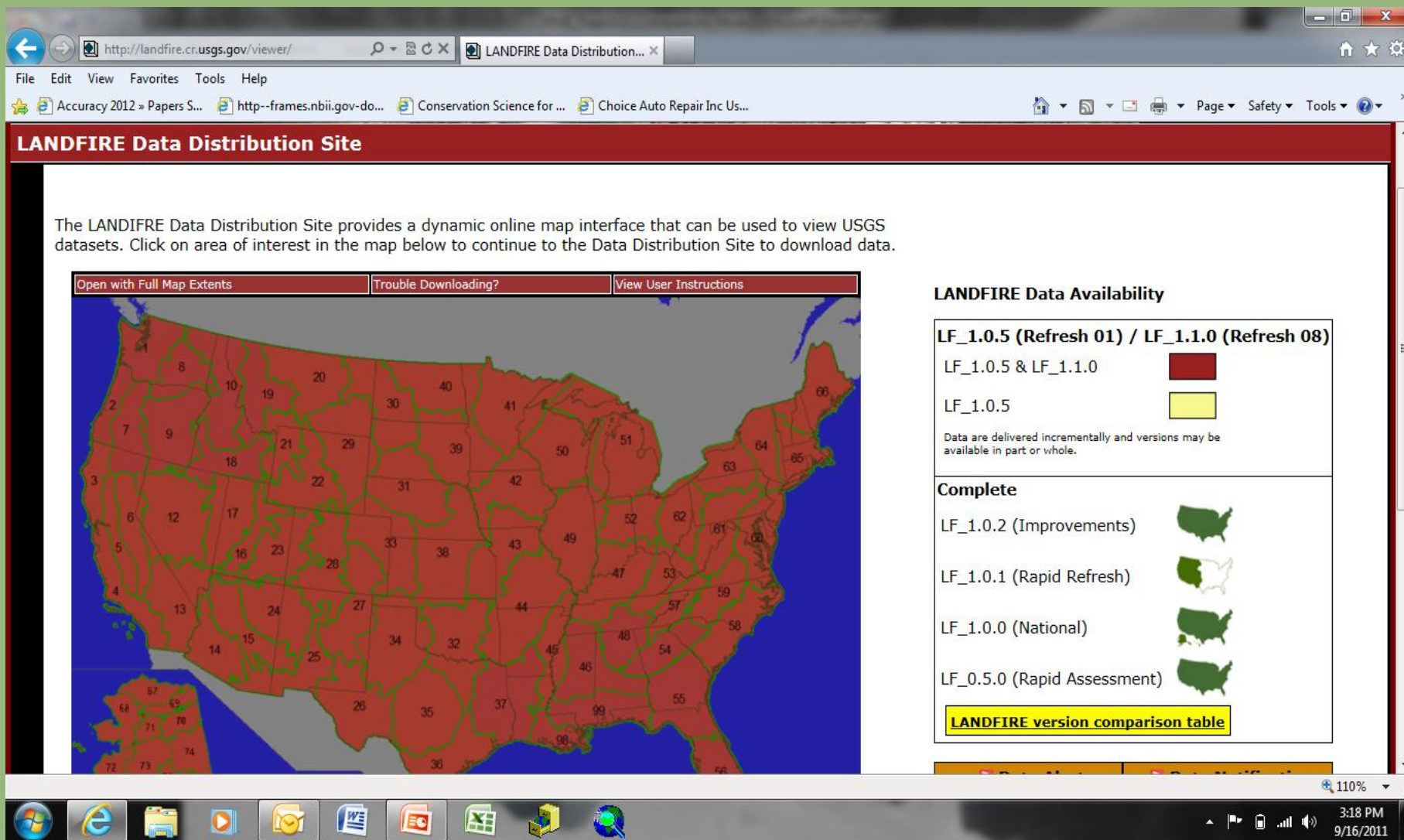
The screenshot shows a web browser window at <http://www.landfire.gov/fuel.php>. The page title is "LANDFIRE Data Products". The browser's address bar shows the URL and the page title. The browser's menu bar includes "File", "Edit", "View", "Favorites", "Tools", and "Help". The browser's status bar shows several open tabs, including "Accuracy 2012 > Papers S...", "http--frames.nbii.gov-do...", "Conservation Science for...", and "Choice Auto Repair Inc Us...".

The website's navigation bar includes "Homepage", "Contact us", "FAQs", "Sitemap", "Search", and a "GO" button. The main content area is titled "Data Products >> Fuel". The text describes the LANDFIRE fuel data, including fire behavior fuel models (FBFM13, FBFM40, and the Canadian Forest Fire Danger Rating System [CFFDRS]), canopy bulk density (CBD), canopy base height (CBH), canopy cover (CC), canopy height (CH), the Fuel Characteristic Classification System (FCCS) fuelbeds, and fuel loading models (FLMs); the Landscape (.LCP) file is the data format required for many fire behavior and effects models. These data can be implemented within models to predict wildland fire behavior and effects, and are useful for strategic fuel treatment prioritization and tactical assessment of fire behavior and effects.

The left sidebar contains a "Data Products" menu with the following items: Overview, Version Comparison, Fuel, Vegetation, Fire Regimes, Topographic, Disturbance, and Databases & Tabular Data. A red box highlights the "Data Products" menu, and a red arrow points to the "40 Scott and Burgan Fire Behavior Fuel Models" link in the main content area.

The right sidebar contains several sections: "Access LANDFIRE Data" with links to "Data Distribution Site" and "Data Access Tool"; "IMPORTANT user information on Data Products:" with links to "Alerts (08/04/11)" and "Notifications (08/04/11)"; "Helpful Tools to assist users of LANDFIRE data" with a hammer icon; "At what scale should LANDFIRE data be used?"; "Recommendations for evaluating LANDFIRE fuel data products"; and "How do I cite LANDFIRE data products?".

The Windows taskbar at the bottom shows the system tray with the date and time: 3:17 PM, 9/16/2011. The taskbar also shows several application icons, including Internet Explorer, File Explorer, and the Start button.



The screenshot shows a web browser window displaying the LANDFIRE Data Distribution Site. The browser's address bar shows the URL <http://landfire.cr.usgs.gov/viewer/>. The page title is "LANDFIRE Data Distribution Site".

The main content area features a map of the United States divided into numbered regions (1-99). A text box above the map reads: "The LANDIFRE Data Distribution Site provides a dynamic online map interface that can be used to view USGS datasets. Click on area of interest in the map below to continue to the Data Distribution Site to download data." Above the map are three buttons: "Open with Full Map Extents", "Trouble Downloading?", and "View User Instructions".

To the right of the map is a section titled "LANDFIRE Data Availability". It lists the following datasets and their availability status:

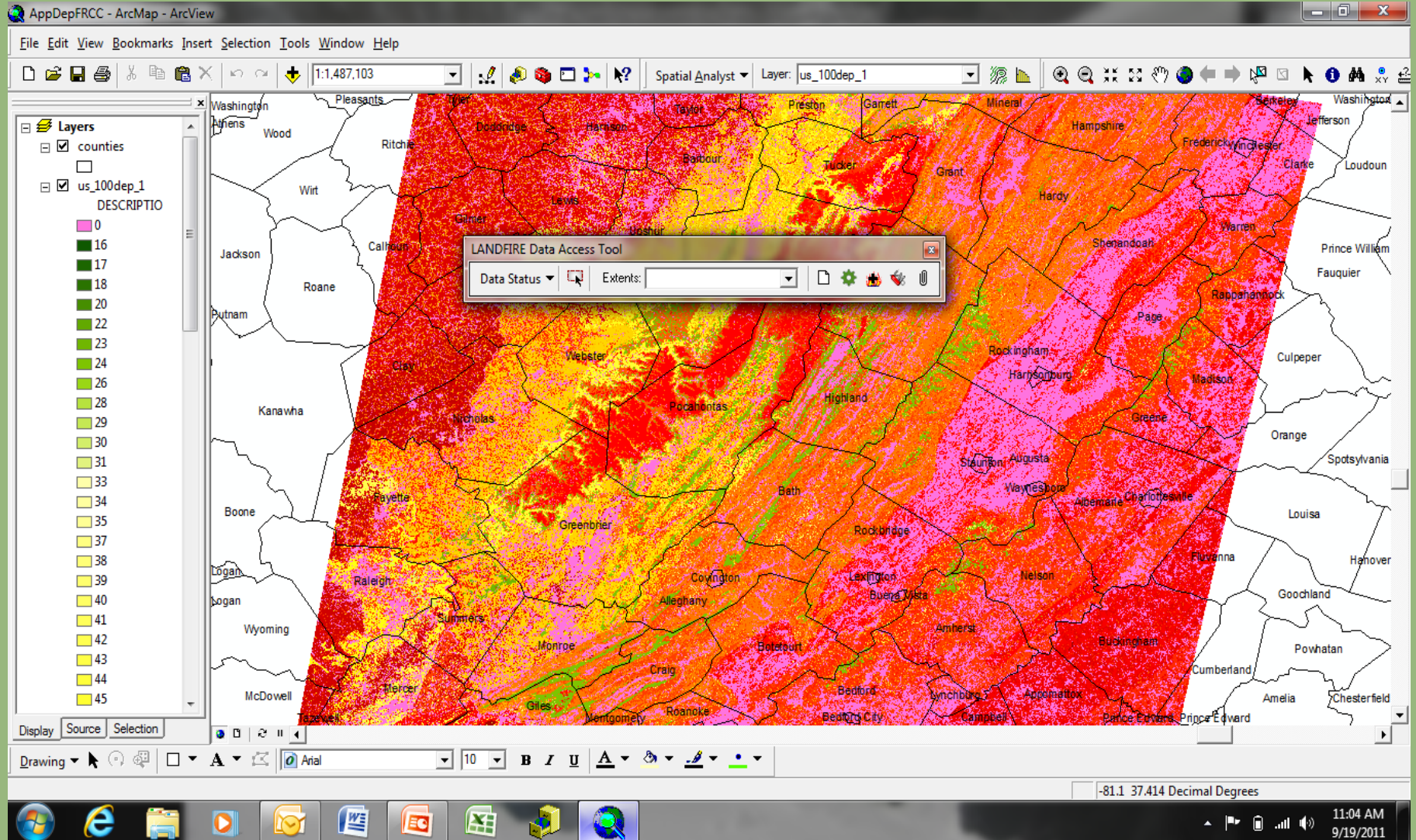
- LF_1.0.5 (Refresh 01) / LF_1.1.0 (Refresh 08)**
 - LF_1.0.5 & LF_1.1.0: Available (indicated by a dark red square)
 - LF_1.0.5: Available (indicated by a yellow square)

Data are delivered incrementally and versions may be available in part or whole.
- Complete**
 - LF_1.0.2 (Improvements): Available (indicated by a green square)
 - LF_1.0.1 (Rapid Refresh): Available (indicated by a green square)
 - LF_1.0.0 (National): Available (indicated by a green square)
 - LF_0.5.0 (Rapid Assessment): Available (indicated by a green square)

At the bottom of the availability section is a button labeled "LANDFIRE version comparison table".

The Windows taskbar at the bottom shows the system time as 3:18 PM on 9/16/2011 and a zoom level of 110%.

LANDFIRE Data Access Tool



Spatial data versions currently available

LANDFIRE

Homepage Contact us FAQs Search GO

Data Products >> Version Comparison

[Printable table with Data Products](#)

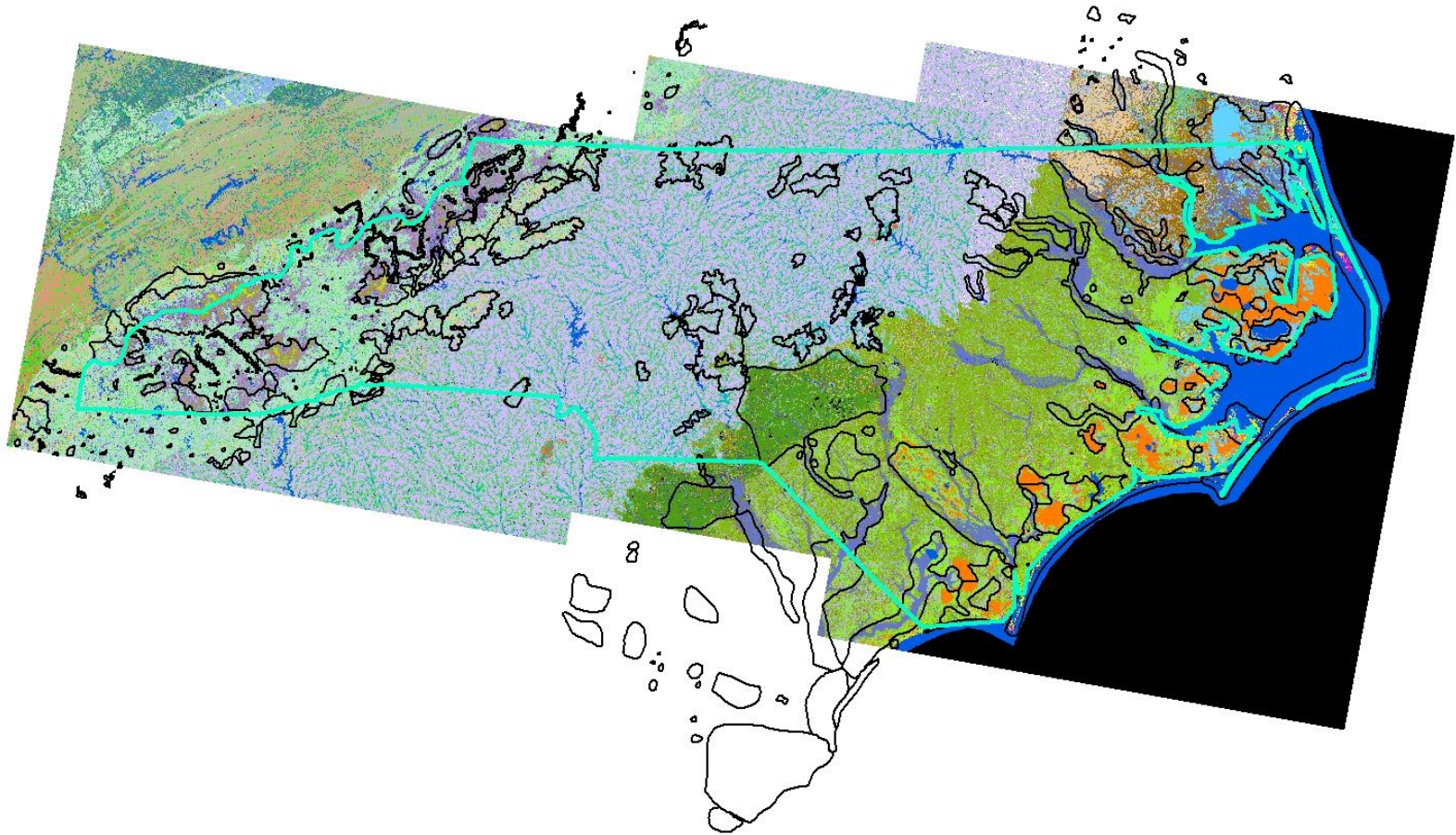
	LF_0.5.0	LF_1.0.0	LF_1.0.1	LF_1.0.2	LF_1.0.5	LF_1.1.0
Version Name and Description	Rapid Assessment: Designed to fill data gaps. National data available.	National: Original LF data products	Rapid Refresh: Started with LF_1.0.0 and modified existing vegetation and fuels along international boundaries. Areas previously classified as agriculture, urban, rock, & water.	Improvements: Started with LF_1.0.0 and modified existing vegetation and fuels along international boundaries. Areas previously classified as agriculture, urban, rock, & water.	Refresh 2001: Started with LF_1.0.2 and refined Existing Vegetation Type (EVT) based on local feedback. Remapped Existing Vegetation Cover (EVC) and Existing Vegetation Height (EVH) in forested areas.	Refresh 2008: Started with LF_1.0.5 and incorporated disturbances (fire, vegetation management, weather, etc.) & succession through 2008.
Imagery Date	1990 - 2004	1999 - 2003	1999 - 2003	1999 - 2003	1999 - 2003	1999 - 2003
Disturbance Imagery Dates	N/A	N/A	2000 - 2007	N/A	N/A	2000 - 2008
Completion	2005	2000	2008	2010	2011	2011

http://www.landfire.gov/downloadfile.php?file=Printable_LF_Version_Comparison_012611.pdf

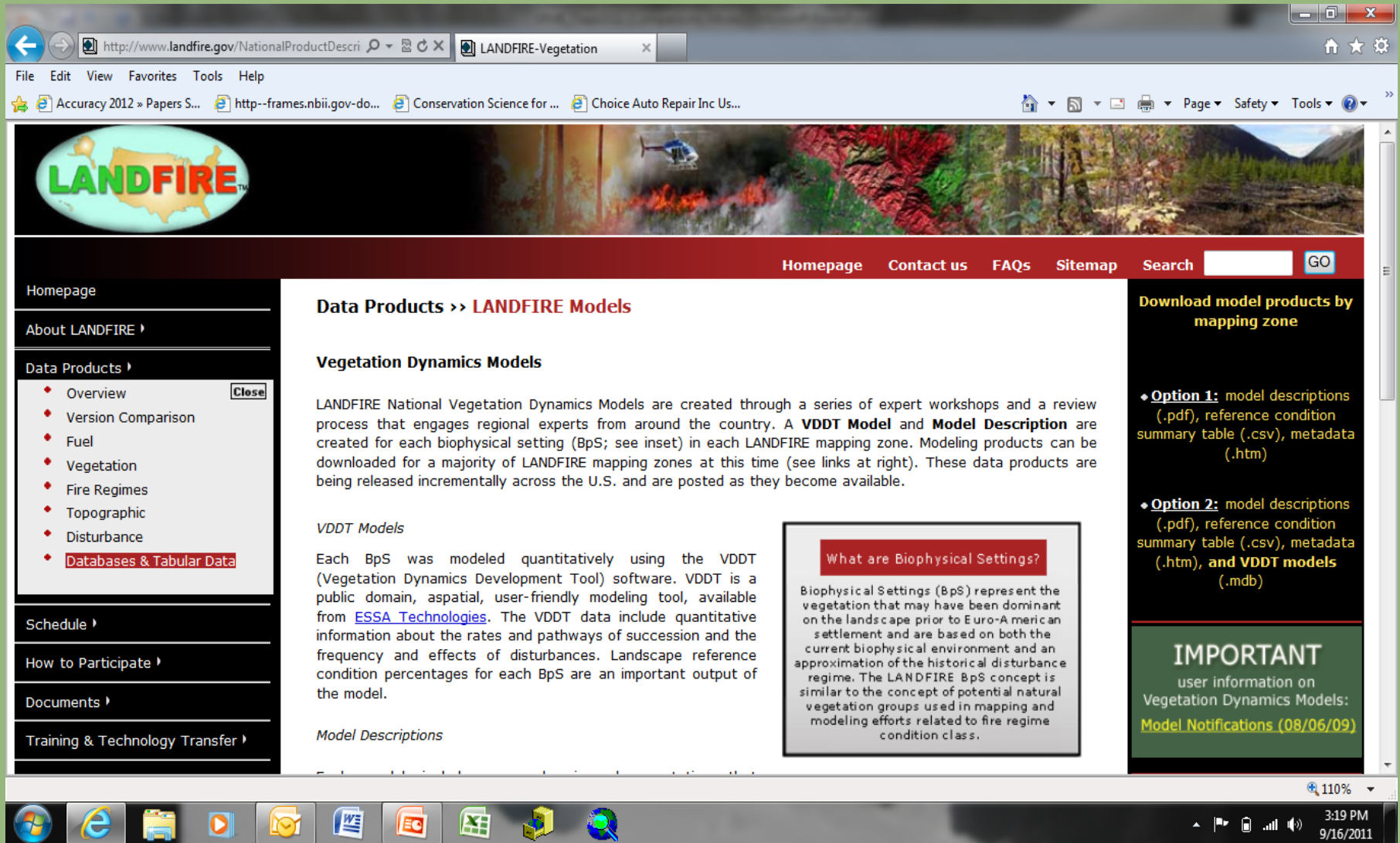
110%

3:17 PM
9/16/2011

Available to all and easy to use Biophysical Setting + TNC Portfolio Sites



Pre-European Settlement Vegetation Models



http://www.landfire.gov/NationalProductDescri... LANDFIRE-Vegetation

File Edit View Favorites Tools Help

Accuracy 2012 > Papers S... http--frames.nbii.gov-do... Conservation Science for ... Choice Auto Repair Inc Us...

LANDFIRE

Homepage Contact us FAQs Sitemap Search GO

Homepage

About LANDFIRE >

Data Products >

- Overview Close
- Version Comparison
- Fuel
- Vegetation
- Fire Regimes
- Topographic
- Disturbance
- Databases & Tabular Data**

Schedule >

How to Participate >

Documents >

Training & Technology Transfer >

Data Products >> LANDFIRE Models

Vegetation Dynamics Models

LANDFIRE National Vegetation Dynamics Models are created through a series of expert workshops and a review process that engages regional experts from around the country. A **VDDT Model** and **Model Description** are created for each biophysical setting (BpS; see inset) in each LANDFIRE mapping zone. Modeling products can be downloaded for a majority of LANDFIRE mapping zones at this time (see links at right). These data products are being released incrementally across the U.S. and are posted as they become available.

VDDT Models

Each BpS was modeled quantitatively using the VDDT (Vegetation Dynamics Development Tool) software. VDDT is a public domain, aspatial, user-friendly modeling tool, available from [ESSA Technologies](#). The VDDT data include quantitative information about the rates and pathways of succession and the frequency and effects of disturbances. Landscape reference condition percentages for each BpS are an important output of the model.

Model Descriptions

What are Biophysical Settings?

Biophysical Settings (BpS) represent the vegetation that may have been dominant on the landscape prior to Euro-American settlement and are based on both the current biophysical environment and an approximation of the historical disturbance regime. The LANDFIRE BpS concept is similar to the concept of potential natural vegetation groups used in mapping and modeling efforts related to fire regime condition class.

Download model products by mapping zone

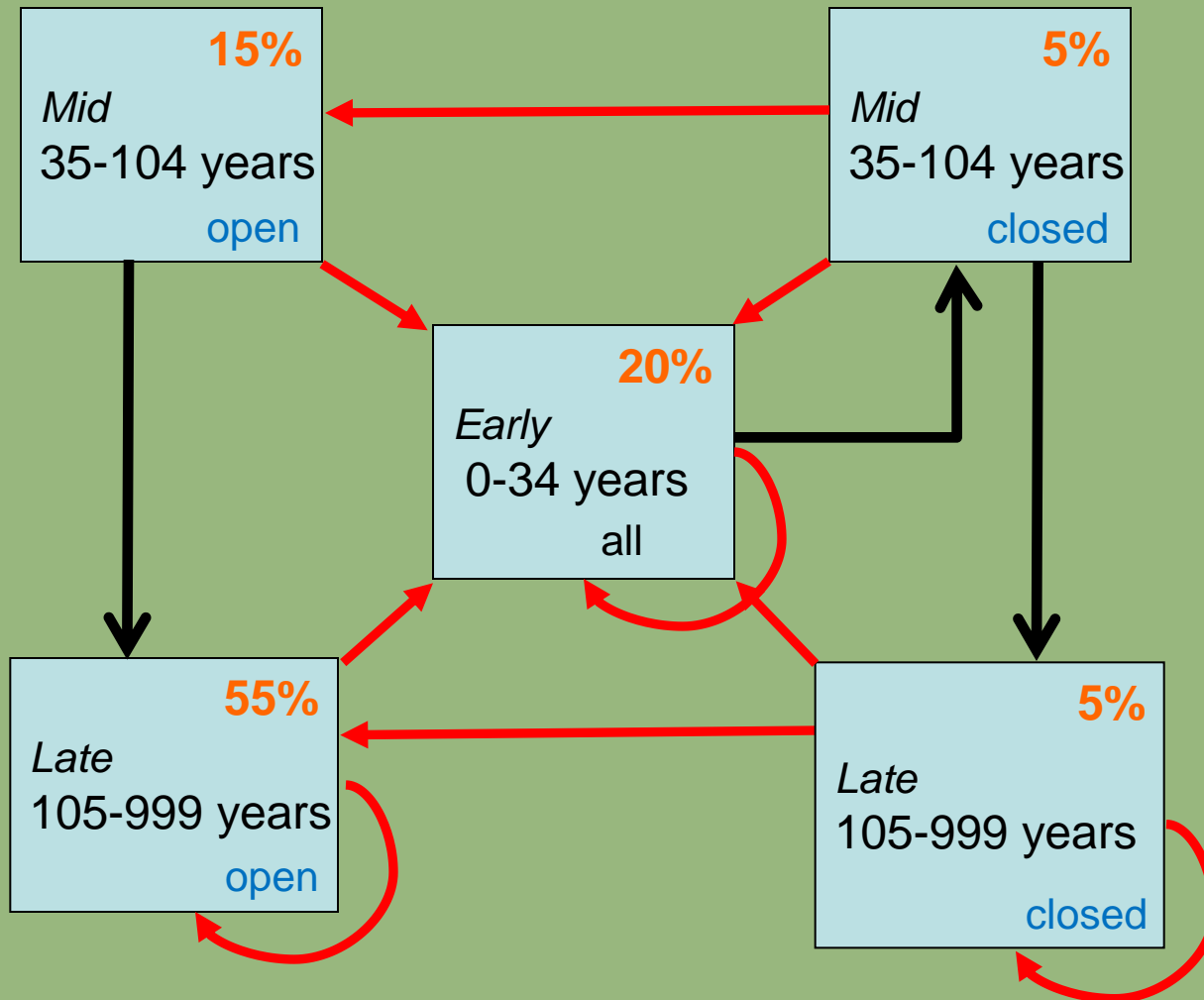
- ◆ **Option 1:** model descriptions (.pdf), reference condition summary table (.csv), metadata (.htm)
- ◆ **Option 2:** model descriptions (.pdf), reference condition summary table (.csv), metadata (.htm), **and VDDT models** (.mdb)

IMPORTANT
user information on
Vegetation Dynamics Models:
[Model Notifications \(08/06/09\)](#)

110% 3:19 PM 9/16/2011

Model Development

Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest & Woodland
-Mark Loewen, Doug Page & Linda Chappell



Each box is a vegetation class representing composition and structure

Each arrow is a transition representing **succession** or **fire**

NIFTT Tools

Web Hosting by: **Frames** FRAMES Home Subject Areas Geographic Areas Partner Sites MyFRAMES Log In


National Interagency Fuels, Fire, and Vegetation Technology Transfer (NIFTT)

Frames USGS

Partner Sites > NIFTT > Home

Welcome to NIFTT!

<http://niftt.gov>



The National Interagency Fuels, Fire, and Vegetation Technology Transfer (NIFTT) operates under the umbrella of the Wildland Fire Management Research, Development, and Application program within the Rocky Mountain Research Station. NIFTT is currently sponsored by the National Interagency Fuels Management Committee and LANDFIRE.

NIFTT's mission is to provide land managers with science-based analysis tools and training (e.g., online courses, webinars, tutorials, guidebooks, and workshops) focused on the assessment of fire behavior, fire effects, fire regimes, and vegetation dynamics. We provide customer support via our web pages (www.niftt.gov and www.frcc.gov) and Help Desk (helpdesk@niftt.gov). NIFTT also offers classroom workshops that can be tailored to local needs. Please contact NIFTT if you are interested in a classroom workshop in your region.

Check It Out: A new course describing the **Fuel Loading Model** fire

Search the Resource Catalog: GO

110% 11:02 AM 9/19/2011

Questions?

We are all about proper application!



What should you expect of LANDFIRE products?

- Regional/national spatial data and models are not designed to be “local” information.
- In some cases, LANDFIRE products represent local conditions well, but in some cases they do not—why?
 - How many geo-referenced ground plots were available?
 - How “mappable” are the targets using available technologies?
 - Is the local information compatible with LANDFIRE?
 - How many experts were available to help?

All data, including LANDFIRE, should be reviewed prior to application, local or otherwise—no one else can tell you if or how LANDFIRE products can be used in your situation

How do you review and adjust products?

- NIFTT developed a set of tools and supporting materials to help the user community understand and utilize LANDFIRE products
 - **www.nifft.gov**
- TNC LFT developed materials to help the user review and modify LANDFIRE products---called Info Packets
 - Will be available on **www.conservationgateway.org** and **www.landfire.gov** in October
 - Includes guidelines for review, review steps, checklists, and short “How To” videos
- FAQs on **www.landfire.gov**
- **helpdesk@landfire.gov**

Some REAL examples:

- Evaluating the costs/benefits of different management options
- Investigating the impacts of changes in fire regime under different climate change scenarios
- Including spatial data outside your boundary
- Filling gaps in your spatial data--thematic, spatial or temporal
- Running Fire Behavior models across ownerships—FarSite, FLAMMAP, FSPPro

The screenshot shows a web browser window displaying the LANDFIRE website. The browser's address bar shows the URL http://www.landfire.gov/documents_dataproducts/. The website header features the LANDFIRE logo and a navigation menu with links for [Homepage](#), [Contact us](#), [FAQs](#), [Sitemap](#), and a search box with a [GO](#) button. A left-hand navigation menu includes links for [Homepage](#), [About LANDFIRE](#), [Data Products](#), [Schedule](#), [How to Participate](#), [Documents](#), and [Training & Technology Transfer](#). The [Documents](#) menu is expanded, showing a list of document categories: [Information](#), [Applications and Uses](#) (highlighted), [Bulletins](#), [Reviews, Evaluations, & Data Product Quality](#), [General Technical Reports](#), [Related Technical Papers](#), [FRCC Documentation](#), [Product Update Program](#), and [Presentations](#). The main content area is titled **Documents >> Applications & Uses** and contains a list of document links:

- [Tools for Landscape Planning & Management - June 2011](#)
- [Use of LANDFIRE Data in Bee Pollination Study - 2011](#)
- [Use of LANDFIRE in Sage-Grouse Habitat Analysis: Western North America - 2007 - 2009](#)
- [BLM - Bodie Hills Conservation Action Planning - July 2009](#)
- [Use of LANDFIRE Data in Wildland Fire Risk Assessment: Ashley Lakes Fire](#)
- [Use of LANDFIRE Data in Wildland Fire Incident Management: Dammeron & Valley Road Fires](#)
- [Use of LANDFIRE data in fuels program prioritization and planning: Signal Peak Assessment](#)
- [Use of LANDFIRE Data in Bighorn Sheep Viability Analysis: Payette National Forest Area](#)
- [Modeling Grizzly Bear Density using LANDFIRE Data: NW Montana, November 2006](#)


To the right of the text is a map of the United States with various regions colored in red, green, and purple, representing different fire risk or management zones. The browser's taskbar at the bottom shows several open applications, including Internet Explorer, and the system tray displays the time as 12:53 PM on 9/19/2011.

Upper_Fraser_Valley_CWPP_and_LANDFIRE_data.pdf - Adobe Reader

File Edit View Window Help

1 / 2 139%

Tools Comment



LANDFIRE Data Product Applications

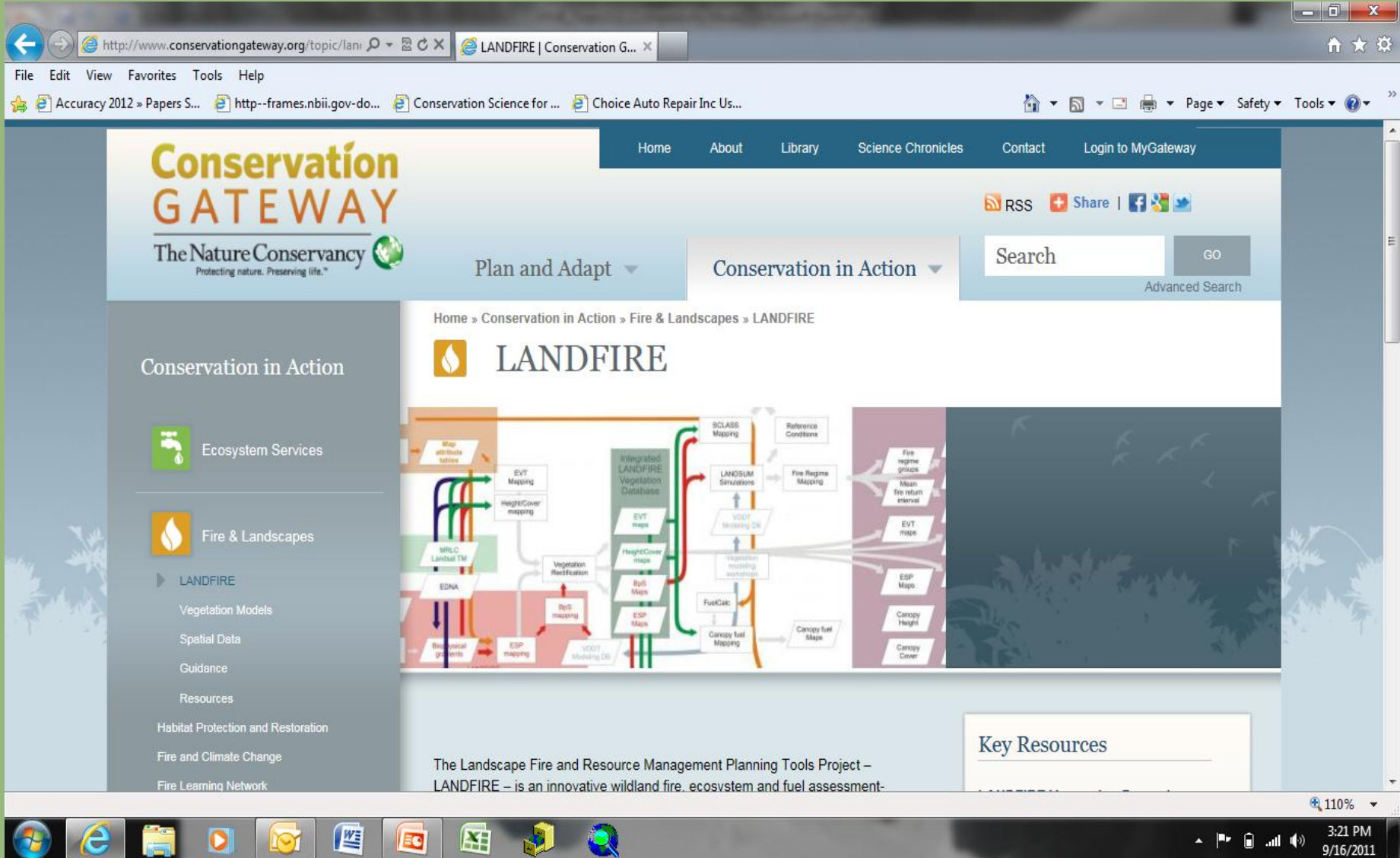
Topic & Title of Project *Upper Fraser Valley CWPP and LANDFIRE data: Northern Colorado October, 2008* page 1

Background The Anchor Point Group of Boulder, Colorado is a wildfire management consulting firm that provides services related to wildland-urban interface [WUI] issues. Recently, Anchor Point worked with the Upper Fraser Valley communities to meet the 2005 Healthy Forest Restoration Act (HFRA) mandate of completing a Community Wildfire Protection Plan (CWPP). This project used LANDFIRE data products to conduct the CWPP for the Upper Fraser Valley (in Grand County, CO, near the town of Winter Park). CWPPs, which assist in defining the WUI and establishing locally based strategic priorities for wildfire preparedness and hazardous fuels reduction work, are vital for communities applying for grants to support wildfire hazard risk mitigation around communities.

Key Points

Description of analysis Anchor Point used LANDFIRE data (elevation, slope, aspect, fuel model, canopy cover, canopy base height, stand height, and canopy bulk density) as inputs to FlamMap to generate estimates of what fire behavior (flame length, potential crown fire activity, and rate of spread) may be like under a given set of weather conditions. Anchor Point's methodology combines field assessments of WUI communities with geospatially derived factors to esti-

8:30 AM 9/30/2011



The screenshot shows a web browser window displaying the Conservation Gateway website. The address bar shows the URL: <http://www.conservationgateway.org/topic/landfire>. The page title is "LANDFIRE | Conservation Gateway".

The website header includes the Conservation Gateway logo and navigation links: Home, About, Library, Science Chronicles, Contact, and Login to MyGateway. There are also social media icons for RSS, Facebook, and Twitter, and a search bar with a "GO" button.

The main content area is titled "LANDFIRE" and features a detailed flowchart illustrating the integrated process of fire and landscape management. The flowchart starts with "Map attribute tables" and "MRLC Landfall TM" leading to "EVT Mapping" and "Height/Cover mapping". These feed into an "Integrated LANDFIRE Vegetation Database" which includes "EVT Maps", "Height/Cover Maps", and "Bys Maps". This database then informs "Vegetation Rectification" and "Bys mapping", which lead to "Vegetation Mapping" and "EVT Mapping DB". The "Vegetation Mapping" step leads to "SCLASS Mapping" and "Reference Conditions", which then lead to "LANDSUM Simulations" and "Fire Regime Mapping". "Vegetation Mapping" also leads to "Vegetation Modeling" and "FuelCat", which lead to "Canopy Fuel Mapping" and "Canopy Fuel Maps". "Fire Regime Mapping" leads to "Fire Regime Groups", "Mean Fire Return Interval", and "EVT Maps". "Canopy Fuel Maps" leads to "ESP Maps", "Canopy Height", and "Canopy Cover".

On the left side of the page, there is a sidebar menu titled "Conservation in Action" with the following items: Ecosystem Services, Fire & Landscapes, LANDFIRE, Vegetation Models, Spatial Data, Guidance, Resources, Habitat Protection and Restoration, Fire and Climate Change, and Fire Learning Network.

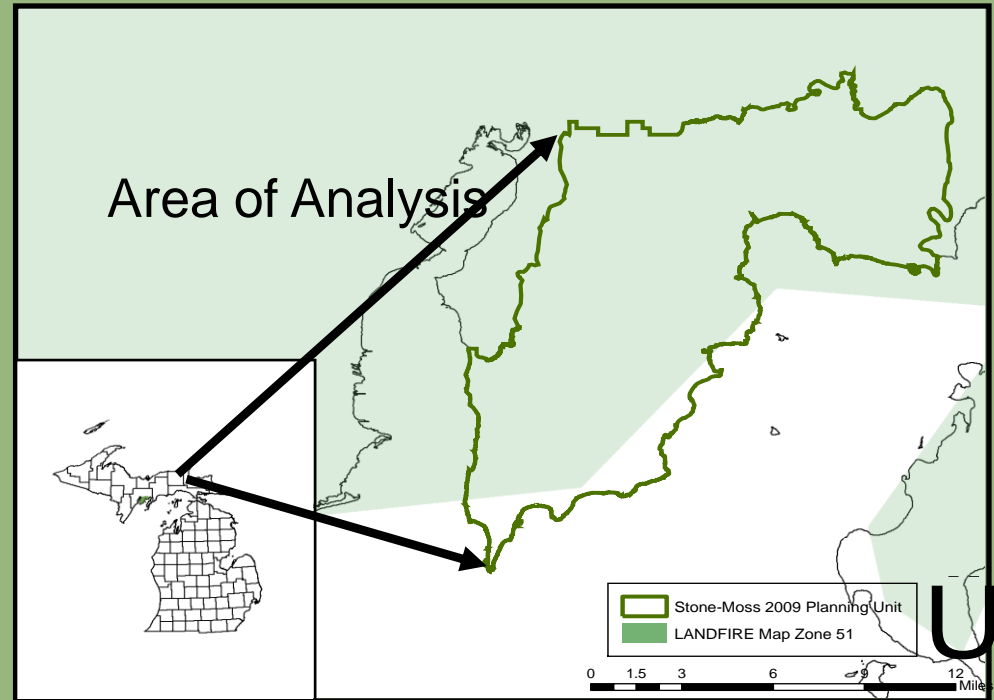
At the bottom of the page, there is a section titled "Key Resources" and a paragraph that reads: "The Landscape Fire and Resource Management Planning Tools Project – LANDFIRE – is an innovative wildland fire, ecosystem and fuel assessment..."

The Windows taskbar at the bottom shows the system clock as 3:21 PM on 9/16/2011, and the zoom level is set to 110%.



Hiawatha National Forest

- Mid-scale planning process
- Needed to identify opportunities for vegetation management that fit within forest plan
- Had good data on USFS lands, no data outside
- Utilized LANDFIRE spatial data and vegetation models—both reviewed and modified



RESULT

Identified a lack of specific vegetation types/stages, highlighting the most beneficial opportunities for management.

BLM Bodie Hills Management Options

Bodie Hills		Strategies for Ecological Systems	
Ecological System	Conservation Strategy	Annual Cost	Probability of Success
Aspen (Stable)	Treat 50 acres/year of late succession aspen classes. Provide fencing for 200 uncharacteristic acres and continue active herd management	\$25,000	Very High
Big Wildrye – Big Sagebrush	Treat 50+ acres/year of depleted basin wildrye to convert to early development class (e.g. one drainage/yr) as field circumstances permit. Continue weed inventory & control. Add prescribed fire as needed in the future	\$18,000	High
Low Sagebrush	Mechanically thin ~125 ac/yr of late successional low sagebrush to prevent new tree encroachment	\$11,000	High
Montane Riparian	Continue weed inventories, spot treatments and active hard management in riparian areas (1/3 is on private land). Stabilize headouts and restore natural channels on targeted creeks	\$6,000	High
Montane Sagebrush Steppe	Treat ~1000 ac/yr of montane sagebrush steppe— with prescribed fire, mowing/burning/drilling/seeding, lopping and canopy thinning	\$97,000	High
Wet Meadows	Continue weed inventories, spot treatments and active hard management in wet meadows (50% are on private land; private landowners & agencies cooperating on coordinated weed management area). Treat iris/silver sage at targeted meadows.	\$10,000	High
Wyoming Big Sagebrush (Loamy)	Create WUI and ecological fuel breaks using mowing, seedling, mechanical brush control, possible aeration and some very small spring burning of Depleted and Class C to convert to Classes B and A.	\$4,000	Medium
Wyoming Big Sagebrush (Sandy)	Create ecological fuel breaks along sandy roads and other WUI fuel breaks as needed.	\$18,000	High
		\$189,000	

How can you help make LANDFIRE better?

- When you **review** LANDFIRE products, **communicate** the results to the LANDFIRE team through the contacts or the LANDFIRE Helpdesk
- **Share** geo-referenced plot data with LANDFIRE to support the mapping process
- **Share** “treatment” polygons with LANDFIRE to support the updating process
- **Share** any applications with LANDFIRE and the user community

Key Contacts

- USFS: Frank Fay, ffay@fs.fed.us
- DOI: Henry Bastian, henry_bastian@ios.doi.gov
- TNC : Kori Blankenship [kblankenship@tnc.org]; Sarah Hagen [shagen@tnc.org]; Jeannie Patton [jpatton@tnc.org]; Randy Swaty [rswaty@tnc.org]; Jim Smith [jim_smith@tnc.org]
- helpdesk@landfire.gov

Key Links

- www.landfire.gov
- www.conservationgateway.org/topic/landfire
- www.nifft.gov



Take Home Messages

- Products include spatial data, vegetation models, and tools
- LANDFIRE does not necessarily replace local data/models, but it is at least a great start
- Expect to make adjustments/corrections for local applications
- Products are being applied in numerous ways across the country in both fire and non-fire situations
- Though time & resources are limited, we'll try to help you locate, understand & use LANDFIRE products
- Help us make LANDFIRE products better! = **Review, communicate , and share**