



United States Department of Agriculture

Considerations for Nested Dashboards

Mike Scanlon, Rocky Mountain
Research Station

and

Chris Ringo, College of Agricultural Sciences,
Oregon State University



Forest Service



Oregon State University
College of Agricultural
Sciences



Presenters



Mike Scanlon – Staff
Assistant & Systems Analyst



USDA Forest Service



Chris Ringo – Senior Faculty
Research Assistant



Oregon State University
College of Agricultural
Sciences



Presenters



Mike Scanlon – Staff
Assistant & Systems Analyst



USDA Forest Service



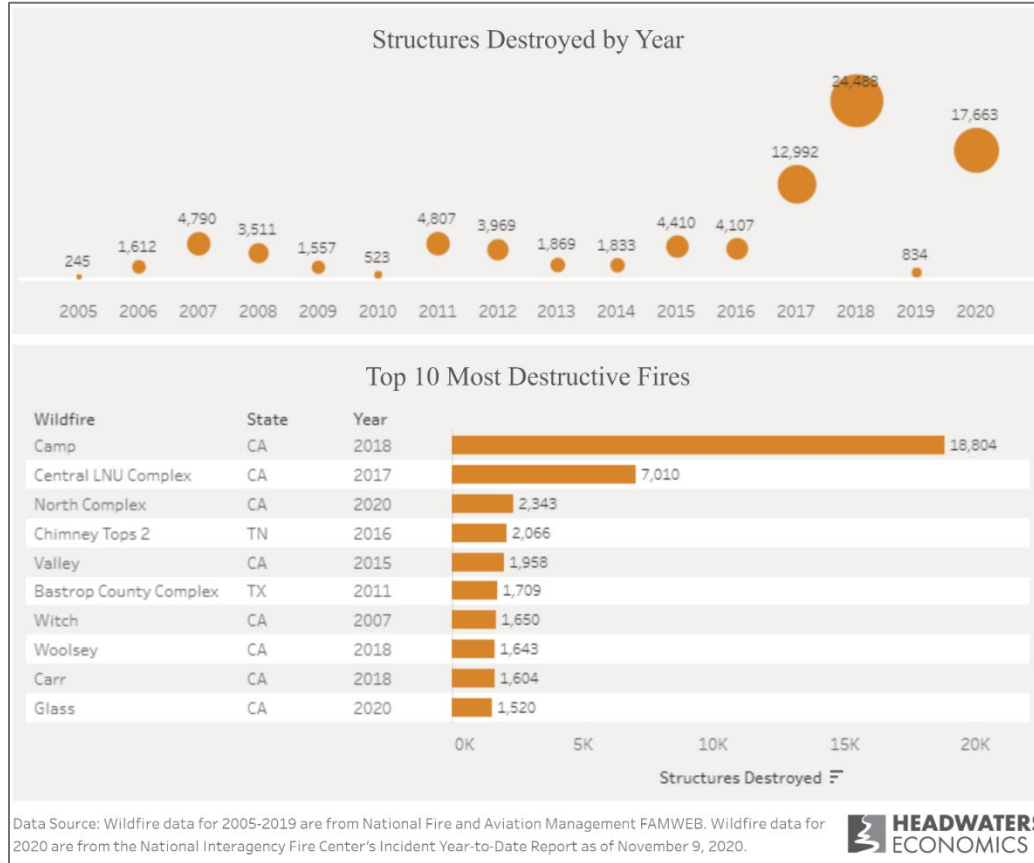
Chris Ringo – Senior Faculty
Research Assistant



Oregon State University
College of Agricultural
Sciences



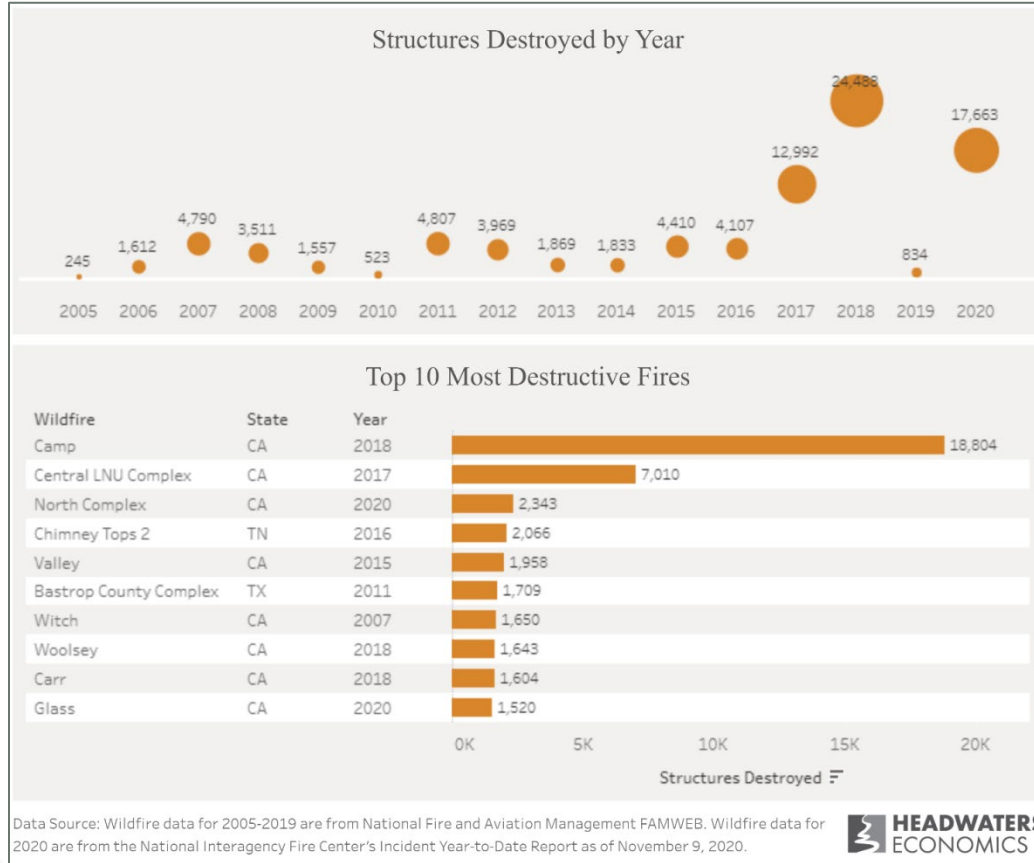
Wildfires are Getting Worse



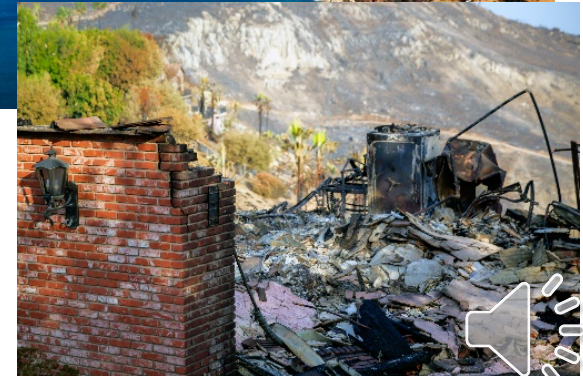
- 2018 Camp Fire
- 18,800 structures lost



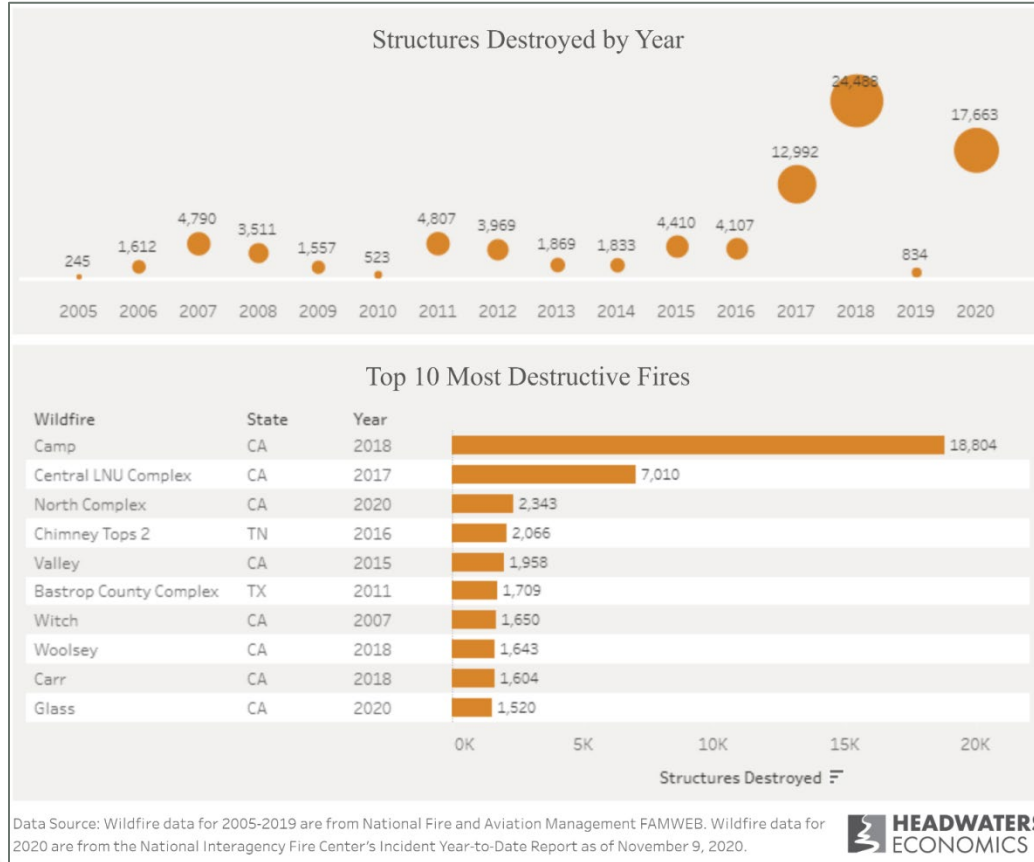
Wildfires are Getting Worse



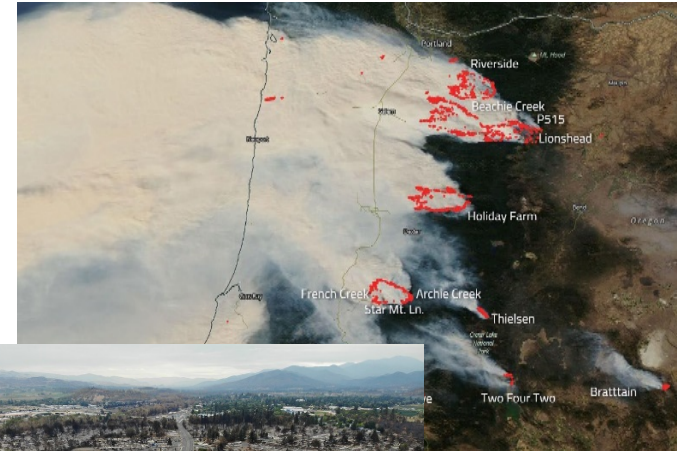
- 2020 California fires
- 10,000+ structures lost



Wildfires are Getting Worse



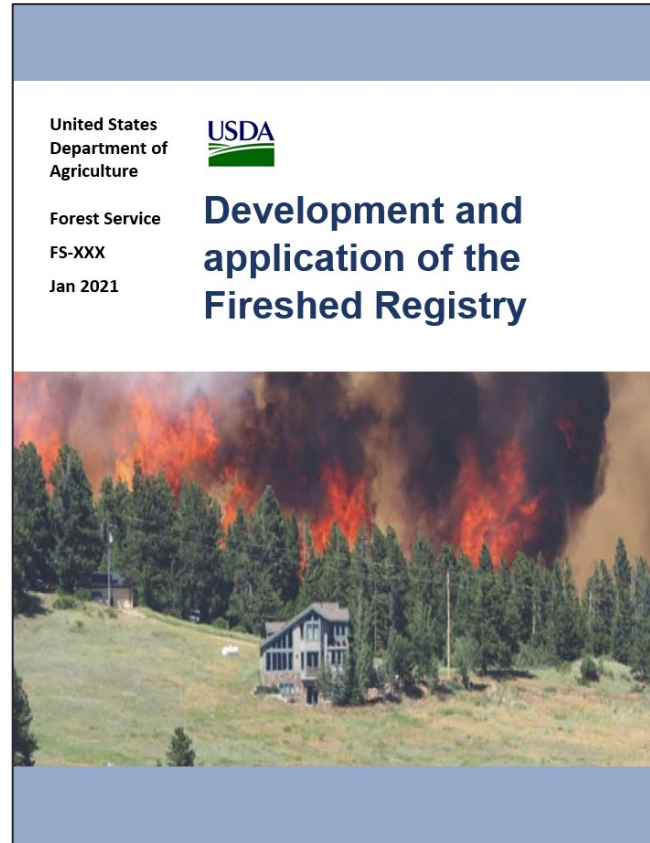
- 2020 Oregon fires
- 4,000+ structures lost

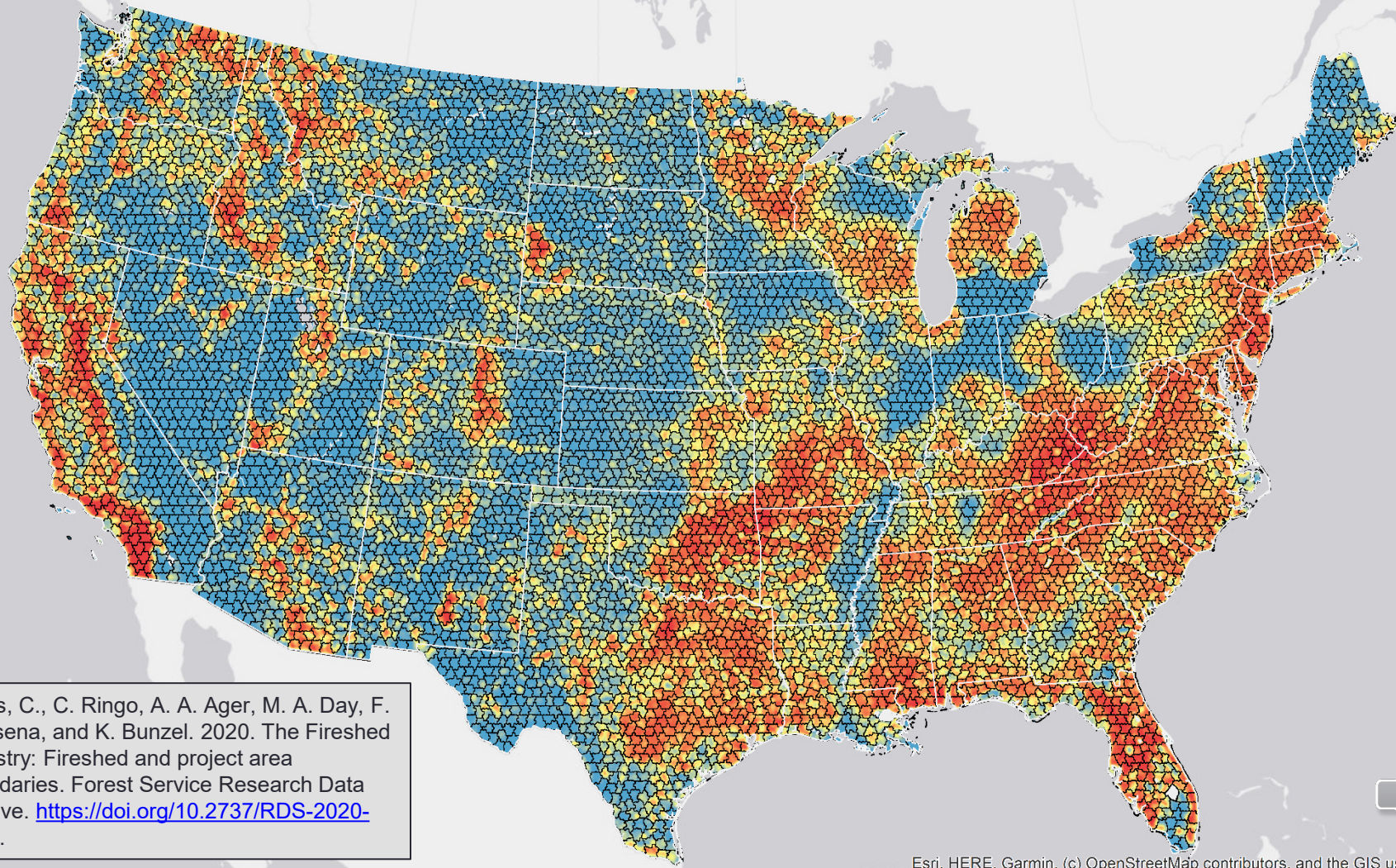


Fireshed Registry Project Overview

Research Scientists

- Dr. Alan A. Ager
- Michelle A. Day
- Chris Ringo
- Cody Evers
- Fermin Alcasena
- Rachel Houtman
- Michael Scanlon
- Tania Ellersick





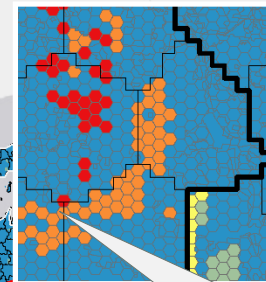
Evers, C., C. Ringo, A. A. Ager, M. A. Day, F. Alcasena, and K. Bunzel. 2020. The Fireshed Registry: Fireshed and project area boundaries. Forest Service Research Data Archive. <https://doi.org/10.2737/RDS-2020-0054>.



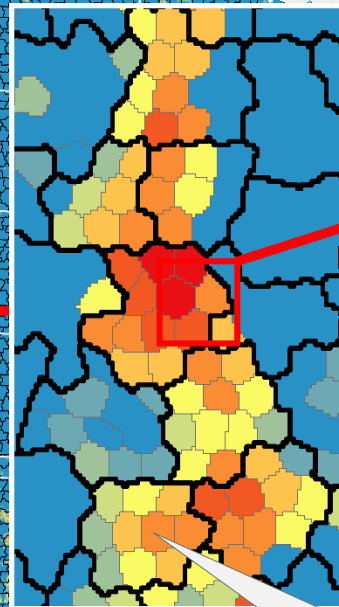
Scale of exposure assessment

~ 7,700 Firesheds

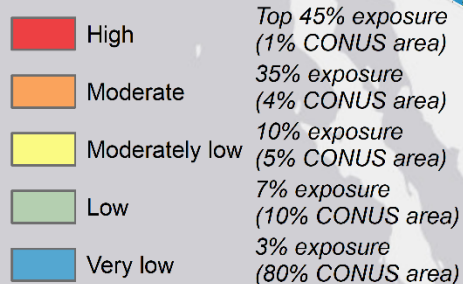
~ 250,000 Acres



Treatment units
~ 9.7 million stands
~ 250 Acres



Building exposure



Prioritization and implementation
~ 77,000 Planning Areas
~ 25,000 Acres

Example Fireshed Registry Atlas Page: top priority Fireshed for treatment in the western US

Fireshed Registry Atlas Morrison, CO (Fireshed 1853)

Fireshed Treatment

Total area (ac):	310,835	Total structure exposure:	181
Area treated (ac):	59,160	Reduction in exposure (structures):	38
Number of projects:	13	Merchantable volume (MBF)	188,986

Communities

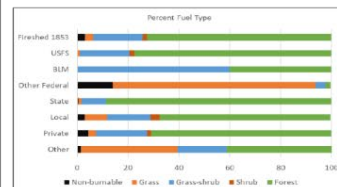
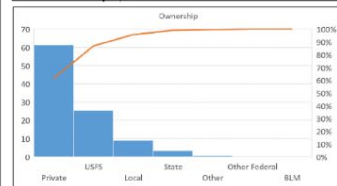
Fires igniting in this fireshed affect 40 communities, with an avg. of 181 structures exposed annually. Communities with the highest avg. annual structure exposure are:

Aspen Park	67	Ken Caryl	10
Evergreen	51	Genesee	9
Indian Hills	14	Upper Bear Creek	6

Largest Historic Fires (1992-2017)

Fire Name	Year	Fire size (ac)
Buffalo Creek	1996	11,875
High Meadows	2000	10,800
Lower North Fork	2012	4,142
Snaking	2002	2,312
Lim Gulch	2013	511

Ownership / Fuels



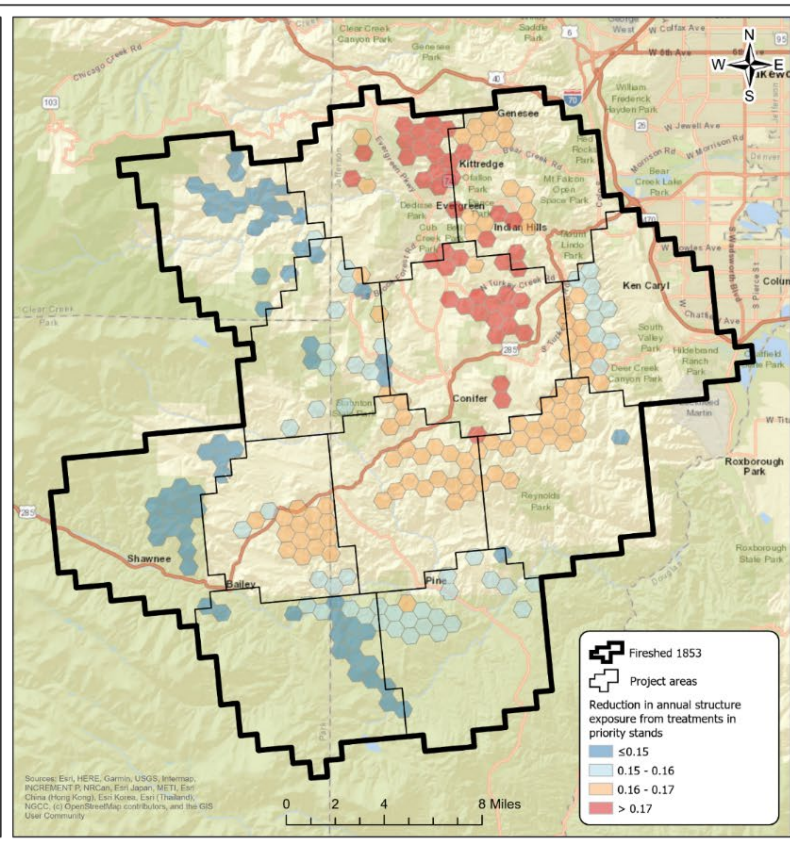
Worst Simulated Fires

Top 5 in size:

Fire size (ac)	Structures Exposed
466,945	25,271
352,747	13,169
328,210	28,903
324,509	28,760
282,724	13,489

Top 5 in exposure:

Structures Exposed	Fire size (ac)
28,903	328,210
28,760	324,509
28,083	246,541
25,496	269,560
25,271	466,945



Sources: ERI, HERE, Garmin, USGS, Imagery, INCREMENTAL PICTURES, Esri, Japan, METI, Esri, China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, @OpenStreetMap contributors, and the GIS User Community



First Dashboard Attempt

Fireshed Registry Dashboard

Modeled treatments

Fireshed: Morrison, Colorado (1,853)
 Fireshed area (ac): 309,840.52
 Treatment area (ac): 59,160.35
 Total annual structure exposure: 180.69
 Western US Rank (of 1860): 11
 Reduction in annual exposure: 37.75
 Western US Rank (of 1860): 1
 Merchantable volume (MBF): 188,985.76

Project List

Project ID: 18,587
 Project Area (ac): 29,687.05
 Treatment Area (ac): 4,938.6
 Reduction in Exposure (# structure): 3.44
 Merchantable Timber (MBF): 15,266.86

Project ID: 18,586
 Project Area (ac): 24,787.24
 Treatment Area (ac): 4,928.35
 Reduction in Exposure (# structure): 3.43
 Merchantable Timber (MBF): 14,752.16

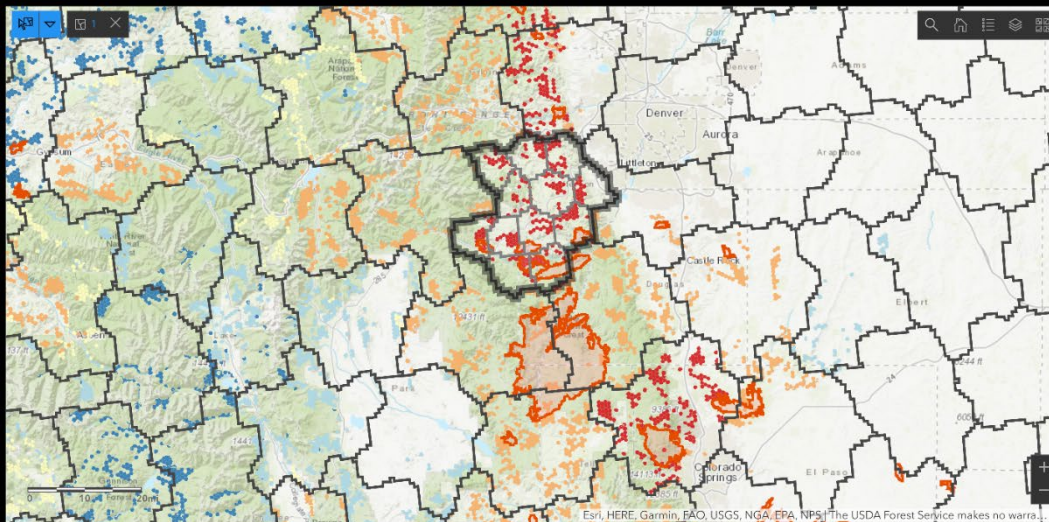
Project ID: 18,585
 Project Area (ac): 24,787.24
 Treatment Area (ac): 4,899.92
 Reduction in Exposure (# structure): 3.35
 Merchantable Timber (MBF): 11,684.73

Project ID: 18,591
 Project Area (ac): 27,381.26
 Treatment Area (ac): 4,925.81
 Reduction in Exposure (# structure): 3.34
 Merchantable Timber (MBF): 19,856.11

Project ID: 18,590
 Project Area (ac): 25,075.47
 Treatment Area (ac): 4,941
 Reduction in Exposure (# structure): 3.31
 Merchantable Timber (MBF): 17,310.58

Project ID: 18,593
 Project Area (ac): 21,040.33
 Treatment Area (ac): 4,942.1
 Reduction in Exposure (# structure): 3.22
 Merchantable Timber (MBF): 11,674.72

Project ID: 18,588
 Project Area (ac): 25,651.91
 Treatment Area (ac): 4,942.11
 Reduction in Exposure (# structure): 3.22
 Merchantable Timber (MBF): 22,038.92



Map Legend

Fireshed boundaries



Project Areas



MTBS Fire Perimeters



Optimized treatment locations

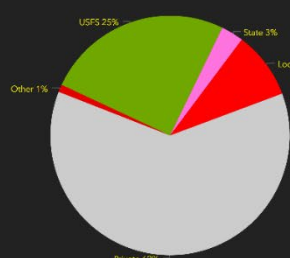
HUSUM_STND

- > 0.05 - 0.65
- > 0.001 - 0.05
- > 0.0005 - 0.001
- > 0.0001 - 0.0005
- 0 - 0.0001

US States

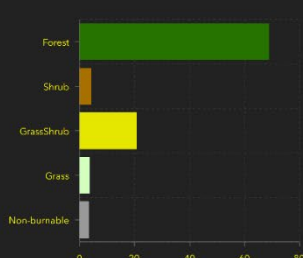
States - Regional Extent

Ownership



Fireshed Treated Area Treated Exposure

Fireshed Fuel Types



Percent of Fireshed

Modeled Exposure (Top 5 Communities)

Community: Aspen Park
 Annual Structures exposed: 67

Community: Evergreen
 Annual Structures exposed: 51

Community: Indian Hills
 Annual Structures exposed: 14

Community: Ken Caryl
 Annual Structures exposed: 10

Community: Genesee
 Annual Structures exposed: 9

Top 5 Historic Fires

Fire Name: BUFFALO CREEK
 Year: 1,996
 Size (ac): 11,875

Fire Name: HIGH MEADOWS
 Year: 2,000
 Size (ac): 10,800

Fire Name: LOWER NORTH FORK
 Year: 2,012
 Size (ac): 4,142

Fire Name: SNAKING
 Year: 2,002
 Size (ac): 2,312

Fire Name: LIME GULCH
 Year: 2,013
 Size (ac): 511

Historic Fires Simulated Fires



Dashboards

Dashboard Settings

External links

Nested dashboards

Home ▾

Fireshed Registry

Configure

309,834 ac

home General **URL Parameters**

fireshed

Feature Parameter

Name

Layer: Firesheds Change

Unique ID Field

When Parameter Value(s) Change

Add Action

Add Target

Filter

99! Selected Fireshed

Method Fields Spatial

Add URL Parameter



Cascading Selections

- Embedded Content – URL
 - https://...arcgis.com/...?p1={Firedshed_ID}
- Dashboard link with parameters
 - Dashboard actions work
 - Actions do not “cascade”
 - Map or Feature actions within are not executed
- Most charts sum acres from a feature selection ☹️
- Parent – Child actions only
- Strings and numbers don't mix



Dashboard Organization

Currently Published Dashboard

Dashboards

1. Master
2. Current & Historic Conditions
3. Charts
4. Historic Fires & Treatments
5. Community Exposure
6. Planned Treatments
7. Scenario Planning
8. Community Explorer

Fireshed Registry Master Page: <https://www.arcgis.com/apps/opstdashboard/index.html#/8df414f92af944c5a6167b9e9b85f8a2?mode=edit>

Current & Historical Conditions (Tab 1) <https://usfs.maps.arcgis.com/apps/opstdashboard/index.html#/d01e63f0bedd4ec6ae6842d494285aac?mode=edit>

Rich Text Title (Fireshed Name and Number)
UST (Column Headers in HTML)

Percent_Ownership_and_Fuel_Types_Chart_Only
<https://usfs.maps.arcgis.com/apps/opstdashboard/index.html#/31f7cbde061547af9cc69cb14de6f6fb?mode=edit>

Tab 1: Percent Ownership
Chart: Layer: Fireshed_OwnerPct – Change State color to pink, check label size

Tab2: Percent Fuel Types
Chart: Layer: Fireshed_FuelTypes

Maps

Tab 1 – “Ownership Map”
Name – “Fireshed Registry Map (Ownership)”
Review multiple Map and Layer Actions

Tab 2 – “Fire and Treatment History”
Name – “Fireshed Registry Map (History) v2”
Map Action – Respond to Extent Changes only

Tab 3 – “Exposure Profile”
Name – “Fireshed Registry Map (Exposure) v2”
Map Action – Respond to Extent Changes only

Rich Text Title (“Fire & Treatment History”)

Historical_Treatments_and_Historical_Fires_Charts_Only
<https://usfs.maps.arcgis.com/apps/opstdashboard/index.html#/3e9b0f814e7d455291b5db330f0a221?mode=edit>

Rich Text: Largest Historical Fires, 1992-2015
Data List: Layer: Fireshed_HistoricFires_Top5
Fire Name, FireYear, FireSize

Tab 1 “Historical Treatments” Data List: Layer: Fireshed_FireshedAndMgmtHistory_v3
List Title: “Fire & treatment Totals, 2010-2015”
Prescribed Fire: Mechanical: Mastication:

Tab2 “Historical Fires”
Data List: Layer: Fireshed_FireAndMgmtHistory
List Title: Fires & Treatments, 2010-2015
Area Burned: Number of Fires

Rich Text Title (“Community & Exposure Profile”)

Historical_Treatments_and_Historical_Fires_Charts_Only
<https://usfs.maps.arcgis.com/apps/opstdashboard/index.html#/65202a7978754e93b633a61d03f894?mode=edit>

Tab 1 – “Model Exposure” Data List:
Layer: Fireshed_CommunityStats (text)
DataList: Layer Fireshed_ExposedCommunities
Community Name, Average Exposure, Maximum Exposure

Tab2 – “Worst Simulated Fire”
Rich Text: Blank (on left side)
Data List: Layer: SimulatedFires_by_Fireshed_Top5
Structures Exposed, Fire Size (ac)

Planned/Proposed Treatments (Tab 2) <https://usfs.maps.arcgis.com/apps/opstdashboard/index.html#/c532b70567b14f0f9f4fe822e6d79aee?mode=edit>
Fireshed Dashboard_Treatment Analysis_Optimized
Fireshed Dashboard_Treatment Analysis_Planned

Load Scenario Planning Outputs (Tab 3)
usfs.maps.arcgis.com/apps/opstdashboard/index.html#/0151ba5d07aa47999ef9257d445cd89d?mode=edit
ForSys Outputs Map

Community Explorer (Tab 4)
usfs.maps.arcgis.com/apps/opstdashboard/index.html#/f9ba7194df024ae4933e3554b0f4e721?mode=edit
Fireshed Registry Map (Communities)



1

Morrison, Colorado (Fireshed 1853)

Fireshed Area	WUI Area	WUI Structures	# Communities
309,834 ac	167,495 ac (54% of Fireshed)	35,946	37

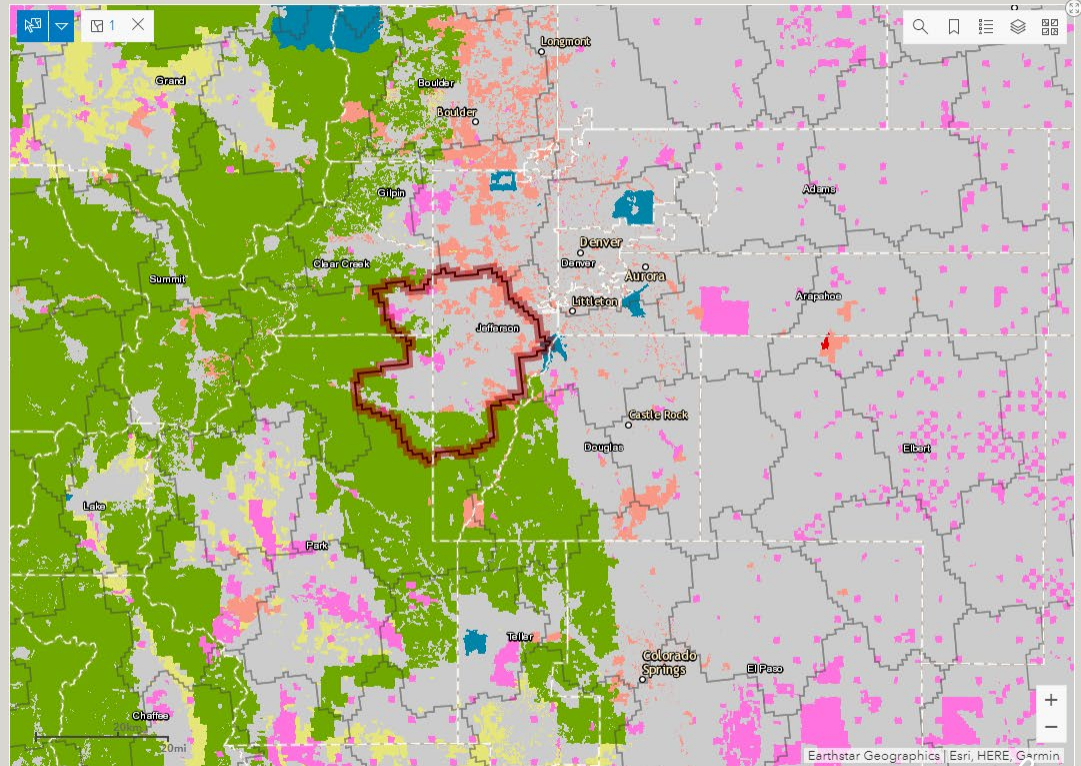
3

FIRE & TREATMENT HISTORY

4

COMMUNITY & EXPOSURE PROFILE

5



Ownership Map | Fire & Treatment History | Exposure Profile

Current & Historical | Planned | Treatment | Load Scenario | Outputs | Community

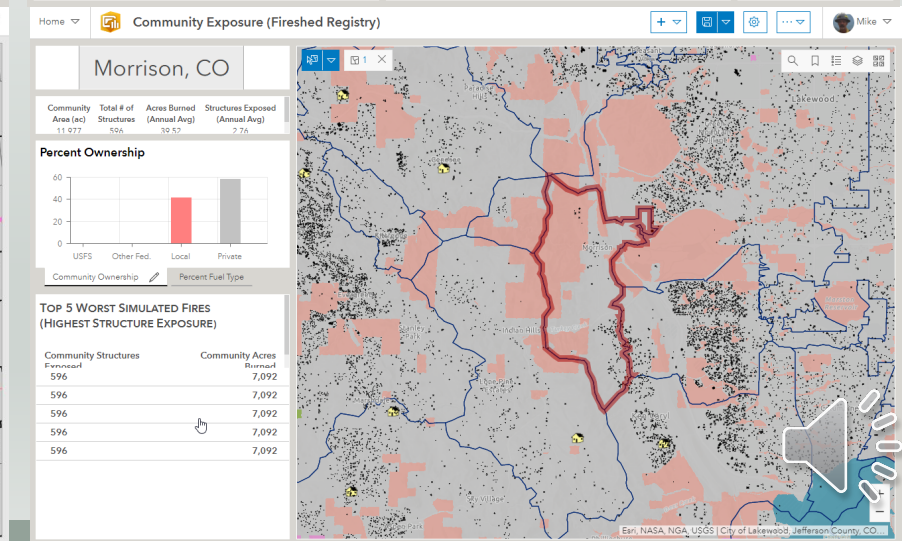
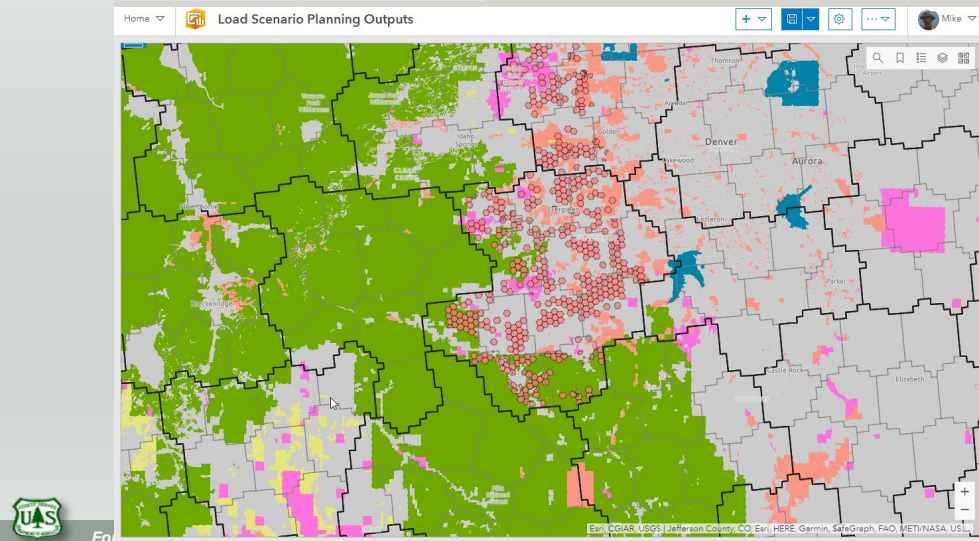
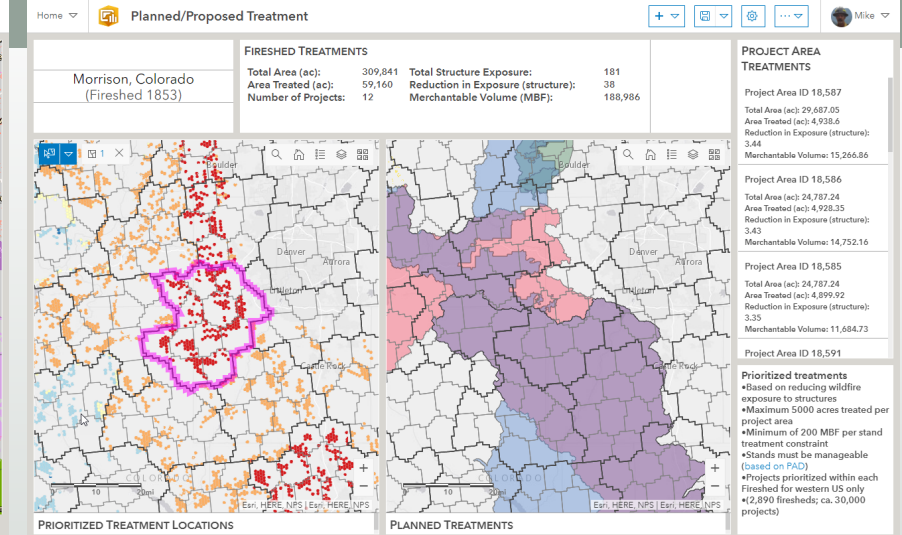
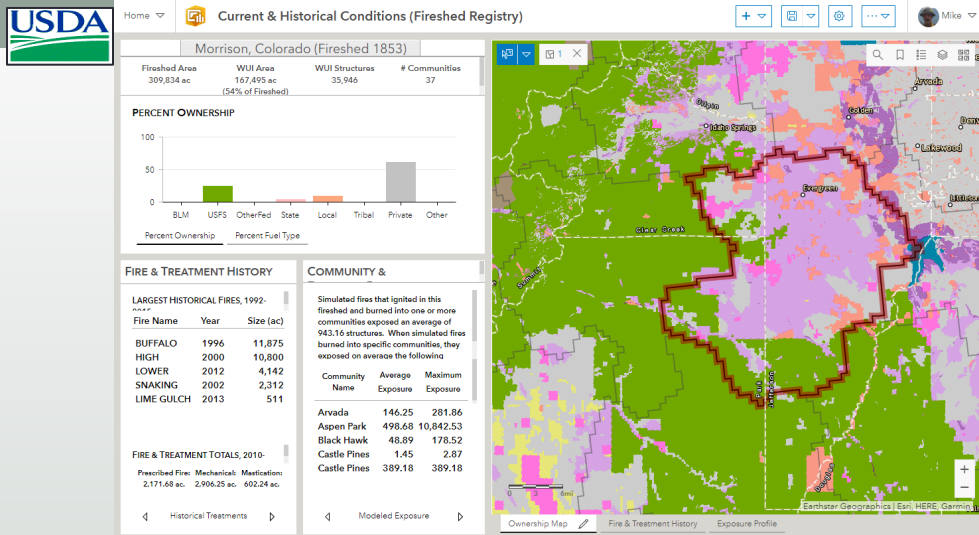
2

6

7

8





Nested Dashboard Advantage

Stacked Tables and Charts

FIRE & TREATMENT HISTORY

LARGEST HISTORICAL FIRES, 1992-2015

Fire Name	Year	Size (ac)
BUFFALO CREEK	1996	11,875
HIGH	2000	10,800
LOWER NORTH	2012	4,142
SNAKING	2002	2,312
LIME GULCH	2013	511

FIRE & TREATMENT TOTALS, 2010-2015

Prescribed Fire:	Mechanical:	Mastication:
2,171.68 ac.	2,906.25 ac.	602.24 ac.

Historical Treatments Historical Fires

COMMUNITY & EXPOSURE PROFILE

Simulated fires that ignited in this fireshed and burned into one or more communities exposed an average of 943.16 structures. When simulated fires burned into specific communities, they exposed on average the following number of structures:

Community Name	Average Exposure	Maximum Exposure
Arvada	146.25	281.86
Aspen Park	498.68	10,842.53
Black Hawk	48.89	178.52
Castle Pines	1.45	2.87
Castle Pines North	389.18	389.18

Modeled Exposure Worst Simulated Fires



Morrison, Colorado (Fireshed 1853)

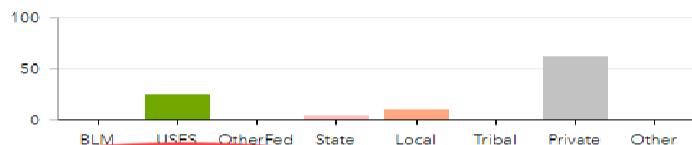
Fireshed Area
 309,834 ac

WUI Area
 167,495 ac
 (54% of Fireshed)

WUI Structures
 35,946

Communities
 37

PERCENT OWNERSHIP



Percent Ownership

Percent Fuel Type

FIRE & TREATMENT HISTORY

LARGEST HISTORICAL FIRES, 1992-PRESENT

Fire Name	Year	Size (ac)
BUFFALO	1996	11,875
HIGH	2000	10,800
LOWER	2012	4,142
SNAKING	2002	2,312
LIME GULCH	2013	511

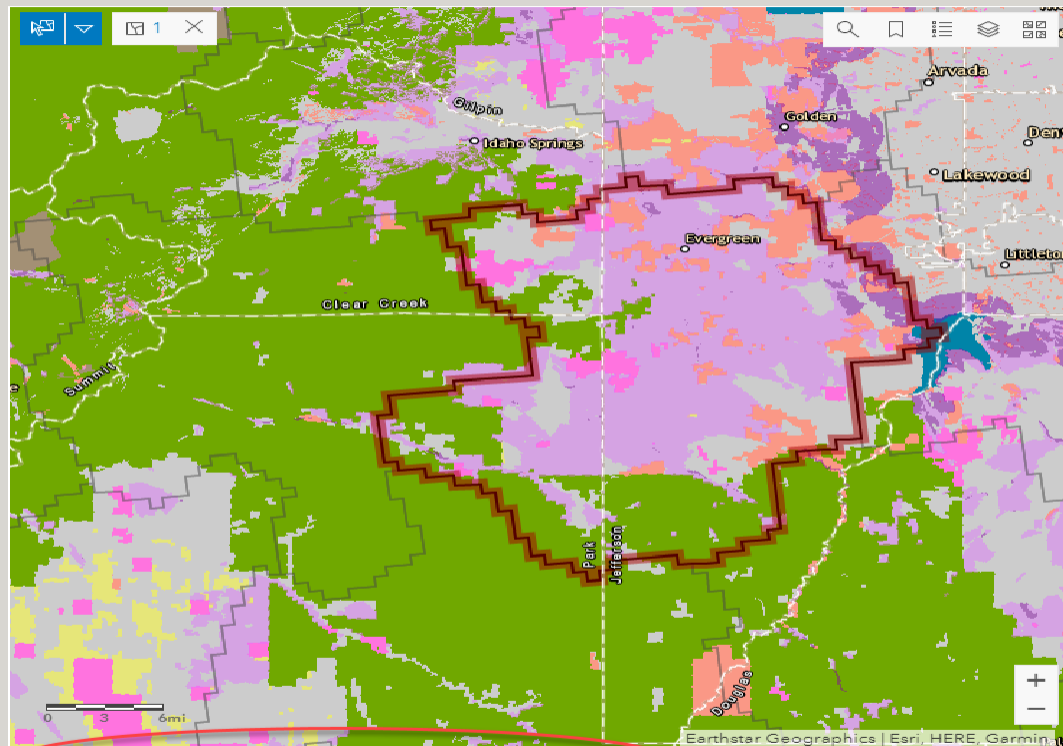
FIRE & TREATMENT TOTALS, 2010-

Prescribed Fire: 2,171.68 ac.
 Mechanical: 2,906.25 ac.
 Mastication: 602.24 ac.

COMMUNITY &

Simulated fires that ignited in this fireshed and burned into one or more communities exposed an average of 943.16 structures. When simulated fires burned into specific communities, they exposed on average the following:

Community Name	Average Exposure	Maximum Exposure
Arvada	146.25	281.86
Aspen Park	498.68	10,842.53
Black Hawk	48.89	178.52
Castle Pines	1.45	2.87
Castle Pines	389.18	389.18



Ownership Map

Fire & Treatment History

Exposure Profile

Current & Historical Conditions

Planned/Proposed Treatment

Load Scenario Planning Outputs

Community Explorer

Integrated Single Dashboard

Slack | general | USFS Scenario Pl...
BEST 28 UML Tools in 2021
Content
Fireshed Registry (v2)
Fireshed Registry
Current & Historical Conditions
Historical_Treatments_and_Histor...

usfs.maps.arcgis.com/apps/opsdashboard/index.html#/81d5f0aaa4c349fc83452c7f8f0b9f7?mode=edit

Apps
ConnectR
ArcGIS Online
DEMO APP (NRM C...
DevTest Citrix
Google Maps
Learn more about C...
NRM Compass
NRM Prod Citrix
OSU
TeamForge
Imported From IE
Research Projects

Home
Fireshed Registry (v2)

Fireshed Registry Dashboard

Fireshed
Morrison, Colorado (Fireshed #1,853)

Fireshed Registry

The **Fireshed Registry** is a geospatial dashboard built to organize information about wildfire transmission to communities and monitor progress towards risk reduction from management investments. The Registry is a unique approach to bring together a time window of information – past, present, and predicted future, to describe risk trajectories on lands where destructive wildfires are likely to originate. The dashboard provides an interactive system to view information on:

1. Context (Ownership, Fuels, and Buildings),
2. History (Fires and Treatments),
3. Projected wildfire risk (Simulated Fires),
4. Planned future treatments (5-year action plans), and
5. Prioritized treatment
6. Community zones and exposure

The proposed treatments are the results of one possible strategy, based on the scenario investment planning model. **Panels with a yellow background have clickable records that will allow you to filter the features shown on the map.**

To get started with this interface, **highlight the selection tool** in the top-left corner of this map, zoom in, and then click on your area of interest. If more than one "fireshed" is selected, please re-select just a single fireshed.

The **Scenario Investment Planning Platform** provides more information on the development of Firesheds and the data shown here.

"Wildfire transmission to communities" occurs when fires start on public lands and grow into private lands where structures are exposed to wildfire risk.

Start Here
Highlight the selection tool, zoom in, and pick a single fireshed to explore.

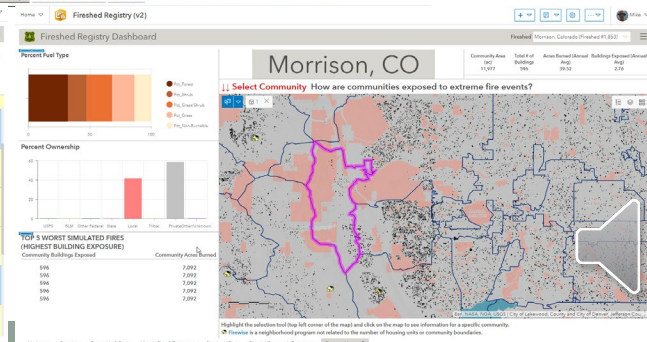
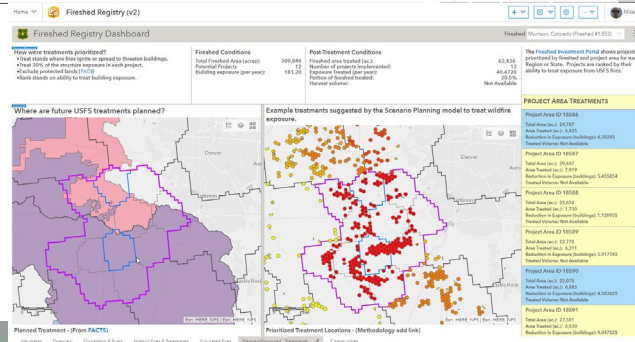
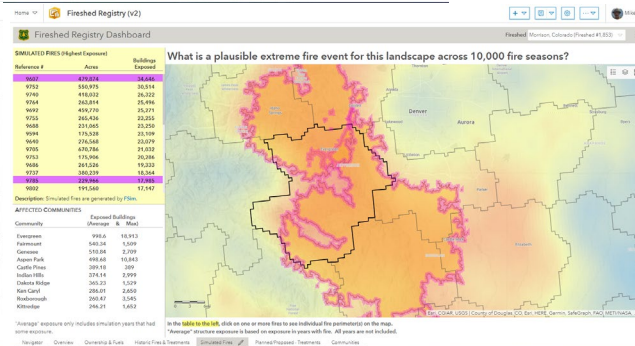
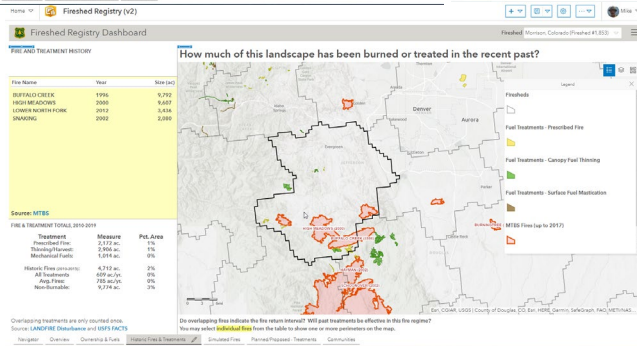
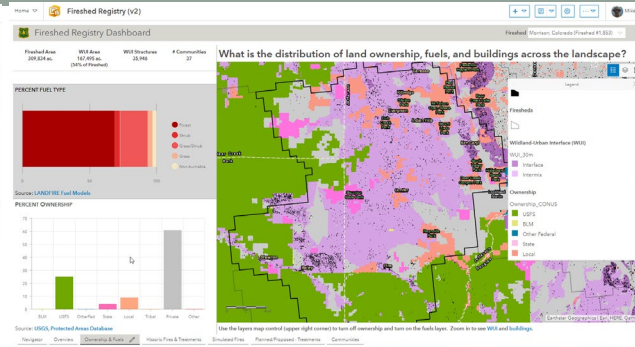
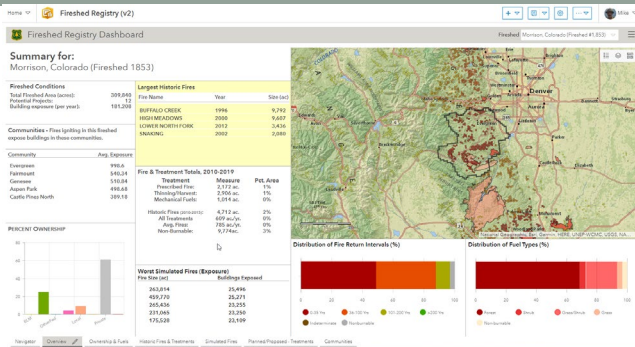
45 Actions based on one feature selection

National forest
Community
Non-source area / Source area
Exposed area / Non-exposed area

Navigator
Overview
Ownership & Fuels
Historic Fires & Treatments
Simulated Fires
Planned/Proposed - Treatments
Communities

Forest Service

^
📶
🔊
🌡️
8:59 AM





SIMULATED FIRES (Highest Exposure)

Reference #	Acres	Buildings Exposed
9607	479,874	34,646
9752	550,975	30,514
9740	418,032	26,322
9764	263,814	25,496
9692	459,770	25,271
9755	265,436	23,255
9688	231,065	23,250
9594	175,528	23,109
9640	276,568	23,079
9705	670,786	21,032
9753	175,906	20,286
9686	261,526	19,333
9737	380,239	18,364
9785	229,966	17,985
9802	191,560	17,147

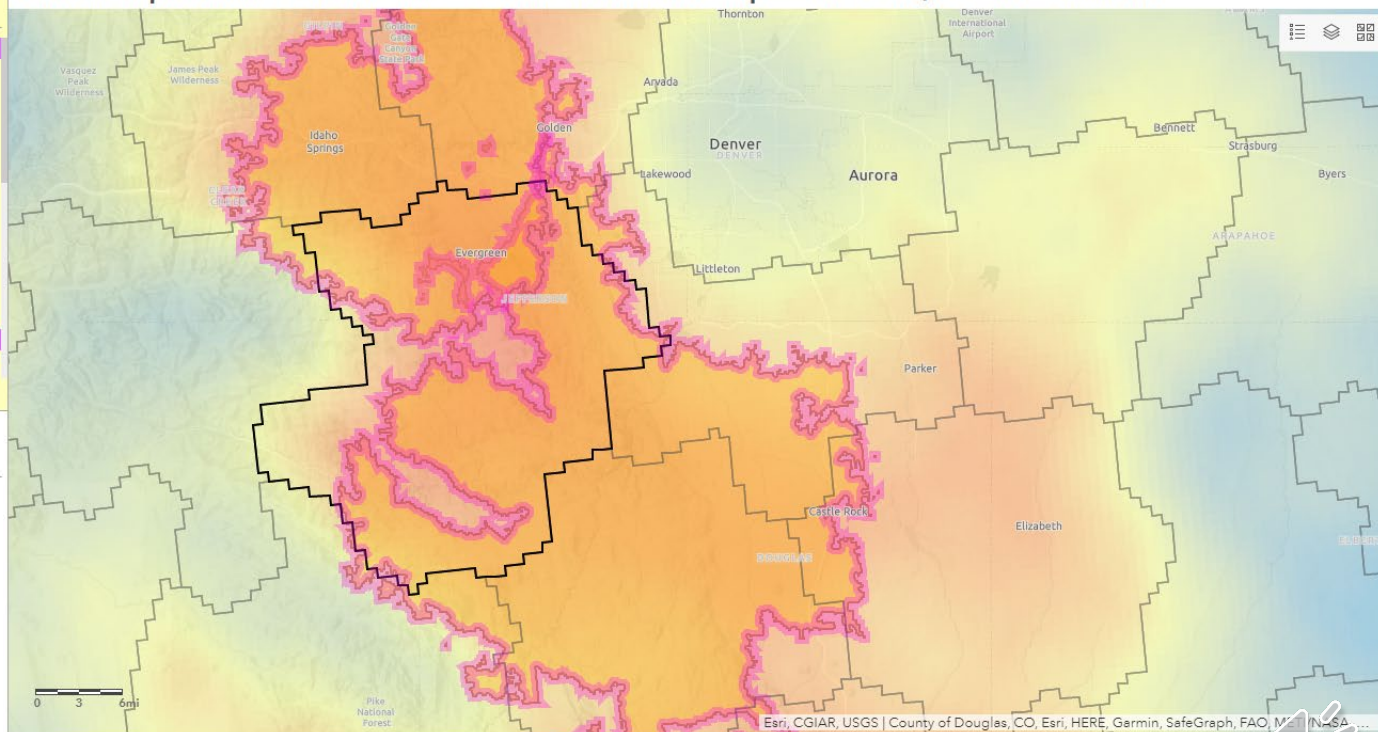
Description: Simulated fires are generated by FSim.

AFFECTED COMMUNITIES

Community	Exposed Buildings (Average & Max)	
Evergreen	998.6	18,913
Fairmount	540.34	1,509
Genesee	510.84	2,709
Aspen Park	498.68	10,843
Castle Pines	389.18	389
Indian Hills	374.14	2,999
Dakota Ridge	365.23	1,529
Ken Caryl	286.01	2,650
Roxborough	260.47	3,545
Kittredge	246.21	1,652

"Average" exposure only includes simulation years that had some exposure.

What is a plausible extreme fire event for this landscape across 10,000 fire seasons?



In the **table to the left**, click on one or more fires to see individual fire perimeter(s) on the map.

"Average" structure exposure is based on exposure in years with fire. All years are not included.



Tip #1 - Dashboard Reference with Context



Fireshed Morrison, Colorado (Fireshed #1,853)

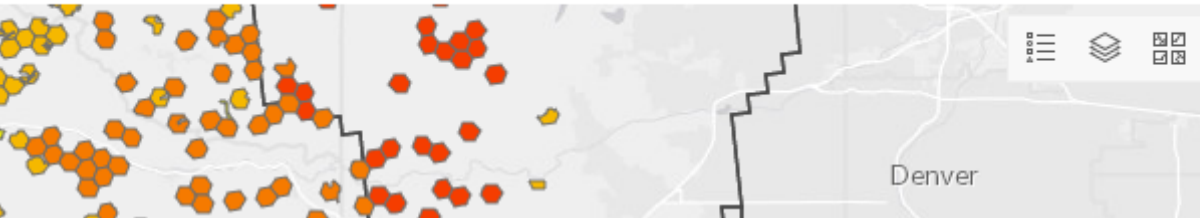
Post-Treatment Conditions

40 Fireshed area treated (ac.):
12 Number of projects implemented:
20 Exposure Treated (per year):
Portion of fireshed treated:
Harvest volume:

63,436
12
40,472
20.5%
Not Available

The [Fireshed Investment Portal](#) shows projects prioritized by fireshed and project area for each Region or State. Projects are ranked by their ability to treat exposure from USFS fires.

Treatments suggested by the Scenario Planning model to treat wildfire



PROJECT AREA TREATMENTS

Project Area ID 18586

Total Area (ac.): 24,787

Area Treated (ac.): 6,425

Reduction in Exposure (buildings): 4.38292

Treated Volume: Not Available

Project Area ID 18587

Total Area (ac.): 29,687



List

Data

List

General

Actions

List Options

Line Item Text



The [Fireshed Investment Portal](#) shows projects prioritized by fireshed and project area for each Region or State. Projects are ranked by their ability to treat exposure from USFS fires.

div

p span span strong a

Line Item Icon

None Symbol

The [Fireshed Investment Portal](#) shows projects prioritized by fireshed and project area for each Region or State. Projects are ranked by their ability to treat exposure from USFS fires.

Link



Display Text

Fireshed Investment Portal

Link Type

URL

Protocol

https://

URL

ii#/caa9434664c04681b71d75ba7afa521f2p1=[Fireshed..ID]

OK

Cancel

Tip #2 Feature Classes not Data Tables

Fireshed Morrison, Colorado (Fireshed #1,853) ▾



Recap

Nested Design

- Multiple stacked windows
- Embedded content with URL parameters
- Reduced bandwidth

Integrated Design

- One window for stacked panels
- Call all actions from one map selection
- Components can continue to interact



Questions?



Mike Scanlon – Staff
Assistant & Systems Analyst



USDA Forest Service



Chris Ringo – Senior Faculty
Research Assistant



Oregon State University
College of Agricultural
Sciences

