IFTDSS

The Interagency Fuels Treatment Decision Support System (IFTDSS): Facilitating Fuels Planning for All

Brianna Schueller:
USFS IFTDSS Technical Lead
Wildland Fire Management Research, Development ,and Applications Group
Grand Marais, MN

Integrating science, technology and fire management.

Wildland Fire Management RD&A

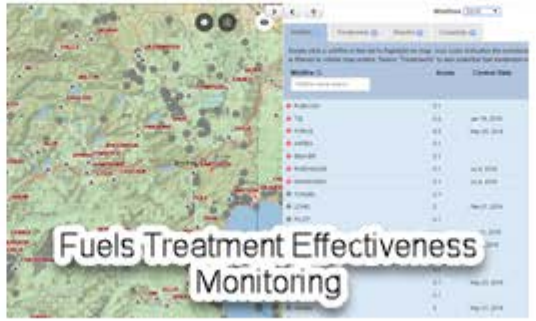
Presentation outline

- What is IFTDSS and why?
- What can IFTDSS do now?
- Where is IFTDSS going?
- How can I learn more about IFTDSS?

NEW! Map Values

Phasing in Risk Assessment

FTEM is Part of IFTDSS



We Want to Hear from You

What is IFTDSS and why?

IFTDSS

To deal with the “software chaos” that exists in fuels management

- Web based application to facilitate common fuels management tasks
- Available to anyone and everyone (funded by USDOI & USDA FS)
- Access to multiple tools from a single web-based portal
- Hosts common authoritative data, tools, models
- Scalable tool for planning effective fuels treatments

How was it designed?

IFTDSS

IFTDSS Planning Cycle

- Stages of cycle correspond to commonly performed tasks
- Users can enter at any stage-free flowing design
- Does not require sequential steps
- Open design appeals to wider user base (novice to advanced)

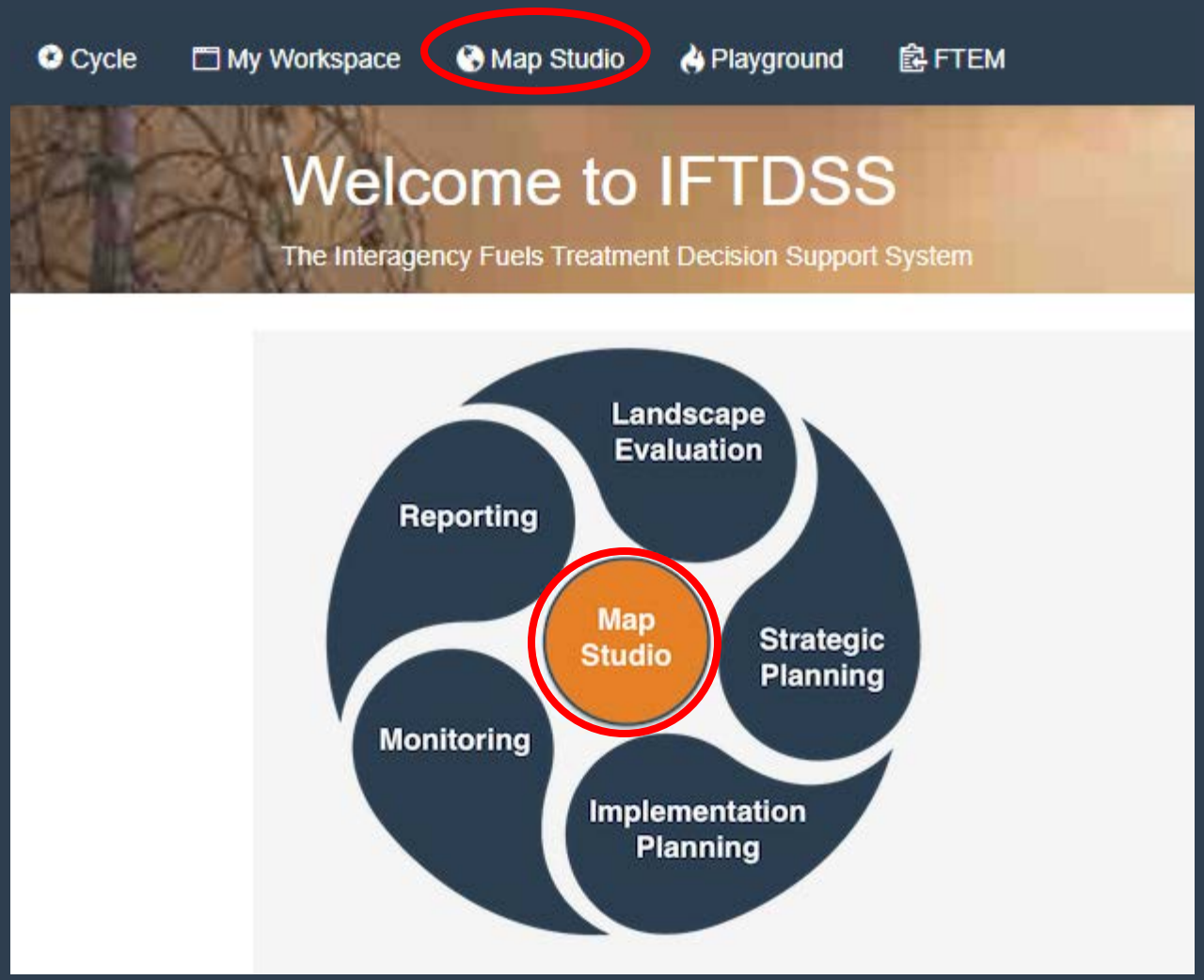
What can IFTDSS do now?

1. Cool easy map stuff
2. Model fire behavior across large landscapes
3. Generate summary reports for download
4. Develop and compare treatment scenarios
5. Aid in Prescribed Fire Planning
6. Fuels Treatment Effectiveness Monitoring

What can IFTDSS do now?

Cool easy map stuff

- Provides consistent nationwide reference datasets for planning purposes
- Create / Upload and save shapefiles
- Create / Edit landscapes using LANDFIRE data
- View/Analyze fire behavior outputs



Cool easy map stuff – Provides consistent nationwide reference datasets for planning purposes

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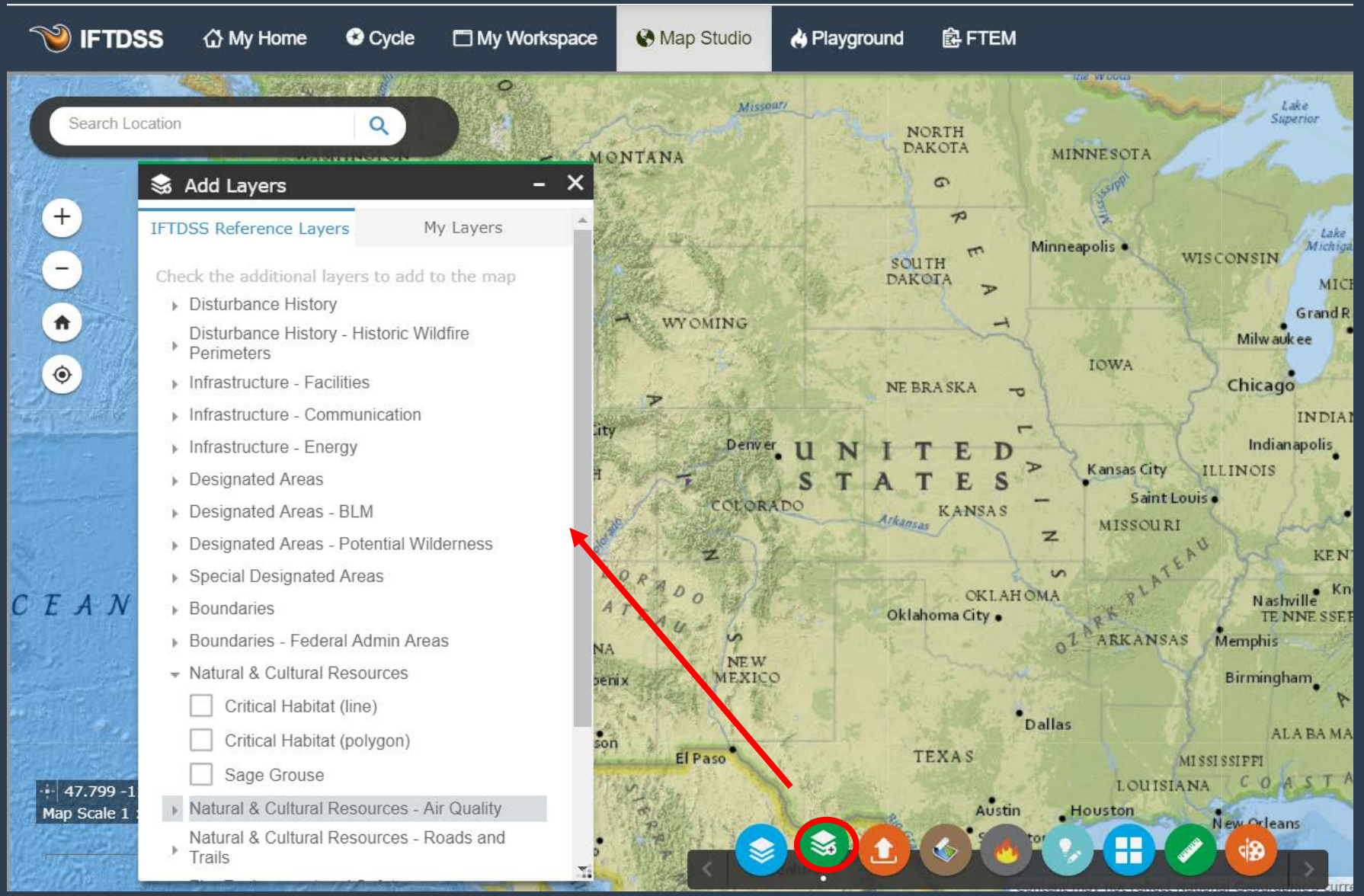

Cool easy map stuff– Create shapes and upload shapefiles

(points, lines, and polygons) to use as Masks for editing or Areas of Interest for reporting

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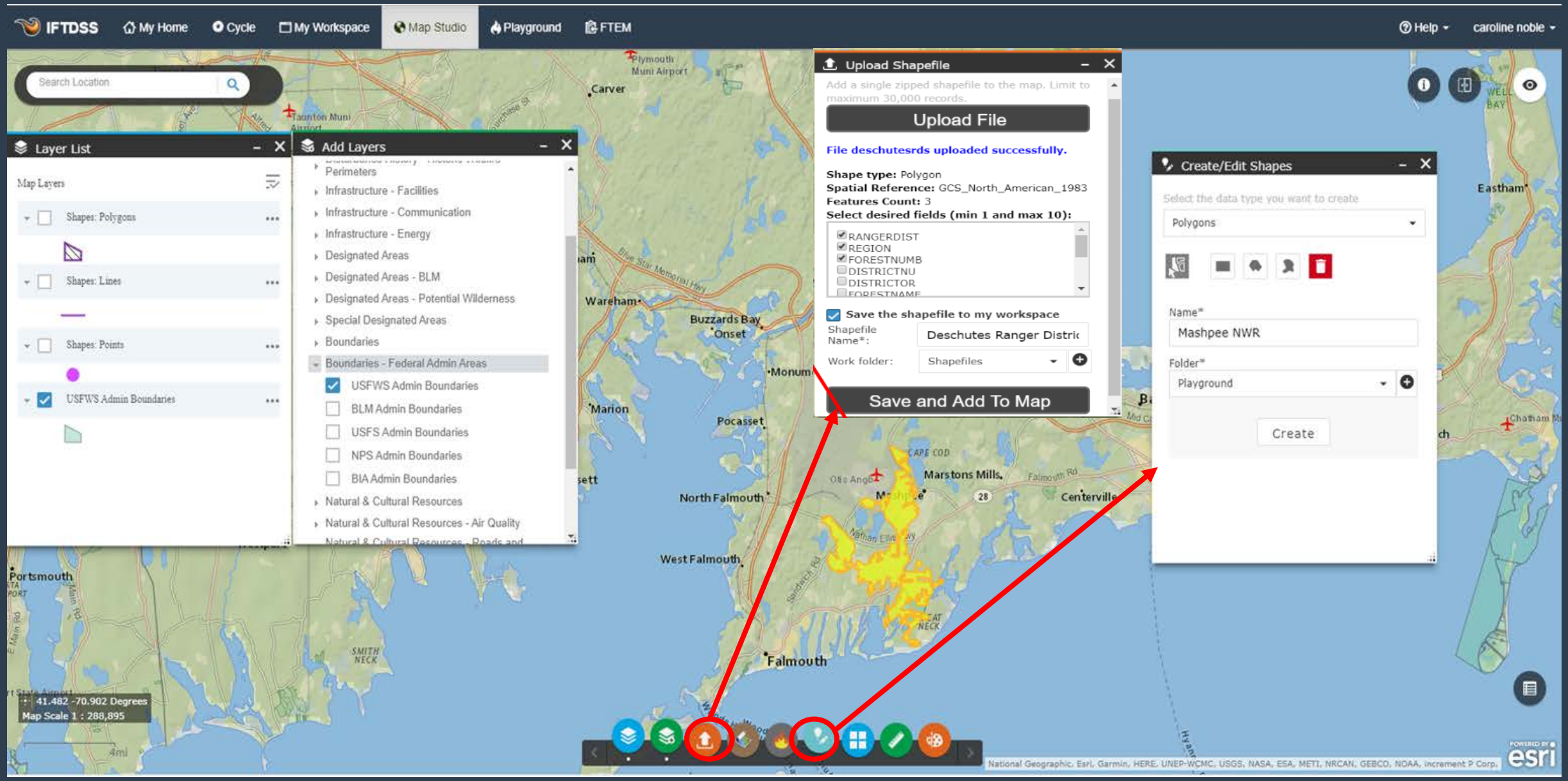
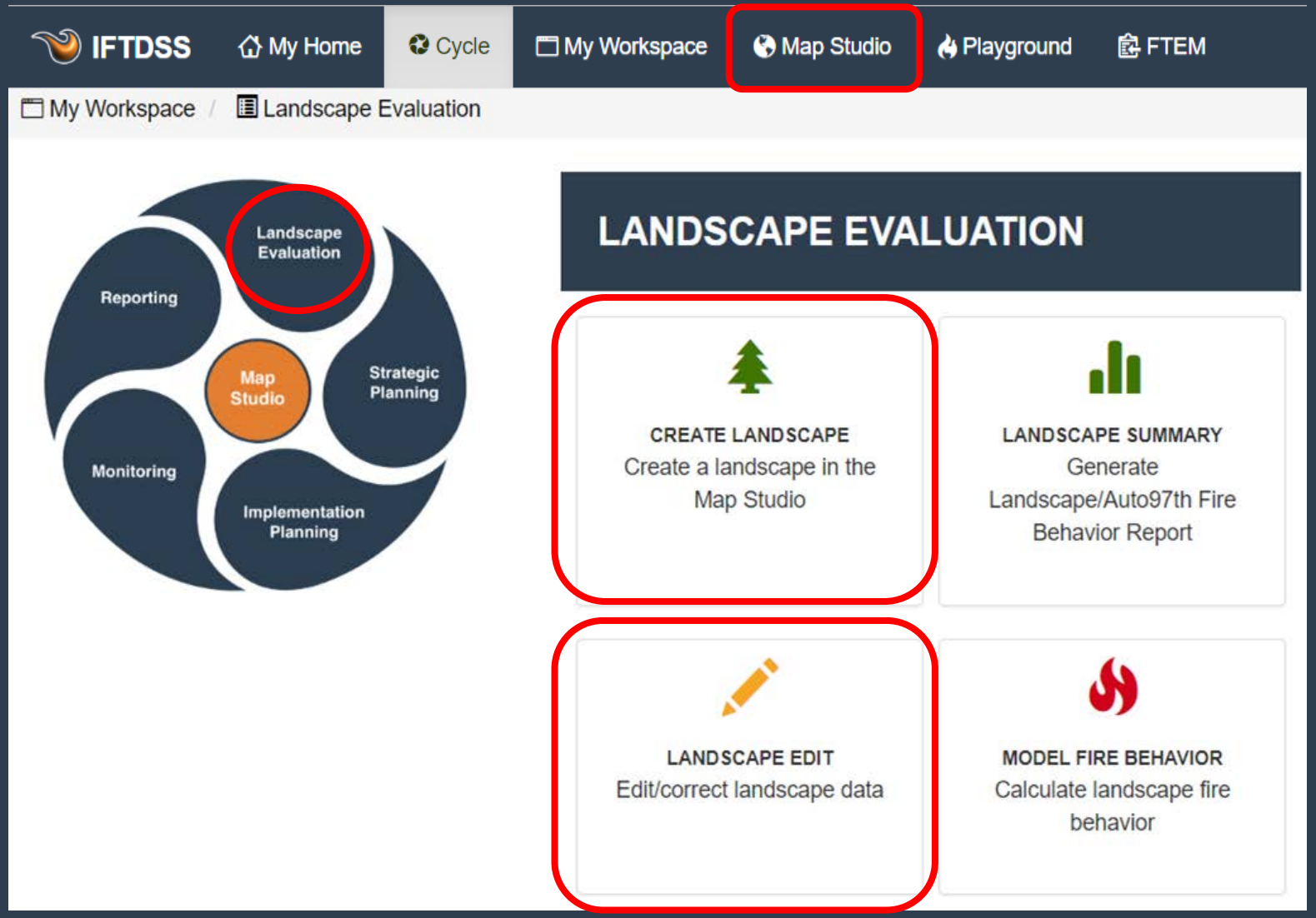


Cool easy map stuff– Create/Edit landscapes using Landfire data



- Create landscapes up to 3.5 million acres
- Edit landscapes with user defined rules
- Edit landscapes with default edit rules based on Landfire Look Up Rules

Cool easy map – Create Landfire landscapes up to 3.5 million acres using an AOI (LF2016 data just released for some areas)

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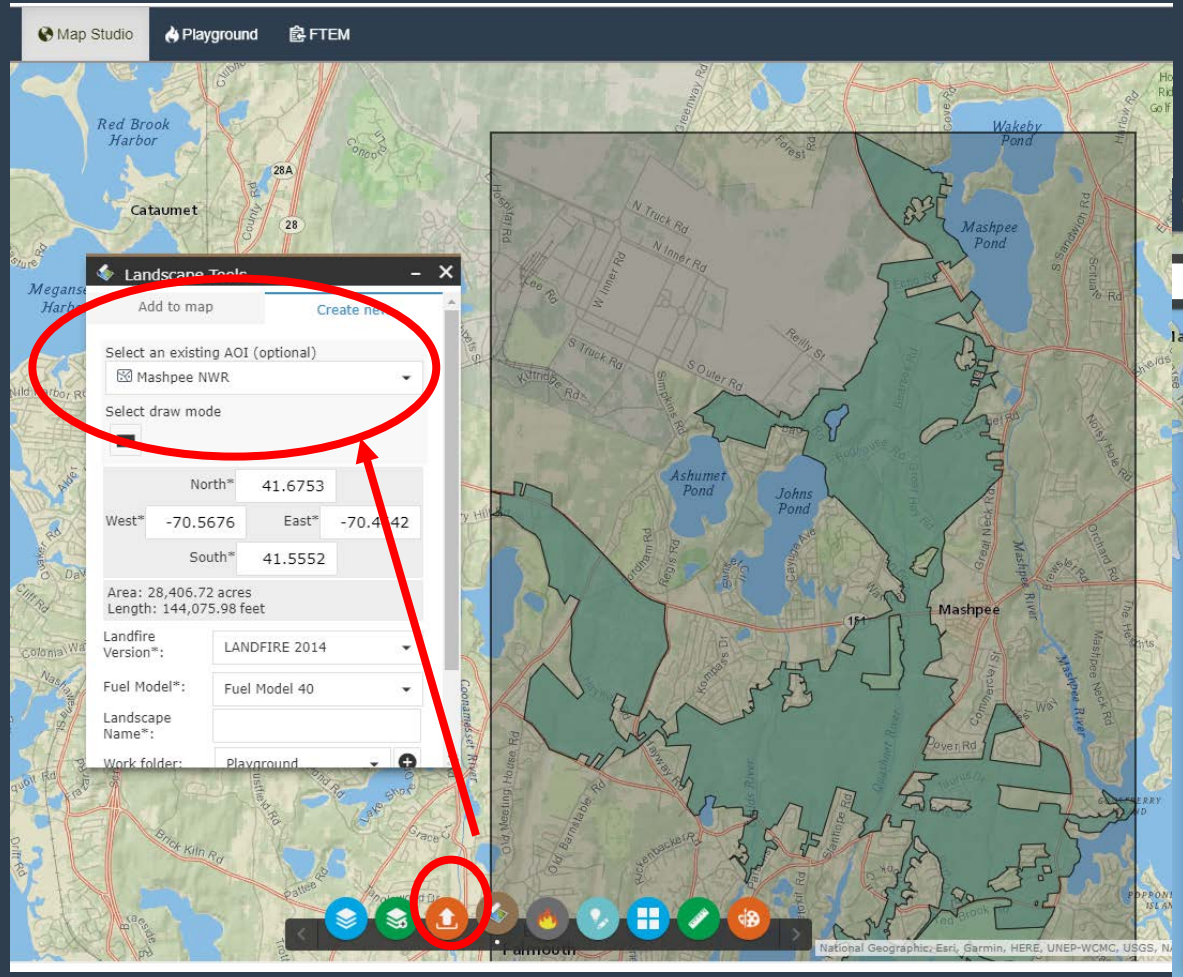

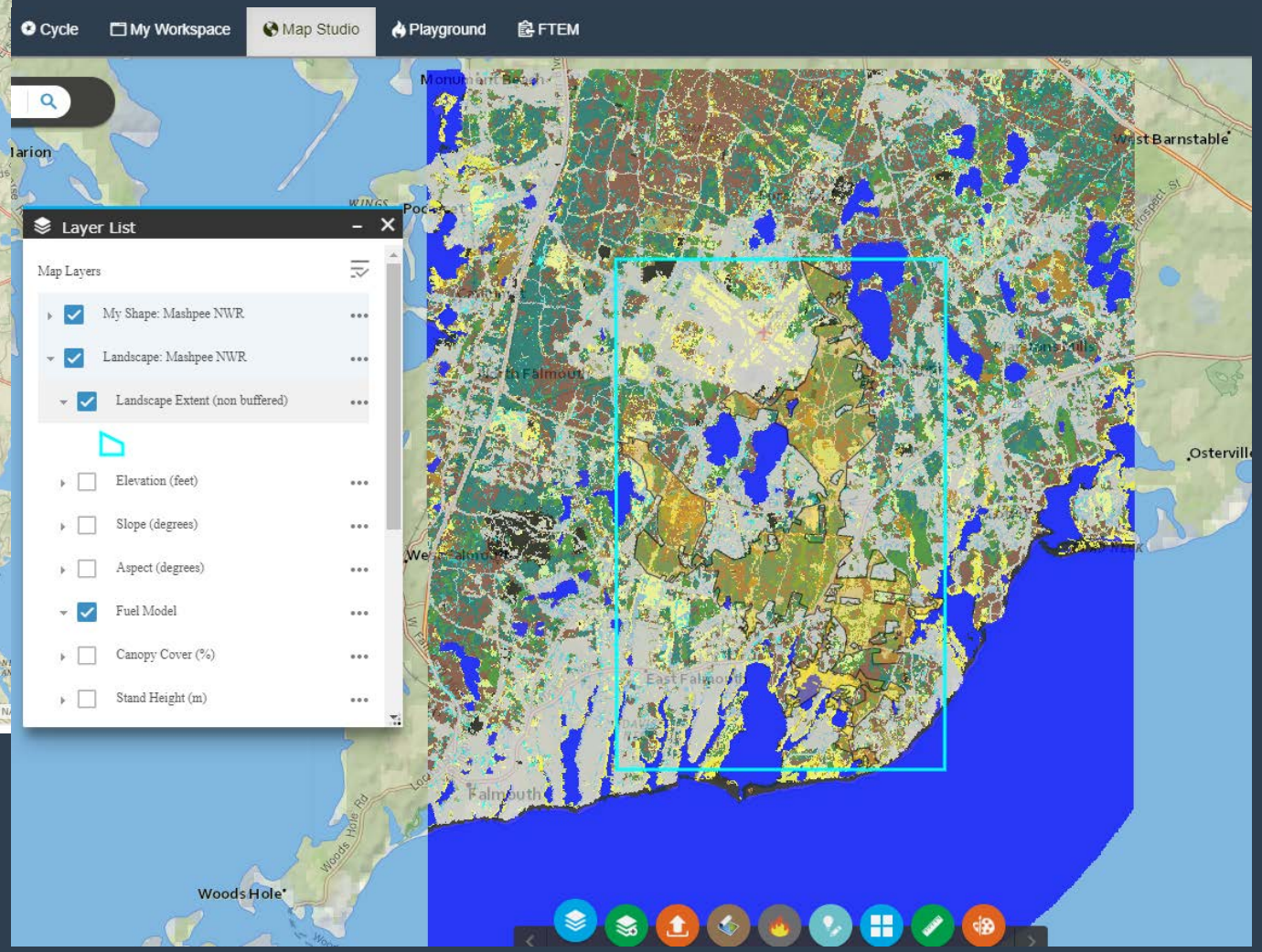

Cool easy map – Edit landscapes using LANDFIRE tools

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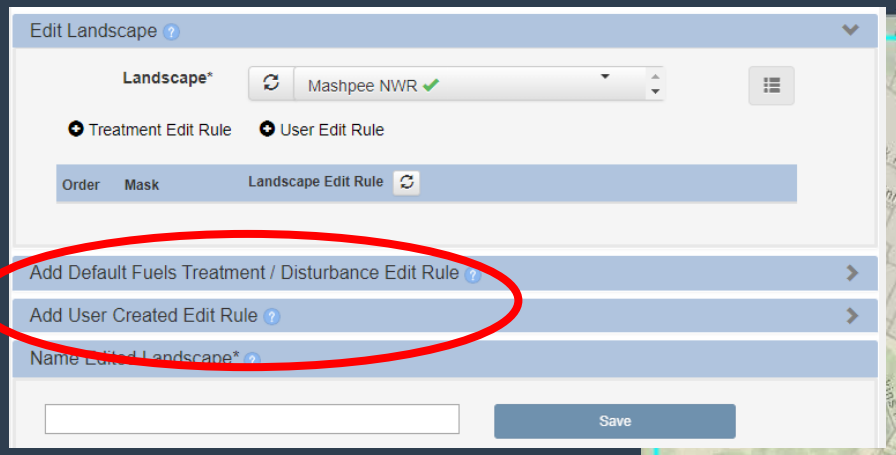
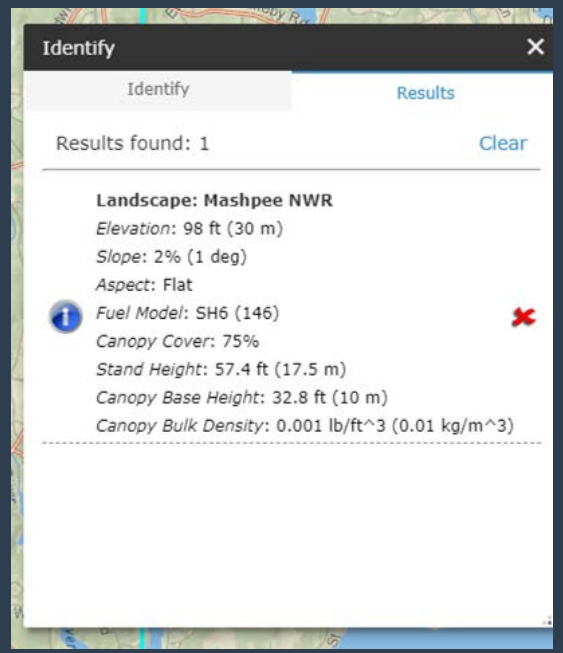
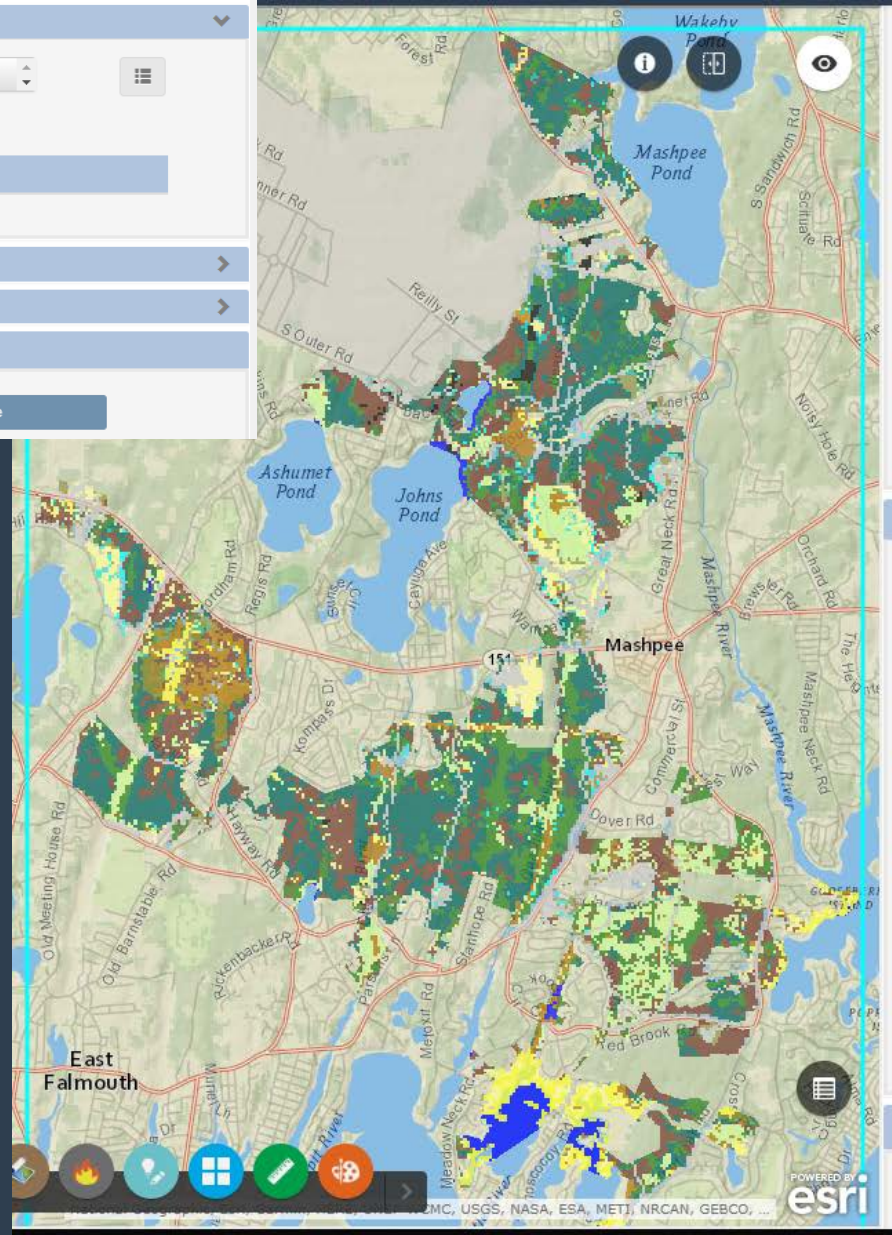
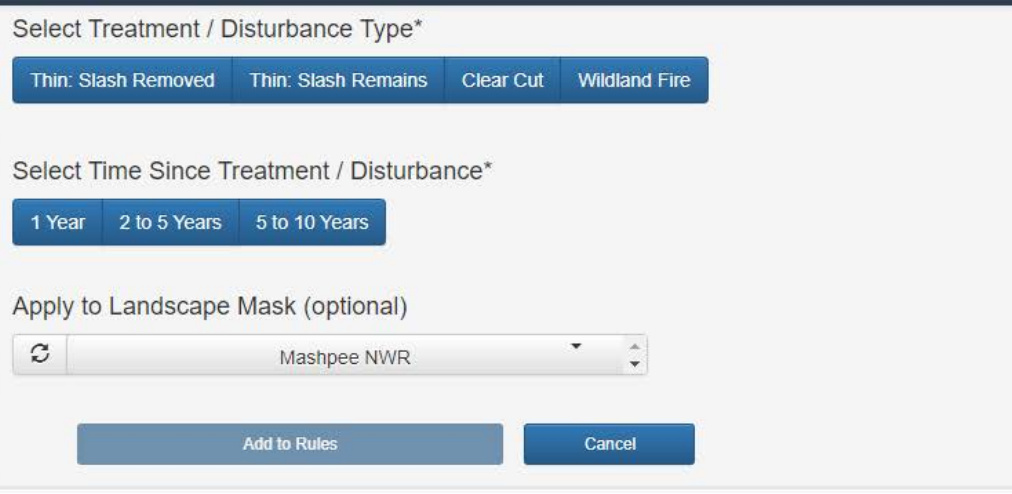
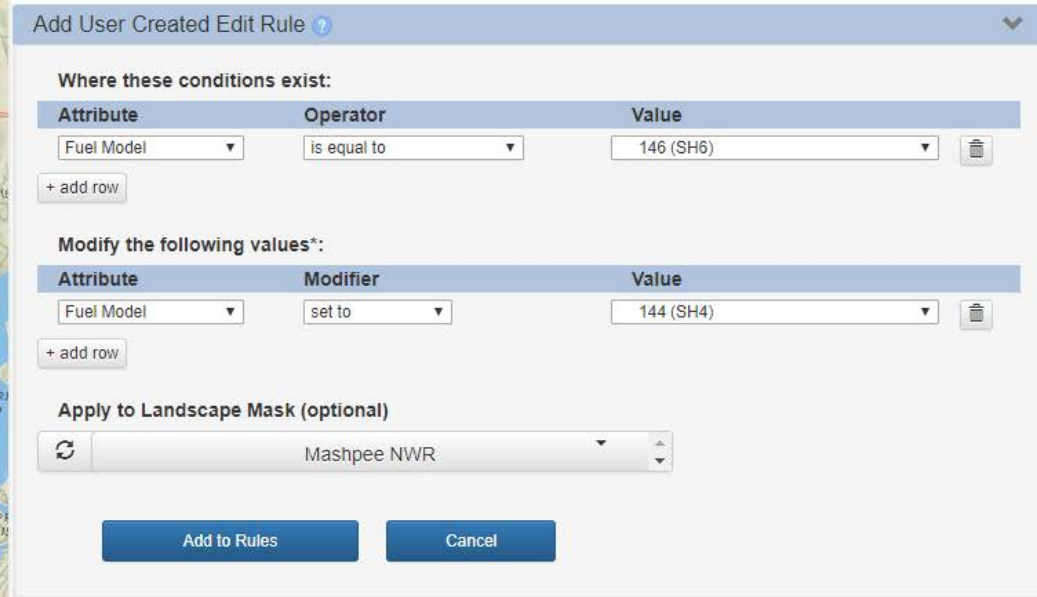






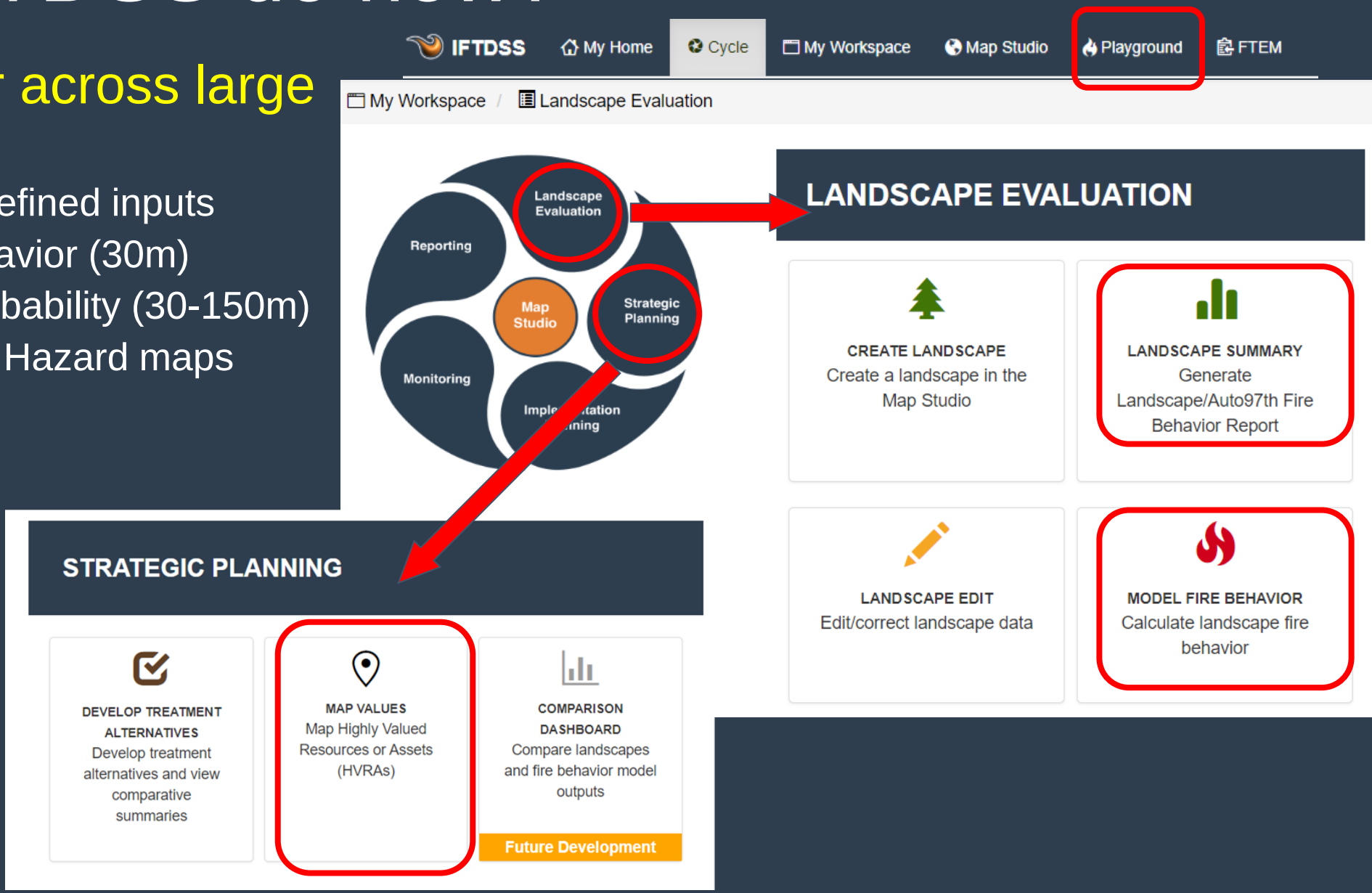




What can IFTDSS do now?

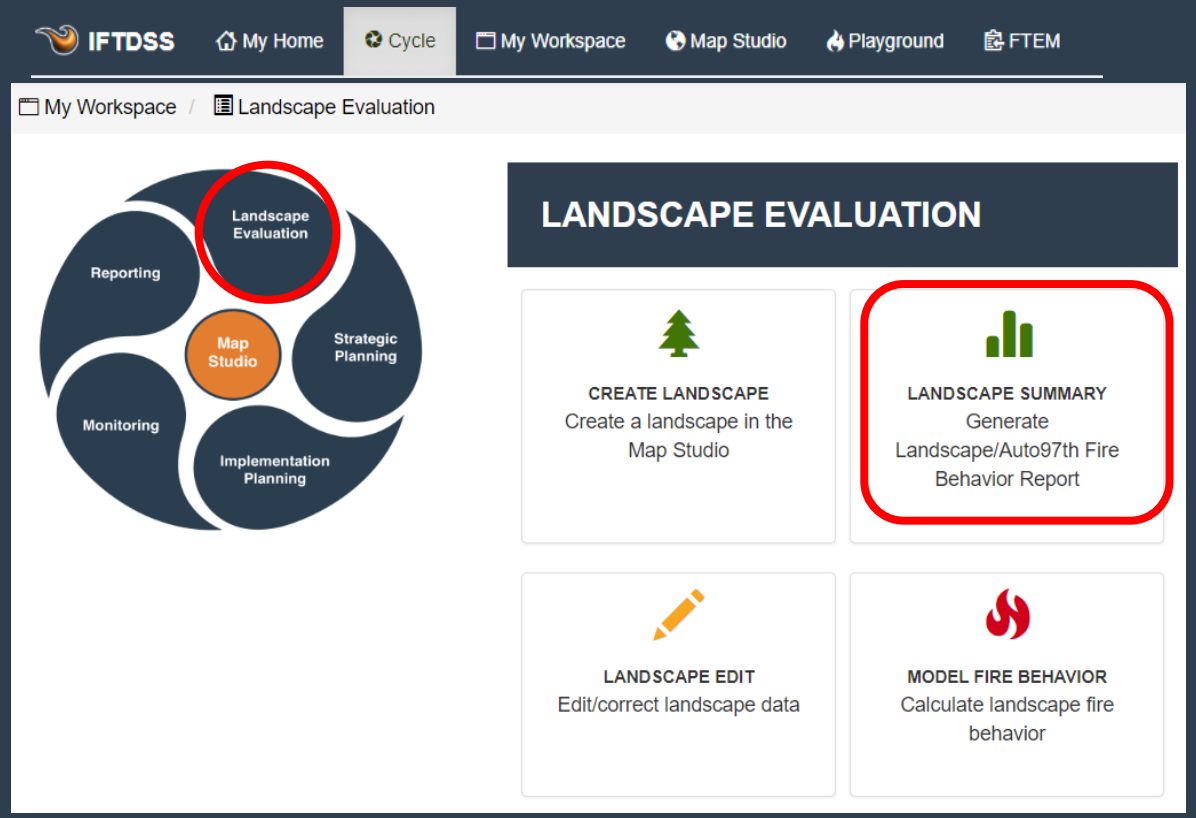
Model fire behavior across large landscapes

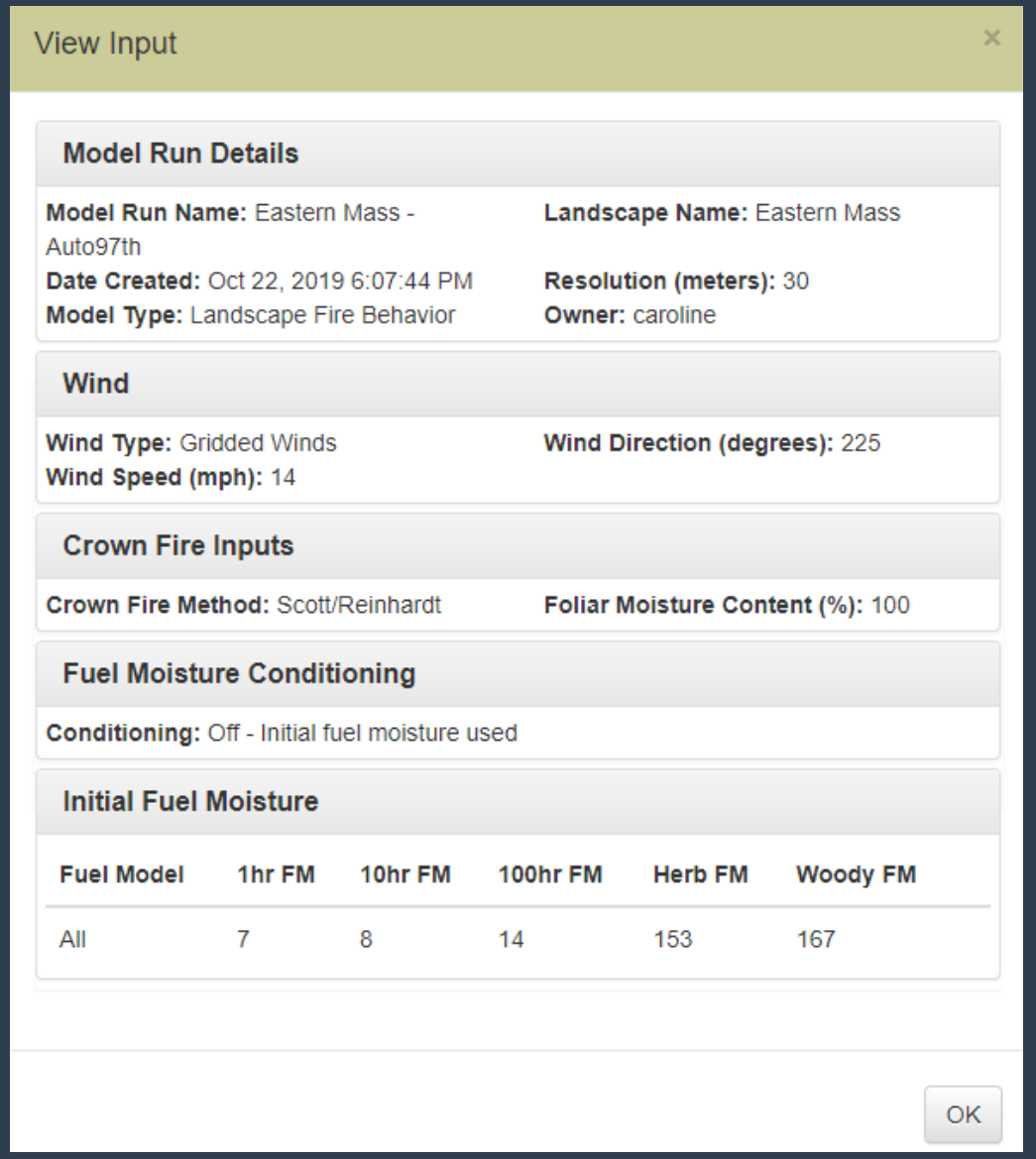
- Auto97th OR User defined inputs
- Landscape Fire Behavior (30m)
- Landscape Burn Probability (30-150m)
- Generate Integrated Hazard maps
- Overlay HVRAs



Model fire behavior across large landscapes : Landscape Fire Behavior Auto97th

IFTDSS

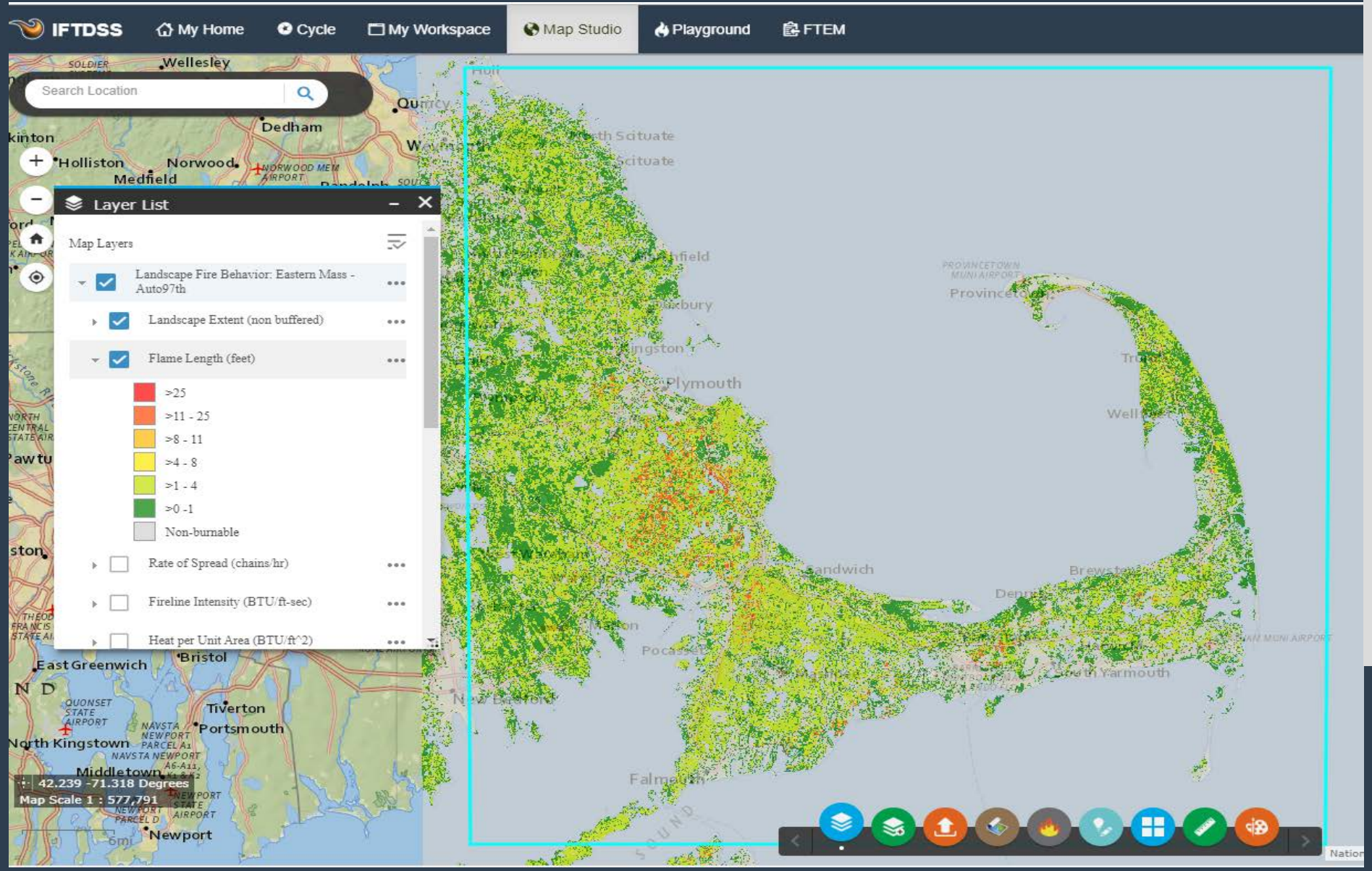




- Closest representative RAWS station
- 97th percentile conditions for Initial Fuels Moistures based on ERC
- 97th percentile wind conditions
- Crown fire defaults (S/R & 100% foliar moisture)

Model fire behavior across large landscapes: Landscape Fire Behavior Auto97th

IFTDSS



Eastern Mass - Auto97th

- **Name:** Eastern Mass - Auto97th
- **Owner:** caroline
- **Created:** Oct 22, 2019 6:07:44 PM
- **Landscape:** Eastern Mass
- **Status:** Running
- **Model Type:** Landscape Fire Behavior
- **Folder:** Playground
- **Wind Type:** Gridded Winds
- **Wind Speed:** 14
- **Wind Direction:** 225
- **Crown Fire Method:** Scott/Reinhardt
- **Foliar Moisture:** 100

Fuel Moisture Conditioning

- **Conditioning:** Off - Initial fuel moisture used

Initial Fuel Moistures

- **Fuel Model:** All
- **1hr FM:** 7
- **10hr FM:** 8
- **100hr FM:** 14
- **Herbaceous FM:** 153
- **Woody FM:** 167

Model fire behavior across large landscapes : Landscape Fire Behavior/Landscape Burn Probability with user defined inputs in the Playground

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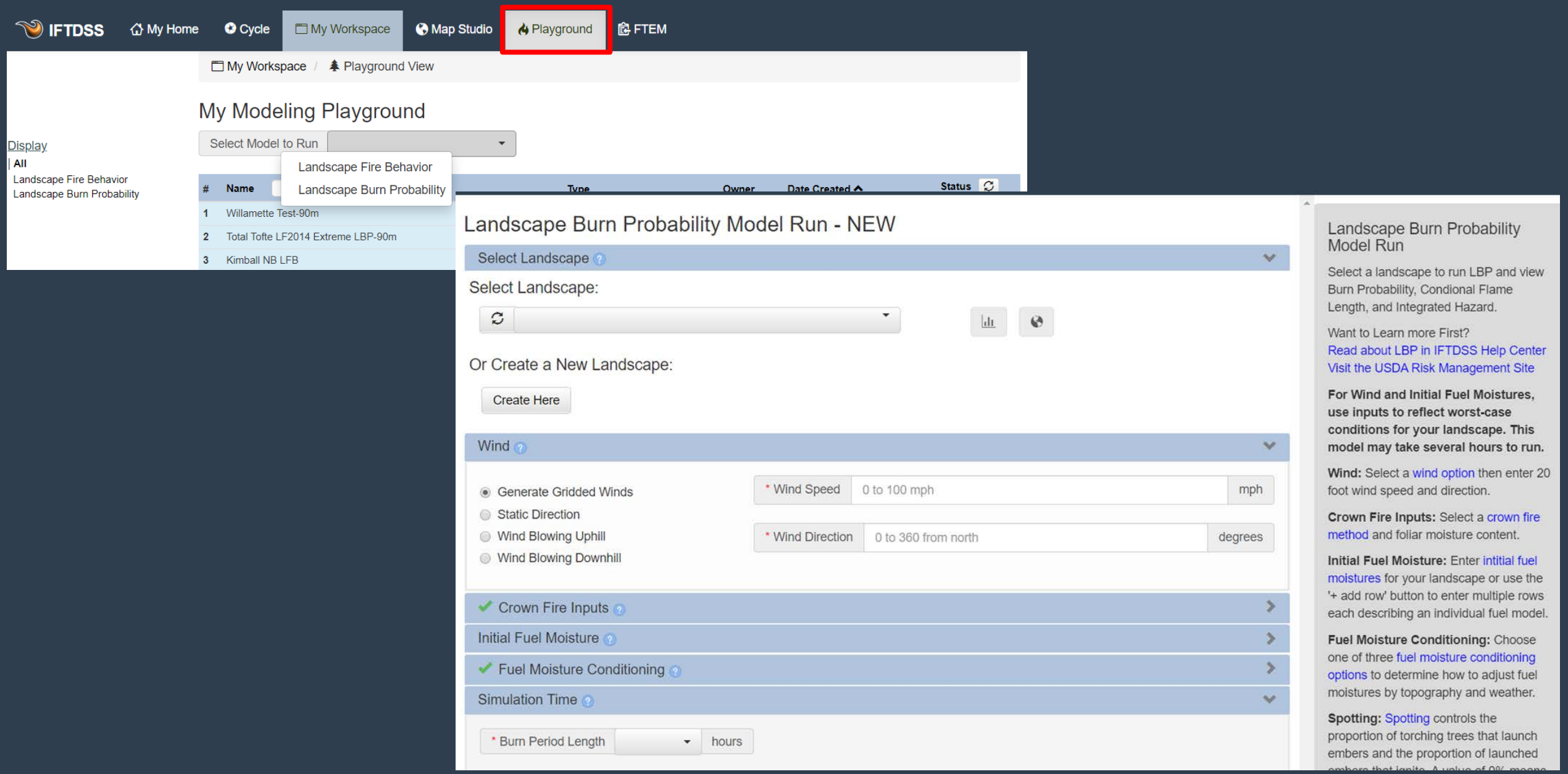

Model fire behavior across large landscapes: Landscape Burn Probability

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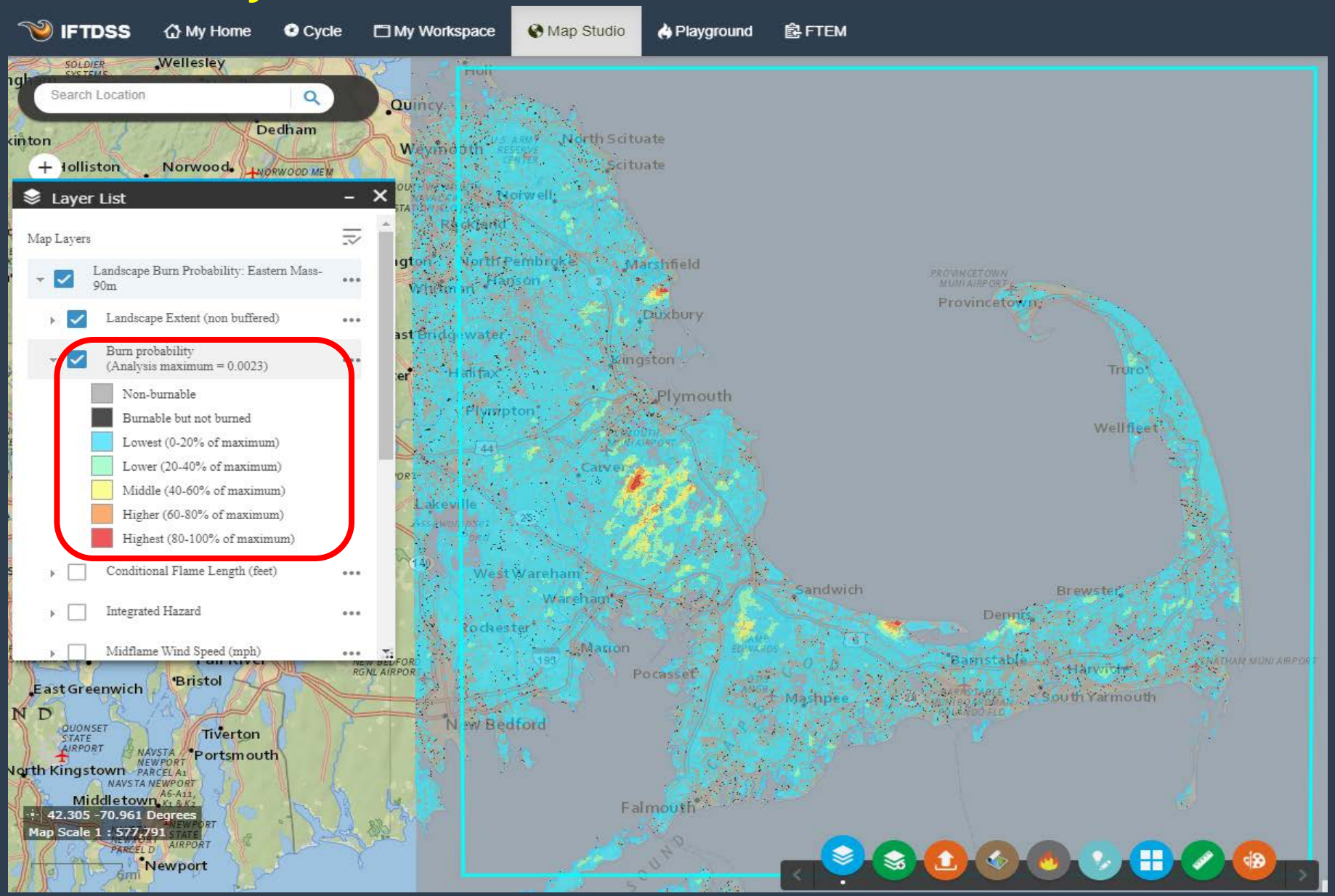

Eastern Mass-90m

- **Name:** Eastern Mass-90m
- **Owner:** caroline
- **Created:** Sep 22, 2019 8:33:55 AM
- **Landscape:** Eastern Mass
- **Status:** Completed
- **Model Type:** Landscape Burn Probability
- **Wind Type:** Gridded Winds
- **Wind Speed:** 25
- **Wind Direction:** 225
- **Crown Fire Method:** Scott/Reinhardt
- **Foliar Moisture:** 100

Fuel Moisture Conditioning

- **Conditioning:** Off - Initial fuel moisture used

Initial Fuel Moistures

- **Fuel Model:** All
- **1hr FM:** 6
- **10hr FM:** 7
- **100hr FM:** 12
- **Herbaceous FM:** 90
- **Woody FM:** 110

Completed Fire Summary

- **Number of fires run:** 161155
- **Number of fires failed:** 0
- **Percent burnable cells burned:** 97.7 %

Model fire behavior across large landscapes: Generate Integrated Hazard maps with Landscape Burn Probability runs

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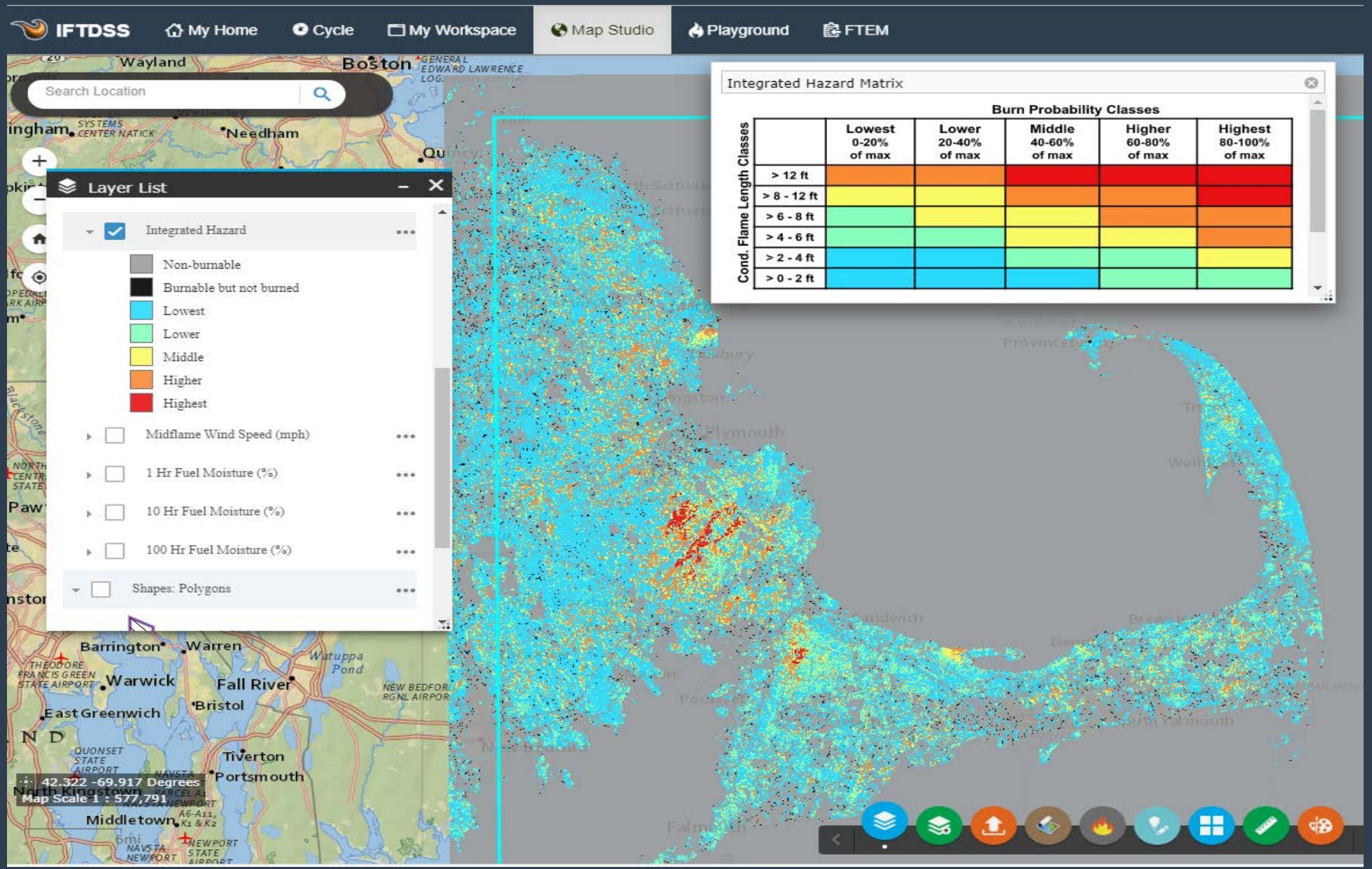
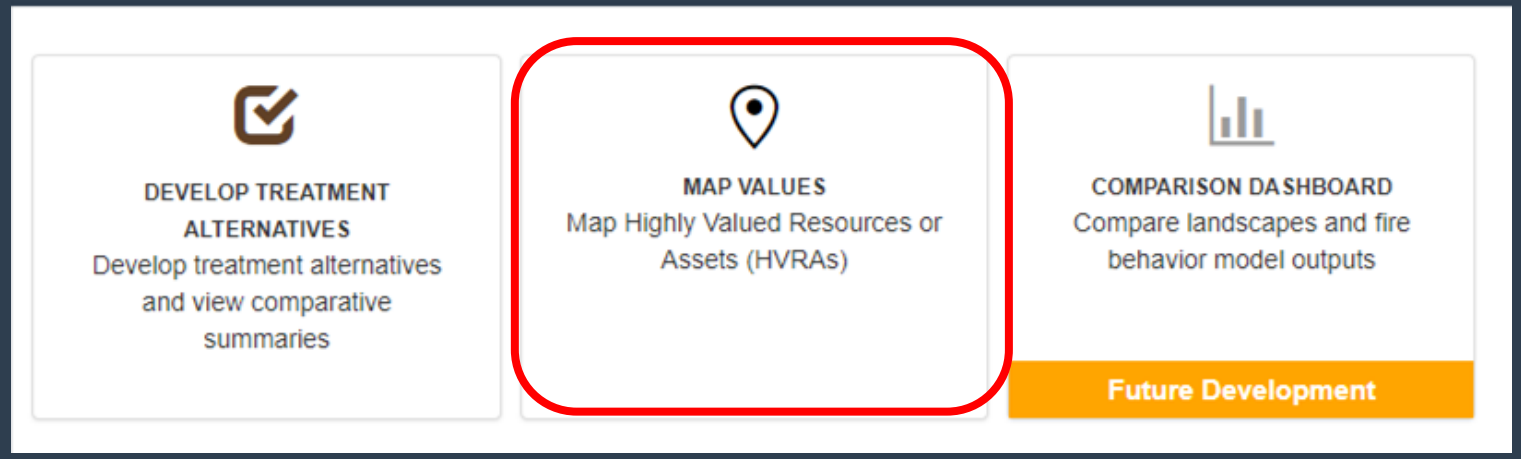


Model fire behavior across large landscapes: Overlay HVRAs

IFTDSS



- Create HVRA sets at all scales
- Use sets for analysis or to overlay with Landscapes or Fire Behavior Outputs in Map Studio
- Copy or Edit existing sets

View HVRA Set

HVRA Set Name: Total Tofte HVRA Set - All Ref

Primary HVRA: Communities

Sub-HVRA Name	Short Name
Low density (>0-28 people per square mile)	Low
Moderate density (>28-250 people per square mile)	Moderate

Primary HVRA: Infrastructure

Sub-HVRA Name	Short Name
Low/Moderate Investment Buildings and Developed Recreation Sites	Low Inv
Powerlines	Pwrline
Communication Sites	Com Site
High Investment Buildings and Developed Recreation Sites	High Inv

Primary HVRA: Municipal Drinking Water

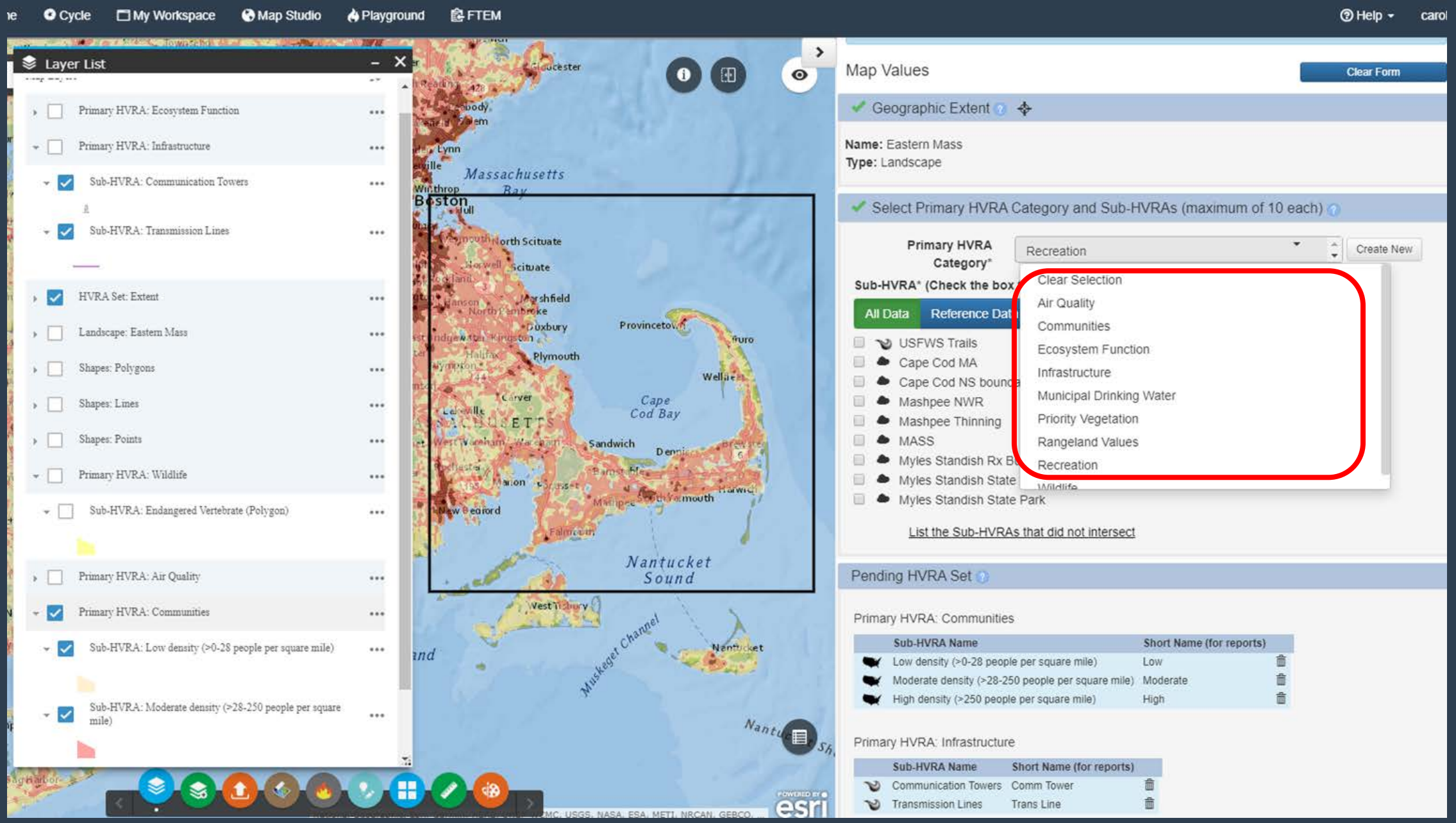
Sub-HVRA Name	Short Name
Lowest value (< 10th percentile)	Lowest
Low value (30th - 39th percentile)	Low
Moderately low value (40th - 49th percentile)	Mod Low
Highest value (90th - 99th percentile)	Highest
Moderately high value (50-59th percentile)	Mod High

Primary HVRA: Air Quality

Sub-HVRA Name	Short Name
Moderate PM2.5 Emission Potential	Moderate
High PM2.5 Emission Potential	High

Model fire behavior across large landscapes: Overlay HVRAs

IFTDSS



Model fire behavior across large landscapes: Overlay HVRAs

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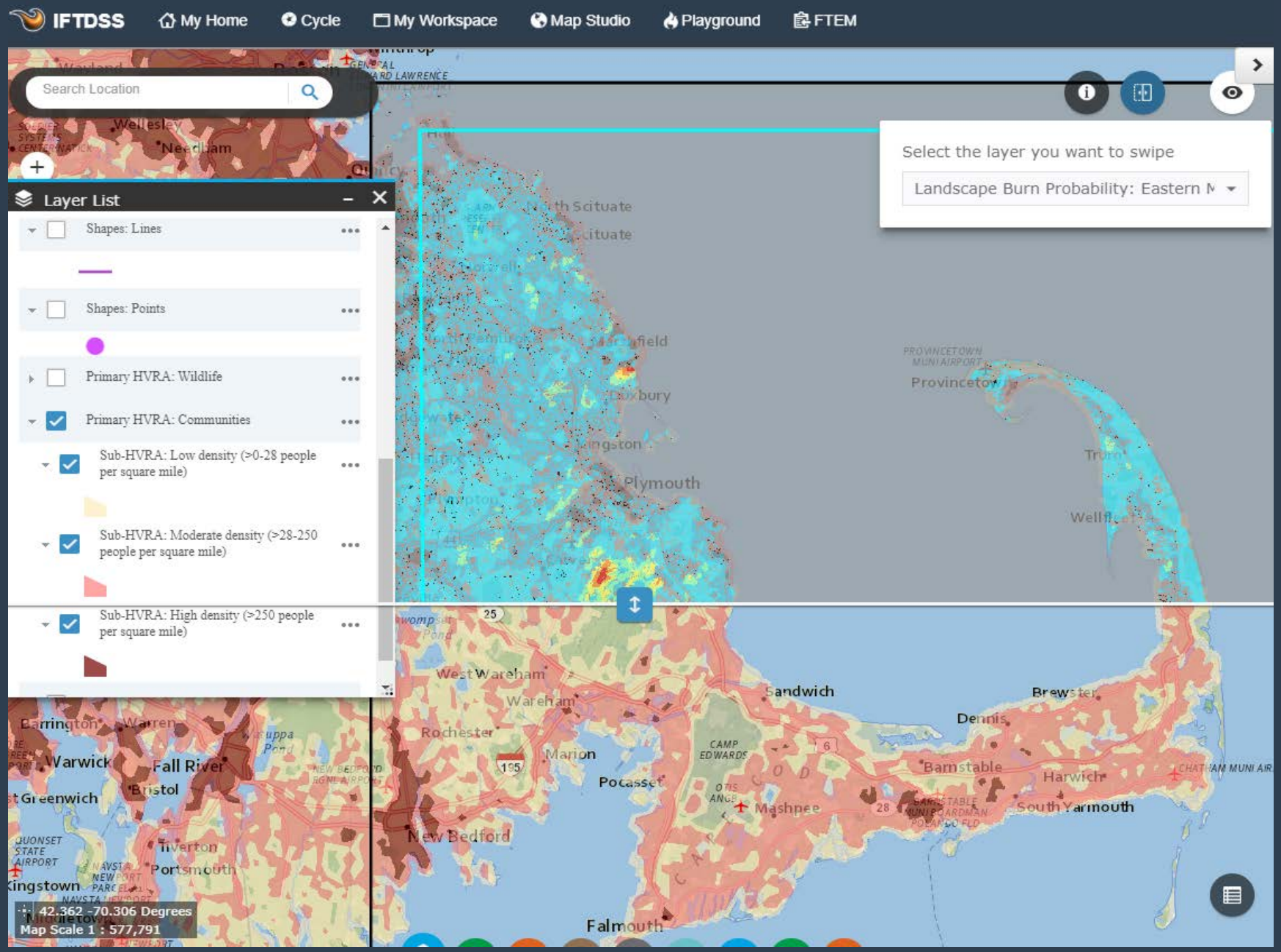
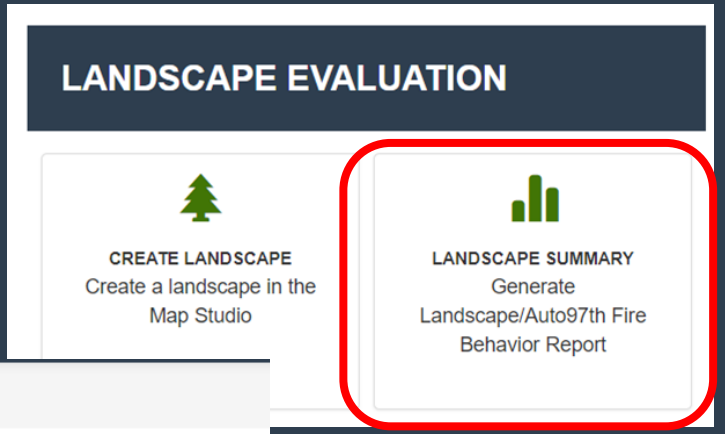
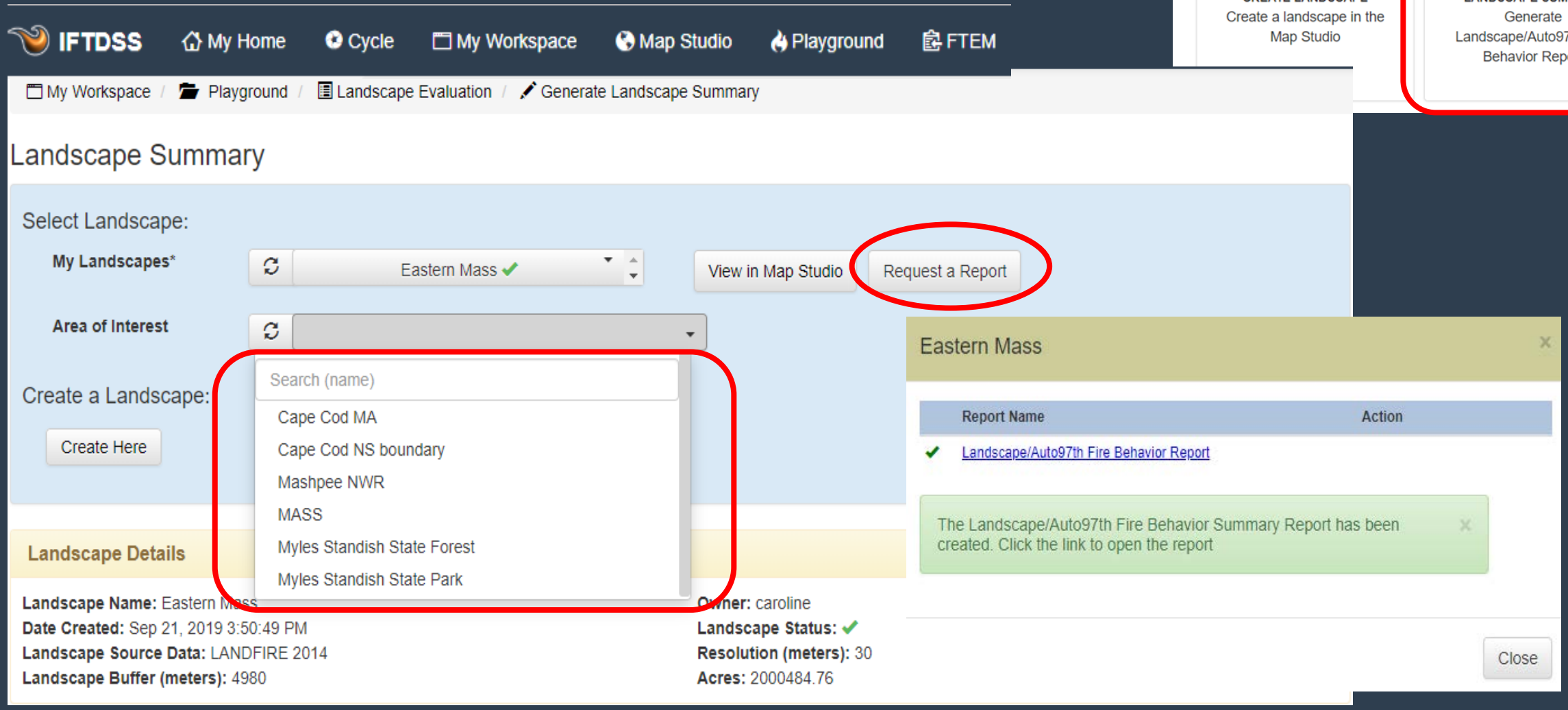


What can IFTDSS do now?

Generate summary reports and download / export

Auto 97th Landscape Fire Behavior Report





Generate summary reports and download / export

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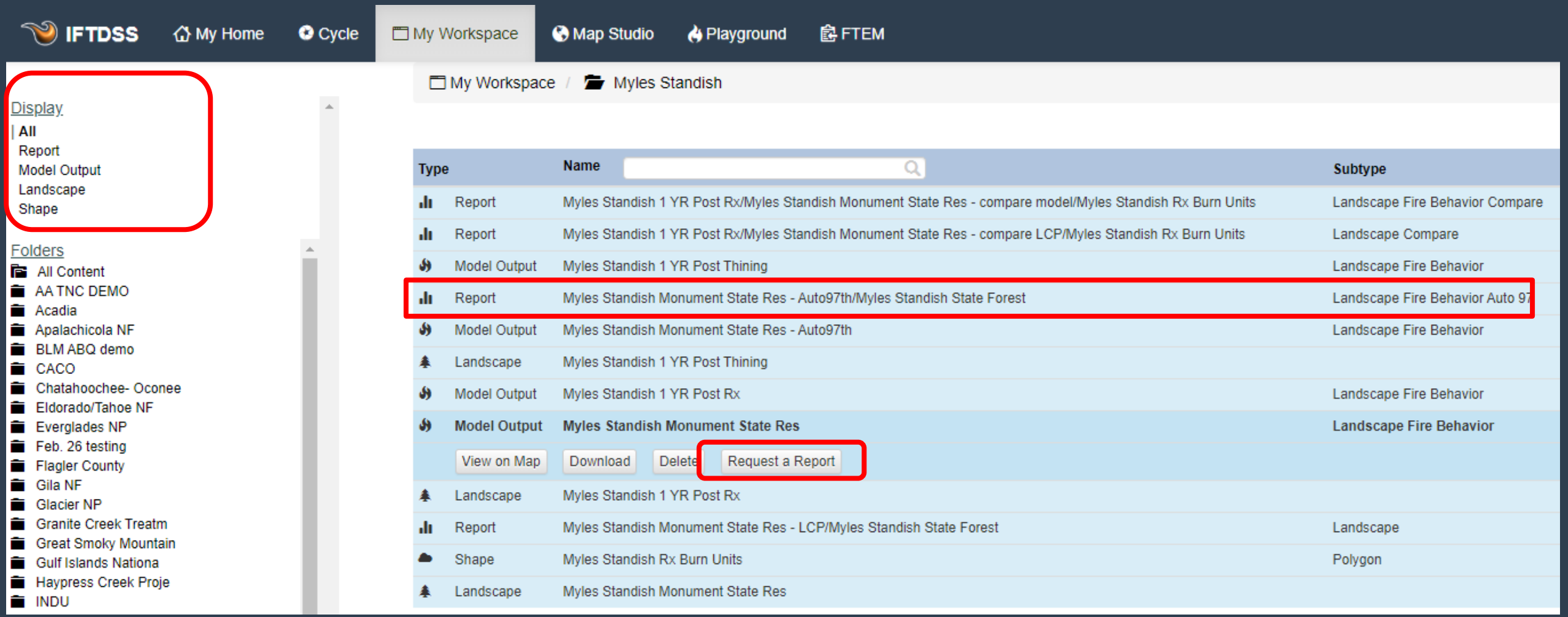

Generate summary reports and download / export

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Help

LANDSCAPE CHARACTERISTICS

All Lcp
Aspect
Canopy Base Height
Canopy Bulk Density
Canopy Cover
Elevation
Fuel Model (FBFM)
Slope
Stand Height

MODEL CHARACTERISTICS

All Model
Crown Fire
Flame Length
Heat/Area
Intensity
Spread Rate

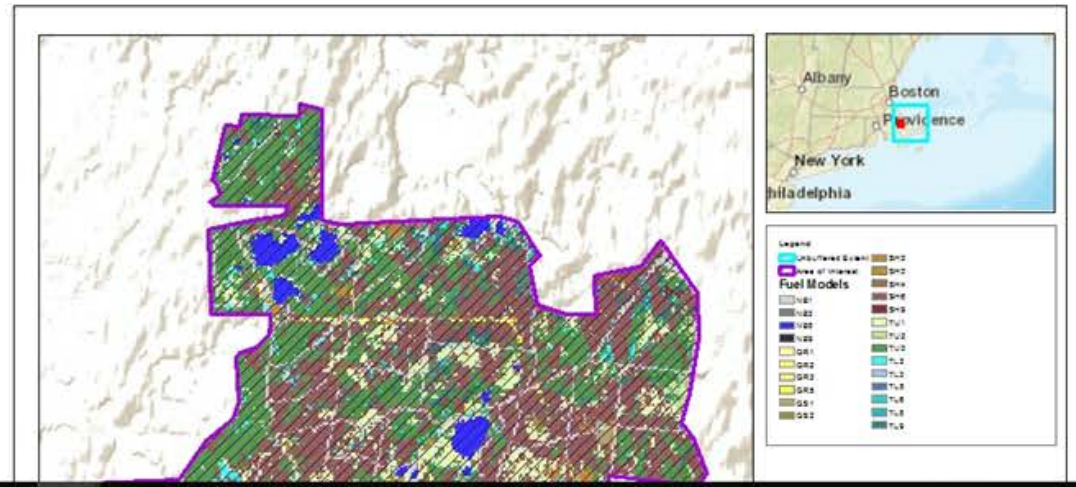
Model Parameters

Run Name: Eastern Mass - Auto97th
Model Type: Landscape Fire Behavior
Run Date: Sep 22, 2019 8:22:53 AM
Wind Type: Gridded Winds
Wind Speed: 14 mph
Wind Direction: 225 deg
Crown Fire Method: Scott/Reinhardt
Foliar Moisture: 100
Conditioning: Off - Initial fuel moisture used

Station Name: CACO
Station Observation Start Date: Apr 1, 2003 12:00:00 AM
Station Observation End Date: Oct 4, 2016 12:00:00 AM
Station Elevation: 140
Station Aspect: 4
Station Latitude: 41.9755555
Station Longitude: 70.0241666

Fuel Model	1 Hr Fuel Moisture	10 Hr Fuel Moisture	100 Hr Fuel Moisture	Live Herbaceous Fuel Moisture	Live Woody Fuel Moisture
All	7	8	14	153	167

Fuel Model (FBFM)



Generate summary reports and download / export

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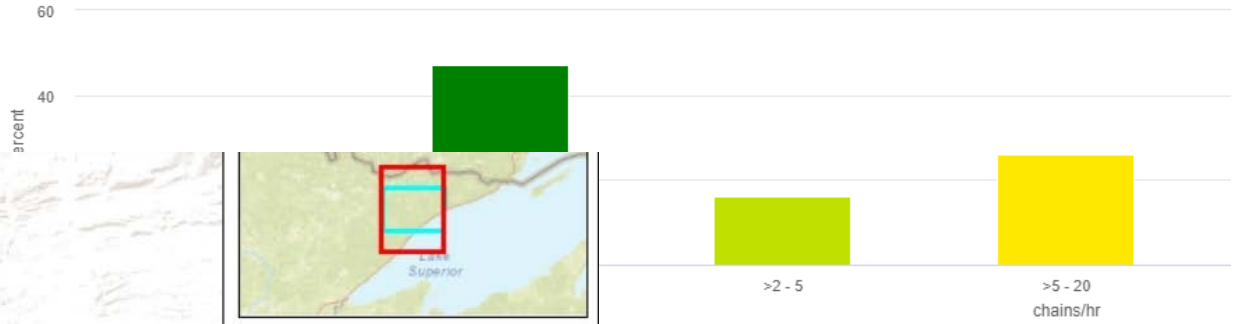
IFTDSS

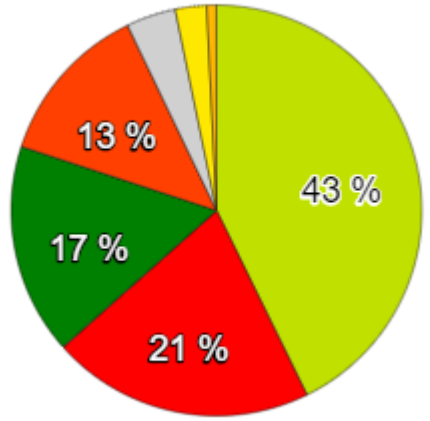
Report: Auto97th
Landfire Version: LANDFIRE 2014
Landscape Name: Eastern Mass
Landscape Acres: 2,000,485
Area of Interest: Myles Standish State Forest

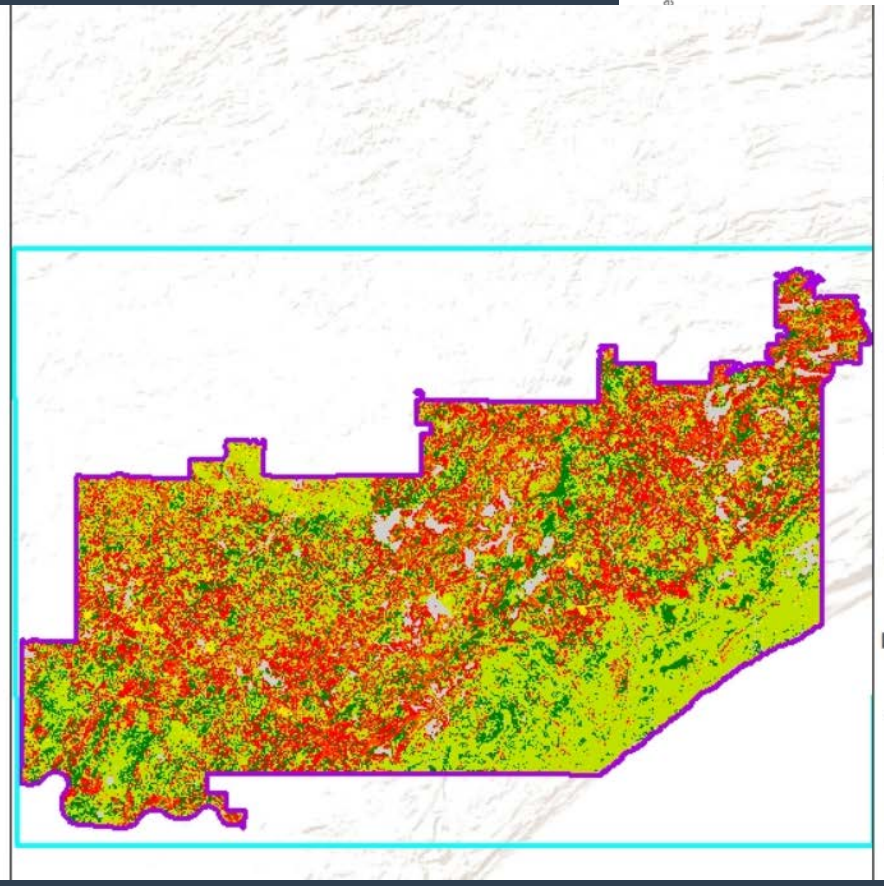
Prepared for: caroline noble
10/21/2019, 5:01:56 AM

Rate of Spread (chains/hr) Data Summary for Area of Interest "Myles Standis Landscape

Source Landscape Name: Eastern Mass
Landfire Version: LANDFIRE 2014
Source Landscape Acres: 2,000,485
Area of Interest Name: Myles Standish State Forest
Area of Interest Acres: 12,441
Model Name: Eastern Mass - Auto97th







Legend
Unbuffered Extent
Non-burnable
Area of Interest
Flame Length (ft)
>25
>11 - 25
>8 - 11
>4 - 8
>1 - 4
>0 -1

Interagency Fuel Treatment Decision Support System

Landscape Fire Behavior Summary
Flame Length

Analysis Details:
Date: 01/30/2020
LANDFIRE Version: LANDFIRE 2016
IFTDSS Username: bschueller
LCP Name: Total Tofte LF2016

Model Inputs:
Wind Type: Gridded Winds
Wind Speed: 14

Flame Length (feet) Data Summary for Area of Interest "totaltofteboundary" within "Total Tofte LF2016" Landscape

Source Landscape Name: Total Tofte LF2016
Landfire Version: LANDFIRE 2016
Source Landscape Acres: 933,505
Area of Interest Name: totaltofteboundary
Area of Interest Acres: 482,577
Model Name: Total Tofte LF2016 - Auto97th

Copy | CSV | Excel | PDF | Print

Show 10 entries

Flame Length (feet)	Pixel Count (freq)	Acres In AOI	Percent In AOI
Non-burnable	84,696	18,836	4
>0 - 1	360,662	80,209	17
>1 - 4	927,388	206,246	43
>4 - 8	53,415	11,879	2
>8 - 11	16,355	3,637	1
>11 - 25	278,449	61,926	13
>25	448,946	99,843	21

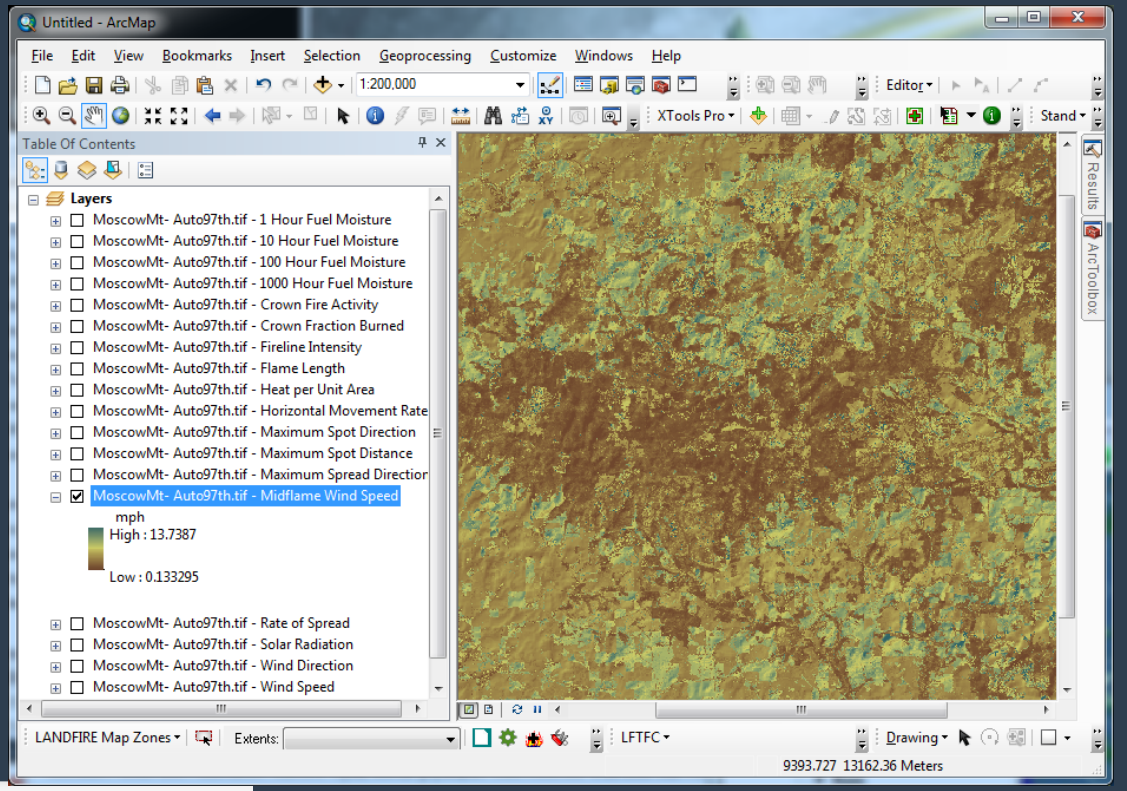
Showing 1 to 7 of 7 entries

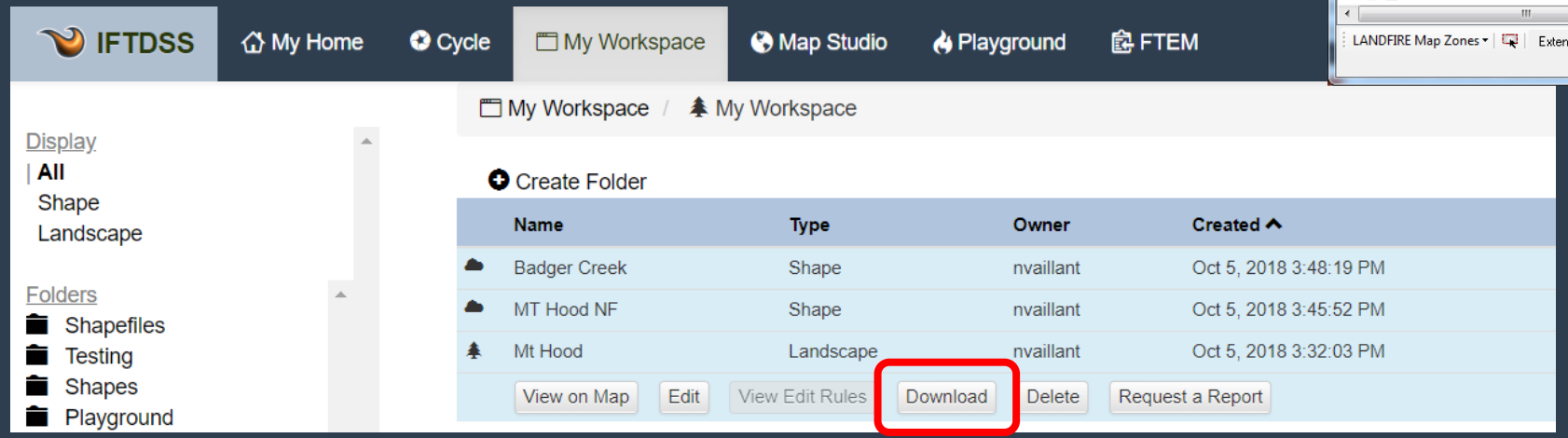
Generate summary reports and download / export

IFTDSS

Export landscape data and fire model outputs

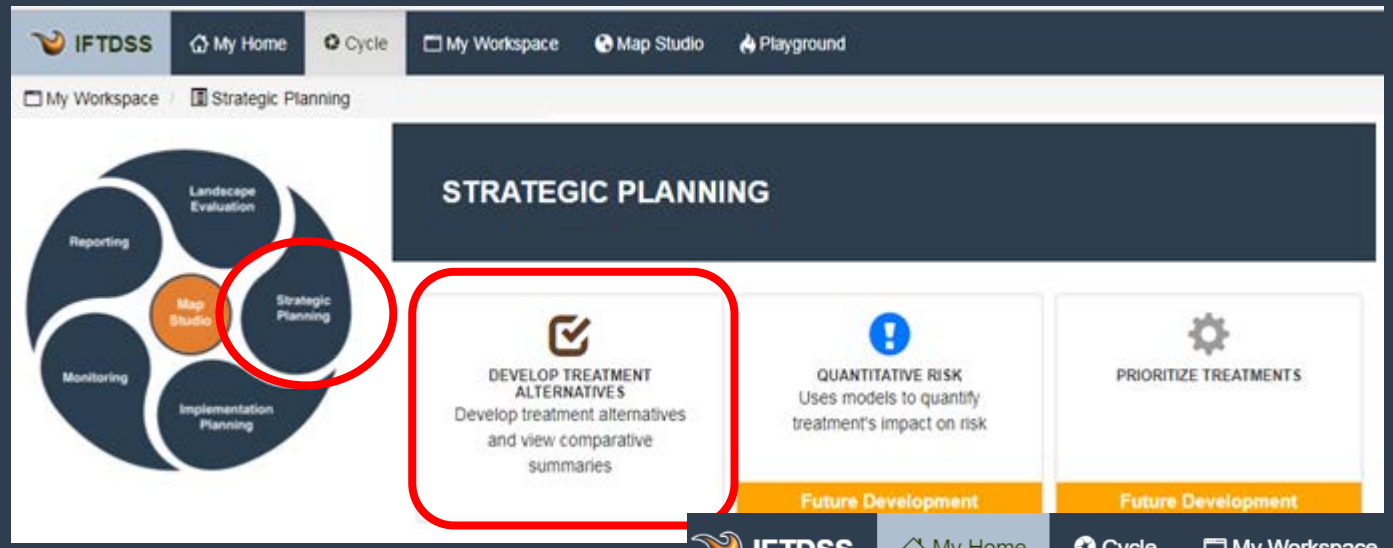
- Multi-band GeoTiffs
- Original and edited landscapes
- Fire model outputs
- Use in other programs that need LCPs (FlamMap, FARSITE, etc.)
- Bring into GIS for further analysis

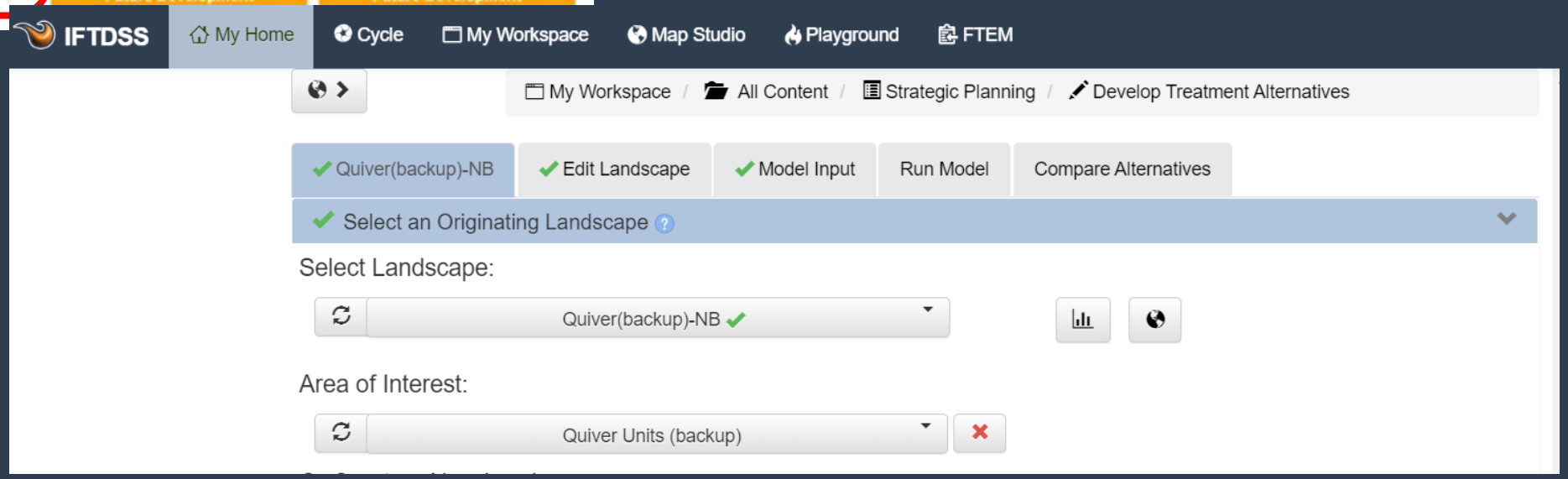




What can IFTDSS do now?

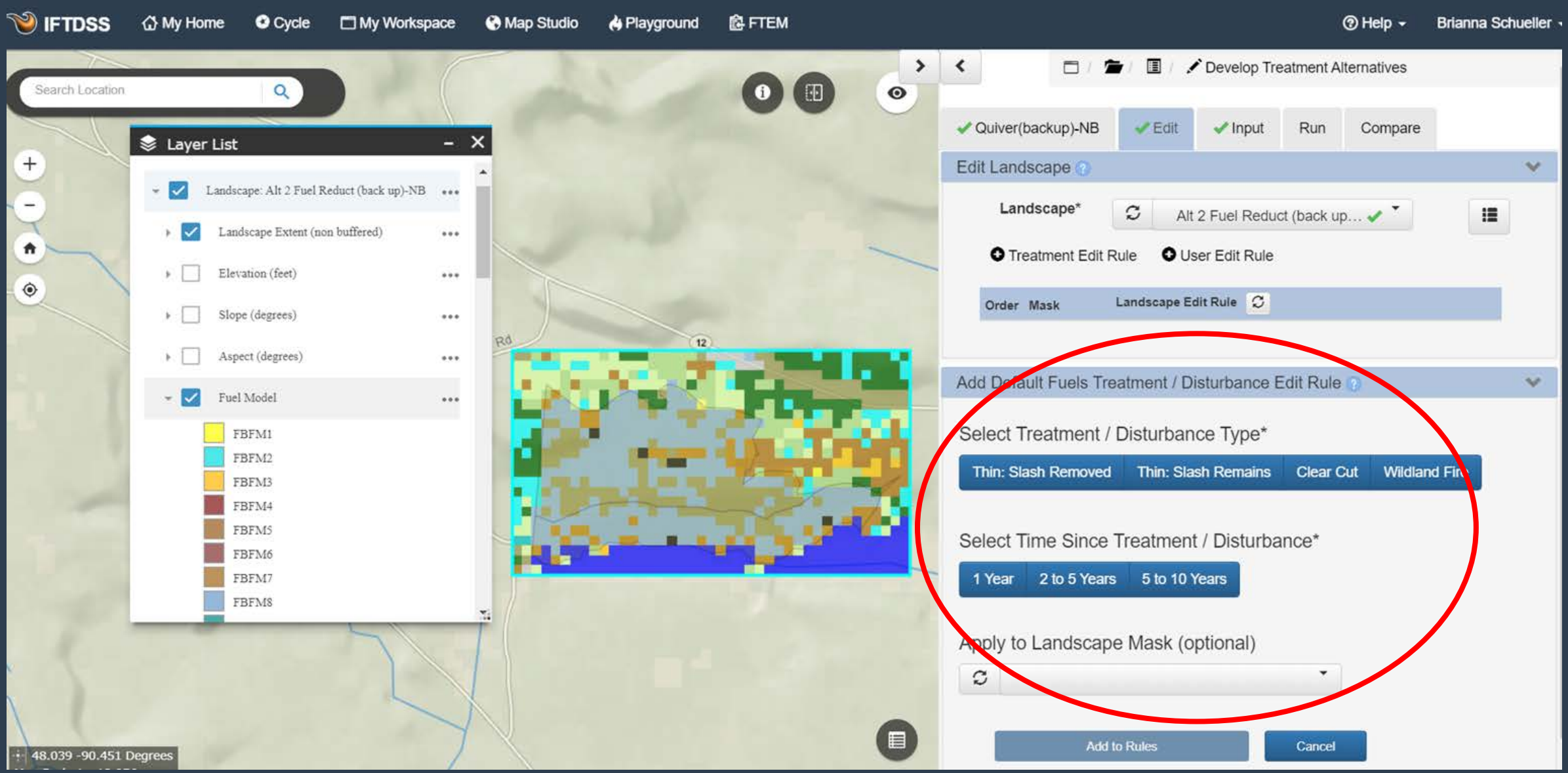
Develop and Compare Treatment Scenarios





Develop and Compare Treatment Scenarios

IFTDSS



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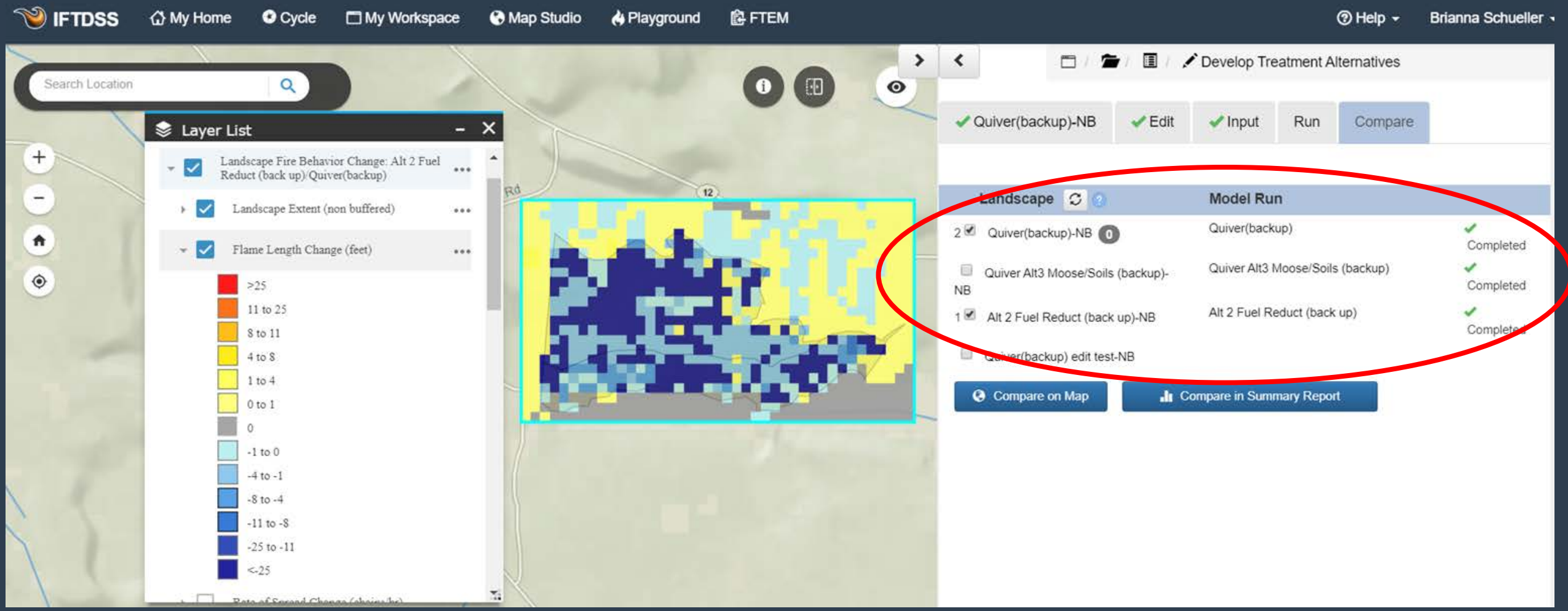

Develop and Compare Treatment Scenarios

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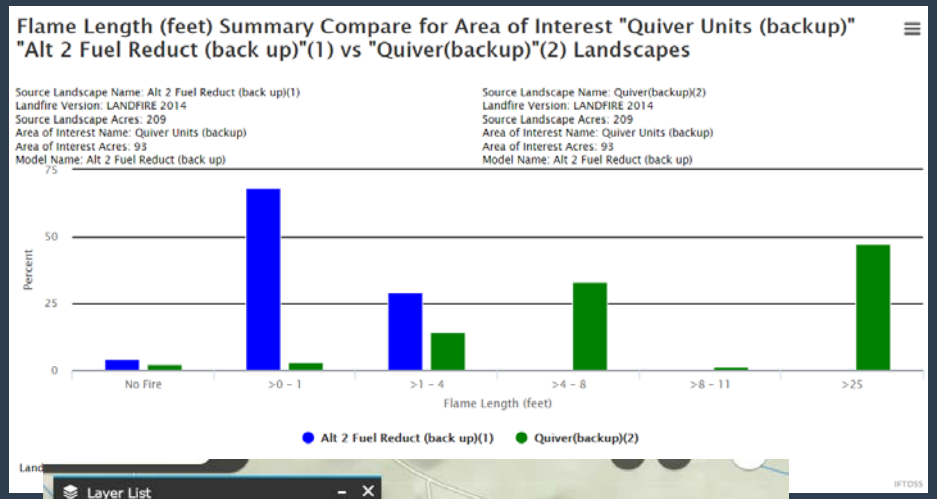

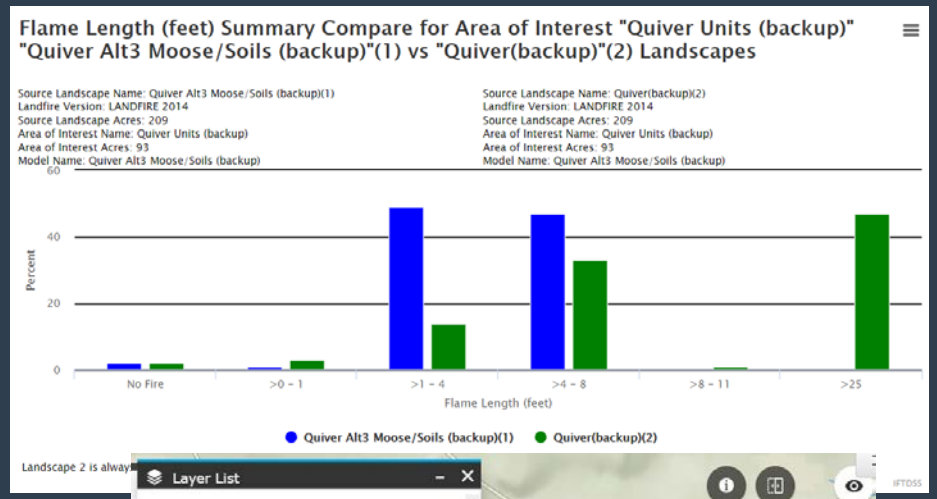

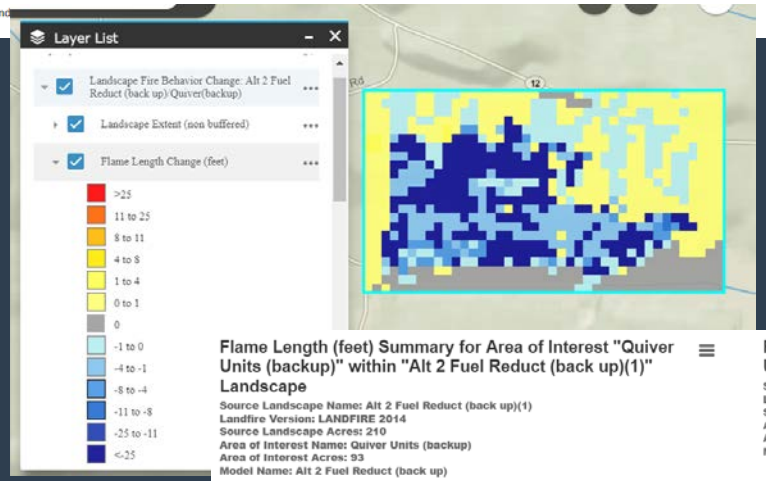

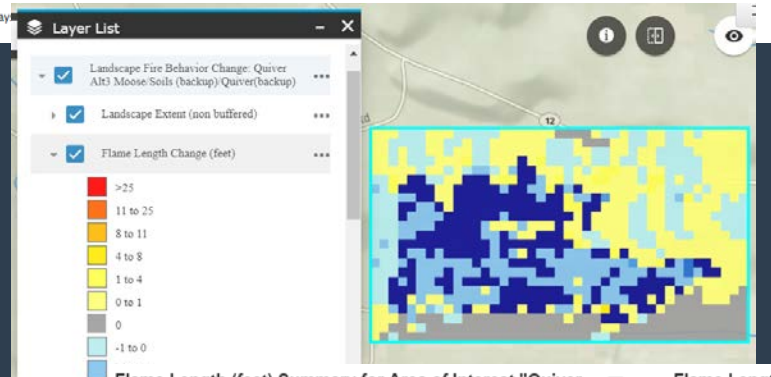

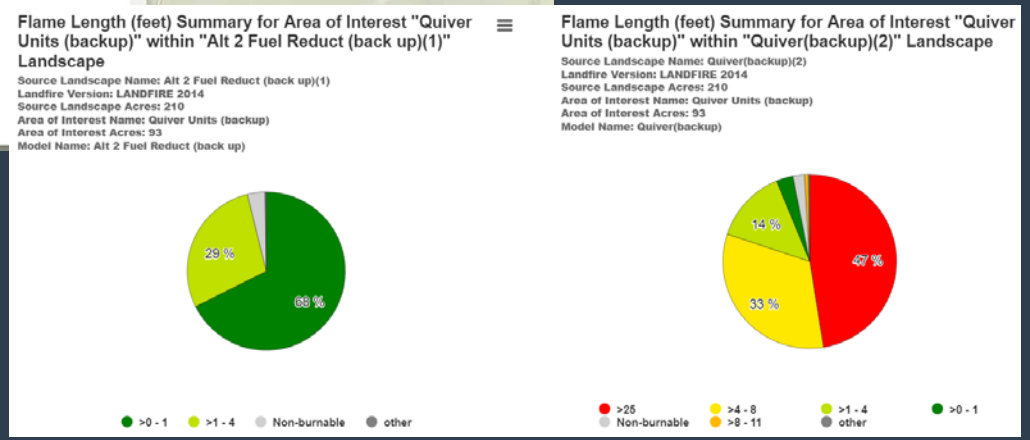

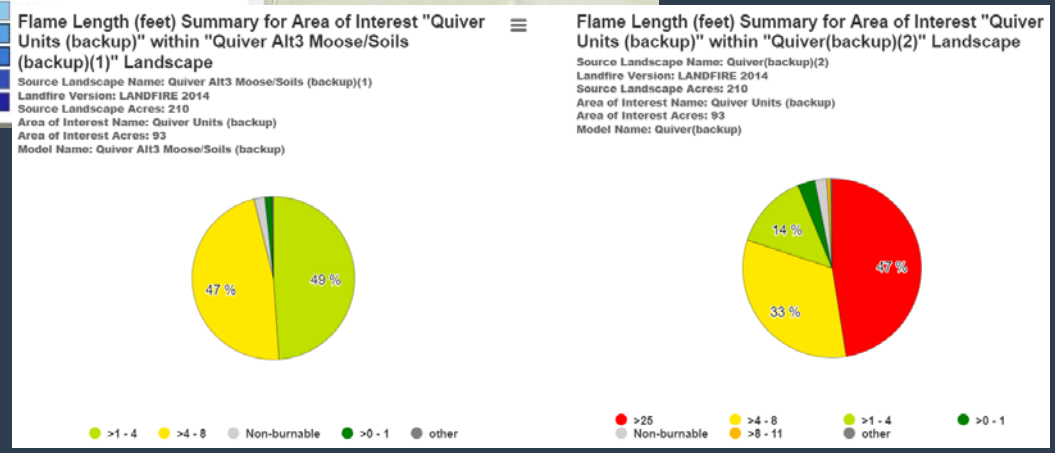

What can IFTDSS do now?

IFTDSS

Aid in Prescribed Fire Planning

- Used to describe fire area and assess Fire Behavior Fuel Models (spatial/tabular)
- Run and compare a variety of prescription parameters and view differences in reports and spatially on the map
- Use Landscape Fire Behavior outputs to create/validate the ignition, holding, contingency plans

Describe fire area and view fuel models on maps

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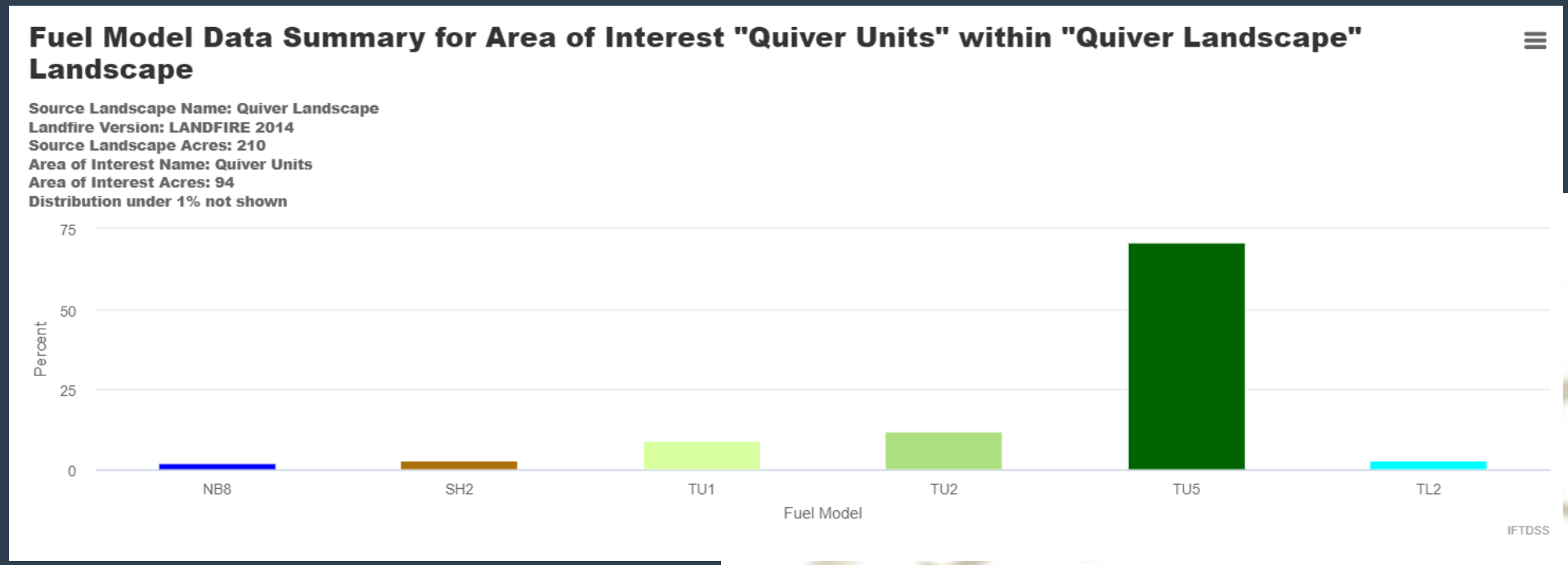

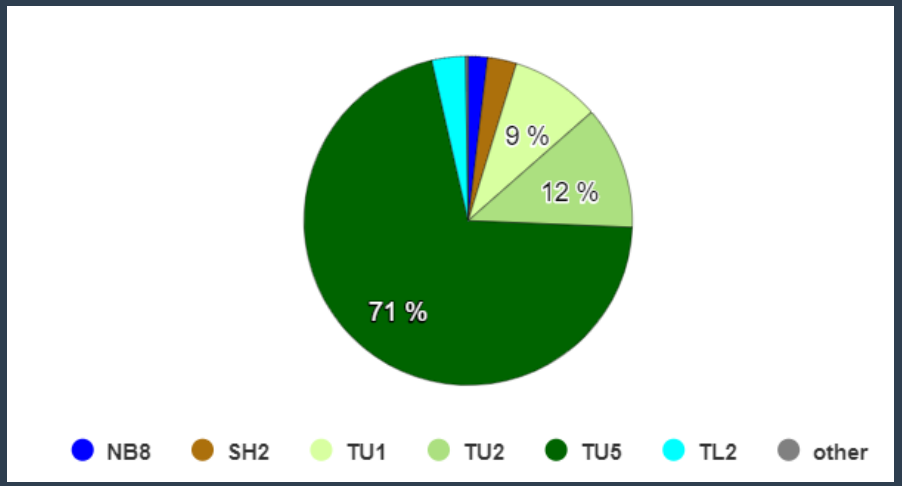

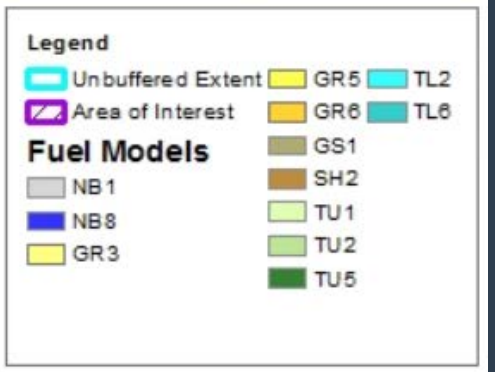

Interagency Fuel Treatment Decision Support System

Compare a variety of Prescription Parameters

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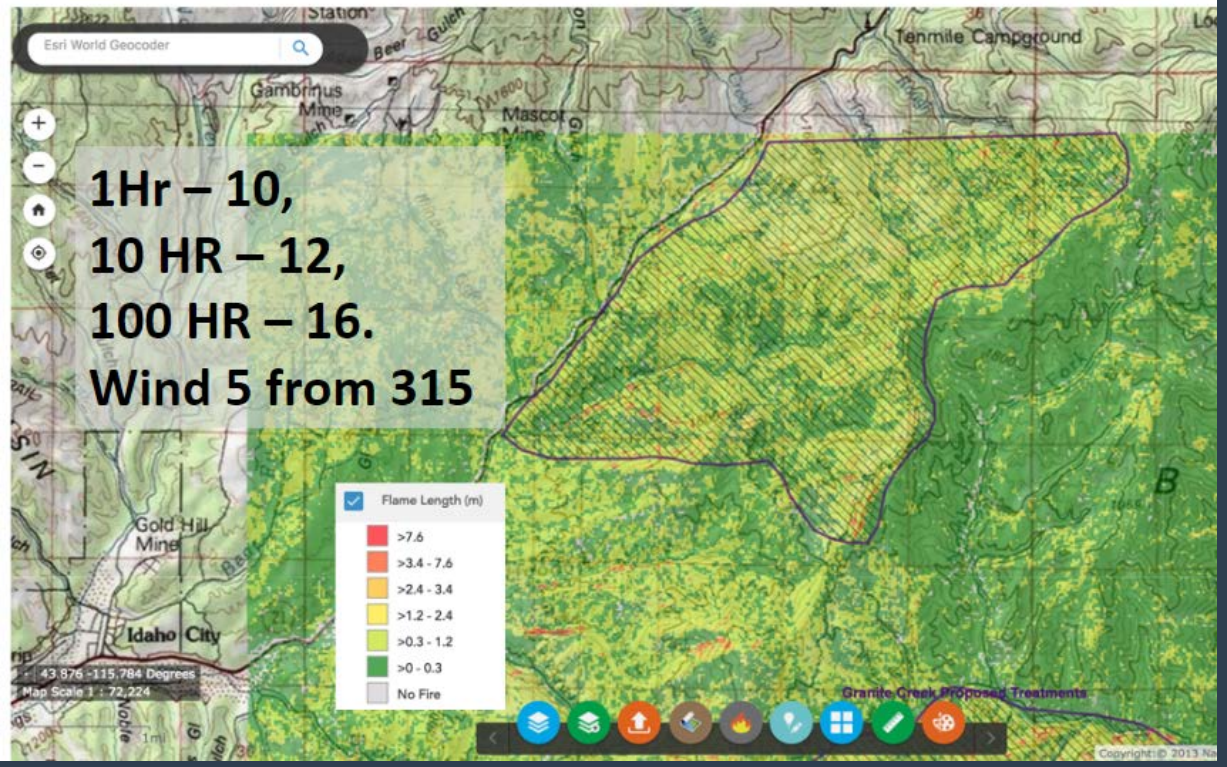
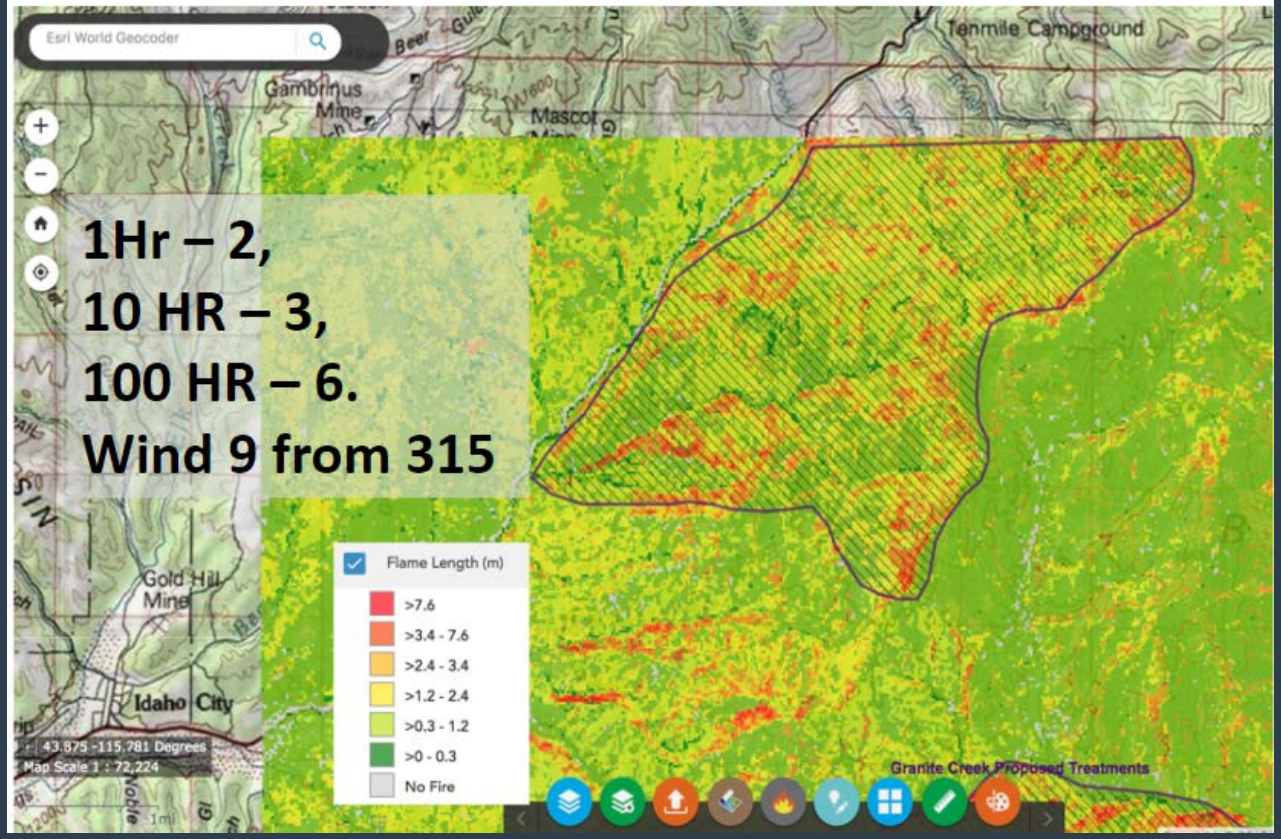
LOW END RX



HIGH END RX



Compare a variety of Prescription Parameters

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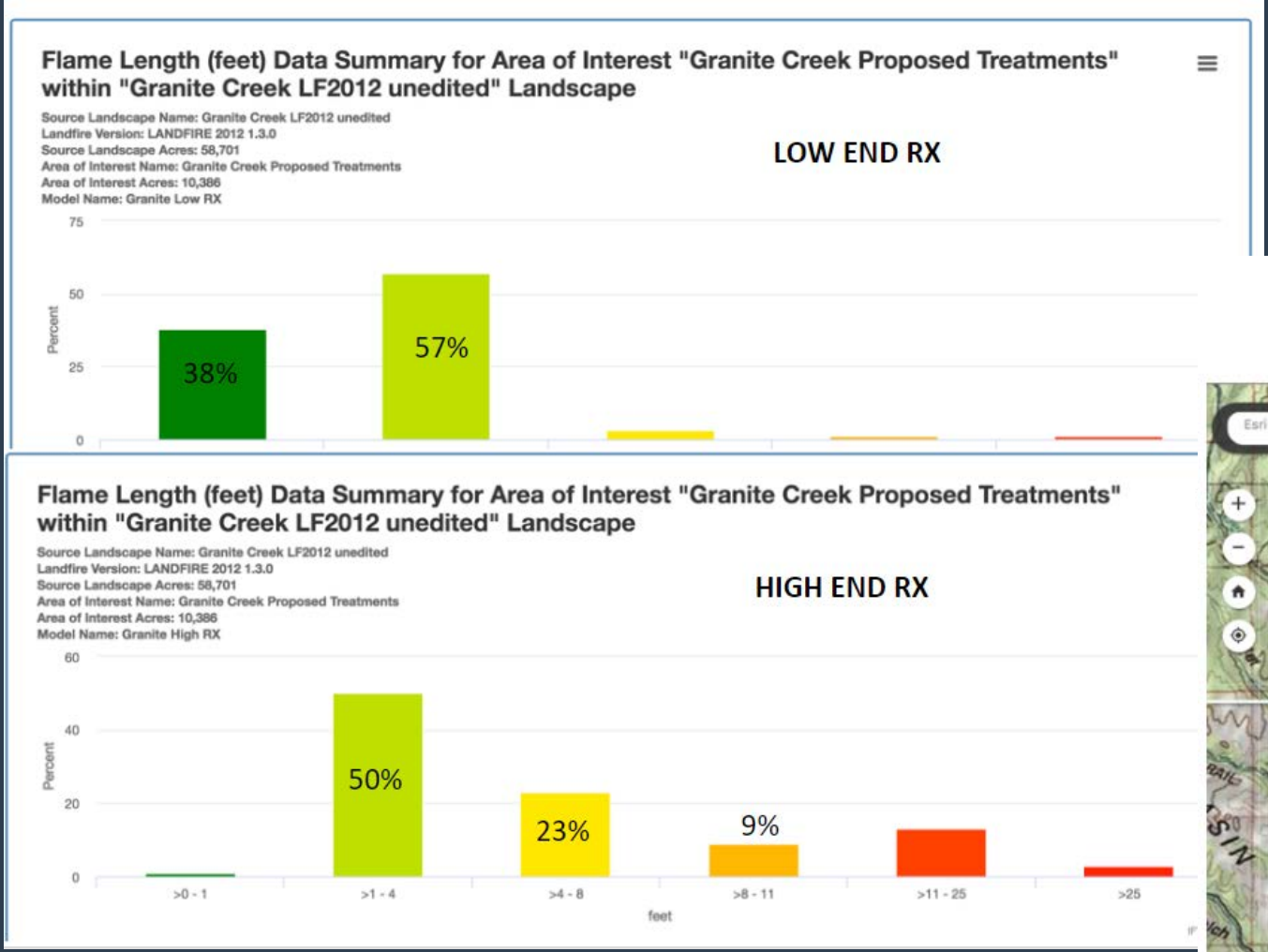
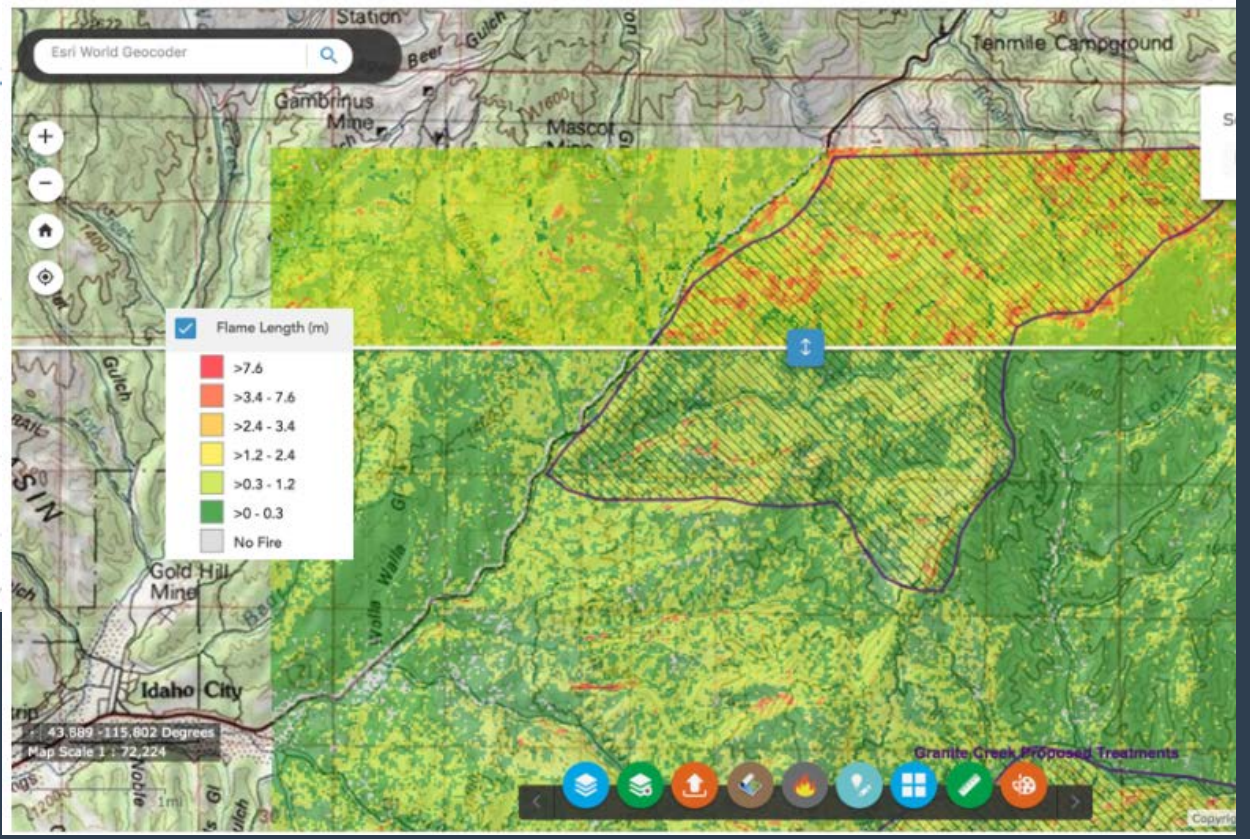


Compare Low RX to High RX



Use in creating/validating holding, ignition, contingency plans

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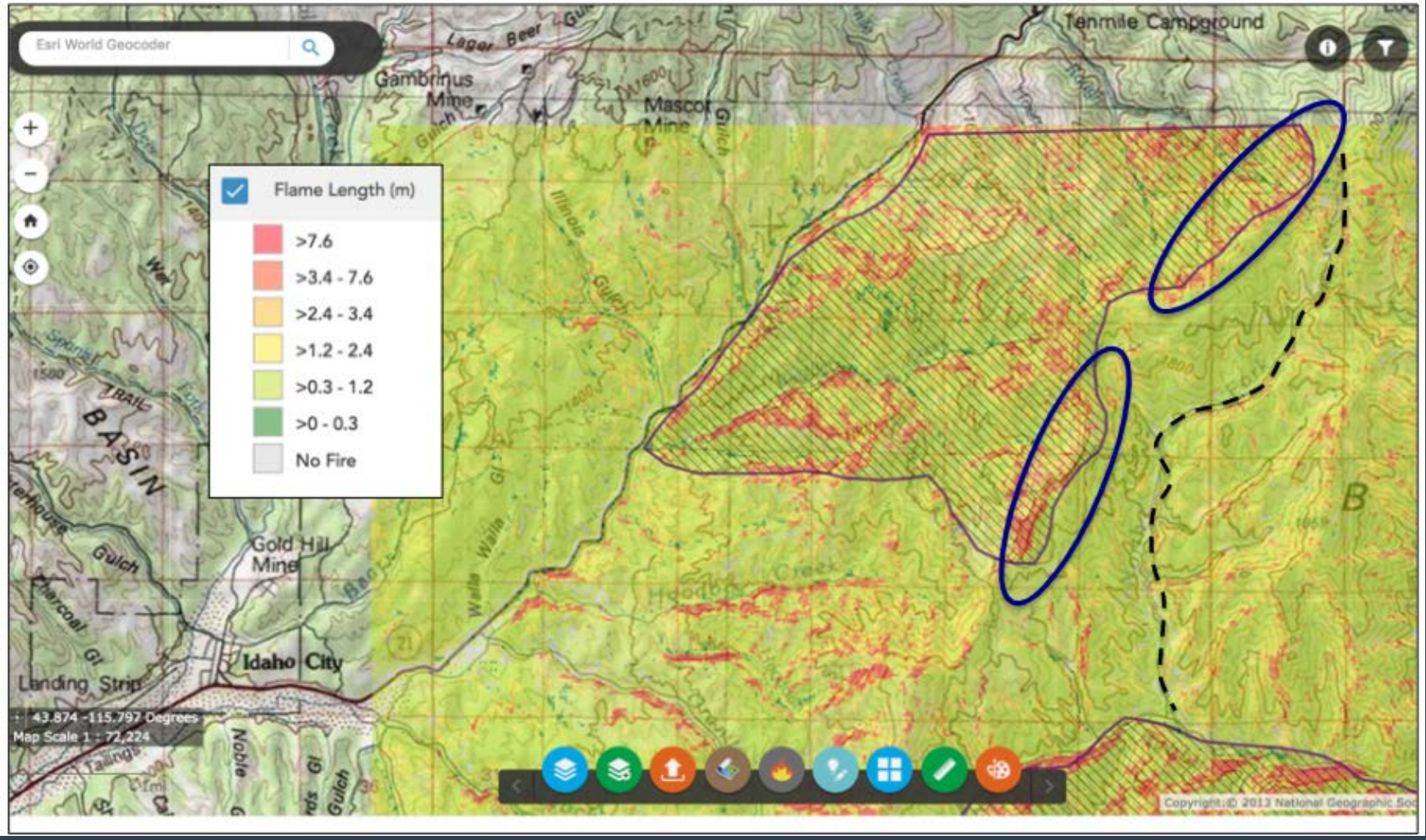
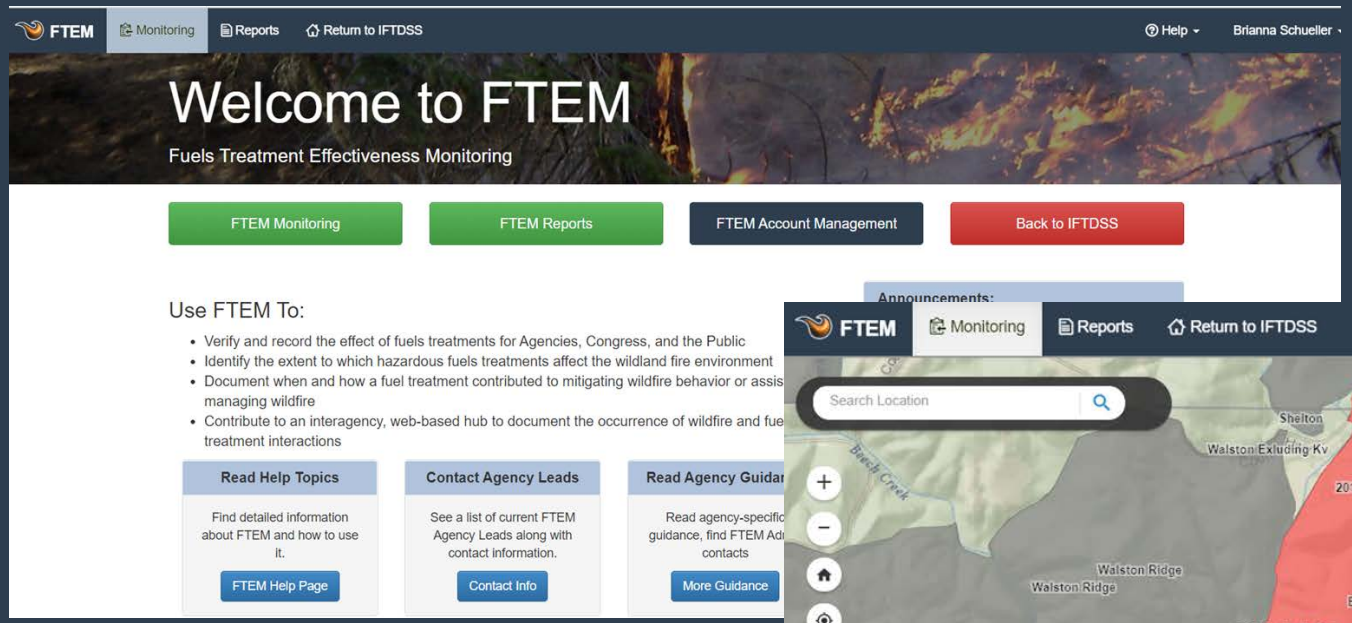
HOLDING PLAN

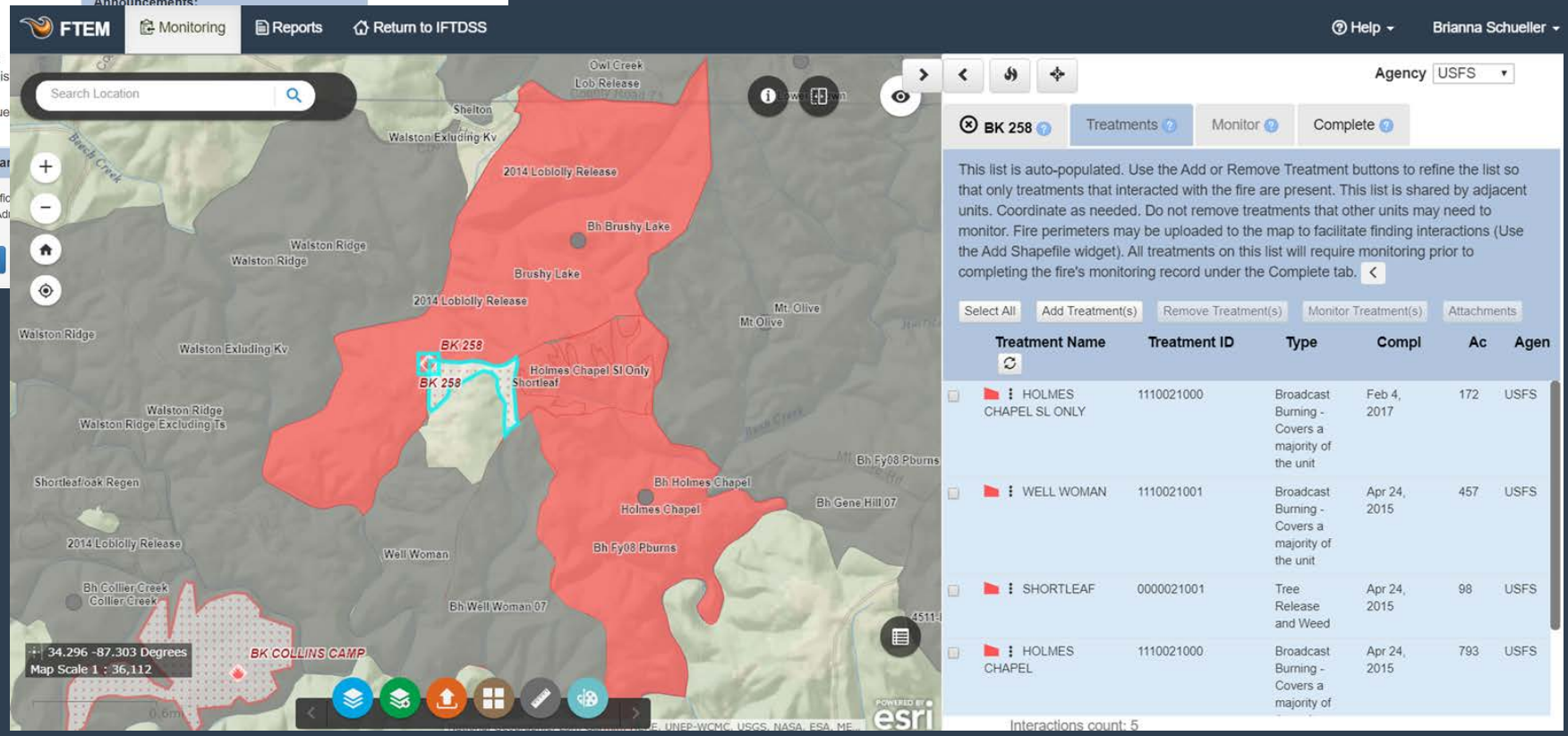
Scenario: Biologist wants burn unit boundary to be located along ridge in blue circles, as the burn boss and burn plan preparer writing the holding plan, you would like to propose the drainage/trail along the dotted line – lower flame lengths, fireline intensity etc.



What can IFTDSS do now?

Fuel Treatment Effectiveness Monitoring

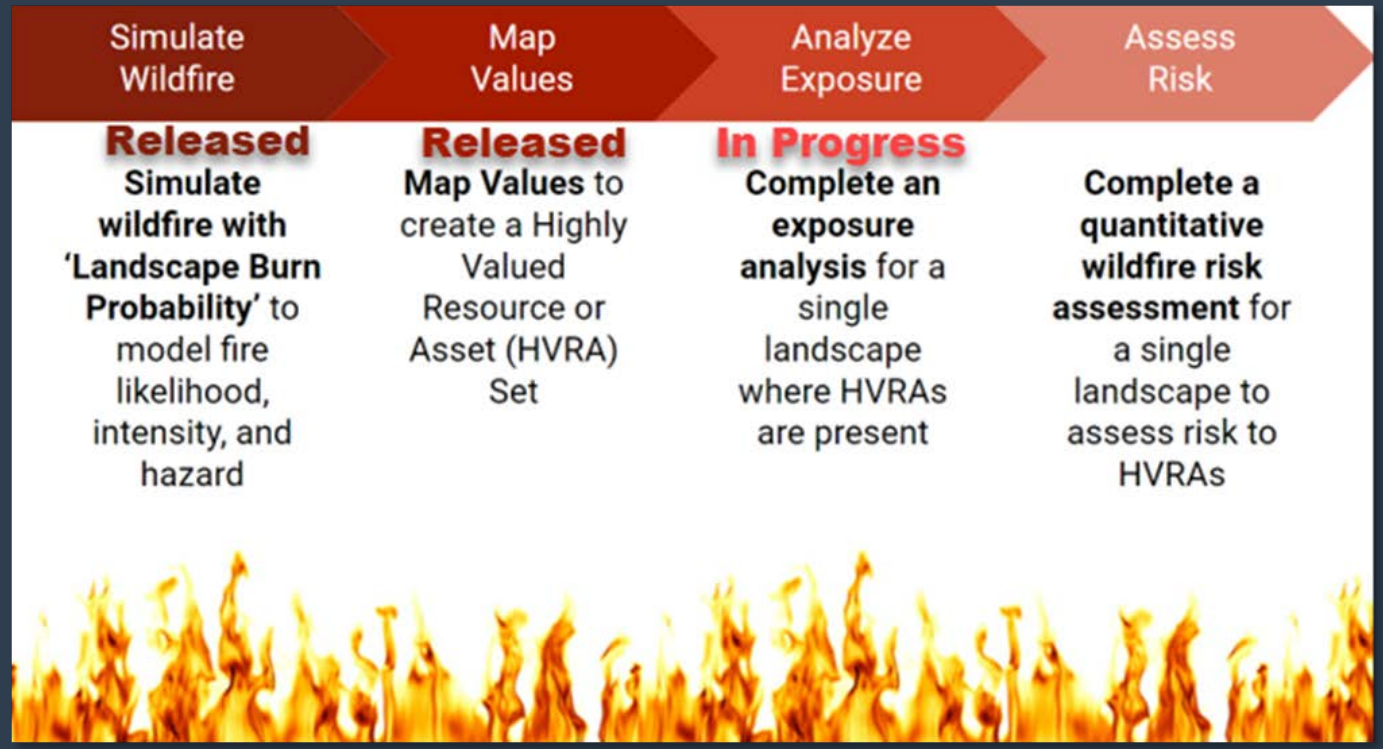




What will IFTDSS do next?

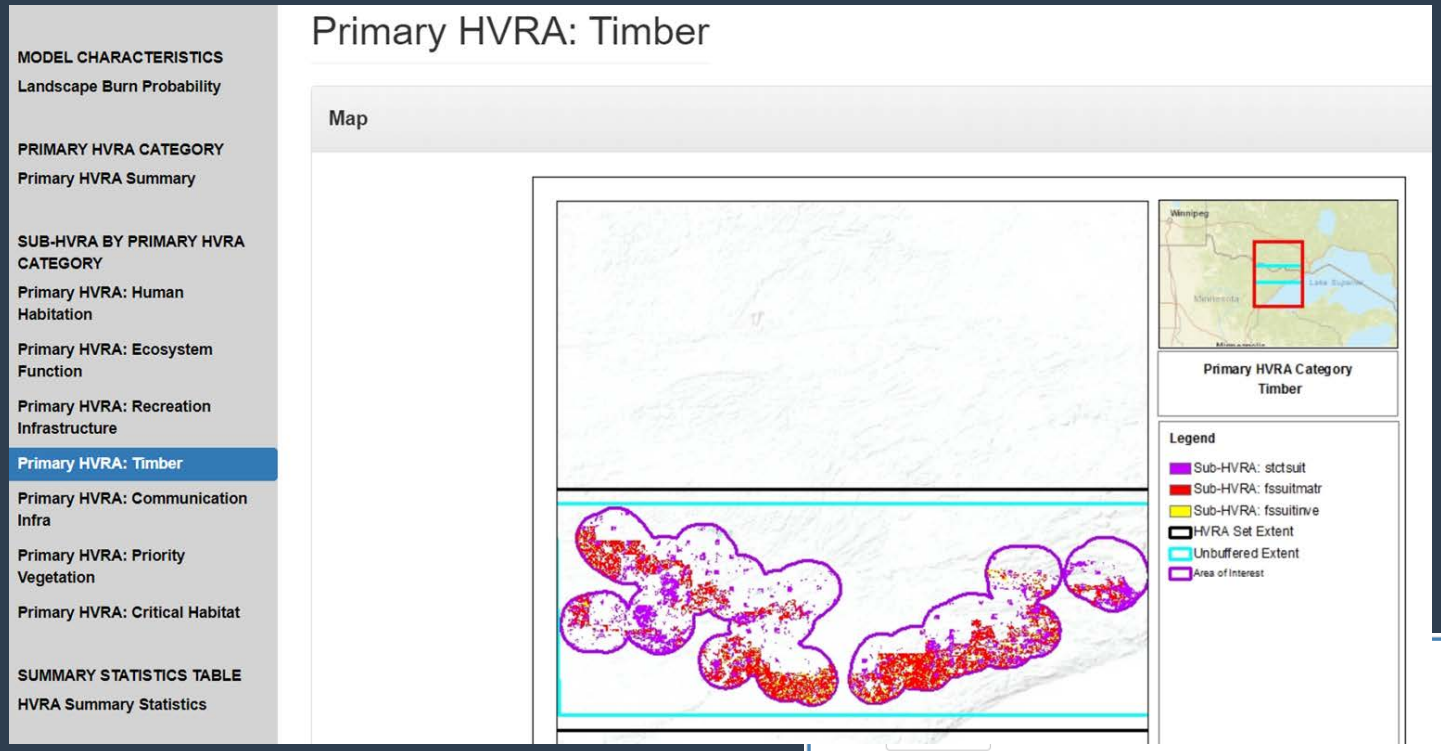
Quantitative Wildfire Risk Assessment

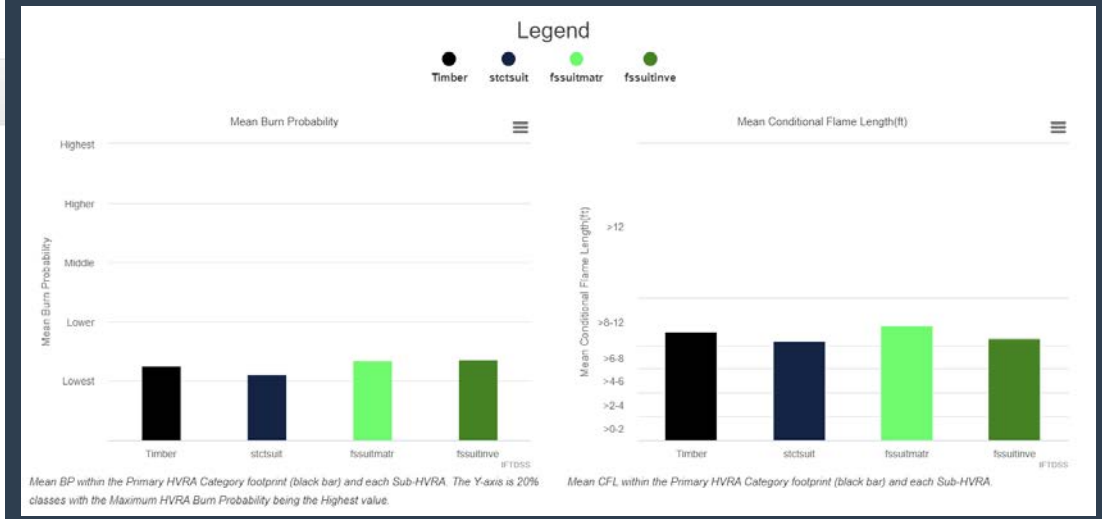
- Wildfire simulation with “Landscape Burn Probability”
- Highly Valued Resources or Assets (HVRA characterization)
- Analyze exposure to HVRAs (coming very soon)
- Complete a Quantitative Wildfire Risk Assessment-assess threats and benefits to HVRAs



What will IFTDSS do next?

Exposure Analysis reports

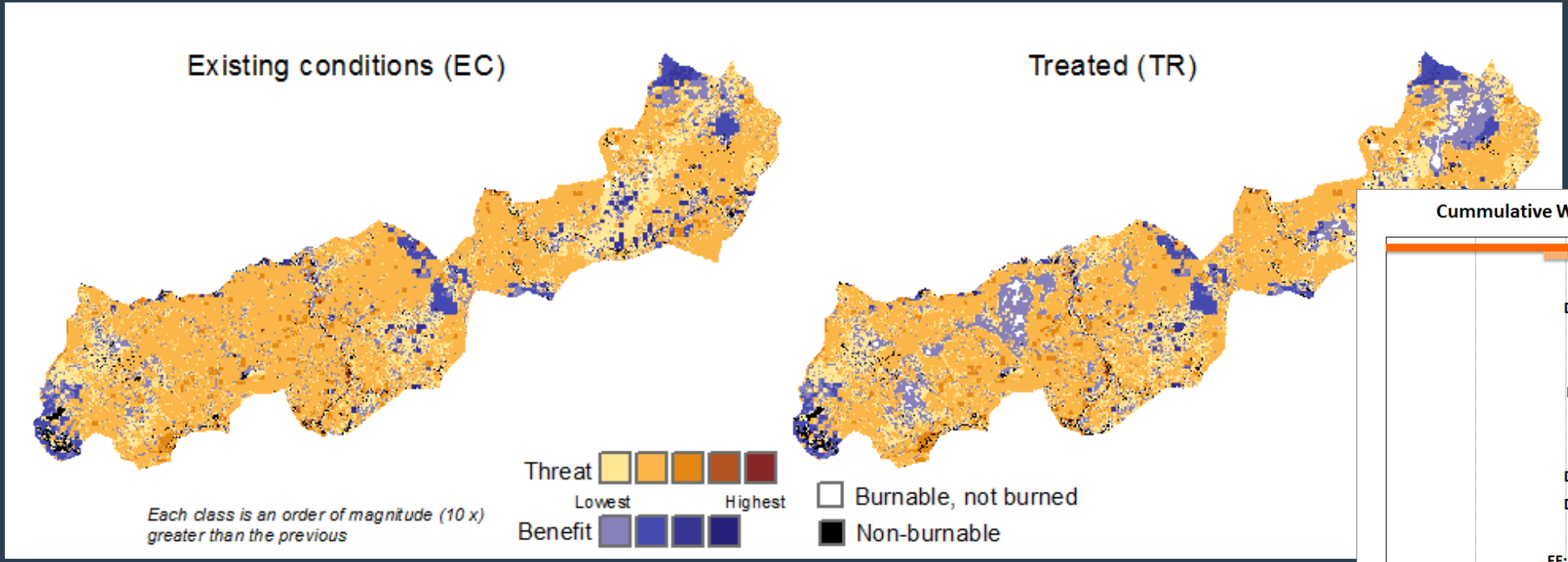


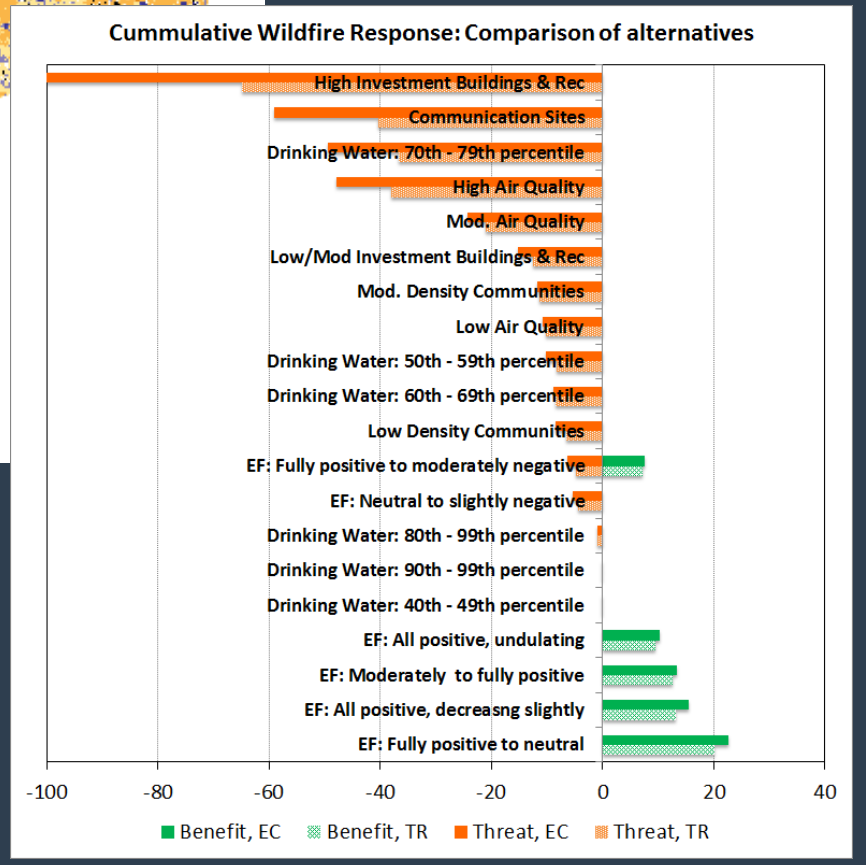


Primary HVRA Category	Sub-HVRA Name	Sub-HVRA Short Name	Relative Extent (ac)	Expected Area Burned (ac)	Mean Burn Probability	Mean Conditional Flame Length (ft)	Mean Integrated Hazard Class
Timber			451,056	316	0.0007	9.13	middle
	timber_statecountysuitable	stctsuit	167,661	104	0.00062	8.37	middle
	timber_usfssuitablematrix_clippedwfbr	fssuitmatr	255,889	192	0.00075	9.68	middle
	timber_fssuitableinvested	fssuitinve	27,506	21	0.00076	8.59	middle

What will IFTDSS do next?

Quantitative Wildfire Risk Assessment





- User defined response functions (RF)
- User defined relative importance (RI)
- Net Benefit/Net Threat Graphics

What will IFTDSS do after Risk???

- Comparison Dashboard
- Fire spread model (MTT)
- Collaboration/Sharing
- ????

How can I learn more about IFTDSS?