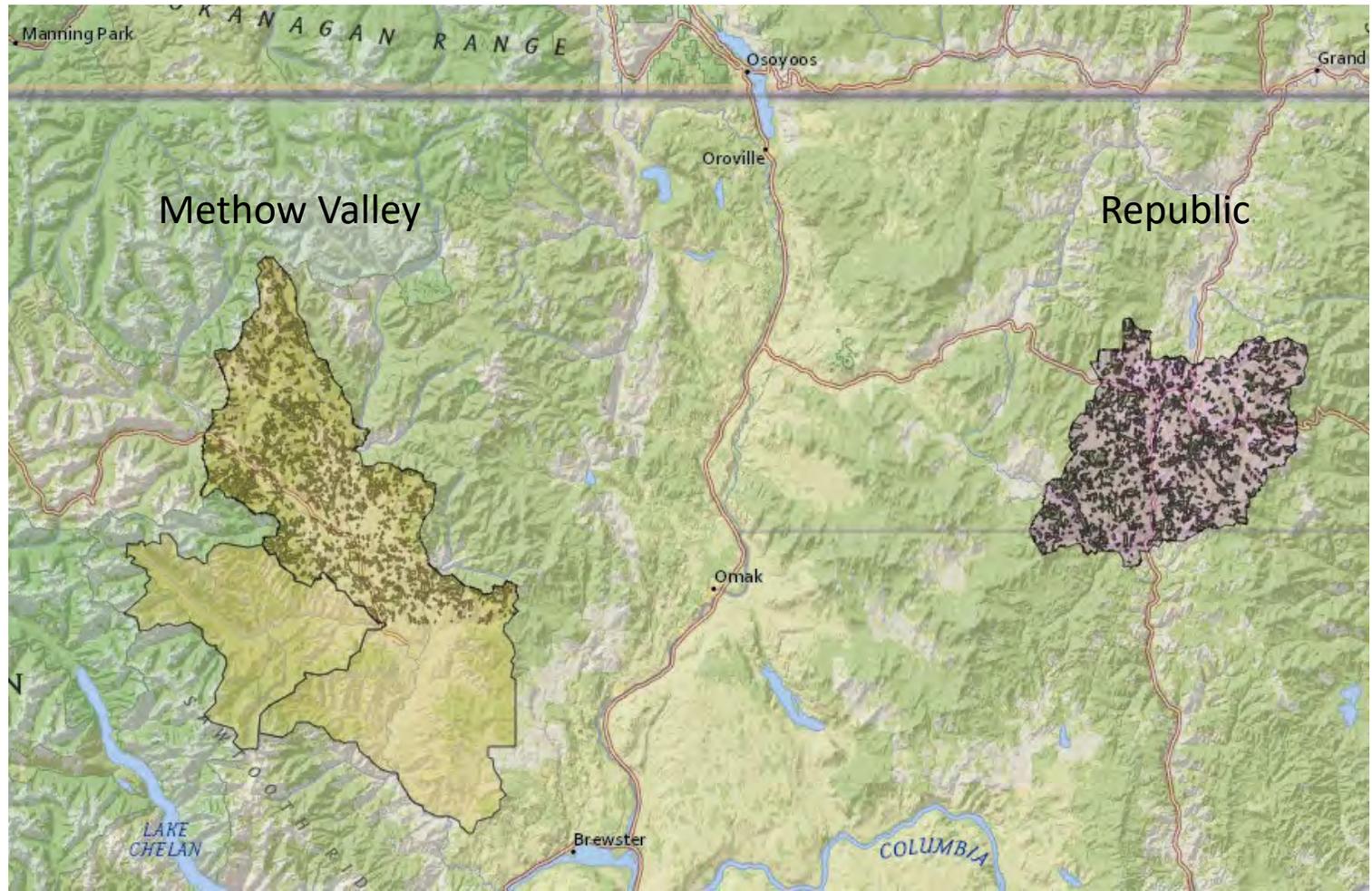


Using IFTDSS to Evaluate Landscape Fuel Treatments

JFSP Project 17-1-01

Objectives

- To evaluate thresholds to effectiveness in landscape fuel treatments across the Washington DNR's Priority Landscapes.



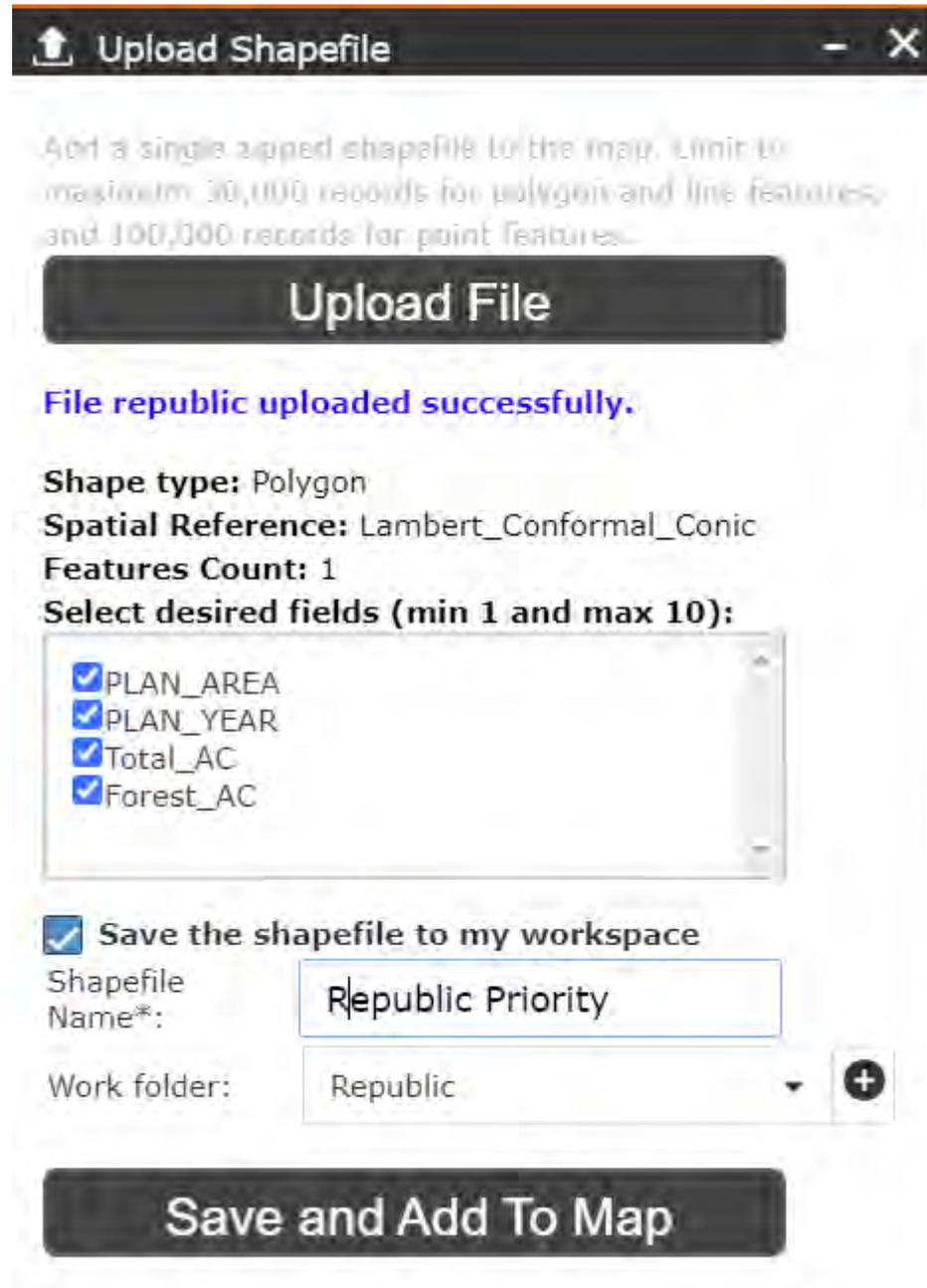
Republic Example

Step 1:

Upload WA DNR's Republic Priority Area

Note – first create a work folder for Republic in My Workspace.

Checked the **Save the shapefile to my workspace** button to change the work folder from the default “Playground” to a specific work folder “Republic”.



Upload Shapefile

Add a single zipped shapefile to the map. Limit to maximum 30,000 records for polygon and line features, and 100,000 records for point features.

Upload File

File republic uploaded successfully.

Shape type: Polygon
Spatial Reference: Lambert_Conformal_Conic
Features Count: 1
Select desired fields (min 1 and max 10):

- PLAN_AREA
- PLAN_YEAR
- Total_AC
- Forest_AC

Save the shapefile to my workspace

Shapefile Name*: Republic Priority

Work folder: Republic

Save and Add To Map

Step 2

Based on the Republic Priority area, create a new Landscape With Fuel Model 40. It takes several minutes for IFTDSS to build it. You can check on the status in My Workspace.

Because we wanted to represent fuels prior to the 2014/2015 wildfire seasons, we selected LANDFIRE 2012 as the source of the standard fuel model layer.



The screenshot shows the 'Landscape Tools' window with the following configuration:

- Add to map:** Disabled (greyed out)
- Create new:** Enabled (blue text)
- Select an existing AOI (optional):** RepublicPriority (checked)
- Select draw mode:** Solid (black square icon)
- Coordinates:**
 - North*: 48.7385
 - West*: -118.9598
 - East*: -118.4577
 - South*: 48.4312
- Area:** 312,802.94 acres
- Length:** 467,296.64 feet
- Landfire Version*:** LANDFIRE 2012
- Fuel Model*:** Fuel Model 40
- Landscape Name*:** Republic
- Work folder:** Republic (with a plus icon for adding a new folder)

Step 3:

Upload the treatment shapefiles.
In this example, we have 6 scenarios to evaluate:

- 10%
- 20%
- 30%
- 40%
- 50%
- 60%

 Upload Shapefile - X

Add a single zipped shapefile to the map. Limit to maximum 30,000 records for polygon and line features, and 100,000 records for point features.

Upload File

File republic10 uploaded successfully.

Shape type: Polygon
Spatial Reference: Lambert_Conformal_Conic
Features Count: 419
Select desired fields (min 1 and max 10):

Hectares
 PatchID
 HUC12
 LUA
 TopoAsp
 PWG

Save the shapefile to my workspace

Shapefile Name*:

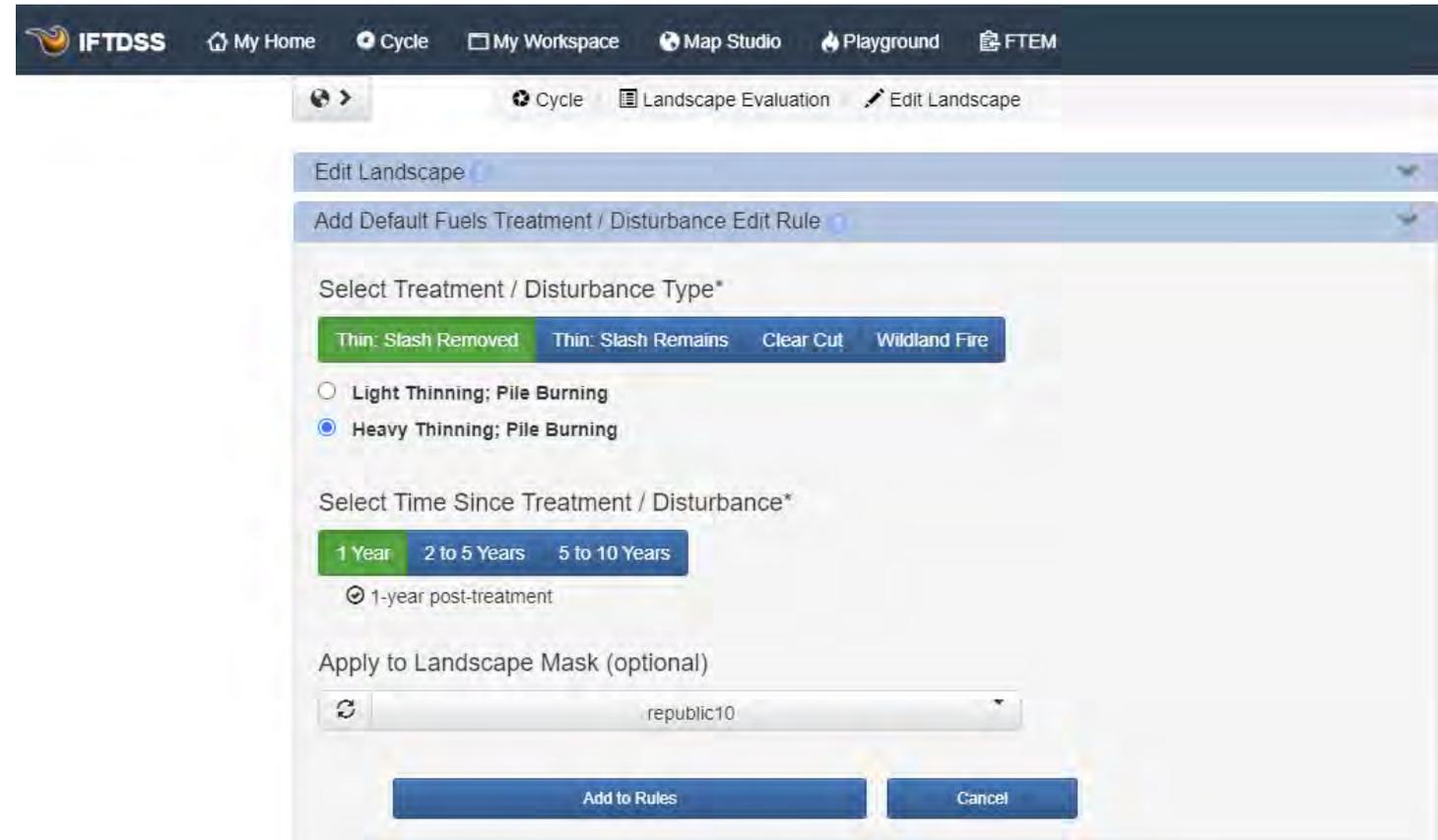
Work folder: 

Save and Add To Map

Step 4: Apply the treatment masks to design fuel treatment layers within each of the 6 scenario landscapes

Select **Edit Landscape** from the IFTDSS Cycle tab

- Select the landscape you wish to edit (Republic)
- First click on **Add Default Fuels Treatment Edit Rule**
- We selected a heavy thinning followed by pile burning
- In this example, our Landscape Mask is the 10% treated landscape



Step 5: Further reduce the surface fuels to represent a broadcast burn

Select **Edit Landscape** from the IFTDSS Cycle tab

- Select the landscape you wish to edit (Republic10)
- Click on **Add User Created Edit Rule**
- This is a bit of finesse, but it works (see next slide for input screen).
 - Where these conditions exist, attribute is set to fuel model, operator = is greater than and value = 101GR1
 - Modify the following values (anything > 101, which excludes NB9 pixels and pixels that are already set to 101) by selecting **Attribute = Fuel model, Modifier = set to, and Value = 101 (GR1)**
 - Select your fuel treatment layer (in this case, republic10) for **Apply to Landscape Mask**
 - Click **Add to Rules**
 - Then name your customized landscape
 - Once again, it take a little while to build this landscape, but it will show up as either building or completed under My Workspace



Cycle

Landscape Evaluation

Edit Landscape

Edit Landscape

Add Default Fuels Treatment / Disturbance Edit Rule

Add User Created Edit Rule

Where these conditions exist:

Attribute

Operator

Value

Fuel Model

is greater than

101 (GR1)



+ add row

Modify the following values*:

Attribute

Modifier

Value

Fuel Model

set to

101 (GR1)



+ add row

Apply to Landscape Mask (optional)



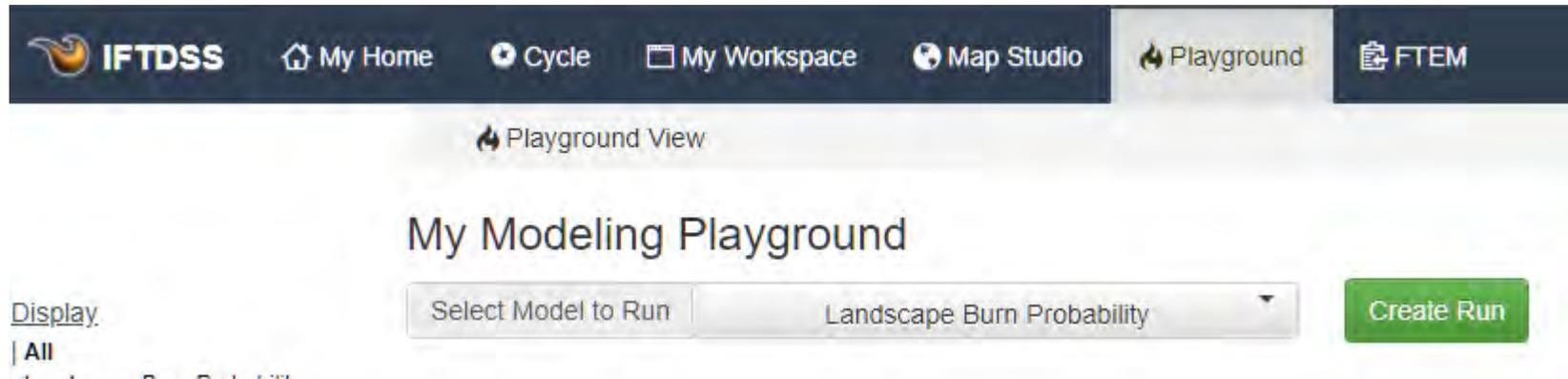
republic10

Add to Rules

Cancel

Step 5: Landscape Burn Probability Modeling

- Navigate to Playground
- Select Model to Run: Landscape Burn Probability
- Click Create Run
- Expand each tab to enter inputs (see next slide for summary of inputs)



The screenshot shows the IFTDSS Playground interface. At the top, there is a dark navigation bar with the IFTDSS logo and several menu items: My Home, Cycle, My Workspace, Map Studio, Playground (which is highlighted), and FTEM. Below the navigation bar, the main content area is titled "My Modeling Playground". On the left side, there is a "Display" section with a "All" filter. The main area contains a "Select Model to Run" dropdown menu currently set to "Landscape Burn Probability", and a green "Create Run" button to its right.

Select Landscape:

 Republic60r 

Landscape Details

Landscape Name: Republic60r

Date Created: Sep 15, 2021 6:51:55 PM

Landscape Source Data: LANDFIRE 2012

Landscape Buffer (meters): 4980

Owner: sprich

Landscape Status: 

Resolution (meters): 30

Acres: 315182.86

 Wind  

 Crown Fire Inputs  

 Initial Fuel Moisture  

 Fuel Moisture Conditioning  

 Ignitions  

 Simulation Time  

 Spotting  

* Spotting Probability percent

Step 5: Landscape Burn Probability Modeling (spotting distance = 20% for both)

View Input

15 mph wind speed



Model Run Details

Model Run Name: Republic60BPN-60m
Date Created: Sep 26, 2021 2:20:00 PM
Model Type: Landscape Burn Probability

Landscape Name: Republic60r
Resolution (meters): 60
Owner: sprich

Wind

Wind Type: Gridded Winds
Wind Speed (mph): 15

Wind Direction (degrees): 315

Crown Fire Inputs

Crown Fire Method: Scott/Reinhardt

Foliar Moisture Content (%): 80

Initial Fuel Moisture

Fuel Model	1hr FM	10hr FM	100hr FM	Herb FM	Woody FM
All	3	4	5	30	60

Fuel Moisture Conditioning

Conditioning: On - Extreme - Northwest Rockies
Conditioning Start: 1300, 8/21/2011
Conditioning End: 1500, 8/26/2011

Simulation Time

Burn Period Length (hours): 10

View Input

35 mph wind speed



Model Run Details

Model Run Name: Republic60BPE-60m
Date Created: Sep 23, 2021 4:10:49 PM
Model Type: Landscape Burn Probability

Landscape Name: Republic60r
Resolution (meters): 60
Owner: sprich

Wind

Wind Type: Gridded Winds
Wind Speed (mph): 35

Wind Direction (degrees): 315

Crown Fire Inputs

Crown Fire Method: Scott/Reinhardt

Foliar Moisture Content (%): 80

Initial Fuel Moisture

Fuel Model	1hr FM	10hr FM	100hr FM	Herb FM	Woody FM
All	3	4	5	30	60

Fuel Moisture Conditioning

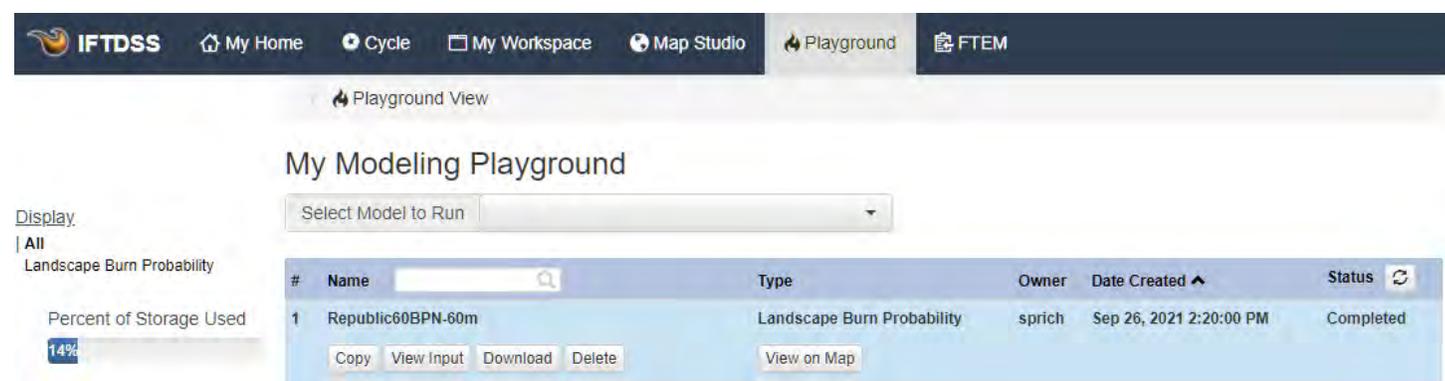
Conditioning: On - Extreme - Northwest Rockies
Conditioning Start: 1300, 8/21/2011
Conditioning End: 1500, 8/26/2011

Simulation Time

Burn Period Length (hours): 10

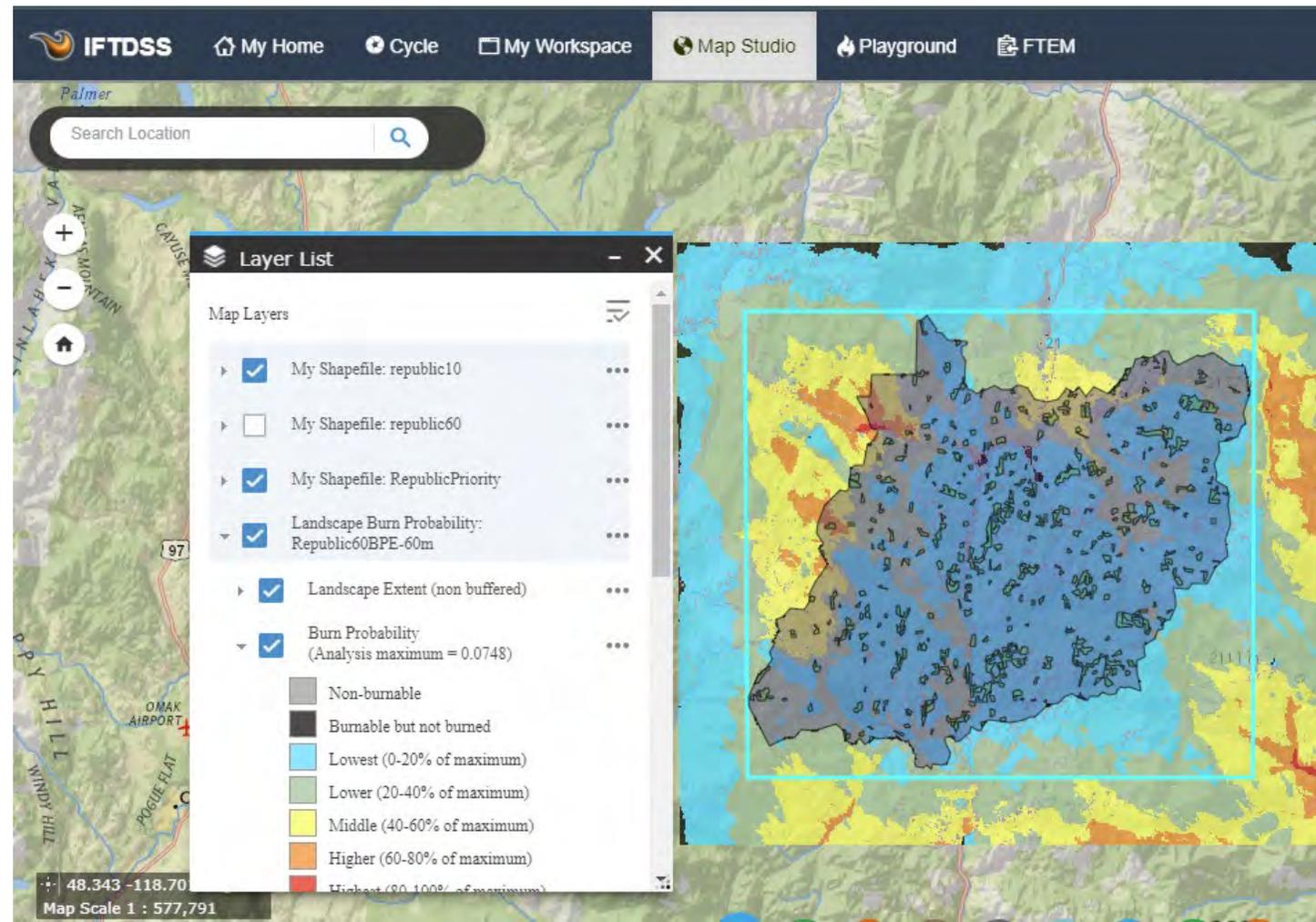
Step 6: Review results

- Once you submit a run, it can take a few minutes to several hours for IFTDSS to complete a simulation.
- Navigate to **Playground** to check the status, and if the simulation is completed, click **View on Map**.
- This example shows the Landscape Burn Probability for Republic 10% (extreme fire weather)



The screenshot shows the 'My Modeling Playground' interface. At the top, there are navigation tabs for 'My Home', 'Cycle', 'My Workspace', 'Map Studio', 'Playground', and 'FTEM'. Below the navigation, there is a 'Display' section with a 'Select Model to Run' dropdown menu. A table lists simulation runs with columns for '#', 'Name', 'Type', 'Owner', 'Date Created', and 'Status'. A progress bar indicates 'Percent of Storage Used' at 14%.

#	Name	Type	Owner	Date Created	Status
1	Republic60BPN-60m	Landscape Burn Probability	sprieh	Sep 26, 2021 2:20:00 PM	Completed

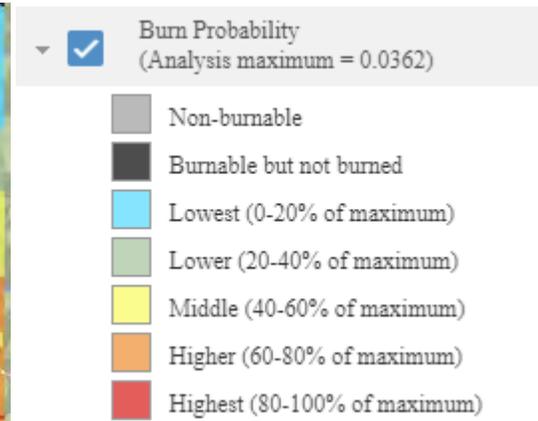
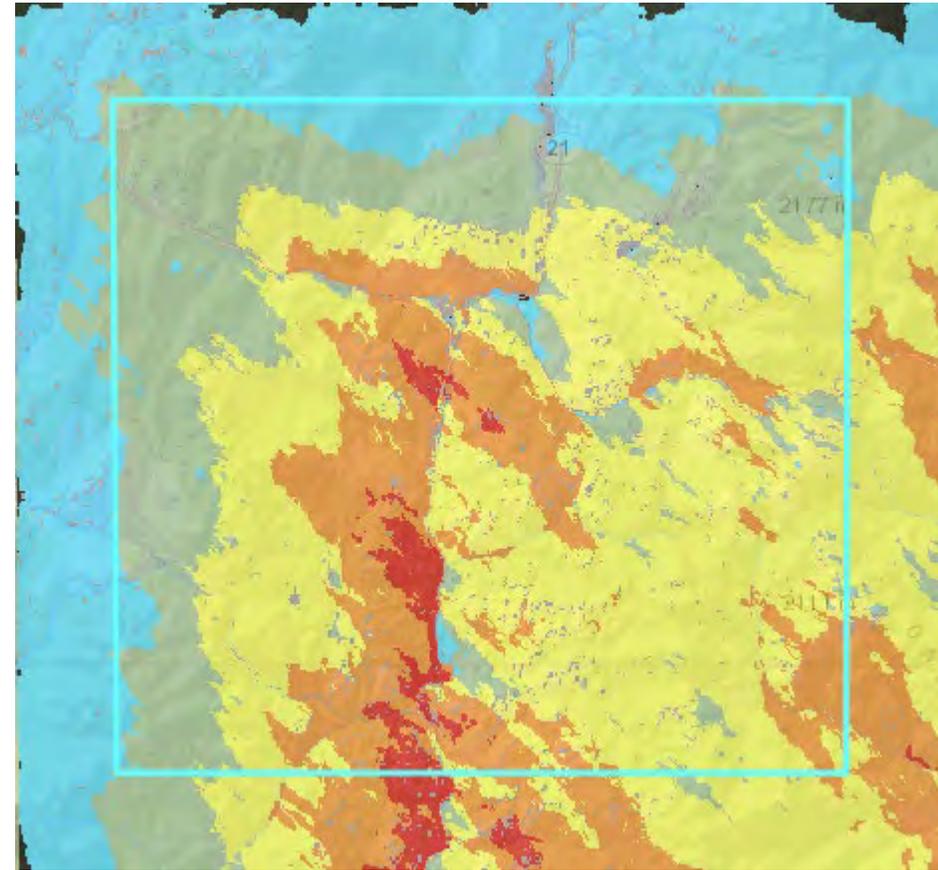
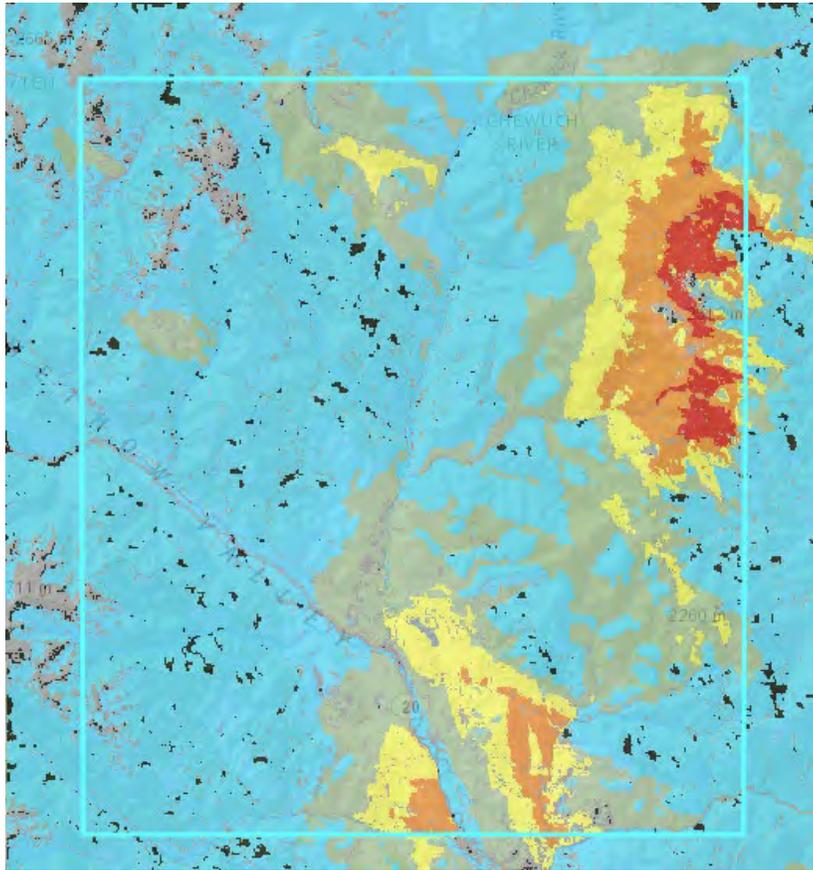


Results

Baseline Burn Probability – Methow vs. Republic Base Landscapes

Methow

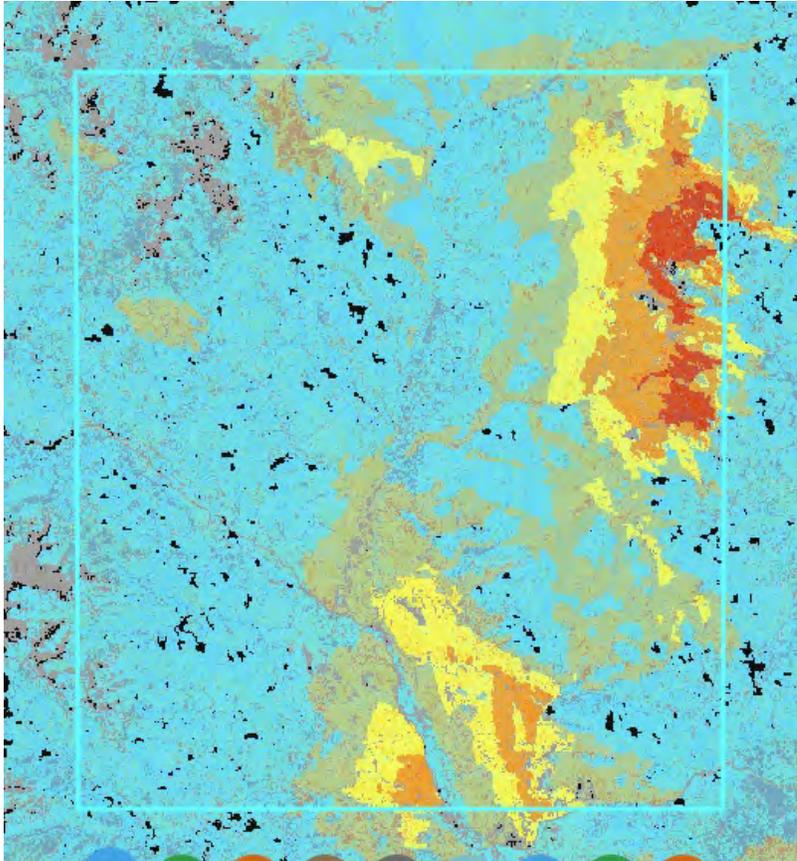
Republic



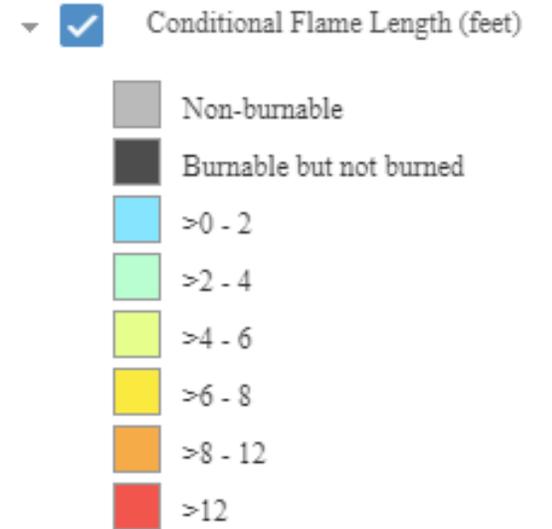
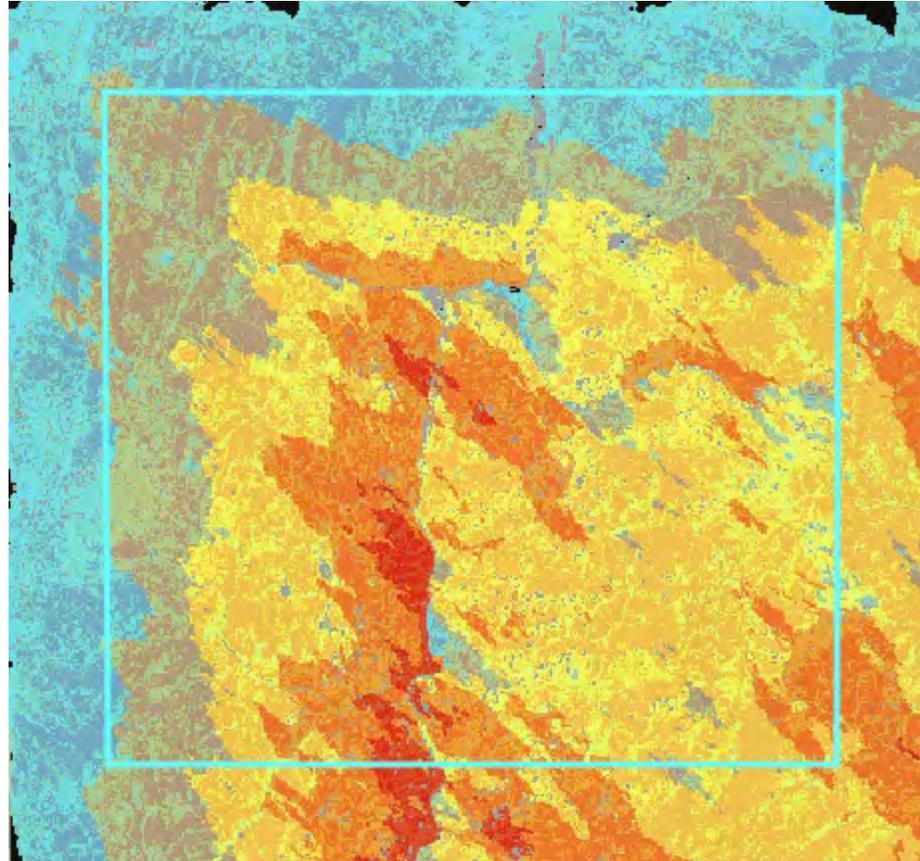
Results

Baseline Conditional Flame Length – Methow vs. Republic Base Landscapes

Methow



Republic

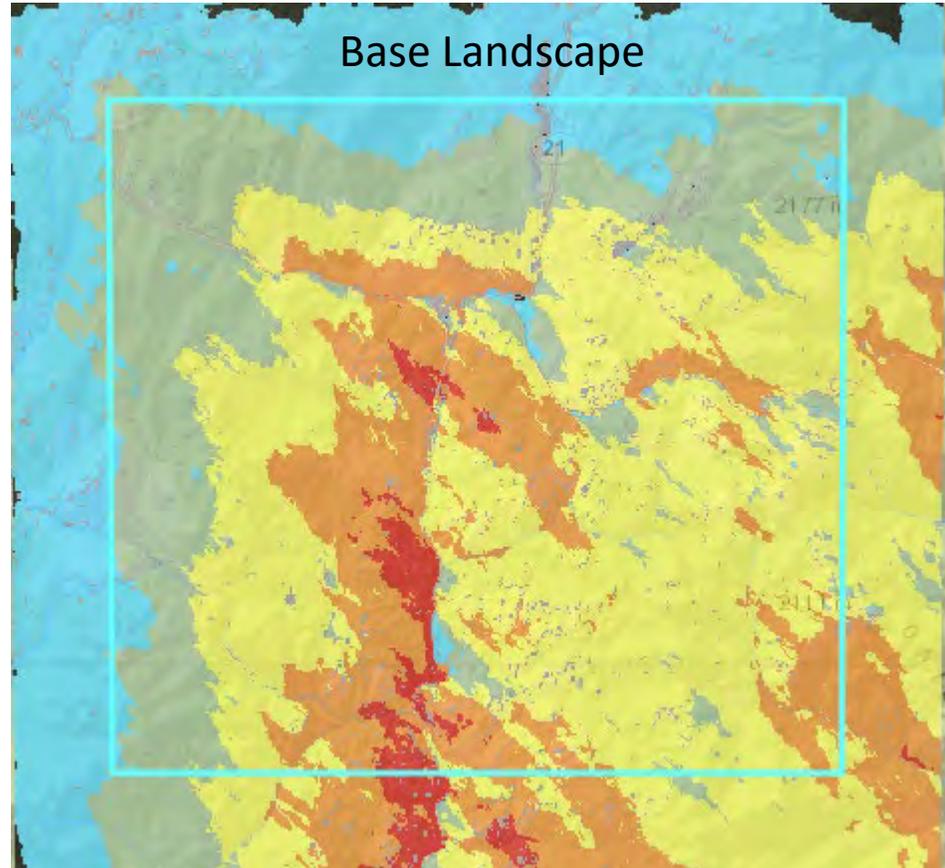


Results

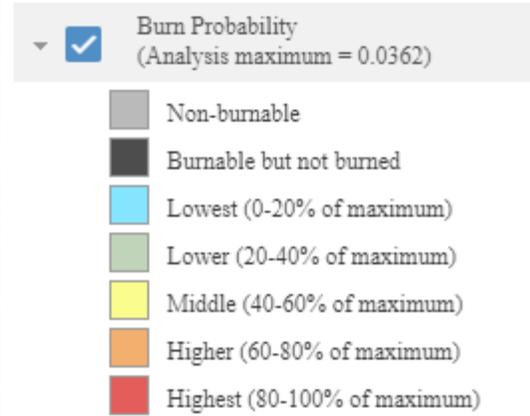
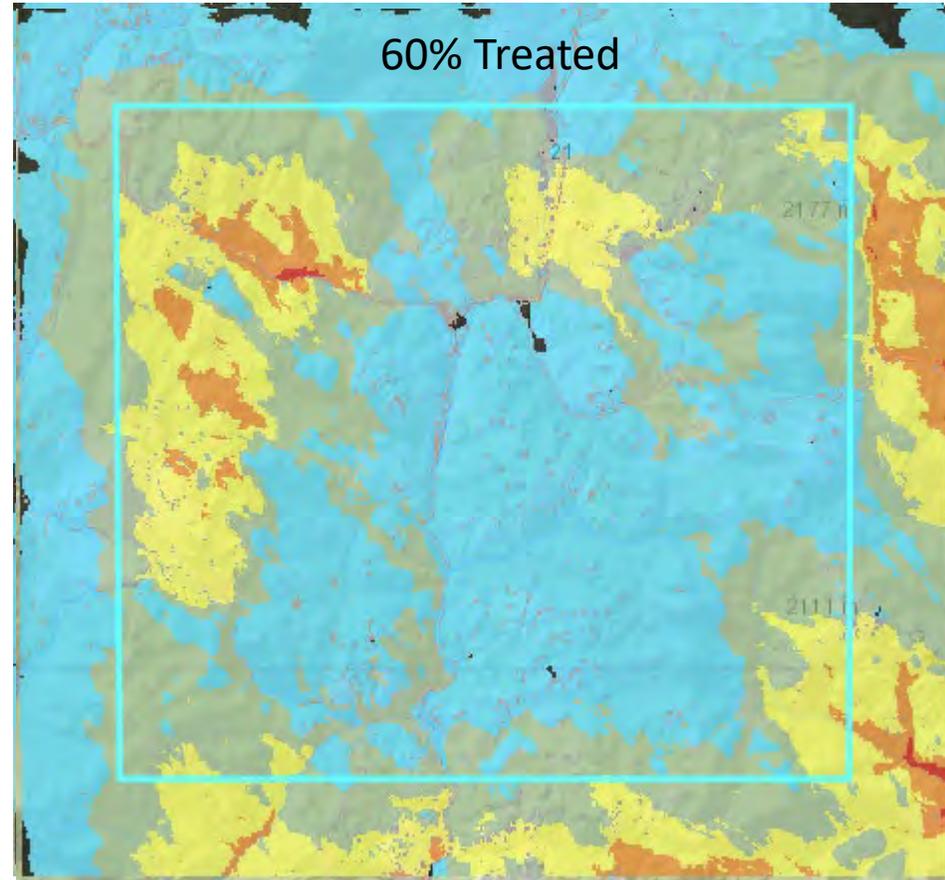
Burn probability: treated intensities from 10 to 60%

REPUBLIC

Base Landscape



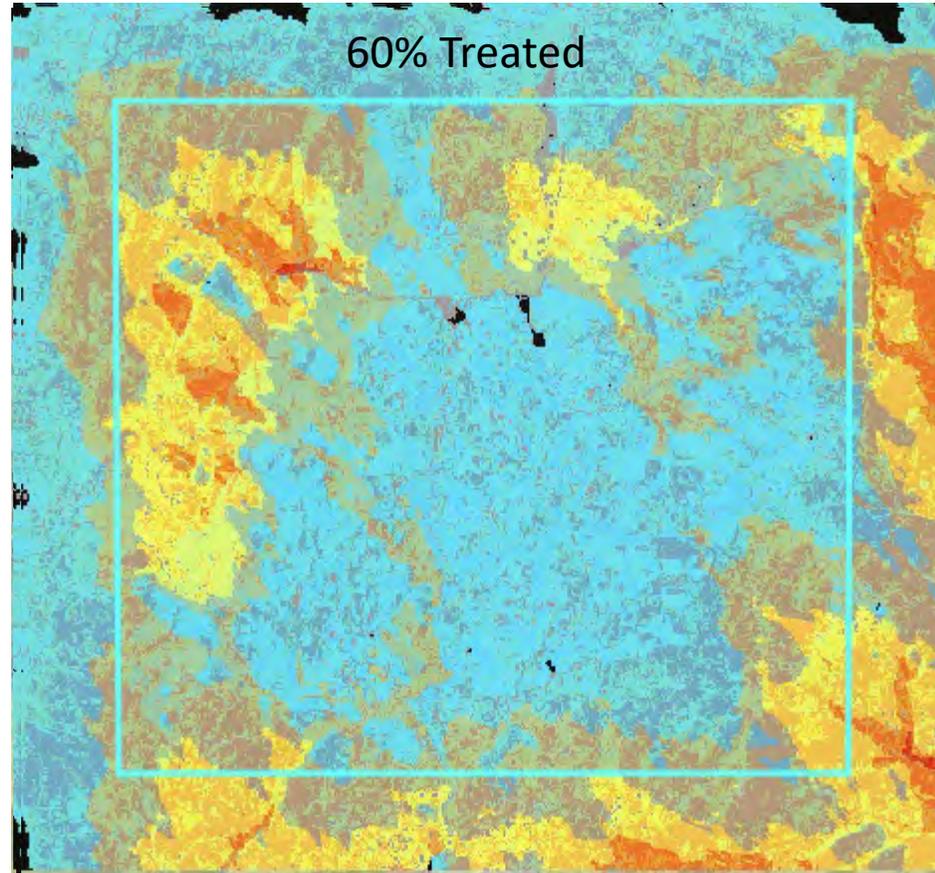
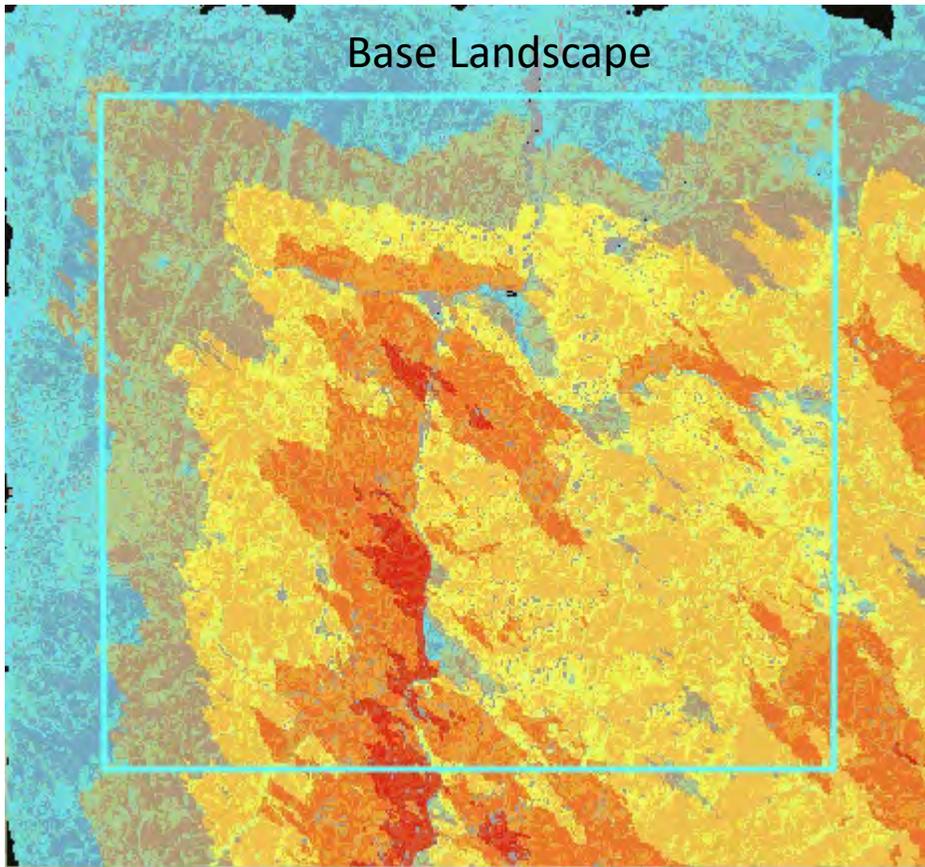
60% Treated



Results

Conditional flame length: treated intensities from 10 to 60%

REPUBLIC



Conditional Flame Length (feet)

