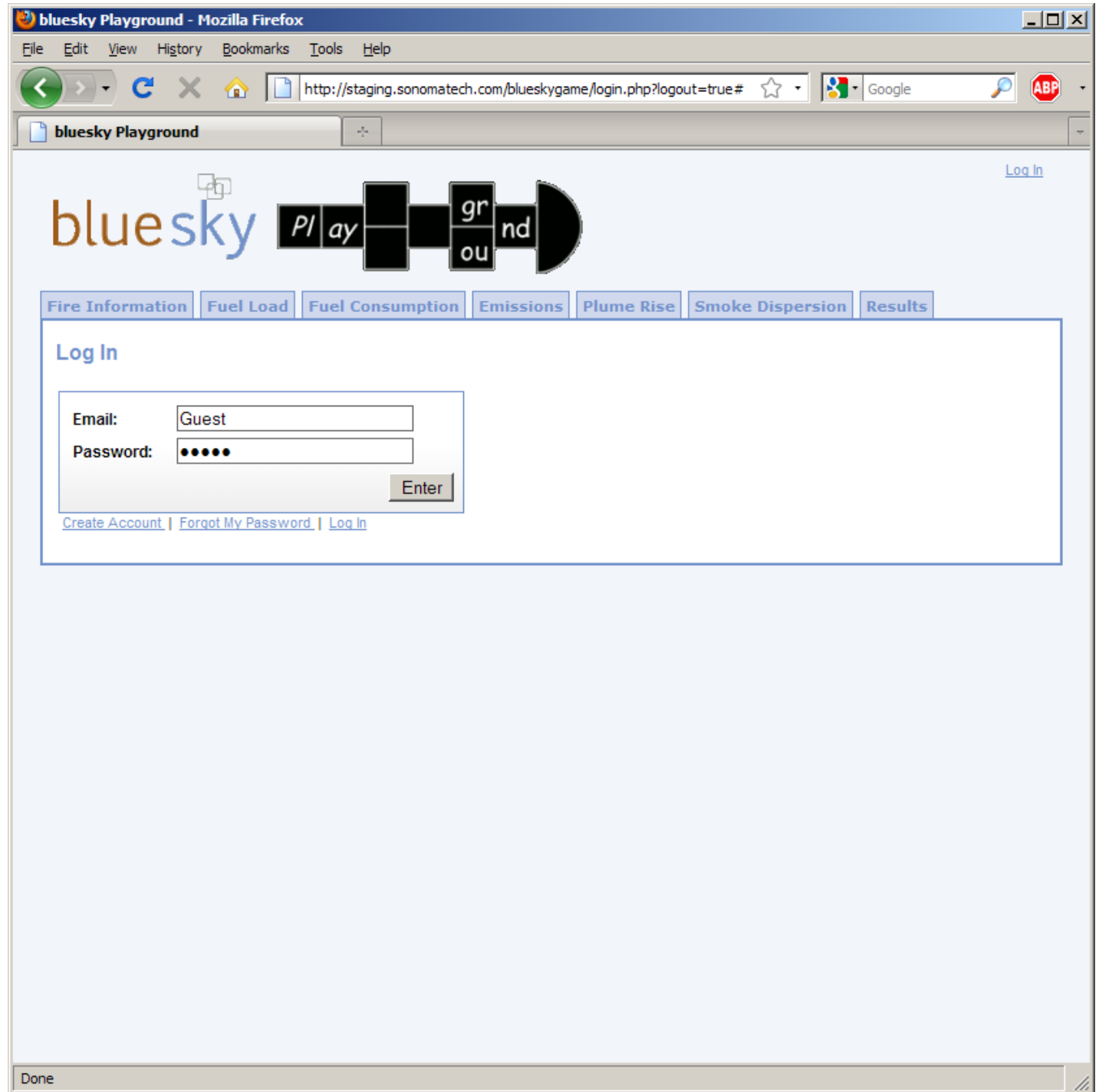


The BlueSky Playground web application allows users to interactively run the models in the BlueSky Framework from any web browser.

Users are first presented with a log in screen, where they can create an account or log in to an existing account.



The BlueSky Playground walks users step-by-step through the steps required to model smoke emissions and dispersion from fires. Tabs along the top of the interface allow navigation back and forth and show what steps have been completed.

Fire Information is the first step. The basic information BlueSky needs includes fire size, location, and time of ignition. Location can be specified by clicking on the interactive map.

Advanced options can also be selected, allowing the user to provide additional information about the fire.

The BlueSky Playground can be run either step-by-step or all at once. To run step-by-step, the user clicks on the "Next" button or selects the next step (Fuel Load) from the tabs above. Alternately, if the user is not interested in the results of individual models, they can preselect all of the steps and go straight to results using the Quick Run feature.

bluesky Playground - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://staging.sonomatech.com/blueskygame/index.php#

bluesky Playground

Welcome - sraffuse | [Log Out](#)

bluesky playground

Fire Information Fuel Load Fuel Consumption Emissions Plume Rise Smoke Dispersion Results

Fire Information

Size: 5000 acres

Location: Longitude: -114.961 Latitude: 45.46 Ignition Date: 20090526 Ignition Time: 10 AM PST

Map Satellite Terrain

Advanced Options

Quick Run

Fuel Load FCCS

Fuel Consumption CONSUME

Emissions FEPS

Plume Rise FEPS

Dispersion CALPUFF

Results

Next

Done

1. Enter basic information about your fire (or select defaults).
2. Select Next Step to see Fuel Load options or choose "Quick Run" and go straight to results.

As soon as the Fuel Load tab is clicked, a fuel loading model in the BlueSky Framework is run. Notice that the Fire Information tab has a checkmark, indicating that it is complete.

This section indicates the modeling pathway that the user has followed to this point. In this example, a 5000 acre fire followed by FCCS fuel loading.

The Fuel Load through Plume Rise tabs are all structured similarly. On the left are the model choices, selectable by tabs. Editable model outputs are shown in text boxes. Outputs from one step serve as inputs to the next step. The user can change these values before the next model is run.

On the right side is a graphical representation of the output for this step.

The screenshot shows the BlueSky Playground web application in a Mozilla Firefox browser. The URL is <http://staging.sonomatech.com/blueskygame/fuelload.php#>. The page title is "bluesky Playground". The user is logged in as "sraffuse". The "Fuel Load" tab is selected, and the "Fire Information" tab has a checkmark. The "Fuel Load" section shows a table of model choices and a bar chart of outputs.

Vegetation	Lodgepole pine forest
Canopy	4.16 tons/acre
Woody Fuels	15.9 tons/acre <a href="#">Advanced</a>
Shrubs	0 tons/acre
Grasses	0.14 tons/acre
Litter depth	1 inches
Duff depth	1.92 inches
Total:	23.12

The bar chart shows the output for the Fuel Load step, measured in tons/acre. The x-axis ranges from 0.00 to 30.00. The y-axis lists the model choices: FCCS, NFDRS, and HARDY. The FCCS model choice is selected, and its output is shown as a bar composed of Canopy (blue), Woody Fuels (yellow), Shrubs (green), and Grasses (orange). The total output for FCCS is 23.12 tons/acre.

At the top right of the Fuel Load section, there is a link for "5000 acres" followed by a blue arrow pointing to "FCCS".

The user can run alternate models for the current step by either clicking on the model tabs or clicking Run All.

The screenshot shows the 'bluesky Playground' web application in a Mozilla Firefox browser. The page title is 'bluesky Playground' and the URL is 'http://staging.sonomatech.com/blueskygame/fuelload.php#FCCS'. The application has a navigation menu with tabs for 'Fire Information', 'Fuel Load', 'Fuel Consumption', 'Emissions', 'Plume Rise', 'Smoke Dispersion', and 'Results'. The 'Fuel Load' tab is active, and the 'FCCS' model is selected. The interface displays a table of input parameters for 'Lodgepole pine forest' and a stacked bar chart showing the results for three models: FCCS, NFDRS, and HARDY. The x-axis of the chart is labeled 'tons/acre' and ranges from 0.00 to 30.00. The legend indicates that the components are Canopy (blue), Woody Fuels (yellow), Shrubs (green), and Grasses (orange).

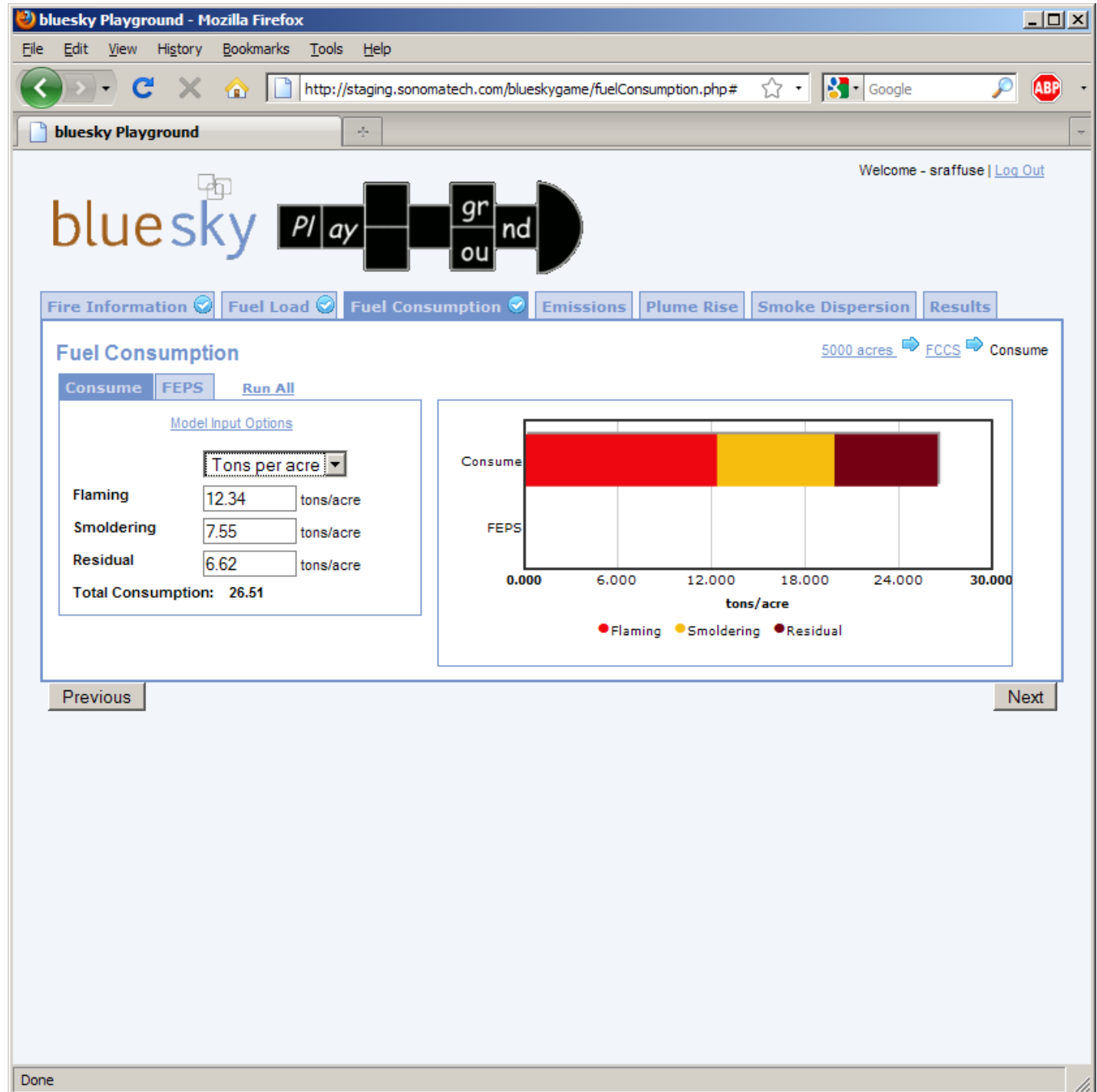
Vegetation	Value	Unit
Canopy	4.16	tons/acre
Woody Fuels	15.9	tons/acre
Shrubs	0	tons/acre
Grasses	0.14	tons/acre
Litter depth	1	inches
Duff depth	1.92	inches
Total:	23.12	

Model	Canopy	Woody Fuels	Shrubs	Grasses
FCCS	4.16	15.9	0	0.14
NFDRS	0	0	0	0
HARDY	0	0	0	0

Model results are dynamically added to the output graph as new models are run. Changing the output values manually will also update the graphs.

The currently selected model, which will be used as the input to the next step, is highlighted in the model tabs and also shown in the pathway indicator.

The Fuel Consumption screen is similar to the Fuel Load screen. The output graph shows consumption per acre broken out by combustion phase.



In this example, the user has selected an alternate Fuel Consumption model (FEPS).

bluesky Playground - Mozilla Firefox

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http://staging.sonomatech.com/blueskygame/fuelConsumption.php#FEI

bluesky Playground

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bluesky Play ground

Fire Information Fuel Load Fuel Consumption Emissions Plume Rise Smoke Dispersion Results

Fuel Consumption 5000 acres FCCS FEPS

Consume FEPS Run All

Model Input Options

Tons per acre

Flaming 5.160444 tons/acre

Smoldering 5.160444 tons/acre

Residual 0.816955 tons/acre

Total Consumption: 11.138

Model	Flaming (tons/acre)	Smoldering (tons/acre)	Residual (tons/acre)	Total (tons/acre)
Consume	12.5	12.5	6.0	31.0
FEPS	5.2	5.2	0.7	11.138

Previous Next

Done

The Emissions screen is similar to the Fuel Consumption and Fuel Load screens. Two graphical outputs are available. This screen shows total emissions broken out by pollutant.

bluesky Playground - Mozilla Firefox

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http://staging.sonomatech.com/blueskygame/emissions.php#

bluesky Playground

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bluesky *Playground*

Fire Information Fuel Load Fuel Consumption **Emissions** Plume Rise Smoke Dispersion Results

5000 acres [FCCS](#) [FEPSConsumption](#) [FEPS](#)

**Emissions**

FEPS EPM Run All

[Model Input Options](#)

	Value	Unit	Display
Heat	6591808	Million BTUs	
PM <sub>2.5</sub>	684.78	tons	<input checked="" type="checkbox"/>
PM <sub>10</sub>	808.04	tons	<input checked="" type="checkbox"/>
CO	8130.83	tons	<input type="checkbox"/>
CO <sub>2</sub>	84184.06	tons	<input type="checkbox"/>
CH <sub>4</sub>	393.41	tons	<input checked="" type="checkbox"/>
NO <sub>x</sub>	89.56	tons	<input checked="" type="checkbox"/>
NH <sub>3</sub>	133.03	tons	<input checked="" type="checkbox"/>
SO <sub>2</sub>	54.56	tons	<input checked="" type="checkbox"/>
VOC	1912.34	tons	<input type="checkbox"/>

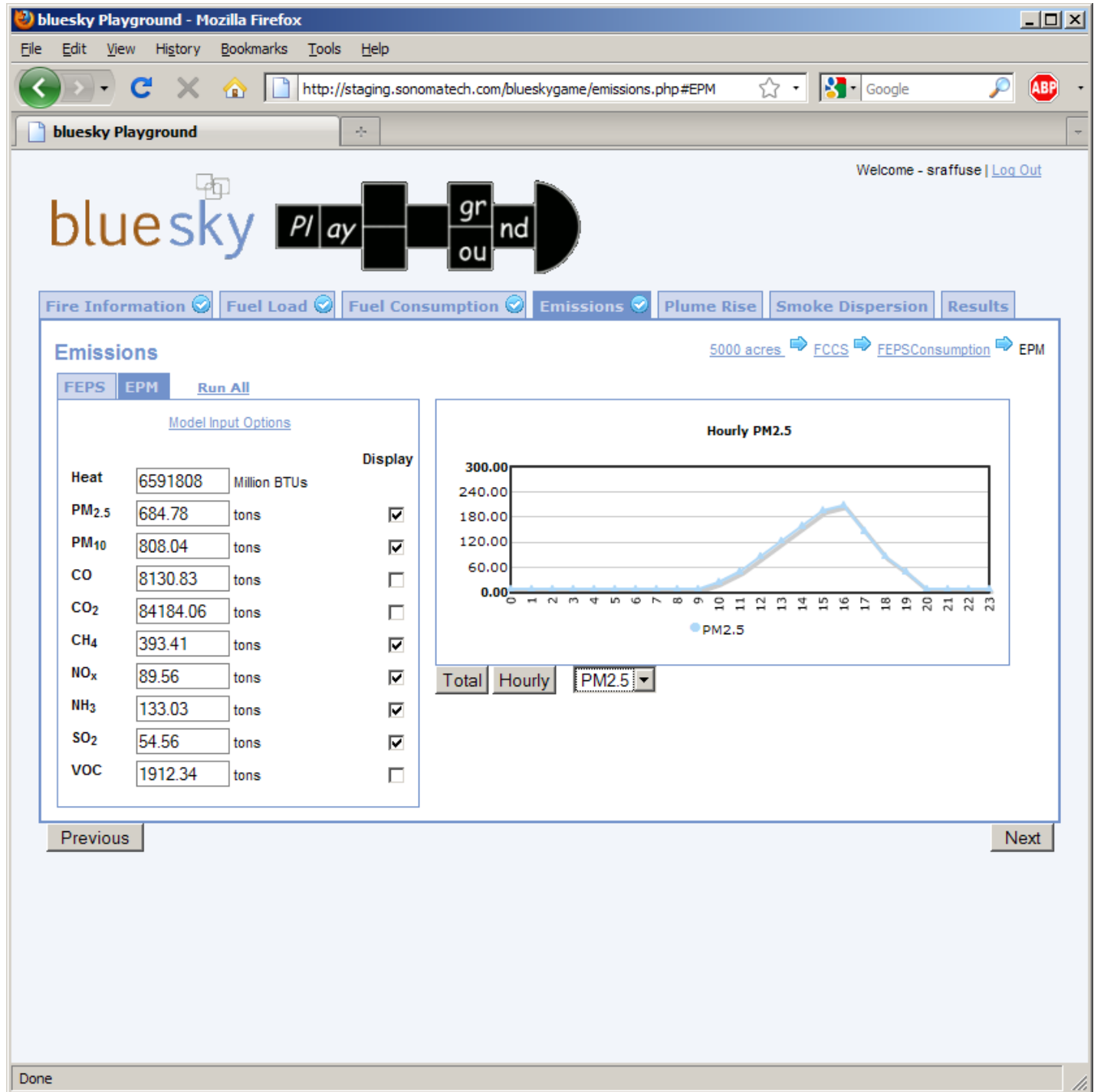
Pollutant	FEPS (tons)	EPM (tons)
PM <sub>2.5</sub>	684.78	808.04
PM <sub>10</sub>	808.04	808.04
CH <sub>4</sub>	393.41	393.41
NO <sub>x</sub>	89.56	89.56
NH <sub>3</sub>	133.03	133.03
SO <sub>2</sub>	54.56	54.56

Total Hourly

Previous Next

Done

This screen shows a time series of hourly emissions. Only one pollutant from one model can be shown at a time on the time series graph.



Plume Rise is how high the smoke plume is lofted into the atmosphere do to buoyancy and vertical winds. BlueSky models plume rise with a plume top and plume bottom. The graph shows the hourly modeled plume top and bottom. Individual hourly values can be edited in the spreadsheet on the left.

bluesky Playground - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://staging.sonomatech.com/blueskygame/plume.php#WRAP

bluesky Playground

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bluesky **Pl ay gr ou nd**

Fire Information Fuel Load Fuel Consumption Emissions **Plume Rise** Smoke Dispersion Results

5000 acres → FCCS → FEPSConsumption → EPMEmissions → WRAP

**Plume Rise**

FEPS WRAP Run All

Feet

4	0.67	1.78
5	0.67	1.78
6	0.67	1.78
7	0.67	1.78
8	2.67	7.11
9	7.41	19.75
10	29.63	79
11	118.51	316.02
12	362.93	967.8
13	474.02	1264.07
14	599.94	1599.83

Plume Top and Bottom

Feet

Hour

● Plume Top Plume Bottom

Previous Next

Done

Smoke Dispersion is the final step in the BlueSky modeling framework. BlueSky Playground provides a map viewer for reviewing smoke dispersion output. Ground level PM<sub>2.5</sub> concentrations are shown.

Users can select the length of time to model. Longer runs take longer to return results.

The user can also adjust the map by changing the central latitude and longitude and by specifying the map width. Clicking the remap button will tell BlueSky to make new maps.

BlueSky dispersion output is hourly. Each hour is shown as an individual image. The hour shown can be changed using the controls at the top of the image. Clicking the Animate button will cycle through the images automatically. It may take a few minutes for all of the images to be downloaded to the user's local cache so they appear smoothly.

The screenshot shows the BlueSky Playground web interface in a Mozilla Firefox browser window. The URL is <http://staging.sonomatech.com/blueskygame/smoke.php>. The page features a navigation bar with tabs for Fire Information, Fuel Load, Fuel Consumption, Emissions, Plume Rise, Smoke Dispersion, and Results. The Smoke Dispersion tab is active, showing a map of a region with a green shaded area representing smoke dispersion. The map is titled "Smoke Dispersion" and includes a legend for PM<sub>2.5</sub> concentrations. The legend shows color-coded ranges: 2-10 µg/m³ (dark green), 11-25 (light green), 26-40 (yellow-green), 41-60 (yellow), 61-80 (light orange), 81-175 (orange), 176-300 (red), 301-500 (dark red), and >500 (dark purple). The map controls include "Hours To Model" (set to 24), "Center of Map" (Longitude: -114.961, Latitude: 45.46), and "Map Width" (299 miles). A "Remap" button is located below the map width input. The map viewer includes an "Animate" button and navigation arrows. The current hour shown is 15. The page also includes a "Previous" button and a "Next" button. The browser window title is "bluesky Playground - Mozilla Firefox".

Legend	
2-10 µg/m <sup>3</sup>	Dark Green
11 - 25	Light Green
26 - 40	Yellow-Green
41 - 60	Yellow
61 - 80	Light Orange
81 - 175	Orange
176 - 300	Red
301 - 500	Dark Red
>500	Dark Purple

At any time user can go back to a specific modeling step and change the parameters. All modeling steps that follow the changed step will be cleared as their results will no longer be valid. When the user goes forward again, all intermediate steps that need to be run are executed.

Once the user is satisfied with their choices, they can review them on the Results page, which shows the modeling pathway and the changes the user made.

If the user wishes, they may save the run parameters.

COMING SOON

The user can also print a summary of the run or load a previously save run.

bluesky Playground - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://staging.sonomatech.com/blueskygame/results.php

bluesky Playground

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bluesky *Playground*

Fire Information Fuel Load Fuel Consumption Emissions Plume Rise Smoke Dispersion Results

Results

Current Run

Model Pathway

5000 acres → FCCS → FEPSConsumption → EPMEmissions → WRAPPlumeRise → CALPUFF

User Changes

Fire Information  
Fire Type: WF

Fuel Consumption  
Smoldering: 5.5

Save Print

BigCompleteRun

TestSean

Previous

Done