

Hitchhiker's Guide to the VMS

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1 Finding VMS elements in the Application

The VMS holds the structure of our application. The data is a tree like structure that determines how the applicaiton is rendered. This section aims to help you understand how the data in the VMS translates to how it is shown in the application.

1.1 Modules/Submodules/Groups/Group Variables

In the VMS Use the side bar to navigate down these paths:

Applications → Modules → Submodules → Group → Group Variables → Variables

Example:

BehavePlus → Surface → Fire Behavior(output) → Surface Fire → Heading Rate of Spread → Heading Rate of Spread

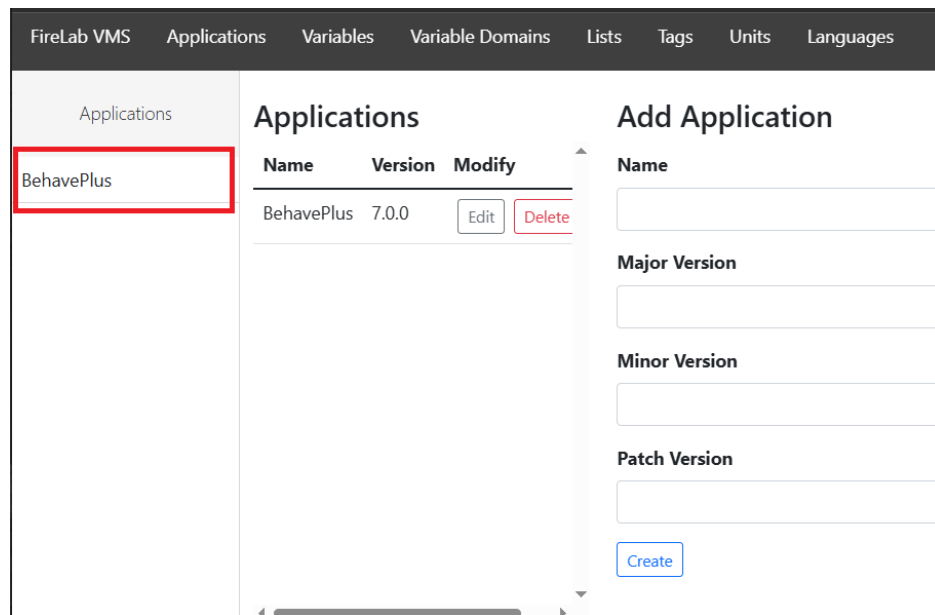


Figure 1: VMS: Home page

WORKING AREA

Module: **Surface** + Show Notes

Outputs Inputs

Submodules: Fire Behavior, Size, Spot, Wind and Fuel

Direction Mode: ☐ Heading ☐ Heading, Backing, Flanking ☐ Direction of Interest

Surface Fire Group: ☐ Rate of Spread ☐ Flame Length ☐ Fireline Intensity Group Variables

Ignition: ☐ Probability of Ignition

Back Next

Figure 2: Application: Outputs page after a Surface Only workhseet has been created.

WORKING AREA

Module: **Surface** + Show Notes

Outputs Inputs

Submodules: Fuel Model, Fuel Moisture, Wind and Slope

Standard Group

Fuel Model Sub Group

Selected Fuel Model Code + Select More

Your Fuel Model Code selections

Back Next

Figure 3: Application: Inputs page after a Surface Only workhseet has been created. NOTE Groups can have sub groups.

1.2 Variables

The Variables can be associated with multiple group variables but group variables can only be associated to a single variable. The Variable entity will hold information about Domains/Dimension/units

1.2.1 Variable Entities

1. Navigate to the "Variables" tab

1.2.2 Variable Associated with a Group Variable

1. Navigate to the Application → Module → Group
2. "Expand" the "Variables" accordion
3. Find the variable you are interested in and click "Edit". This will take you to the "Variables" page and populate the form with the variable's info.

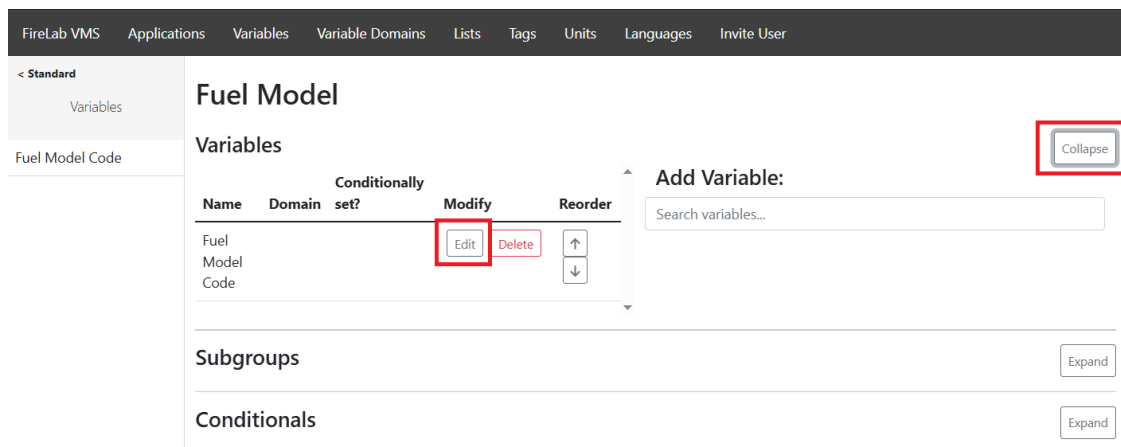


Figure 4: VMS: Finding the variable associated with a group variable

1.3 List and List Options

Certain Group Variables have a list associated with it (usually inputs). In the application lists show up as either radio selections or drop down selections.

The screenshot shows a web application interface titled "WORKING AREA". At the top right, there are "Outputs" and "Inputs" buttons. Below the title bar, there is a "Surface" section with a circular icon and a "+ Show Notes" button. A tabbed interface below shows "Fuel Model", "Fuel Moisture", and "Wind and Slope" tabs, with "Wind and Slope" being the active tab. The "Wind measured at:" section contains a "List" label and three radio button options: "Midflame (Eye Level)", "20-Foot", and "10-Meter". The "10-Meter" option is selected and highlighted with a red box and a red arrow pointing to it from the "List Option" label. Below this, the "Wind and slope are" section has two radio button options: "Aligned (Wind is $\leq 30^\circ$ from upslope)." and "Not Aligned (Wind is $> 30^\circ$ from upslope.)". The "Slope" section includes a "Values:" input field with "0 - 604", a "Range Selector" button, and "Units used: %". At the bottom, there are "Back" and "Next" buttons.

Figure 5: Application: List options as radio selections.

WORKING AREA

Surface [+ Show Notes](#)

[Fuel Model](#) [Fuel Moisture](#) [Wind and Slope](#)

Standard

Fuel Model

Please select from the following Fuel Model Code (you can select multiple)

[Grass](#) [Grass Shrub](#) [Shrub](#) [Timber Understory](#) [Timber Litter](#) [Slash Blowdown](#)

Standard Fuel Models (Anderson, Scott and Burgan) Mediterranean Fuel Models (Fernandes et al; Portugal) Chaparral & Coastal Sage Shrub (Weise, Southern CA)

- + FB1/1 - Short grass (Static)
- + FB2/2 - Timber grass and understory (Static)
- + FB3/3 - Tall grass (Static)
- + FB4/4 - Chaparral (Static)
- + FB5/5 - Brush (Static)
- + FB6/6 - Dormant brush, hardwood slash (Static)
- + FB7/7 - Southern rough (Static)

Selected Fuel Model Code [View](#)

[Back](#) [Next](#)

Figure 6: Application: List options as multi select dropdown.

In the VMS you can find the list associated to a group variable by:

1. Navigating to the Module → Submodule → Group
2. Click "Expand" on the "Variables" accordion. Then click "Edit" on the Variable listed. This will Navigate you to the "Variables" page and populate the form with the variable's information.

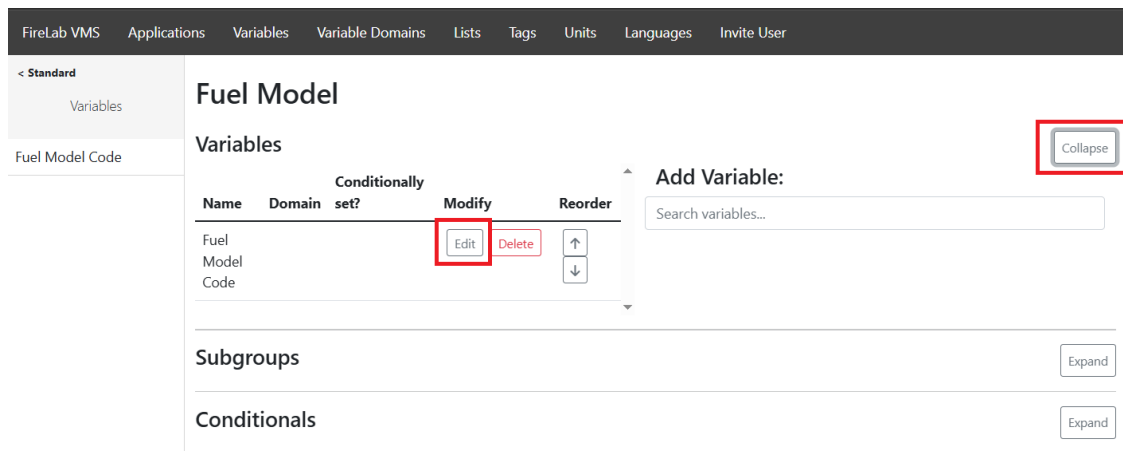


Figure 7: VMS: Group page

1. Look for the "List" field and note the list selected.

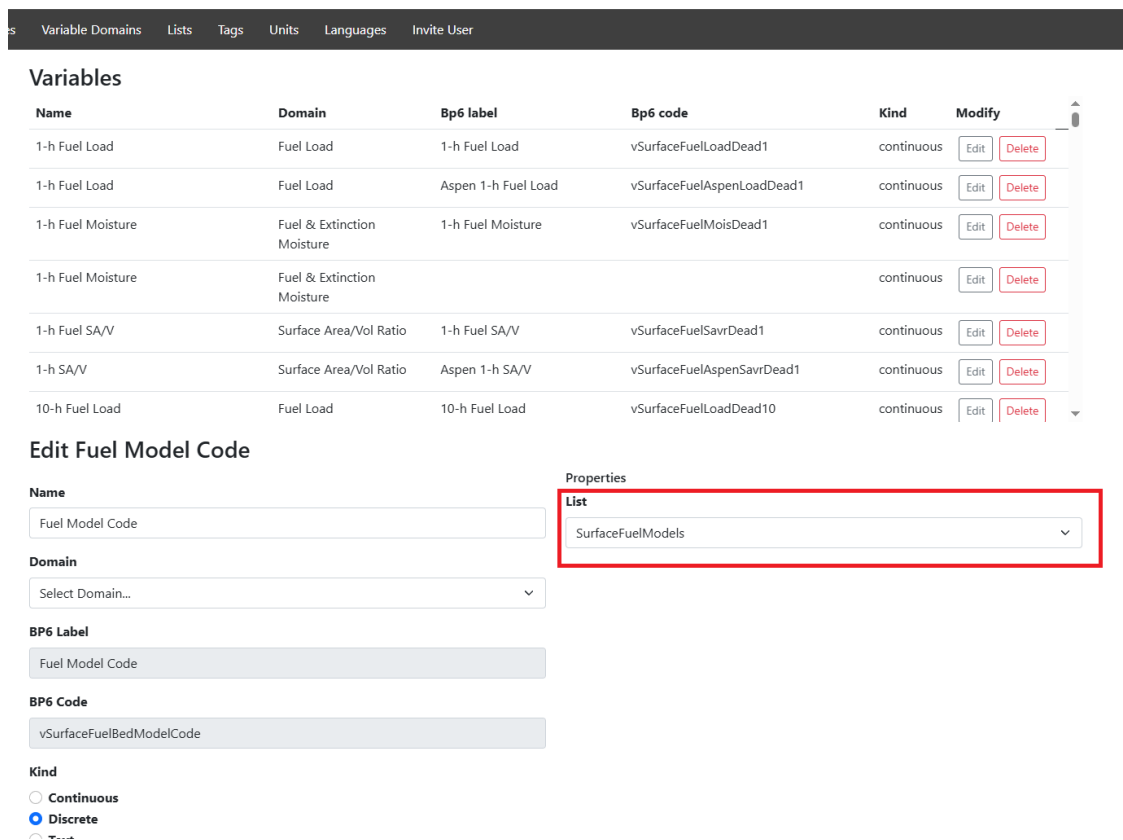


Figure 8: VMS: Variables page

1. Navigate to the "List" tab and scroll down or (Ctrl +f) to find the list mentioned above.

es Variable Domains **Lists** Tags Units Languages Invite User

Lists

Name	Modify
MortalitySpeciesMasterList	Edit Delete
ScorchHeightOrFlameLength	Edit Delete
SpotFireSource	Edit Delete
SurfaceFuelModels	Edit Delete
SurfaceRunInDirectionOf	Edit Delete
SurfaceSpreadDirectionMode	Edit Delete
TimeZone	Edit Delete
TreeSpeciesList	Edit Delete

Add List

Name

Filter Tag Set

Color Tag Set

[Create](#)

All Options

Name	Value	Order	Default	Tags	Color tag	Modify	Reorder
------	-------	-------	---------	------	-----------	--------	---------

Add Option

Name

Value

Order

Default
☐

Tags

Color tag

Modify
[Edit](#) [Delete](#)

Reorder
[Move Up](#) [Move Down](#)

Figure 9: VMS: List page

1. Click "Edit". This will populate the form at the bottom of the page.

1.4 Filter and Color Tags

1.4.1 Filter and Color Tags Entities

Filter and Color tags in the application can be found in input group variables that allow users to select multiple inputs.

The screenshot shows the 'WORKING AREA' interface. At the top, there's a 'Surface' tab and a '+ Show Notes' button. Below this, there are tabs for 'Fuel Model', 'Fuel Moisture', and 'Wind and Slope'. The 'Fuel Model' tab is selected, showing a list of fuel model codes. A red box highlights the 'Filter Tag Set' and 'Color Tag Set' sections. The 'Filter Tag Set' includes 'Grass', 'Grass Shrub', 'Shrub', 'Timber Understory', 'Timber Litter', and 'Slash Blowdown'. The 'Color Tag Set' includes 'Standard Fuel Models (Anderson, Scott and Burgan)', 'Mediterranean Fuel Models (Fernandes et al; Portugal)', and 'Chaparral & Coastal Sage Shrub (Weise, Southern CA)'. Below these, there's a list of fuel model codes with expandable options (e.g., '+ FB1/1 - Short grass (Static)'). At the bottom, there's a 'Selected Fuel Model Code' section with a 'View' button, and 'Back' and 'Next' buttons.

Figure 10: Application: Filter Tag and Color Tag example.

You can find existing tags in the VMS by:

1. Navigate to the "Tags" tab

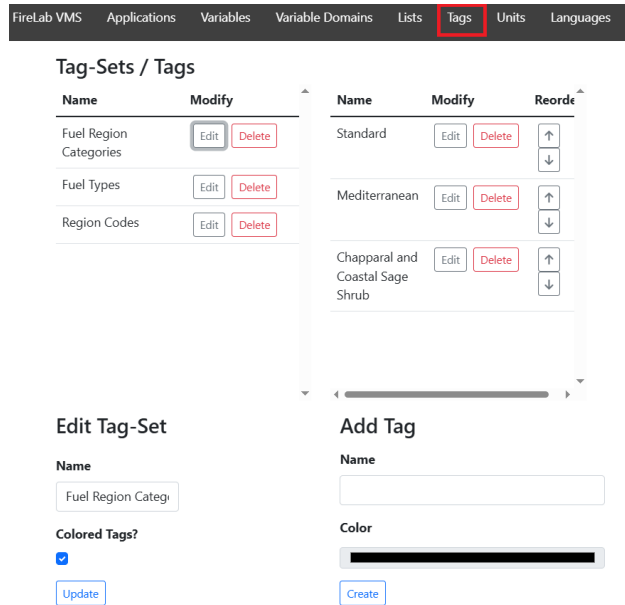


Figure 11: VMS: Tags page

1.4.2 Filter and Color Tags associated with a Group Variable

You can find the tag sets associated with a group variable by:

1. Find the list associated to the group variable, see [List and List Options](#) section.
2. Click "Edit" on the list
3. Once the form on the list page has been populated you can find the associated tag sets.

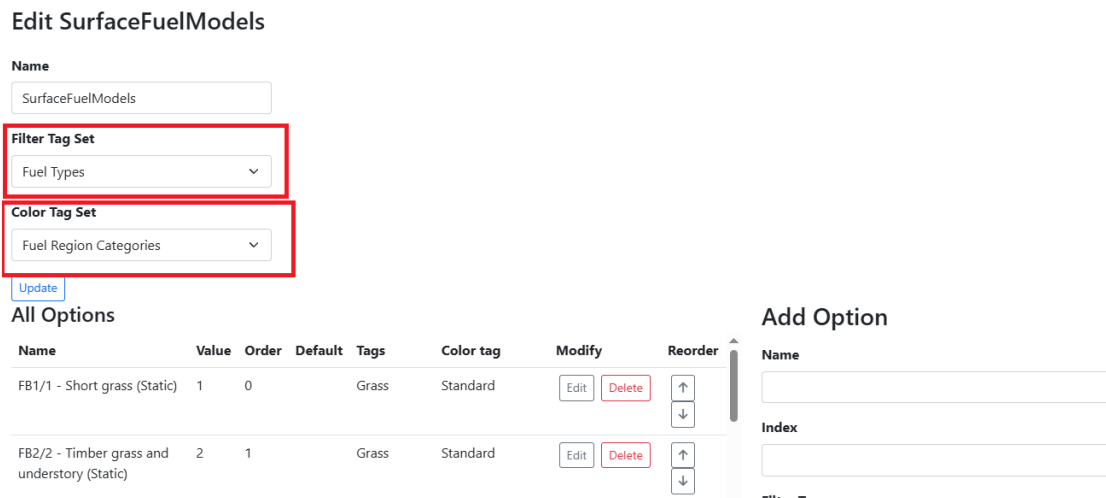


Figure 12: VMS: List page

1.5 Variable Domains

1.5.1 Variable Domain Entities

The Variable Domain entities is used primarily to associate a group of variables to some default units and decimal precision. Domain entities are grouped into Domain sets, primarily used for creating collapsing accordions in the application.

The screenshot shows the 'General Units' tab selected. On the left, the 'Modules' sidebar has icons for Surface, Crown, Contain, and Mortality. The 'Tools & Settings' section has icons for Calculator and Settings. The 'Contain' domain set is selected, and its variable domains are listed in a table. The 'Containment Distances' variable domain is highlighted with a red box, showing units of 'ch' and a decimal precision of '0'. The 'Line Production Rate' variable domain shows units of 'ch/h'. Below the table, there are accordion-style sections for 'Fire & Effects', 'Fuel & Vegetation', 'Terrain & Spotting', 'Time & Map', and 'Weather', each with a '+' icon on the right.

Variable Domain	Units	Decimals
Containment Distances	ch	0
Line Production Rate	ch/h	

Figure 13: Application: Custom Unit Preferences table.

1. Navigate to the "Variable Domains" tab
2. Click "Edit" on the "Domain Set". This will populate the form on the right with a list of domains that belong to this set.

FireLab VMS
Applications
Variables
Variable Domains
Lists
Tags
Units
Languages

Domain Sets

Name	Modify
Contain	<div>Edit</div> <div>Delete</div>
Fire & Effects	<div>Edit</div> <div>Delete</div>
Fuel & Vegetation	<div>Edit</div> <div>Delete</div>
Terrain & Spotting	<div>Edit</div> <div>Delete</div>
Time & Map	<div>Edit</div> <div>Delete</div>
Weather	<div>Edit</div> <div>Delete</div>

Domains

Name	Modify
Containment Distances	<div>Edit</div> <div>Delete</div>
Line Production Rate	<div>Edit</div> <div>Delete</div>

Edit Domain Set

..

Add Domain

Name

Figure 14: VMS: Variable Domains.

1.5.2 Variable Domains Associated with a Group Variable

1. Find the Variable associated with your group variable of interest. see [Variable Associated with a Group Variable](#) section
2. You can find the domain associated to the variable under the "Domain" field

FireLab VMS
Applications
Variables
Variable Domains
Lists
Tags
Units
Languages
Invite User

Variables

Name	Domain	Bp6 label	Bp6 code	Kind	Modify
1-h Fuel SA/V	Surface Area/Vol Ratio	1-h Fuel SA/V	vSurfaceFuelSavrDead1	continuous	Edit Delete
1-h SA/V	Surface Area/Vol Ratio	Aspen 1-h SA/V	vSurfaceFuelAspenSavrDead1	continuous	Edit Delete
10-h Fuel Load	Fuel Load	10-h Fuel Load	vSurfaceFuelLoadDead10	continuous	Edit Delete
10-h Fuel Moisture	Fuel & Extinction Moisture	10-h Fuel Moisture	vSurfaceFuelMoisDead10	continuous	Edit Delete
10-m wind and wind adjustment factor	Wind Speed	10-m Wind Speed (upslope)	vWindSpeedAt10MUpslope	continuous	Edit Delete
100-h Fuel Load	Fuel Load	100-h Fuel Load	vSurfaceFuelLoadDead100	continuous	Edit Delete
100-h Fuel Moisture	Fuel & Extinction	100-h Fuel Moisture	vSurfaceFuelMoisDead100	continuous	Edit Delete

Edit Heading Rate of Spread

Name

Domain

BP6 Label

BP6 Code

Properties
Dimension

English Units

English Decimal

Metric Units

Figure 15: VMS: The Domain associated with this variable.

1.6 Units and Precision

Default Units and Precision live in the Domain Entities.

1. Find the Domain associated with your group variable see [Variable Domains Associated with a Group Variable](#) section.
2. Navigate to the "Domains" page and lookup the domain.
3. Click "Edit" on the "Domain Set" and "Edit" on the "Domain" entity to populate the forms.
4. Default units is shown under "Native Unit"
5. Default precision is shown under "Decimals"

The figure displays four screenshots from the VMS interface. The top-left screenshot shows the 'Domain Sets' table with columns 'Name' and 'Modify'. The 'Contain' row has its 'Edit' button highlighted with a red box. The top-right screenshot shows the 'Domains' table with columns 'Name' and 'Modify'. The 'Containment Distances' row has its 'Edit' button highlighted with a red box. The bottom-left screenshot shows the 'Edit Domain Set' form with the 'Name' field set to 'Contain' and an 'Update' button. The bottom-right screenshot shows the 'Edit Domain' form for 'Containment Distances'. In this form, the 'Decimals' field (set to 0) and the 'Native Unit' dropdown (set to 'Chains (ch)') are highlighted with red boxes. Other fields include 'Dimension' (Length), 'English Unit' (Chains (ch)), 'Metric Unit' (Meters (m)), and 'Filtered Units' (Chains (ch) and Feet (ft) are checked).

Name	Modify
Contain	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Fire & Effects	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Fuel & Vegetation	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Terrain & Spotting	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Time & Map	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Weather	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Name	Modify
Containment Distances	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Line Production Rate	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Edit Domain Set

Name:

Edit Domain

Name:

Decimals:

Dimension:

Native Unit:

English Unit:

Metric Unit:

Filtered Units

- ☒ Chains (ch)
- ☒ Feet (ft)
- ☐ Inches (in)
- ☐ Miles (mi)

Figure 16: VMS: The Domain associated with this variable.

2 Updating Text

Most texts for entities displayed in the application can be updated by changing the translation field for that entity..These entities will have 2 translation fields. One field is used in the worksheet wizard (pages before computation) and the second is used for the results page. Usually the result translations are a short form of the worksheet translations. Here are some of the common entities you might want to update. The application will default to the worksheet translation if a result translation is not present.

2.1 Submodule/Group/Group-Variables

1. For these entities navigate to the entity page, see [Modules/Submodules/Groups/Group Variables](#) section.
2. Update the "Translation" field.

Surface Fire

Variables Expand

Subgroups Expand

Conditionals Expand

Translations Collapse

Worksheet Translations

Language	Key	Translation
English	behaveplus:surface:output:fire_behavior:surface_fire	Surface Fire

Result Translations

Language	Key	Translation
English	behaveplus:surface:result:fire_behavior:surface_fire	

Help Page Expand

Settings Expand

Figure 17: VMS: Group page after navigating BehavePlus → Surface → Fire Behavior(output) → Surface Fire

2.2 List Options

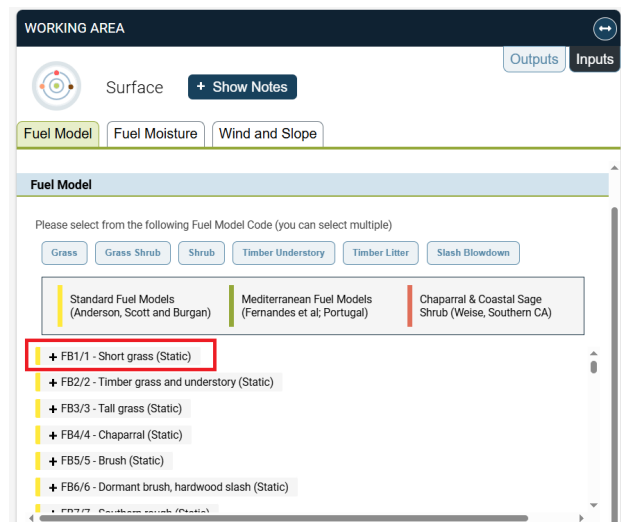


Figure 18: Application: Worksheet translations appear in the wizard.

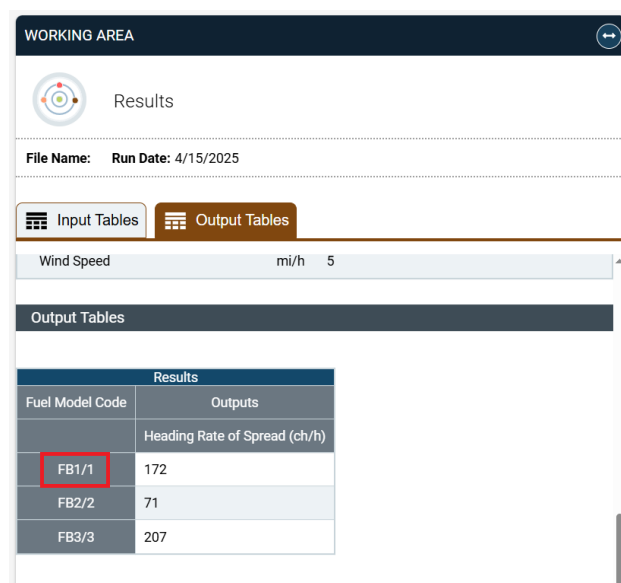


Figure 19: Application: Result translations appear in the results matrices and tables.

1. Find the list associated to the group variable, see [List and List Options](#) section.
2. Click "Edit" on the list.
3. Find the list option you are interested in updating and click "Edit".
4. Update the "Translation" field and the "Name" field.
5. Navigate to the list associated with the group variable. see [List and List Options](#)

6. Click "Edit" on the list option you want to update.

Update

All Options

Name	Value	Order	Default	Tags	Color tag	Modify	Reorder
FB1/1 - Short grass (Static)	1	0		Grass	Standard	Edit Delete	↑ ↓
FB2/2 - Timber grass and understory (Static)	2	1		Grass	Standard	Edit Delete	↑ ↓
FB3/3 - Tall grass (Static)	3	2		Grass	Standard	Edit Delete	↑ ↓
FB4/4 - Chaparral (Static)	4	3		Shrub	Standard	Edit Delete	↑ ↓
FB5/5 - Brush (Static)	5	4		Shrub	Standard	Edit Delete	↑ ↓
FB6/6 - Dormant brush, hardwood slash (Static)	6	5		Shrub	Standard	Edit Delete	↑ ↓
FB7/7 - Southern rough (Static)	7	6		Shrub	Standard	Edit Delete	↑ ↓
FB8/8 - Short needle litter (Static)	8	7		Timber Litter	Standard	Edit Delete	↑ ↓
FB9/9 - Long needle or hardwood litter (Static)	9	8		Timber Litter	Standard	Edit Delete	↑ ↓
FB10/10 - Timber litter & slash (Static)	10	9		Timber Litter	Standard	Edit Delete	↑ ↓

Edit Option

FB1/1 - Short grass (Static)

Index

1

Filter Tags

☒ Grass
 ☐ Grass Shrub
 ☐ Shrub
 ☐ Timber Understory
 ☐ Timber Litter
 ☐ Slash Blowdown

Color Tag

Standard

Hide Option?

☐

Default

☐ False
 ☐ True

Update

Worksheet Translation

Language	Key	Translation
English	behavepluslist-option:surface-fuel-models:fm1---short-grass-(s)	FB1/1 - Shor

Result Translation

Language	Key	Translation
English	behavepluslist-option:results:surface-fuel-models:fm1---short-grass-(s)	FB1/1

Figure 20: VMS: List Page

2.3 Tags

1. Navigate to the tag set associated with your group variable of interest. See [Filter and Color Tags associated with a Group Variable](#)
2. Click "Edit" on the tag set. This will populate the table on the right.
3. Click "Edit" on the tag option you'd like to update.
4. Update the "Translation" field and the "Name" field.

Tag-Sets / Tags

Name	Modify
Fuel Region Categories	Edit Delete
Fuel Types	Edit Delete
Region Codes	Edit Delete

Edit Tag-Set

Name:

Colored Tags? ☒

[Update](#)

Edit Tag

Name	Modify	Reorder
Standard	Edit Delete	↑ ↓
Mediterranean	Edit Delete	↑ ↓
Chapparal and Coastal Sage Shrub	Edit Delete	↑ ↓

Worksheet Translation

Language Key	Translation
English	behaveplus:tags:fuel-region-categories:chapparal-and-coastal-sage-shrub Chaparral & Cc

Figure 21: VMS: Updating translations on tags page.

3 Updating Default Unit Preferences

3.1 Units

1. Find the Domain associated with the variable you are interested in. See [Variable Domains Associated with a Group Variable](#) section.
2. Click "Edit" on the Domain set
3. Click "Edit" on the Domain found in step 1.
4. Update the "Native Unit" field

Domain Sets

Name	Modify
Contain	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Fire & Effects	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Fuel & Vegetation	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Terrain & Spotting	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Time & Map	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Weather	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Edit Domain Set

Name
Contain

Domains

Name	Modify
Containment Distances	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Line Production Rate	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Edit Domain

Name
Containment Distances

Decimals
0

Dimension
Length

Native Unit
Chains (ch)

English Unit
Chains (ch)

Metric Unit
Meters (m)

Filtered Units

- ☒ Chains (ch)
- ☒ Feet (ft)
- ☐ Inches (in)
- ☐ Miles (mi)

Figure 22: VMS: Updating translations on tags page.

3.2 Precision

1. Follow the steps from [above](#) to find the Domain entity.
2. Update the "Decimals" field

The figure displays four screenshots from the VMS interface, illustrating the process of updating domain precision. The top-left screenshot shows the 'Domain Sets' table with the 'Edit' button for 'Contain' highlighted. The top-right screenshot shows the 'Domains' table with the 'Edit' button for 'Containment Distances' highlighted. The bottom-left screenshot shows the 'Edit Domain Set' form with the 'Name' field set to 'Contain' and the 'Update' button. The bottom-right screenshot shows the 'Edit Domain' form with the 'Decimals' field set to '0' and highlighted, along with other configuration options like Dimension, Native Unit, English Unit, Metric Unit, and Filtered Units.

Domain Sets

Name	Modify
Contain	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Fire & Effects	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Fuel & Vegetation	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Terrain & Spotting	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Time & Map	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Weather	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Domains

Name	Modify
Containment Distances	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Line Production Rate	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Edit Domain Set

Name

Edit Domain

Name

Decimals

Dimension

Native Unit

English Unit

Metric Unit

Filtered Units

☒ Chains (ch)
☒ Feet (ft)
☐ Inches (in)
☐ Miles (mi)

Figure 23: VMS: Updating translations on tags page.

4 Updating Units Dropdown Selections

In the Application's inputs page a user can change units via a drop down menu. By default a variable is linked to a "Dimension" (i.e. length) and will have all options available to select. However there are cases when this list should be limited to a subset. If this is desired do the following:

1. Find the Domain associated with the variable you are interested in. See [Variable Domains Associated with a Group Variable](#) section.
2. Click "Edit" on the Domain set
3. Click "Edit" on the Domain found in step 1.
4. Under "Filtered Units" select a subset of your desired units

The screenshot displays the VMS Domains Page with two main sections: a list of domains and two detailed edit forms.

Domains List:

Domain Name	Edit	Delete
Fire & Effects	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
Fuel & Vegetation	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
Terrain & Spotting	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
Time & Map	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
Weather	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>

Edit Domain Set:

Name
Fuel & Vegetation

Edit Domain:

Name
Tree & Canopy Height

Decimals

Dimension
Length

Native Unit
Feet (ft)

English Unit
Feet (ft)

Metric Unit
Meters (m)

Filtered Units

- ☐ Chains (ch)
- ☒ Feet (ft)
- ☐ Inches (in)
- ☐ Miles (mi)
- ☐ Centimeters (cm)
- ☐ Kilometers (km)
- ☒ Meters (m)
- ☐ Millimeters (mm)

Figure 24: VMS: Domains Page Updating Units dropdown to a subset of units.

5 Re-Ordering