Climate Shield Interactive Map Help Document

Sharon (Parkes) Payne
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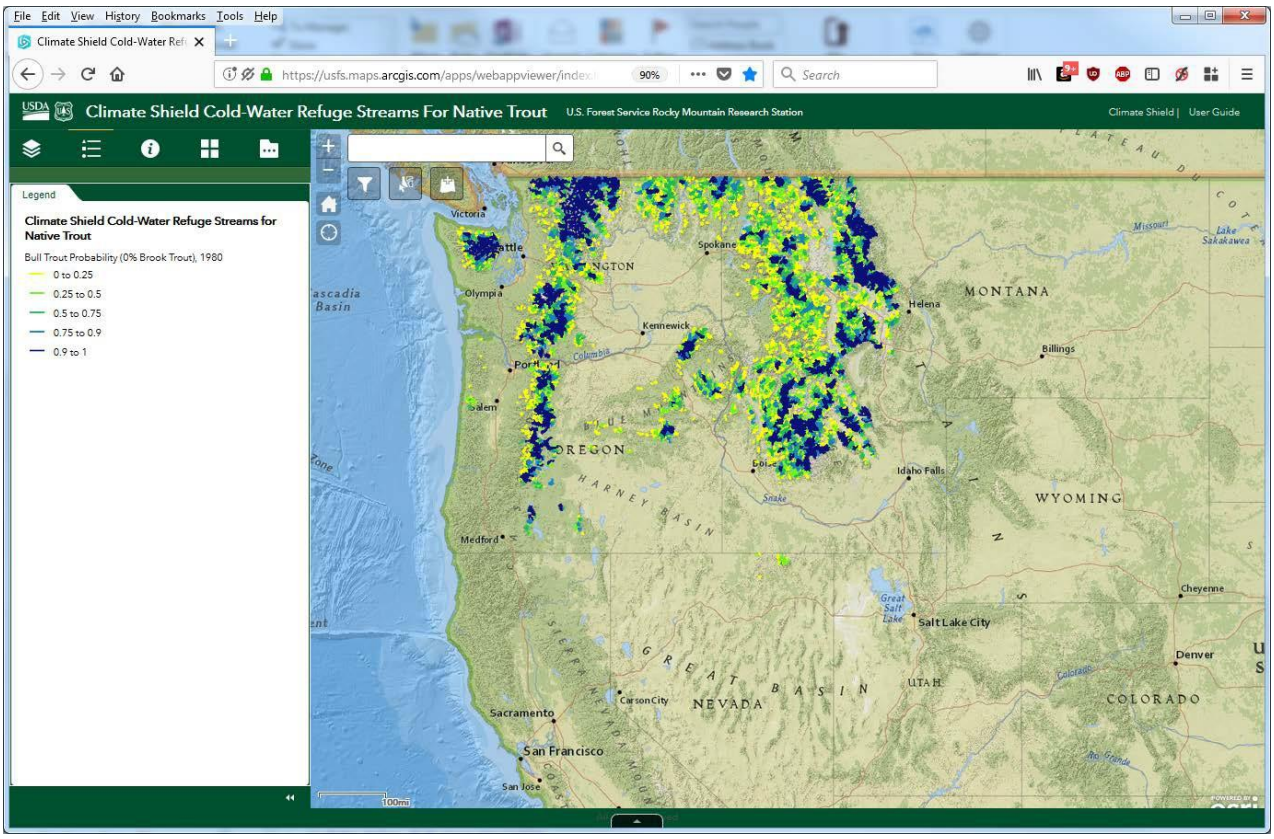
Overview

There are tabs available along the left under the map name and tools in the upper left-hand corner of the map under the search bar. Navigating the Map

Legend Tab | Layer List | Information | Change Basemap | Extract Lines by Area of Interest | Filter Line Segments | Select Features | Add Layer from ArcGIS Online, a URL or a File | Search Bar

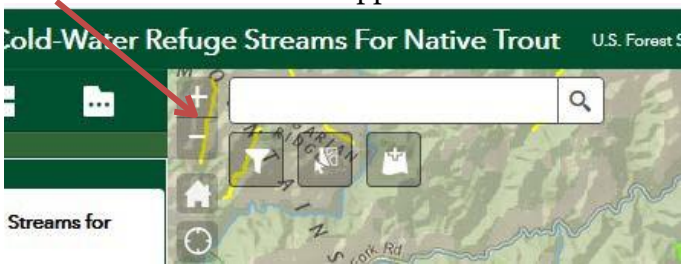
Navigating the Map

The initial view is the entire Climate Shield refuge streams project area. Zoom in to a specific area to better view the streams layer. Please note that stream names are available on the default basemap.



You can **Zoom** by:

1. **Simply moving your mouse scroll up and down while in the window**
2. Using the + and – buttons in the upper left-hand corner

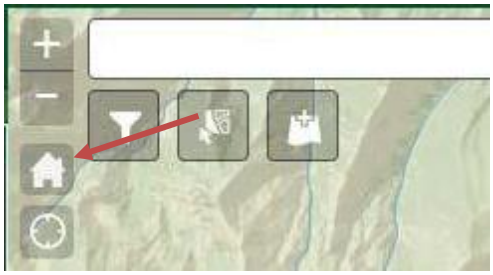


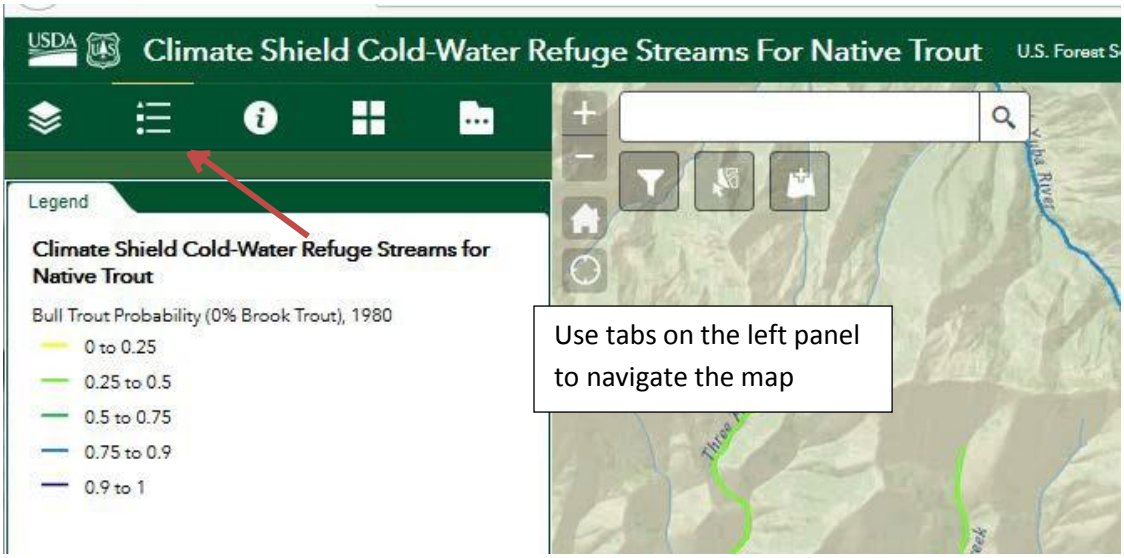
You can **Pan** by:

1. **Clicking on an area of the map and dragging your mouse to the desired view**

Changing your Extent

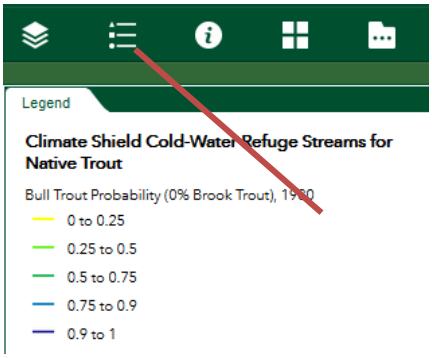
You can zoom out to the initial full extent by clicking on the home button in the upper-left corner of the map.





Legend Tab

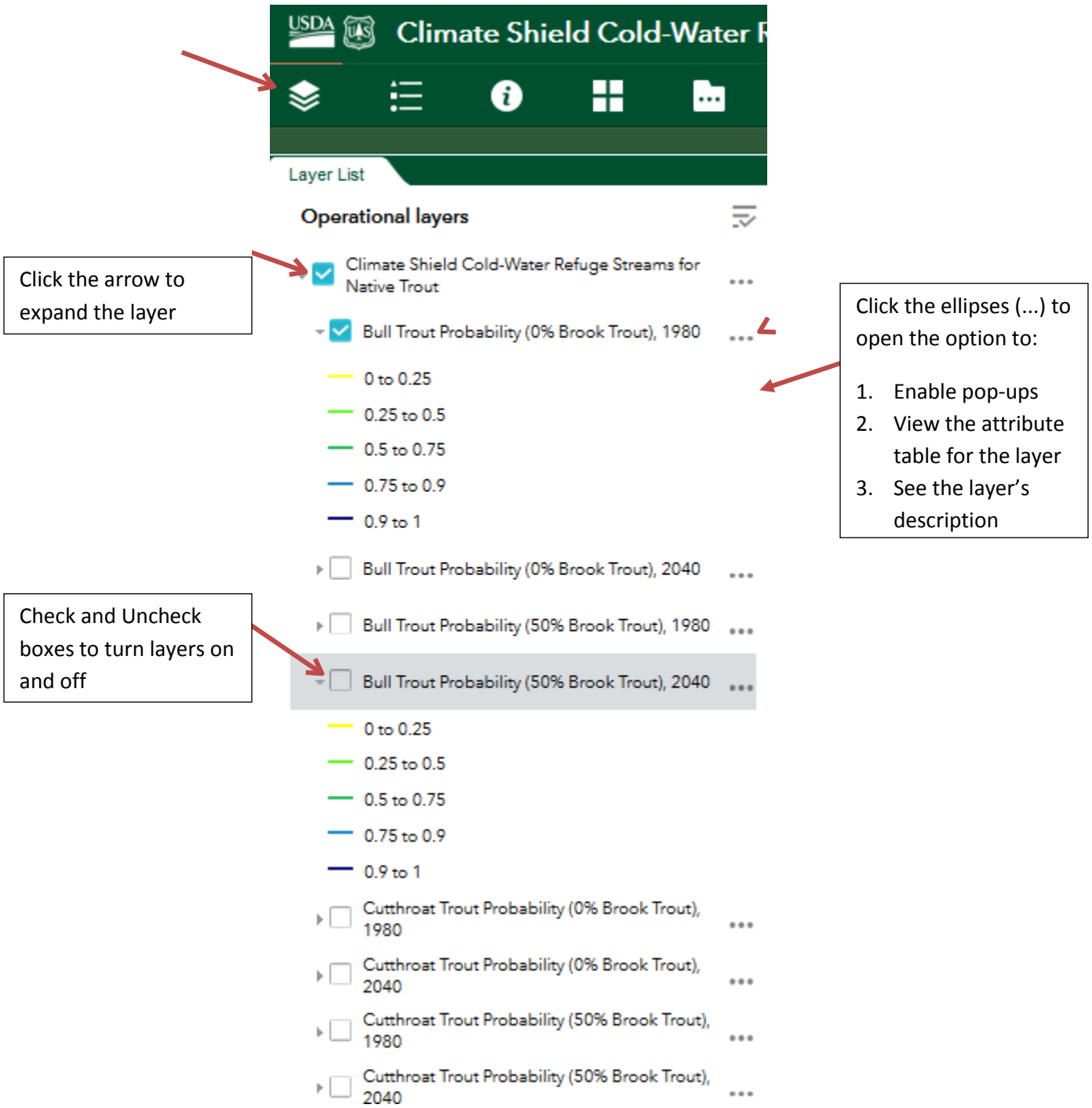
In the left panel of the browser window, the initial map view is of the Legend Tab. It shows the user which layers are active and the legend for the stream symbols being shown.



Layer List

In the left panel of the browser window, the Layer List can be viewed and changed. It is the first icon on the left. You can turn layers on and off in this panel. You can also use the arrows to expand to see the legend for those layers. Selecting the ellipses (...) also allows you to view and navigate that layer's attribute table.

Layers are named by using Bull Trout or Cutthroat Trout probability with different proportions of Brook Trout present, as well as different [NorWeST stream temperature] modeled stream temperature scenarios.

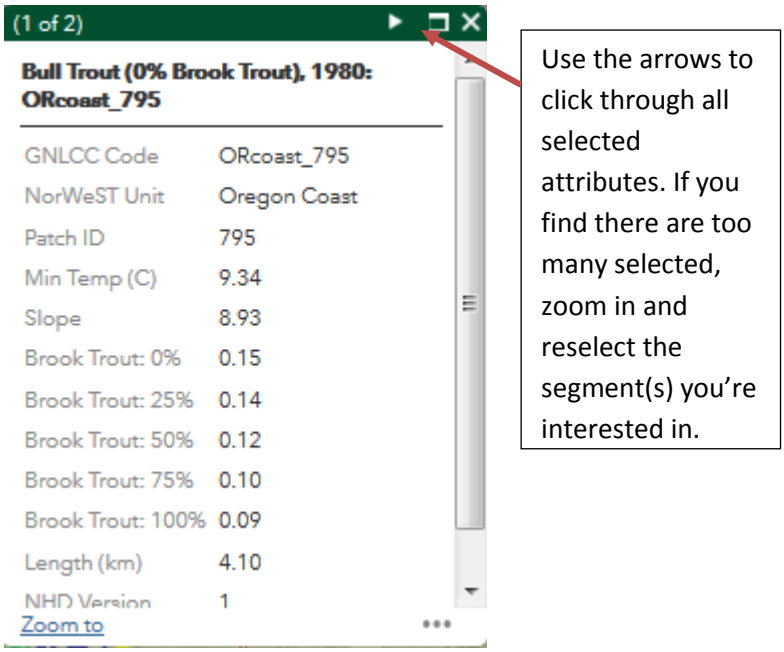


Attribute and field information

The climate scenarios used in this project represent baseline (1980s), moderate (2040s), and extreme (2080s) climate change conditions and were chosen because they bracket what might be considered a "pristine" historical condition and "worst-case" end-of-century conditions.

Note that because the distribution of Brook Trout is poorly known in many areas, making precise predictions about their effects within each stream is impossible so only two scenarios are provided in the digital map .pdf files (0% and 50%). However, the Climate Shield predictive models can be used to assess a broad range of Brook Trout invasions. More details are included in the **Climate Shield manuscript** published in Global Change Biology.

Clicking on a stream segment will allow you see the attributes associated with that segment in a popup window. Note that the pop-up window shows a field description instead of the shorter field attribute name in the attribute table.



Choosing "**View in Attribute Table**" will show the attributes of all features in that layer that are within the viewable map. Use the map to navigate to the area you're interested in. Note that the attributes in the attribute table are the shorter field attribute names for each segment and not the longer field descriptions available in the pop-up window.

GNLCCcode: The river basin corresponding to the area where NorWeST stream temperature scenarios were previously developed.

NOREWEST: The production unit name, representing the HUCs processed for NorWeST.

PATCH_ID: Unique identifier for one cold-water habitat within a NorWeST unit.

MinTempC (MeanTempC): MinTempC was used in the bull trout model and was the lowest mean August temperature predicted for any 1-km section within a cold-water habitat. MeanTempC was used in the cutthroat trout model and was the mean August temperature across all 1-km sections constituting a cold-water habitat.

Slope: Stream slope was represented as the average value across all reaches within a cold-water habitat

BT_0BKT – BT_100 (CT__0BKT – CT_100): These five fields are probabilities of juvenile bull trout (cutthroat trout) occurrence within a cold-water habitat based on the prevalence of brook trout at 0%, 25%, 50%, 75%, or 100% of the sites within a habitat.

The probabilities were predicted using the Climate Shield native trout models developed from known species occurrence in >500 cold-water streams. This information can be used to assess how vulnerable a native trout population would be to a brook trout invasion or whether a native trout population would persist in the absence of brook trout. Note that because native trout populations in habitats with slopes >10% are resistant to brook trout invasions, probabilities in those habitats do not change relative to brook trout prevalence

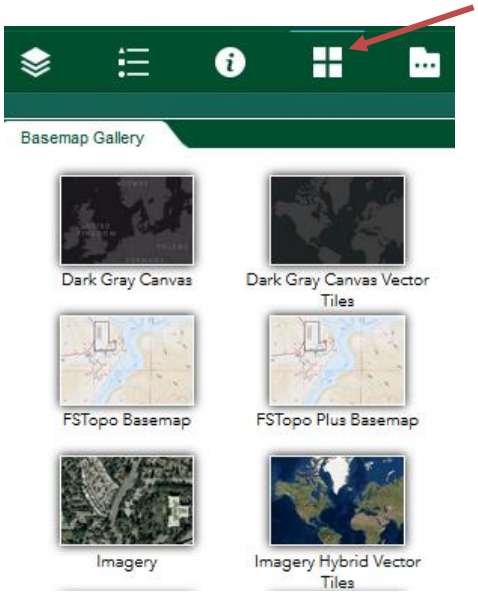
Information Tab

The information tab in the left panel allows users to view some material about the map and the Climate Shield project, as well as offering links to more information.

Background Image - Basemap

In the upper right-hand corner of the browser window, there is a **Basemap Gallery** button.

Clicking this button allows you to change the background image. Please note that some stream names are available on the default basemap, but might not be available if you change that basemap.



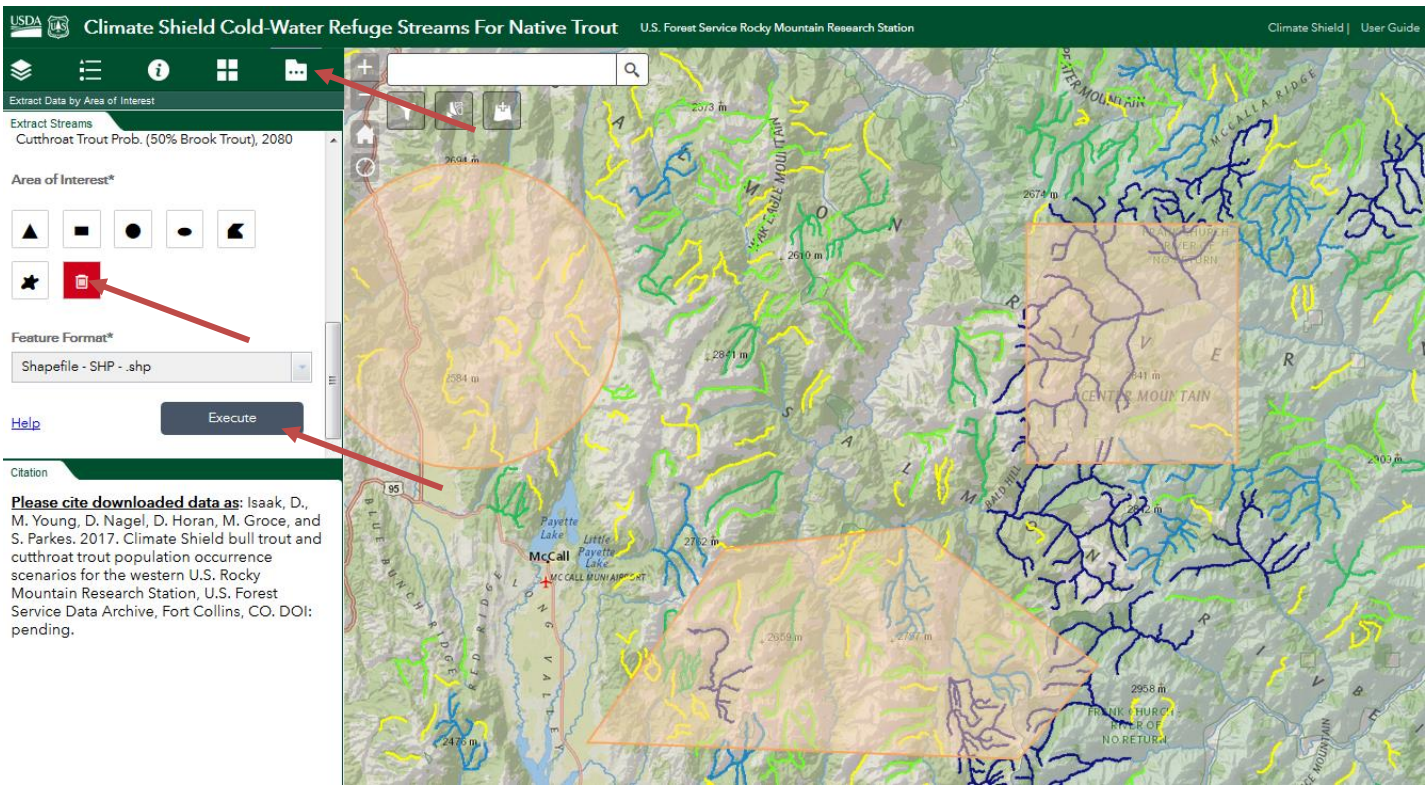
Extract Data by Area of Interest

Clicking the Extract Layer by Area of Interest tab brings up a geoprocessing tool that allows you to select an area of interest using various methods. Once you've made your selection, you can export the line segments within the area(s) of interest as a shapefile or geodatabase.

Notes:

- You can create more than one polygon to select different areas. You can select a box around one stream and a polygon around another.
- You can choose which layers to extract by using the check boxes next to the layer name in the left window.
- You can select using multiple area of interest types (freehand polygons, circles, rectangles, etc.)
- This tool does not select line segments in the attribute table. Rather, it allows the line segments within your area(s) of interest to be exported to a shapefile or geodatabase. To select lines to view in the attribute table, use the Select Features tool.

To remove the polygons you've created, click the 'delete' trashcan icon.



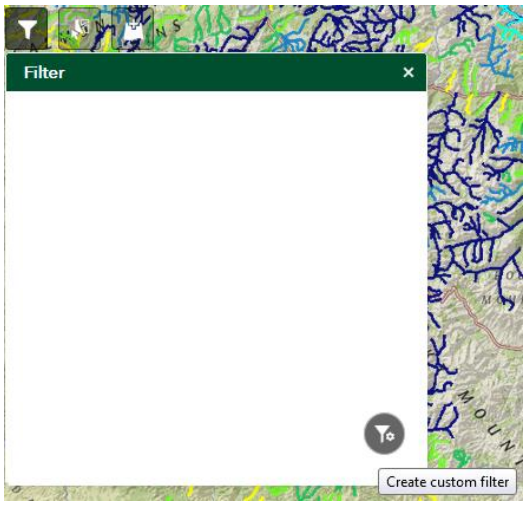
Once you've selected your area(s), click the "Execute" button. Depending on the size of your browser window, you may need to scroll down to see the button.

Please cite downloaded data as: Isaak, D., M. Young, D. Nagel, D. Horan, M. Groce, and S. Parkes. 2017. Climate Shield bull trout and cutthroat trout population occurrence scenarios for the western U.S. Rocky Mountain Research Station, U.S. Forest Service Data Archive, Fort Collins, CO. DOI: pending.

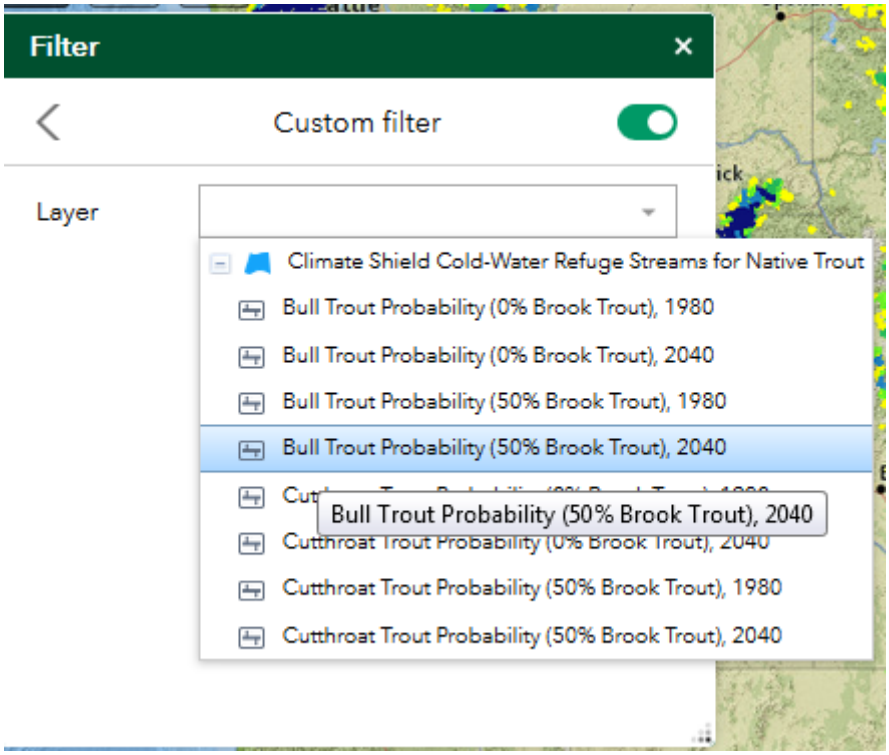
Filter

The Filter button allows you to filter the line segments on the map and in the attribute table by model results.

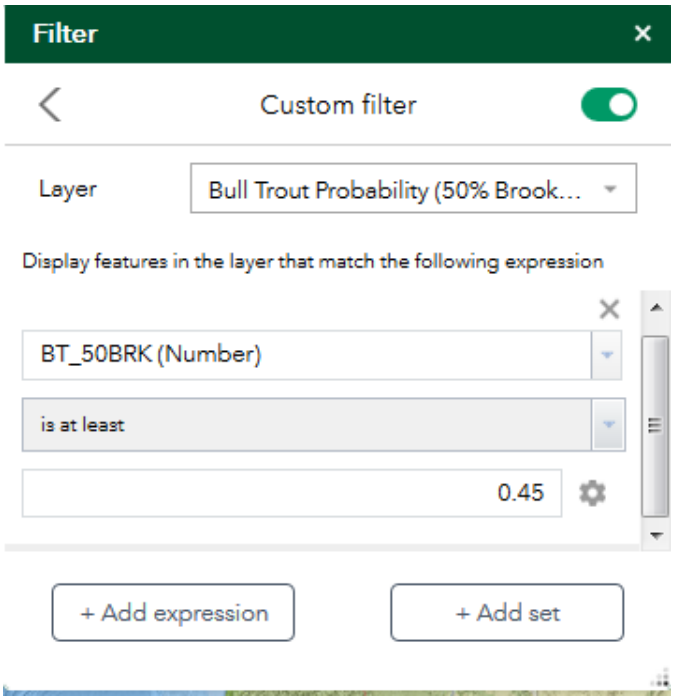
You need to create a Custom Filter for the data you're looking for. Select the "Create Custom Filter" button in the lower right-hand corner of the Filter window.



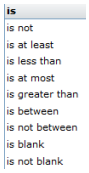
Select a layer you are interested in and then click the "Add Expression" button or "Add Set" button.



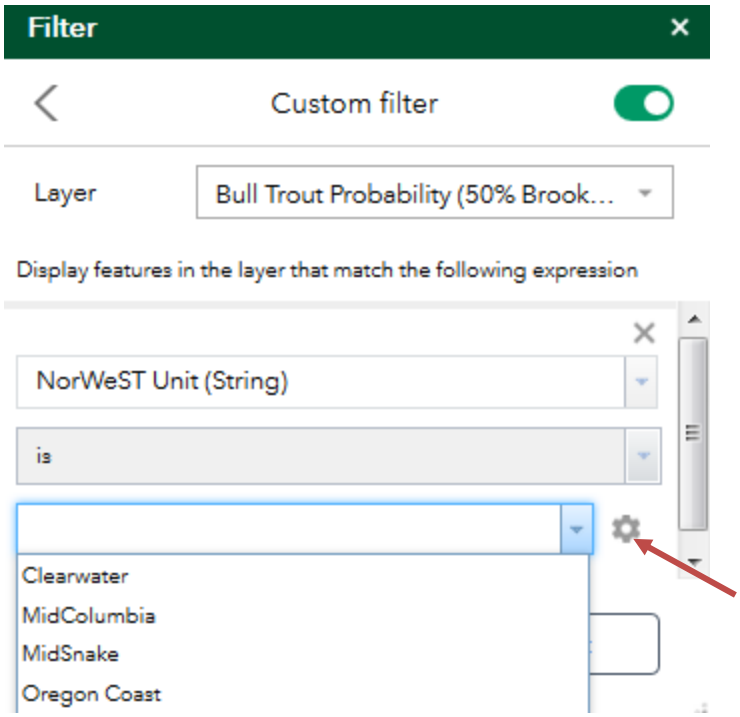
- Click the field drop-down arrow and choose the field you want to filter against from the list.



- Click the operators drop-down arrow and choose an operator from the list. ("is at least", "is greater than", "is between", etc.)



- If you want to filter based on a specific value, click the setting gear icon, choose Value, and enter a value in the field. Click the box to the left of Ask for values if you want to set up an interactive expression.

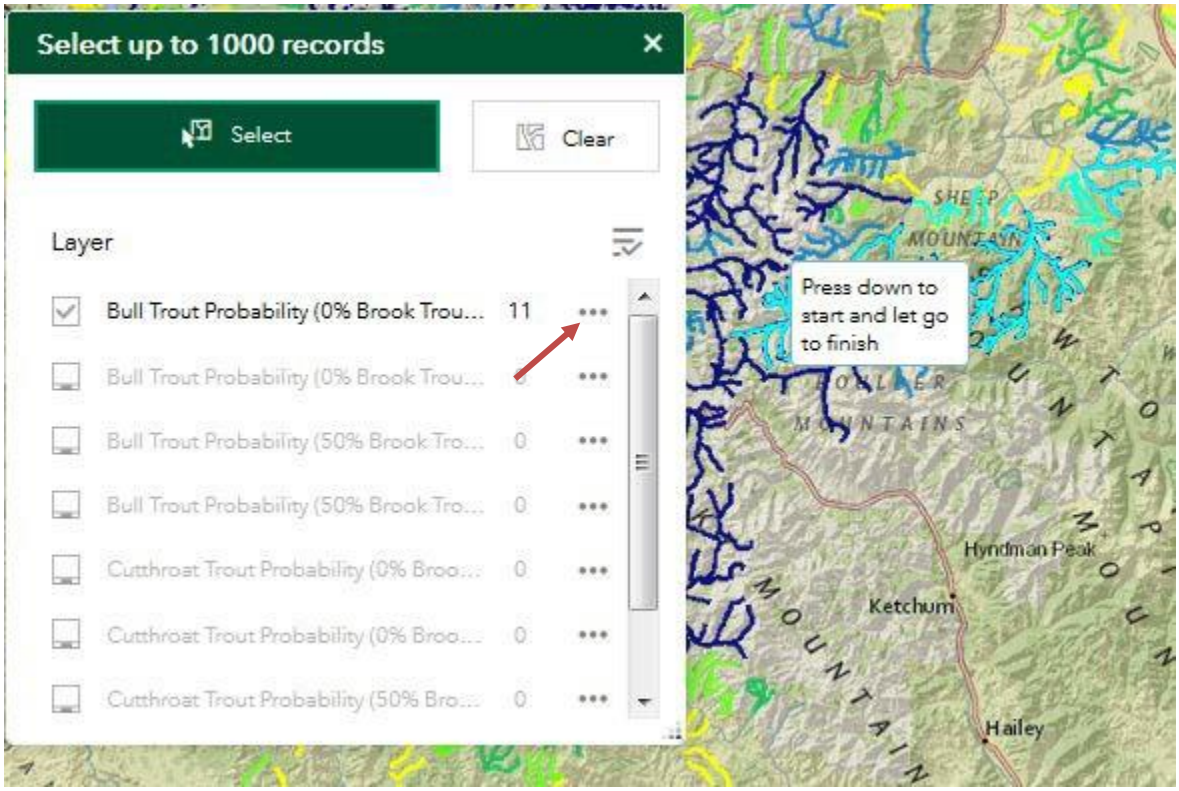


- For more information, see the "Create Filters" section of the ArcGIS Online document - https://doc.arcgis.com/en/arcgis-online/create-maps/apply-filters.htm

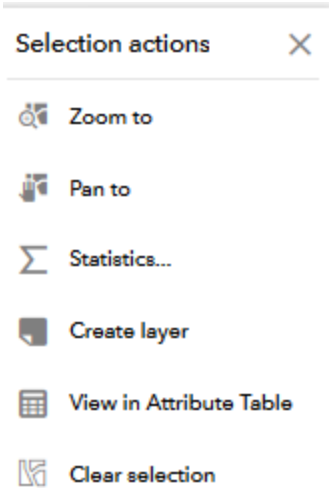
Select

Select Features

The Select button allows you to choose a layer and select stream segments on the map. Click and drag your mouse to create a box around the streams you would like to select. Please note there is an ArcGIS limitation that only allows 1000 records to be selected at a time.



You have several layer options for the selected records. Click the ellipses (...) to open the option to:

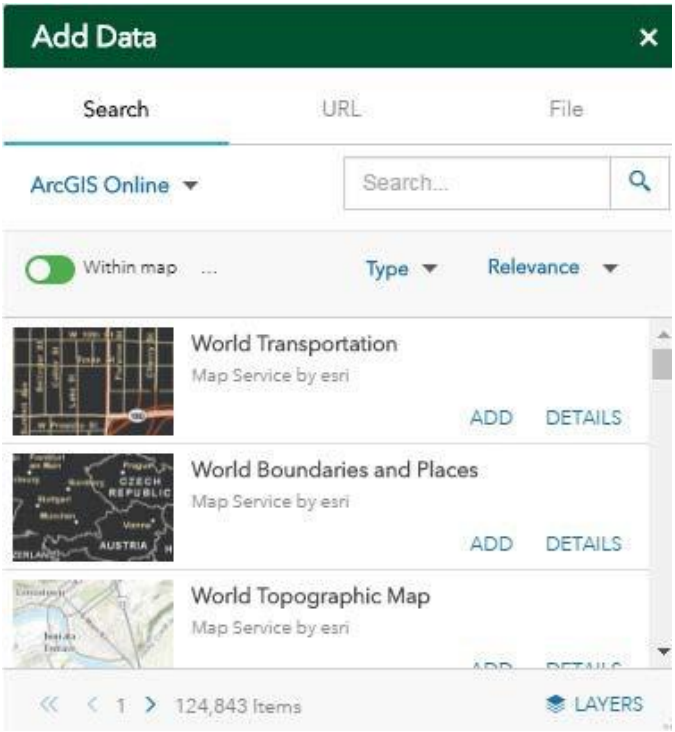


- Zoom to – zoom to the selected features.
- Pan to— Pan the map to selected features.
- Statistics—Not available for a single feature. It only summarizes the field with numeric type.
- Create Layer—Create a layer from a single feature or selected features.
- View in Attribute Table— View the selected stream segments in an attribute table.
- Clear selection— Clear the selection set

Add Data

Add Layer from ArcGIS Online, a URL, or a file

Choosing the Add Data button allows you to add other online layers to this map. You can search the available data in 1) ArcGIS online or 2) you can enter a specific URL if you already have a web service link or a KML file, GeoRSS File or CSV file URL. 3) You can also upload a file from your computer. It supports shapefiles in Zip format, and CSV, GPX and GeoJSON files.

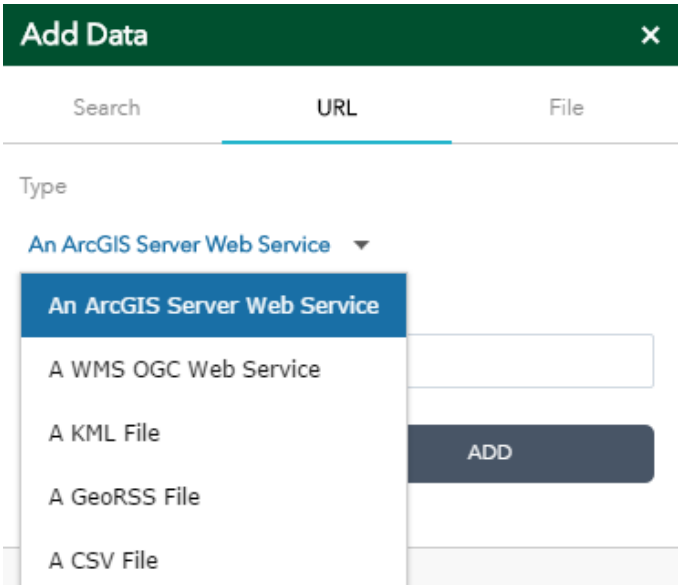


The default search option is within your organization, but you can use the drop-down to select "My Content" or "ArcGIS Online"

Click the icon to only search layers within the map area. Clicking it turns the icon red so you can search all layers in the scope.

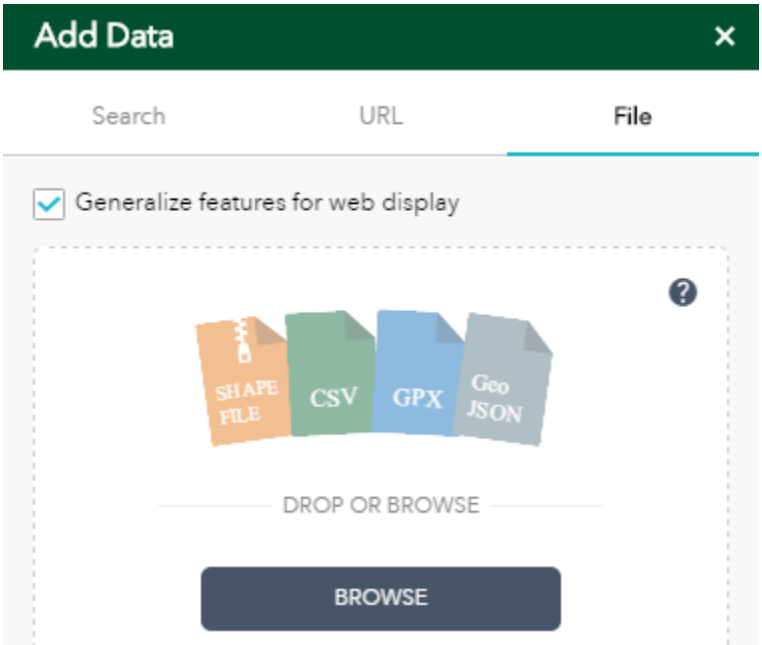
Click the sort icon to refine the type of search layer and sort the items.

- Click the Type drop-down list to search layers based on map service, feature service, image service, vector tile service, KML, or WMS.
- Click the Relevance drop-down list to sort items by relevance, tile, owner, rating, view, or date.



To add layers by URL, click the URL tab next to the Search tab. Choose a type and enter the URL. Click Add to add the data to the map. The added layer will appear in the Layer List widget as well. The following types are supported through the URL:

- ArcGIS Server web service
- WMS OGC web service
- KML
- GeoRSS
- CSV



Click the File tab to upload files locally. You can either drag and drop the file or browse to it. It supports shapefiles in Zip format, and CSV, GPX and GeoJSON files.

Click the X in the upper right of the Add Data window to close it and see your added layers.

To remove layers added click LAYERS in the lower right corner of the Add Data window. In the Layers panel, click the trash can icon next to the layer to remove it.

Click BACK in the lower right corner to return to the main Add Data panel.

Click here to return to the Climate Shield website.

Search Bar

Type a location in the search bar to zoom to a specific city you're interested in to help navigate the map.

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