

NorWeST ArcGIS Online Map Help Document

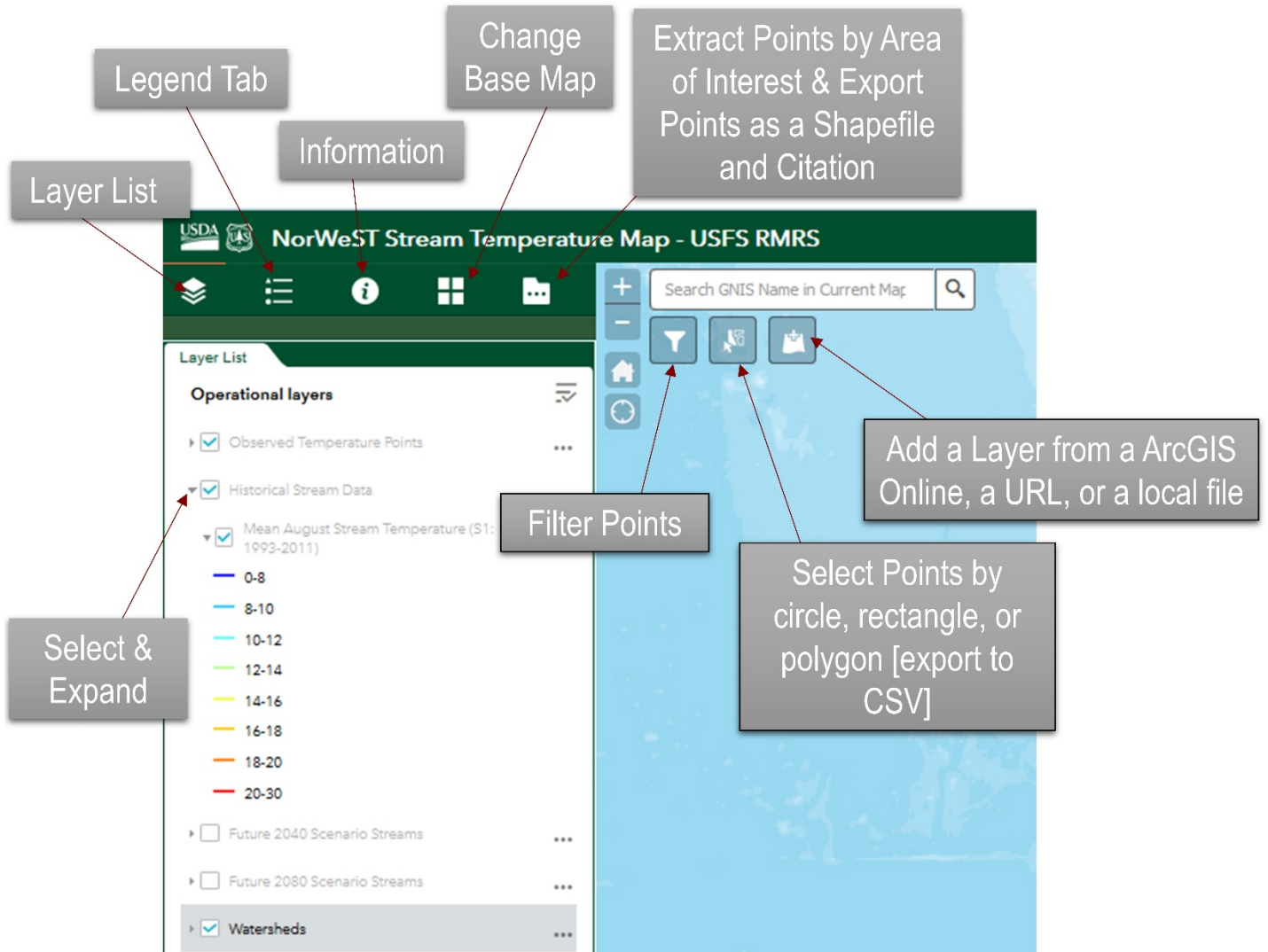
Sharon (Parkes) Payne
November 1, 2017

Overview of the [Online Map](#)

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](#)

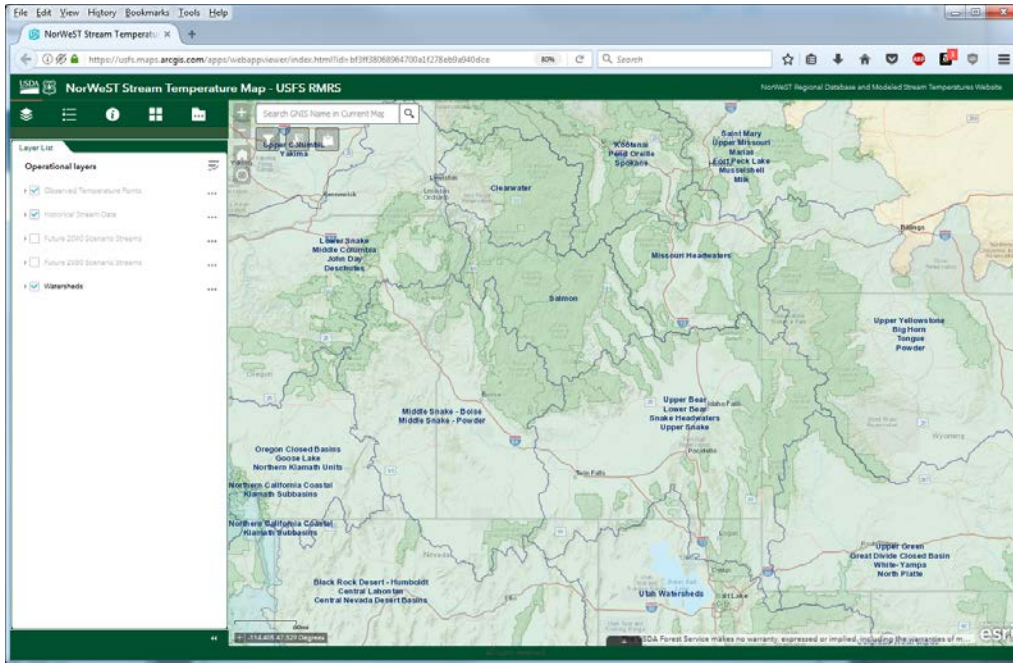
[Layer List and Layers](#) | [Legend Tab](#) | [Information](#) | [Change Basemap](#) | [Extract Layers by Area of Interest](#) | [Filter Layers Select Layers by circle, rectangle, or polygon](#) | [Add Layer from ArcGIS Online, a URL or a File](#) | [Search Bar](#)



Navigating the Map

The initial view is the entire [NorWeST](#) Project Study Area, with the completed Production Unit polygons outlined on the map.

As you zoom in to a specific area, the stream and point layers appear. They are not initially visible.



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:

Clicking on an area of the map and dragging your mouse to the desired view or using your keyboard arrow keys

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.



How to Use the Layer List

In the left panel of the browser window, the Layer List opens by default. You can turn layers on and off in this panel. You can also use the arrows to expand to see the legend.

The screenshot shows the 'NorWeST Stream Temperature' application interface. At the top, there is a green header with the USDA logo and the application title. Below the header is a dark green navigation bar with icons for layers, a menu, information, a window, and a help icon. The main content area is titled 'Layer List' and contains a list of 'Operational layers'. Each layer has a checkbox and an expand/collapse arrow. A callout box points to the top right of the layer list, indicating that clicking the arrow expands all layers or turns them on/off. Another callout points to the ellipsis (...) next to the 'Mean August Stream Temperature (S1: 1993-2011)' layer, indicating that clicking it opens a menu with options: 'Disable pop-up', 'View in Attribute Table', and 'Description'. A third callout points to the checkboxes, indicating that they can be used to turn layers on and off. The 'Mean August Stream Temperature' layer is expanded, showing a color-coded legend for temperature ranges: 0-8 (dark blue), 8-10 (light blue), 10-12 (cyan), 12-14 (light green), 14-16 (yellow-green), 16-18 (yellow), 18-20 (orange), and 20-30 (red).

Click to expand all layers or turn all layers on/off

Click the arrow to expand the layer

Click the ellipses (...) to open the option to:

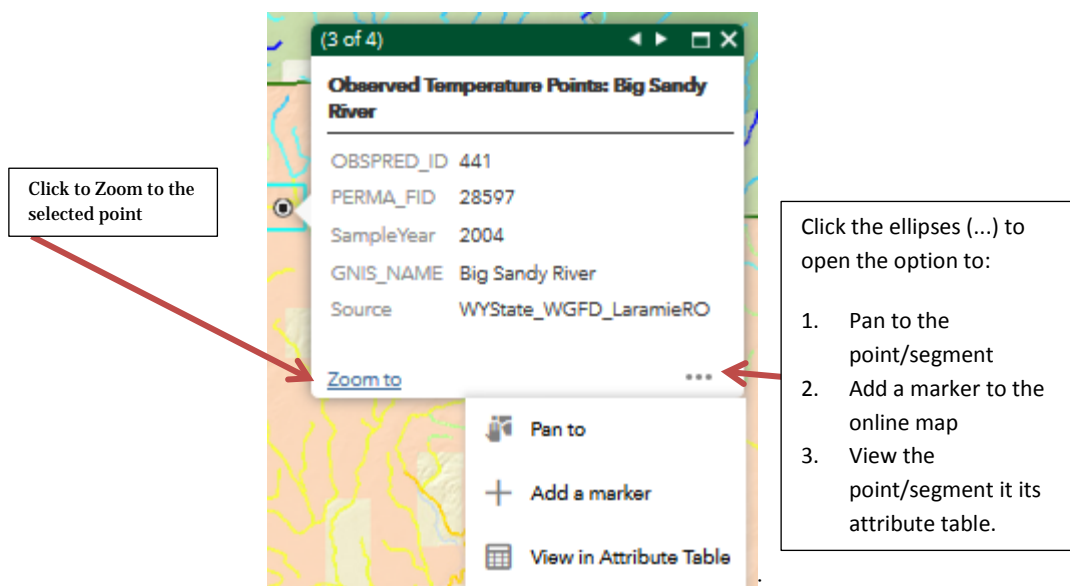
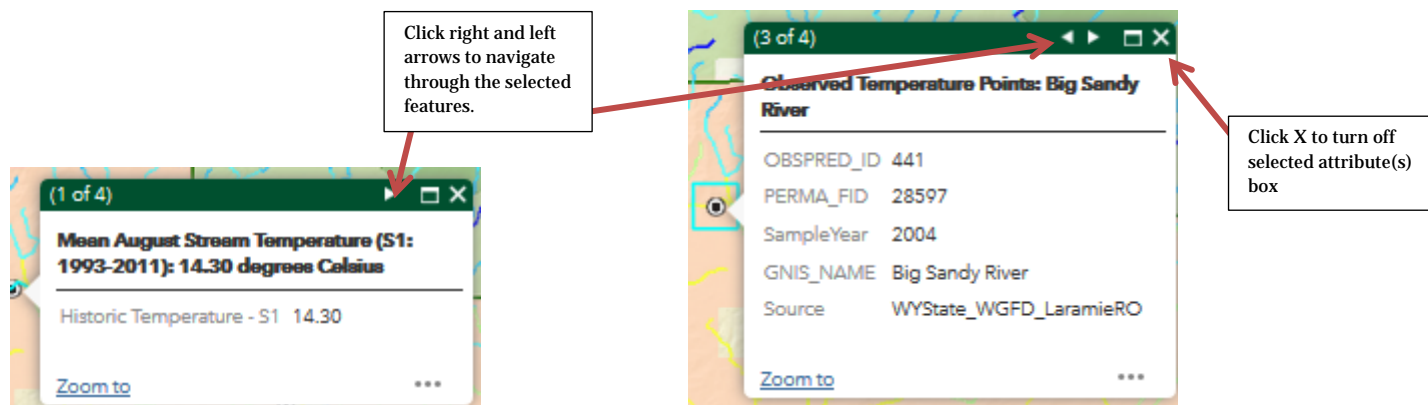
1. Disable pop-ups
2. View the layer in the attribute table
3. See the layer's description

Check and Uncheck boxes to turn layers on and off

What Layers and Attributes are Displayed

To display attributes of observed stream temperature points and modeled stream temperature lines, zoom in to an area and then **click the feature** you're interested in. (Your mouse icon will not change). After you've clicked a point or stream location, **the feature will be highlighted and its attributes are then shown in a pop-up box**. If there is more than one point/line in the same location, there will be the ability to navigate each one by clicking the arrows in the upper-right hand corner of the window. It will take a few moments to load all the attributes. You can see the highlighted attribute change as you navigate through the selected features.

Observed Temperature Points (points representing a thermograph location in the stream temperature database)



- **OBSPRED_ID** - This is a numeric field that can be joined with a spreadsheet of summarized stream temperature observations.
- **PermaFID** – Permanent Feature ID.
- **SampleYear** - The year that temperature data were recorded at the location.
- **GNIS_NAME**- The stream name from the Geographic Names Information System database
- **Source** - The name of the organization that contributed the stream temperature data

The spreadsheets for all completed “Processing Units” can be found at <https://www.fs.fed.us/rm/boise/AWAE/projects/NorWeST/StreamTemperatureDataSummaries.shtml>

Stream Temperature (lines representing modeled streams; segments color coded by mean August temperature)

When queried, the displayed number represents the modelled temperature scenario for the selected segment. Note that the [downloadable 1-km Stream Segment Shapefile](#) has many more modeled scenarios and years than available in this online map.

- **Mean August Stream Temperature.** (S1_93_11) - Historical composite scenario representing 19 year average August mean stream temperatures (Celsius) for 1993–2011. This layer automatically turns on as you zoom in.
- **Modeled Future Scenario 2040.** (S30_2040D) - Future scenario based on global climate model ensemble averages that represent the A1B warming trajectory for 2040s (2030 - 2059). Future stream deltas within a processing unit were based on similar projected changes in August air temperature and stream discharge, but also accounted for differential warming of streams by using historical temperatures to scale temperature increases so that cold streams warm less than warm streams. This

layer needs to be manually turned on by the user in the Layer list on the left of the map and represents temperature in degrees Celsius.

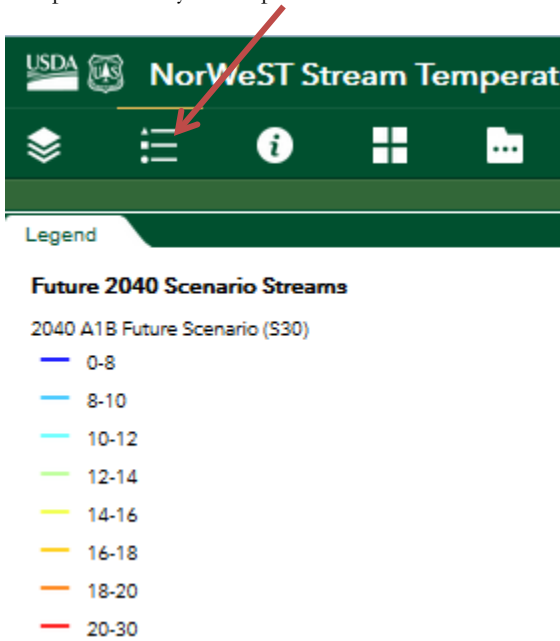
- **Modeled Future Scenario 2080.** (S32_2080D) - Future scenario based on global climate model ensemble averages that represent the A1B warming trajectory for 2080s (2070 - 2099). Future stream deltas within a processing unit were based on similar projected changes in August air temperature and stream discharge, but also accounted for differential warming of streams by using historical temperatures to scale temperature increases so that cold streams warm less than warm streams. This layer needs to be manually turned on by the user in the Layer list on the left of the map and represents temperature in degrees Celsius.

Watersheds - Polygons representing the project “Processing Unit” Boundaries in this project. This layer turns off as you zoom in. The processing status and HUC numbers can be found at:

https://www.fs.fed.us/rm/boise/AWAE/projects/NorWeST/images/NorWeST_FinalProcessingUnitsMap.jpg

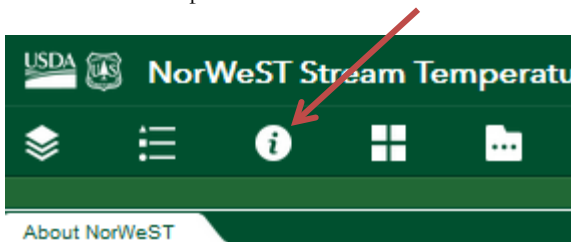
Legend Tab

The legend tab shows the visible layers in the map and is automatically updated to those layers that you’ve selected in the [Layer List](#) and is dependent on your map scale.



Information

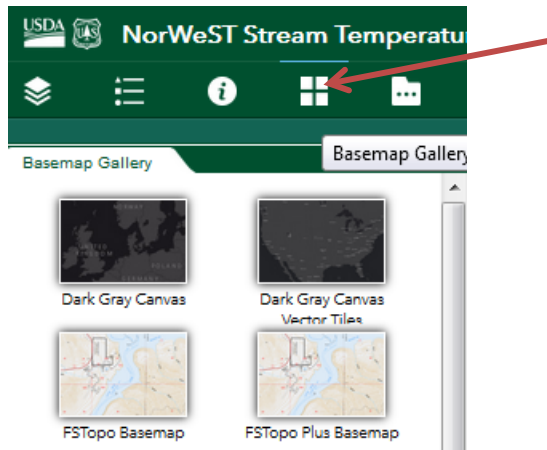
Clicking the Information tab on the left panel will allow you to see information about the map as well as citations for the modelled and observed temperature.





Background Image

In the left panel, there is a **Basemap Gallery** tab. Clicking this tab allows you to change the background to your choice of several types of basemaps. Note that you could also add your own basemap using the [Add Data](#) button.



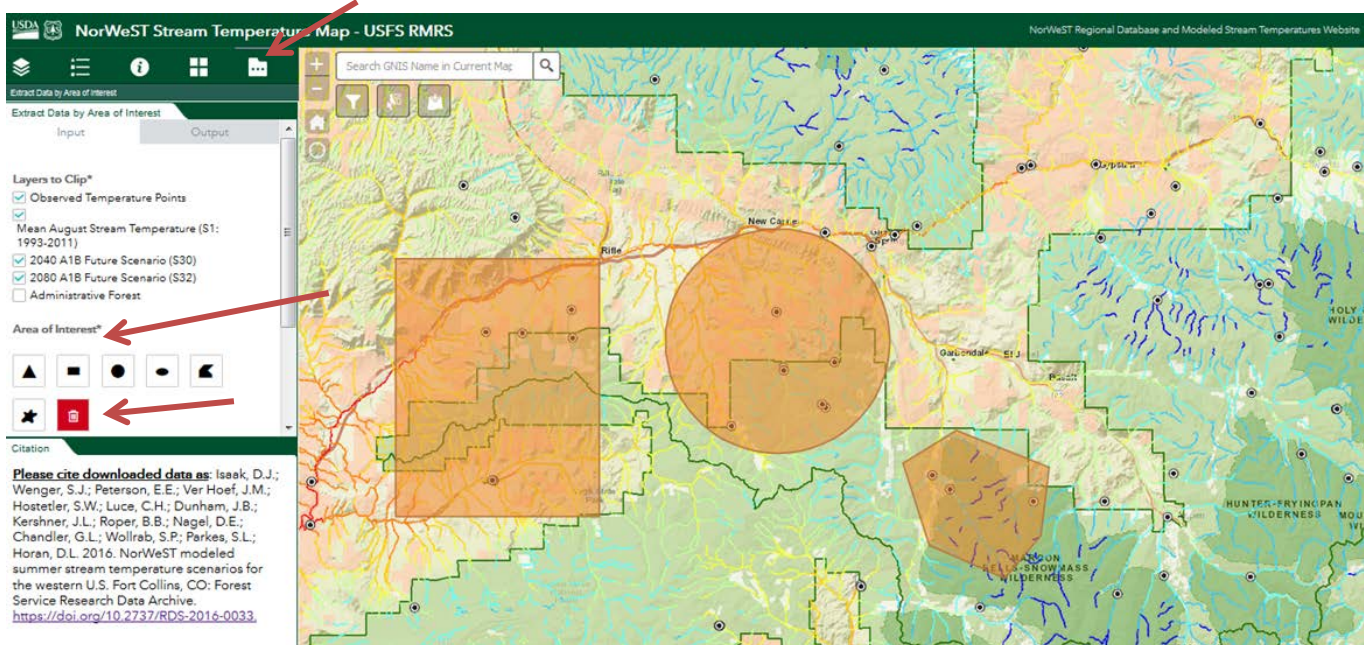
Extract Layer(s) by Area of Interest

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 points within the area(s) of interest as a shapefile or geodatabase.

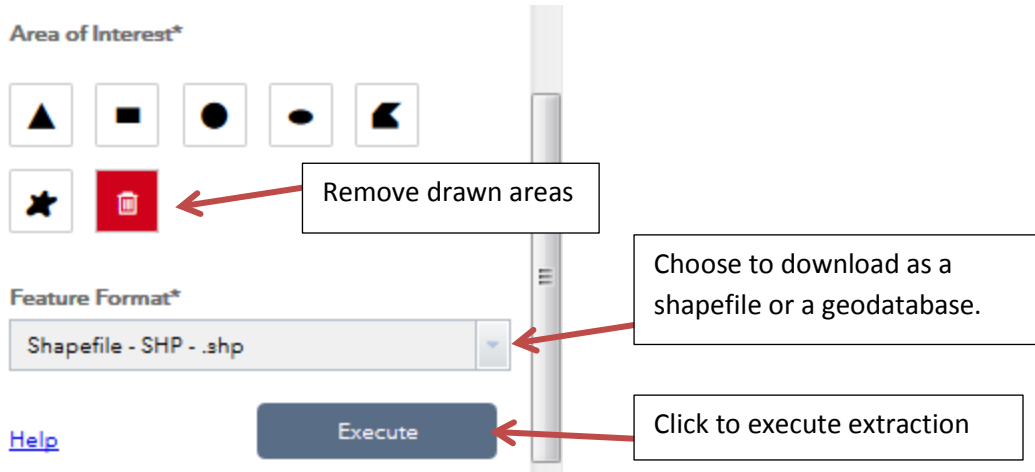
Notes:

- 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.
- If using a triangle, circle, or oval, the area you click and drag will be in the center of the drawn triangle, circle, or oval.
- If using a square or rectangle, the area you click and drag will be one side of the square or rectangle.
- This tool does not select points in the attribute table. Rather, it allows the points within your area(s) of interest to be exported to a shapefile or geodatabase. To select points to view in the attribute table, use the [Select Point](#) tool.

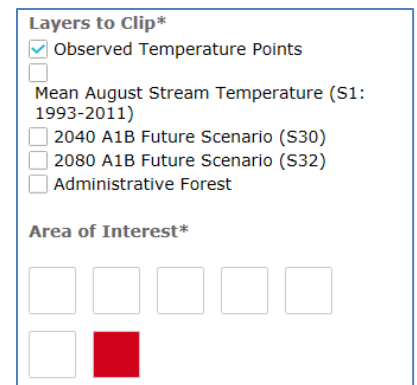
To remove the polygons you've created, click the 'delete' trashcan icon.



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.



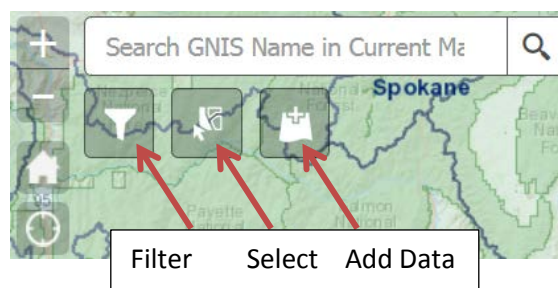
After a few moments, the Output tab will be a link to an output zip file containing a shapefile with your selected features. This shapefile includes the metadata in an XML file. Please note that the points in the map are in WGS 1984 and may need to be projected.



TROUBLESHOOTING NOTE

Some Internet Explorer browsers have issues with the geoprocessing widget that allows users to extract data. AoI boxes are not shown, but work. You can use the graphic above to choose or the other work-around is to use Chrome or Firefox to extract data. See this [ESRI page](#) for more information.

Available map tools





Filter

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

After clicking the Filter button, use the drop-down boxes to make your choice(s). You can filter by choosing a stream name (GNIS_NAME) of observed stream temperature point locations or Stream temperature ranges by model layer. See the [layer information section](#) for notes on the layers and attributes.

You can build custom filters using the Options in the attribute table. [See example.](#)

The Filter dialog box contains the following sections:

- Observed Temperature Points**: GNIS_NAME is [dropdown menu] [Apply]
- Mean August Stream Temperature (S1: 1993-2011)**: Historic Temperature - S1 is less than [input field] Historic Temperature - S1 is greater than [input field] [Apply]
- 2040 A1B Future Scenario (S30)**: 2040 - Scenario 30D is less than [input field] 2040 - Scenario 30D is greater than [input field] [Apply]
- 2080 A1B Future Scenario (S32)**: 2080 - Scenario 32D is less than [input field] 2080 - Scenario 32D is greater than [input field] [Apply]

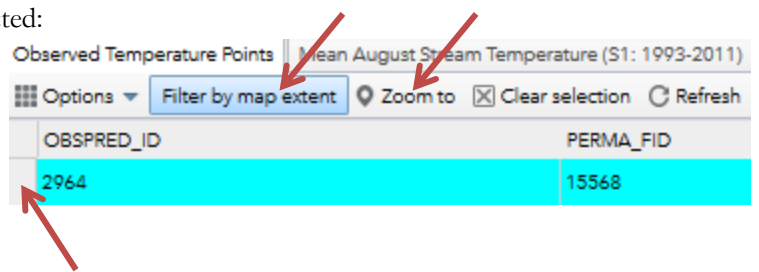
Once you've chosen your filter, click the Apply button. The results will show in the map and in the attribute table.

To remove the filter, click the green check mark in the upper right-hand corner of the Filter window.

The Filter dialog box for 'Observed Temperature Points' shows the dropdown menu set to 'Salmon River'. A green checkmark in the top right corner is highlighted with a red arrow, indicating the button to remove the filter.

If you would like to zoom to the points/segments you've selected:

1. Open the attribute table by clicking the arrow at the bottom of the map
2. Untoggle the "Filter by map extent" button
3. Select the point(s) or segment(s) by clicking the gray area to the left of the row(s)
4. Click "Zoom to" button

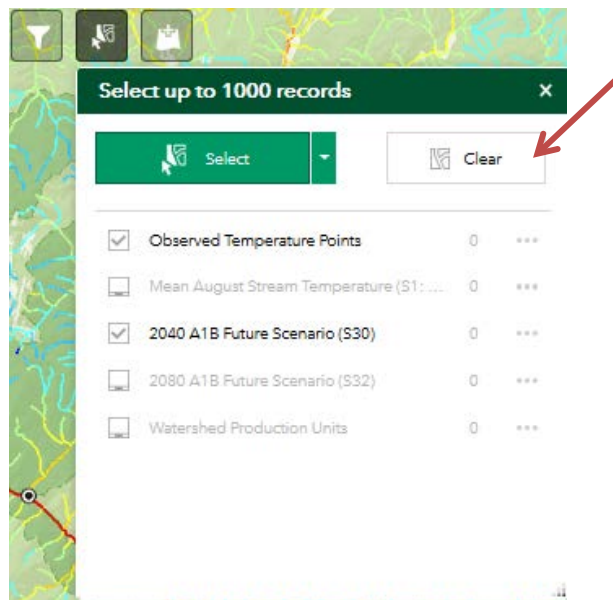


Select Layers by circle, rectangle, or polygon

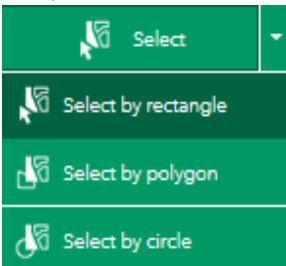
Choose the "Select" button in the upper left-hand corner of the map. This tool allows you to choose up to 1000 specific points or segments on the map. You can select the points or segments from those visible on the map by a rectangle, a polygon, or a circle. Note that the default layers are those selected in the [Layer List tab](#).

You can use it in conjunction with the [Filter tool](#) or you can zoom in and select points in a general area. You can view the selected points in the attribute table, and even [export to a CSV file](#) from there.

Please note that this selection tool doesn't allow export to a shapefile. It also does not allow for you to select more than one area. For those options, please see the [Extract Layers by Area of Interest button](#).

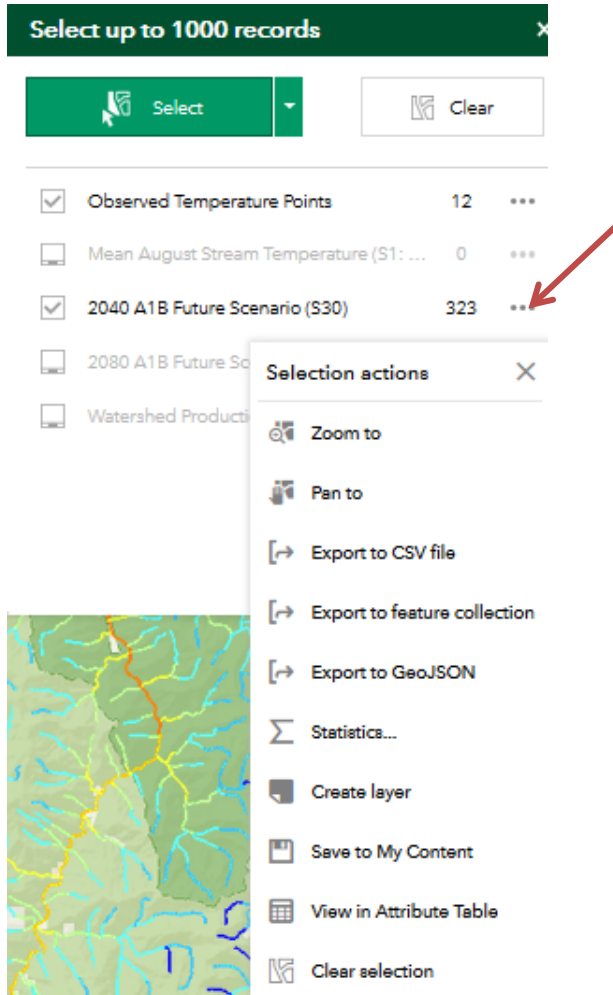


Use the "Select" dropdown to change your options of "Select by rectangle", "Select by polygon" and "Select by circle". Select by Rectangle and Select by Circle draw those shapes for you. Select by Polygon requires that you draw your polygon boundary and you will need to click the map to start that polygon.



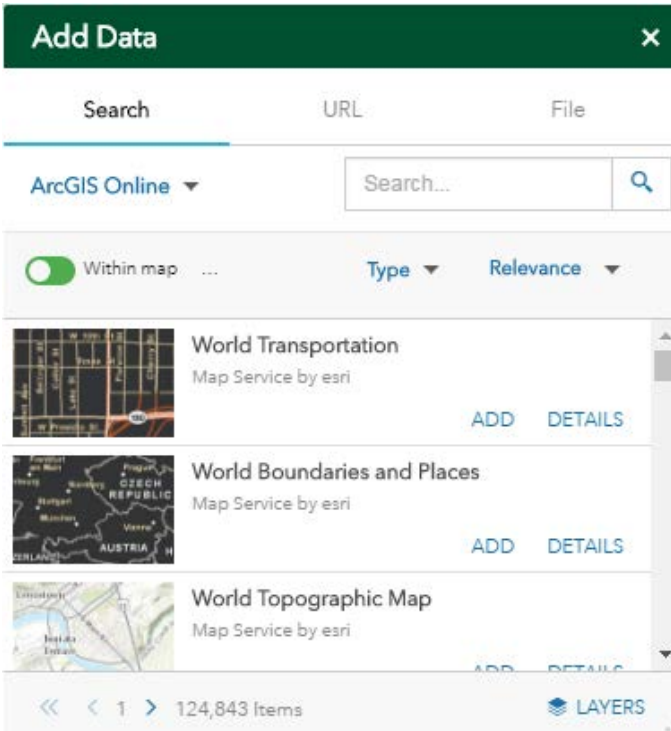
You can clear your selection by clicking the “Clear” button in the upper right-hand corner of the Select window. If you have already closed the window, you can click the Select button again to open the window and clear the selection.


After a moment, the points are selected. Once they are available, you can see the number of selected records for the layer. Click the ellipsis (...) to see your options for each layer.




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

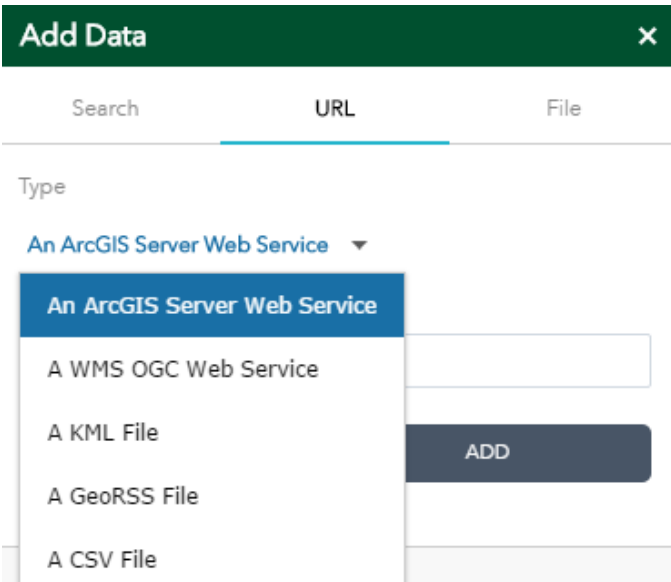
Choosing the Add Data button allows you to add other online layers to this map. You can search the available data in 1) ArcGIS online or 2) you can enter a specific URL if you already have a web service link or a KML file, GeoRSS File or CSV file URL. 3) You can also upload a file from your computer.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



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.

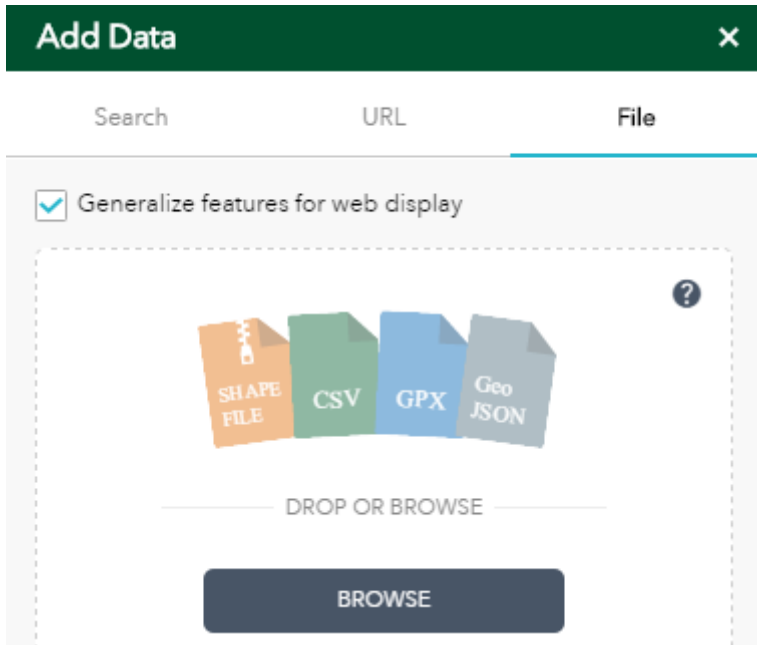
Click the sort icon  to refine the type of search layer and sort the items.

- 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 Sort By drop-down list to sort items by relevance, title, 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



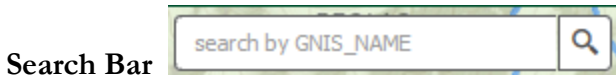
Click the File tab to upload files locally. You can either drag and drop the file or browse to it. It supports shapefiles in Zip format, and CSV, GPX and GeoJSON files.

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.

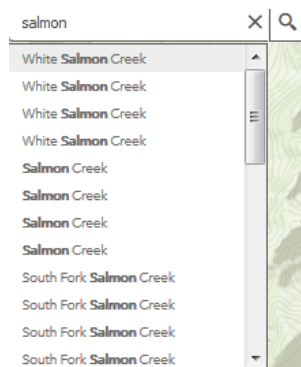
Click BACK in the lower right corner to return to the main Add Data panel.

Search Bar



Search for a stream by NHD Plus version 2 GNIS_NAME. Type your search and hit 'enter', or click the magnifying glass.

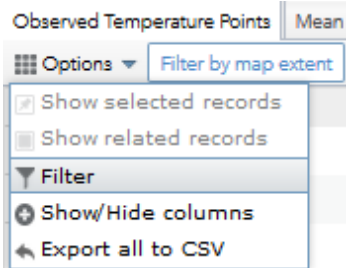
Searches take a moment and return up to 500 results. You can use this tool if you are not certain geographically where a stream or watershed is located. It will automatically zoom to the first result, but the search bar will have a slider to search for other results. Click another result and the map will zoom or pan to that location.



Filter using attribute table example

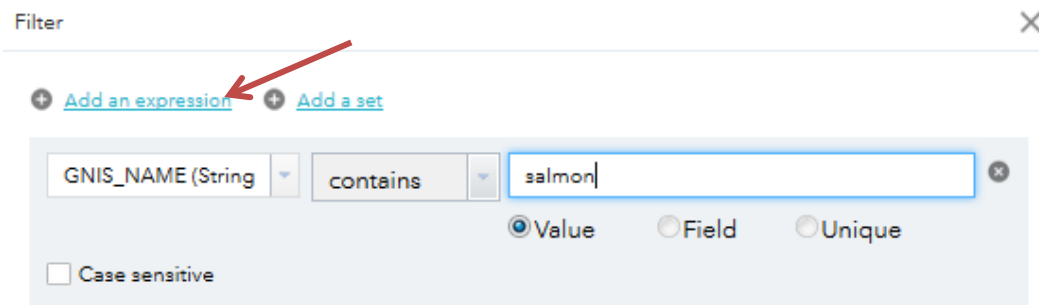
Click on the arrow at the bottom of the map to open the attribute table

Click the Options tab in the upper left-hand corner of the table and choose the Filter option

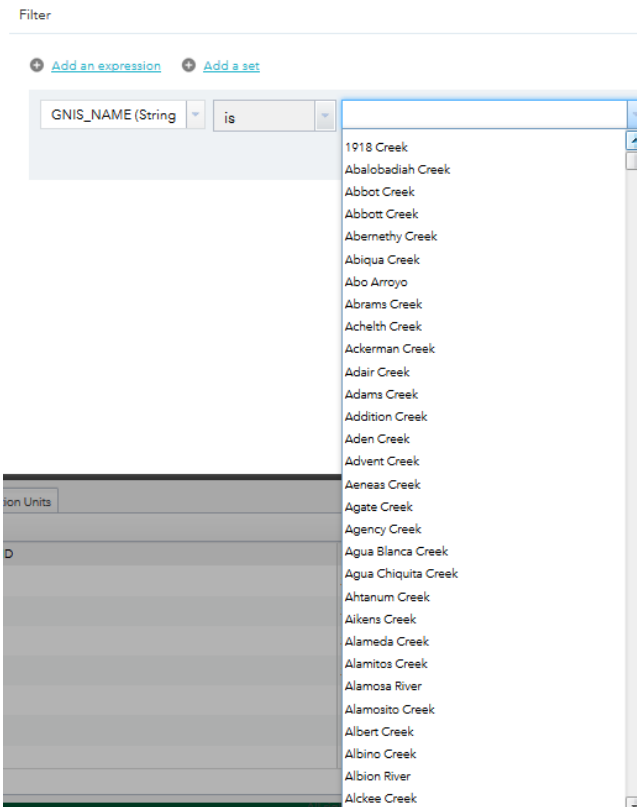


Please note that you can toggle the 'Filter by map extent' off and on. This will change your filter results.

In the Filter window, click "Add a filter expression" and then use the dropdown to choose GNIS_Name (String). You have several options. For example, you can choose "contains" and type the name of a river. This will result in all rivers containing part of that name, including the north and south forks. You can also use "is" and click the "Unique" radio button to get all unique values.



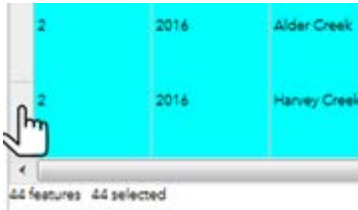
OR



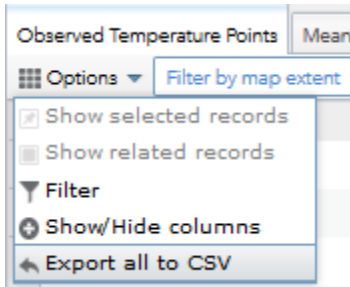
After a moment, click the dropdown. It will be populated with the available GNIS_NAME attributes. Choose your desired stream name and click “OK”.

Both the map and the attribute table will show only the points with those stream names. You can click to the left of the first record in the table, move the slider bar along the right all the way to the bottom of the filtered attributes, and then **click the shift key** and select the last record. This will select all the points you have filtered.

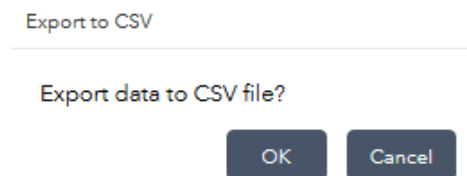
Note that your mouse will change from an arrow to a pointing hand when selecting.



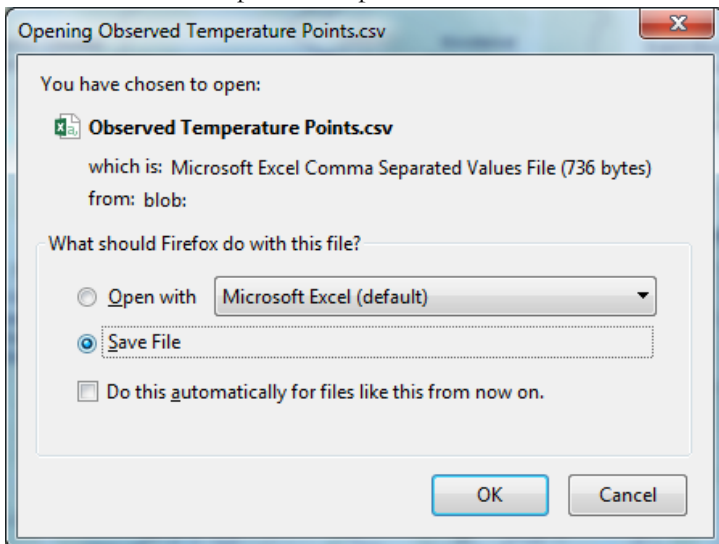
Once you have selected all the points you wish to export, Click the Options tab in the upper left-hand corner of the table and choose the Export Selected to CSV option.



You will be prompted to confirm that you want to export to a CSV file. Click OK.

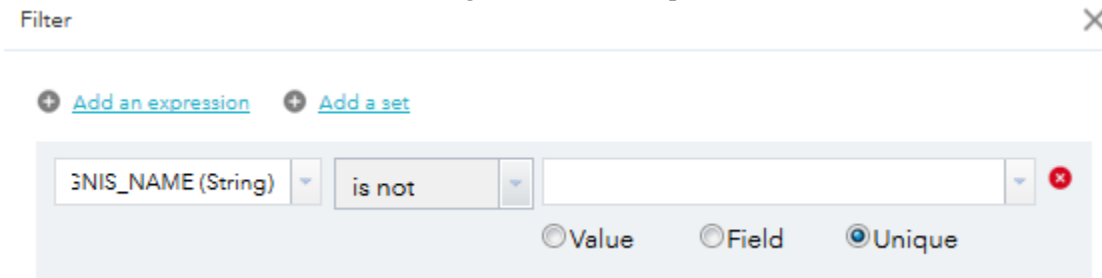


You then have the option to Open or Save the file. Click OK.

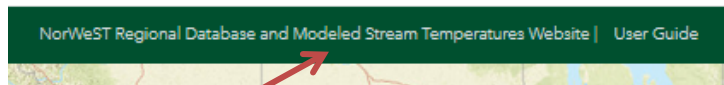


Please note that there is no automatic download of the metadata with the table as there is when you download or extract layers using the [area of interest](#) selection tool and export as a shapefile or geodatabase. You can find a general metadata document for data and scenarios on the [NorWeST website](#).

To remove the filter, click the X to the right of the filter expression.



Website Navigation and Citation



<https://www.fs.fed.us/rm/boise/AWAE/projects/NorWeST.html>

Note that you can return to the NorWeST website by clicking on the link in the upper right-hand corner

Isaak, Daniel J.; Luce, Charles H.; Rieman, Bruce E.; Nagel, David E.; Peterson, Erin E.; Horan, Dona L.; Parkes, Sharon; Chandler, Gwynne L. 2010. [Effects of climate change and wildfire on stream temperatures and salmonid thermal habitat in a mountain river network](#). Ecological Applications. 20(5): 1350-1371.

Isaak, D., S. Wenger, E. Peterson, J. Ver Hoef, D. Nagel, C. Luce, S. Hostetler, J. Dunham, B. Roper, S. Wollrab, G. Chandler, D. Horan, S. Parkes-Payne. 2017. [The NorWeST summer stream temperature model and scenarios for the western U.S.: A crowd-sourced database and new geospatial tools foster a user community and predict broad climate warming of rivers and streams](#). Water Resources Research. DOI: 10.1002/2017WR020969.

Data Summaries Website with data (Excel spreadsheets)

<https://www.fs.fed.us/rm/boise/AWAE/projects/NorWeST/StreamTemperatureDataSummaries.shtml>

Citation to use with these data summaries: Chandler, G.L.; Wollrab, S.P.; Horan, D. L.; Nagel, D. E.; Parkes, S.L.; Isaak, D.J.; Horan, D.L.; Wenger, S.J.; Peterson, E.E.; Ver Hoef, J.M.; Hostetler, S.W.; Luce, C.H.; Dunham, J.B.; Kershner, J.L.; Roper, B.B. 2016. NorWeST stream temperature data summaries for the western U.S. Fort Collins, CO: Forest Service Research Data Archive. <https://doi.org/10.2737/RDS-2016-0032>.

Modeled Stream Temperature webpage with shapefiles, PDF maps, Model Prediction Accuracy and GIS layers by production unit:

<https://www.fs.fed.us/rm/boise/AWAE/projects/NorWeST/ModeledStreamTemperatureScenarioMaps.shtml>

Citation to use with these scenarios: Isaak, D.J.; Wenger, S.J.; Peterson, E.E.; Ver Hoef, J.M.; Hostetler, S.W.; Luce, C.H.; Dunham, J.B.; Kershner, J.L.; Roper, B.B.; Nagel, D.E.; Chandler, G.L.; Wollrab, S.P.; Parkes, S.L.; Horan, D.L. 2016. NorWeST modeled summer stream temperature scenarios for the western U.S. Fort Collins, CO: Forest Service Research Data Archive. <https://doi.org/10.2737/RDS-2016-0033>.