

Group layers in FGP

Federal Geospatial Platform, Data Team

16/02/2022



Table of Contents

- ① What is a group layer?
- ② The difference between group layers and collections
- ③ Why group layers are useful to web mapping in FGP?
- ④ Creating group layers
- ⑤ Setting up a group layer as a Map Resource in FGP
- ⑥ Adding a group layer manually to the FGP viewer



1

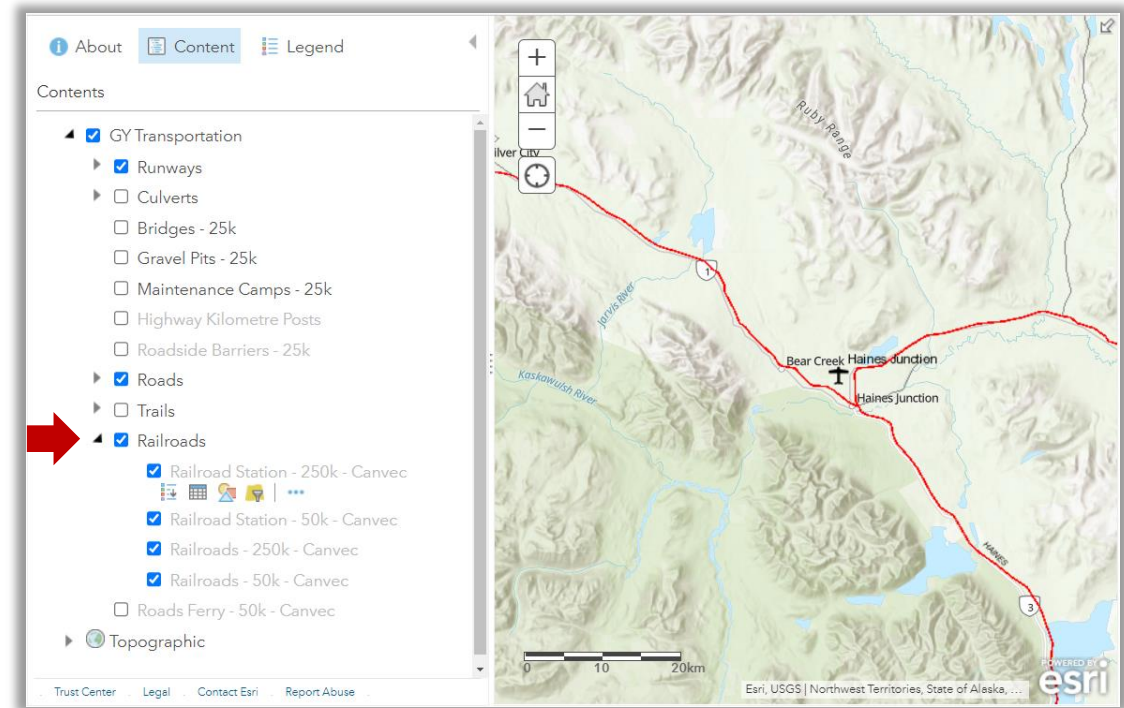
WHAT IS A GROUP LAYER?

- Contains other layers.
- Can have different geometries, such as points, lines and polygons.
- Helps organize related kinds of layers in a map.
- Can be used to define advanced drawing options.

You have two layers on a map representing **railroads** and **railroad stations**. You could group these layers together and name the resulting group layer “**Railroads**”.

There are no limits: you can even create nested group layers (groups of group layers)!

EXAMPLE



1

KEEP IN MIND THAT...



- A group layer behaves similarly to other layers in the table of contents.
 - ↳ Turning off the visibility of a group layer turns off the visibility of all its component layers.
- A group layer's properties override any conflicting properties of its sub-layers.
 - ↳ A visible scale range set on the group layer will override a visible scale range set on one of its sub-layers.
- When creating a web service with group layers, the more layers there are in a group layer, the longer it will take to display.
 - ↳ Reduce the number of layers.
 - ↳ Use geoprocessing tools to reduce the level of details for individual layers.
 - ↳ Make sure to test your service for load times when adding the service to the viewer. Recommended load time is 3 seconds.



Collection

- **Parent record:** Is the general metadata record for all related records (collection).
- **Child record:** Is one of the collection's elements and has a single layer of a web service associated as a Map Resource.
- Each metadata record has its own **Universal Unique Identifier (UUID)**.
- A collection is created by indicating the parent UUID in all of its sibling's metadata records.
- **The parent record has no Map Resource**, while each of its sibling has its own single-layer Map Resource.

Group Layer

- **One metadata record** describing all the layers of its associated Map Resource's layers.
- The Map Resource can be a group layer, a group of group layers or an entire web service with all its layers and group layers.
- There is **no limit** to the number of layers that can be part of the map.



Parent record

Land Cover of Canada - Cartographic Product Collection

Description

Collection of Land Cover products for Canada as produced by Natural Resources Canada using Landsat satellite imagery. This collection of cartographic products offers classified Land Cover of Canada at a 30 metre scale, updated on a 5 year basis.

- [Landcover of Canada 2010](https://open.canada.ca/data/en/dataset/c688b87f-e85f-4842-b0e1-a8f79ebf1133)

- [Landcover of Canada 2015](https://open.canada.ca/data/en/dataset/4e615eae-b90c-420b-adee-2ca35896caf6)

Geographic Extent

SW: -141 41.68
NE: -52.62 83.11

Time Period

From: 2009
To: 2016

Related Products (2)

 2010 Land Cover of Canada

 2015 Land Cover of Canada


View

View

Child record

2015 Land Cover of Canada





Add to Map Cart

 View this map


Description

Land cover information is necessary for a large range of environmental applications related to climate impacts and adaption, emergency response, wildlife habitat, etc. In Canada, a 2008 user survey indicated that the most practical land cover data is provided in a nationwide 30 m spatial resolution format, with an update frequency of five years. In response to this need, the Canada Centre for Remote Sensing (CCRS) has generated a 30 m land cover map of Canada for the base year 2010, as well as this 2015 land cover map.

Data Resources

Name 	Resource Type 	Language 	Format 
2015 Land Cover of Canada	Web Service	French	ESRI REST
2015 Land Cover of Canada	Web Service	English	ESRI REST
2015 Land Cover of Canada	Dataset	No linguistic content	TIFF

Collection

 Land Cover of Canada - Cartographic Product Collection

View parent

View collection



In the catalogue

Floods in Canada - Archive

[Add to Map Cart](#) [View this map](#)

Description

Flood extent polygons and their footprints representing floods from previous years throughout Canada as monitored by Natural Resources Canada using satellite imagery for emergency response.

Data Resources

Name	Resource Type	Language	Format
Floods in Canada - Archives	Web Service	English	WMS
Floods in Canada - Archives	Web Service	French	WMS
Floods in Canada - Archives	Web Service	French	ESRI REST
<u>Floods in Canada - Archives</u>	Web Service	English	ESRI REST

In the viewer

Layers

-
- Floods in Canada - Archives
- Floods in Canada - Archi... Footprints
- Floods in Canada - Archive
- Flooded Area in Canada - Archive



- Two different concepts - that can be confusing - in the FGP catalog.
- In the past, group layers were not supported by the FGP catalogue.
 - ↳ Contributors that wanted to publish a web service with many layers had to create a separate metadata record for each layer.
 - ↳ Then, they would create another metadata record for that collection (parent metadata) and link all the sub-layers metadata records (siblings).





Collections are still **useful** in the catalogue for grouping together multiple datasets.



Since only one web service can be linked to a metadata record, multiple web services that are related to each other, each one having a multi-layer web service of its own, **can make a collection.**

EXAMPLE

The “**Canada's National Forest Inventory**” has many child datasets for various products, each one having its own web service and downloadable subset in many data formats.

[Example: Canada's National Forest Inventory \(NFI\) 2006](#)

Data Resources			
Name	Resource Type	Language	Format
Canada's National Forest Inventory (NFI) (English)	Application	English	HTML
Canada's National Forest Inventory (NFI) (French)	Application	French	HTML
Canada's National Forest Inventory (NFI) of 2006	Web Service	English	WMS
Mapping attributes of Canada's forests at moderate resolution through KNN and MODIS imagery	Supporting Document	English	HTML
TAR packages at tree.pfc.forestry.ca	Dataset	English	GeoTIF

Related Products (16)	
Birches (Genus Betula) in Canada 2006	View
Broad-leaved species in Canada 2006	View
Cedars (Genus Thuja) in Canada 2006	View
Forest Composition across Canada 2006	View
Forest height in Canada 2006	View
Hemlocks (Genus Tsuga) in Canada 2006	View
Maples (Genus Acer) in Canada 2006	View
Merchantable forest volume in Canada 2006	View
Needle-leaved species in Canada 2006	View
Poplars, Aspens and Cottonwoods (Genus Populus) in Canada 2006	View
Spruces (Genus Picea) in Canada 2006	View
Total forest volume in Canada 2006	View
Total live above-ground biomass in Canada 2006	View
Tree Crown Closure in Canada 2006	View
Treed land in Canada 2006	View
True Firs (Genus Abies) in Canada 2006	View



3

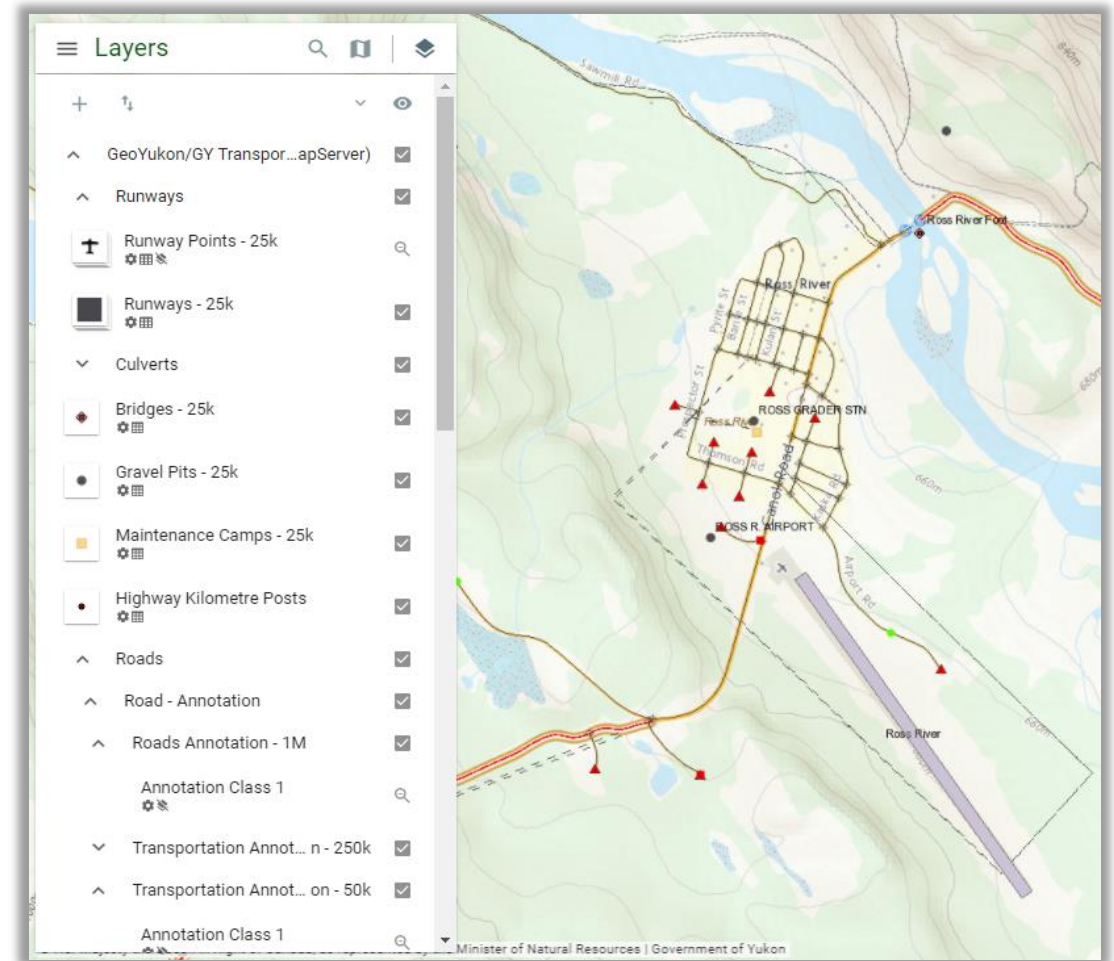
WHY ARE GROUP LAYERS USEFUL TO WEB MAPPING IN FGP?

- In the FGP catalogue, there is no need to create a separate metadata record for each of these layers.
- Some thematics need more than one layer to be represented on a map.

If you want to display a **transportation network** containing **roads** (line feature), **runways** (polygon feature) and **bridges** (point feature); you can display all the layers at once when clicking on the “View this map” button of the record.



[Example: Yukon Transportation Information](#)






The layers listed in the groups are not listed in the metadata. They do not have a metadata record for each layer and thus cannot be searched for by a user. It is a best practice to describe these layers in the abstract/description and that proper keywords are used for search and discovery.

Floods in Canada - Archive (Demo)

Add to Map Cart

 View this map

Description

Flood extent polygons and their footprints representing floods from previous years throughout Canada as monitored by Natural Resources Canada using satellite imagery for emergency response.

Layers included in this dataset:

Floods in Canada - Archive - Product Footprints
 Floods in Canada - Archive
 Flooded Area in Canada - Archive

In response to large flood events, Natural Resources Canada (NRCan), for the provision of emergency geomatics services, may be activated by Canada's emergency management protocols. As new satellite

Data Classification

Theme

Footprint, Flooded Area

GC Core Subject Thesaurus

History, Floods, Archives, Natural disasters,
 Emergency services

Topic category

Inland waters



- Whether you are using ESRI or MapServer to create your map service, when the map contains more than one layer, your entire map is in fact the first “group layer”.
- There is no limit of subgroups you can nest within each other.



WMS services hosted on an ArcGIS Server **do not support** group layers.
The web services used by the FGP viewer that fully supports group layers are:
esriDynamic
esriFeature



4

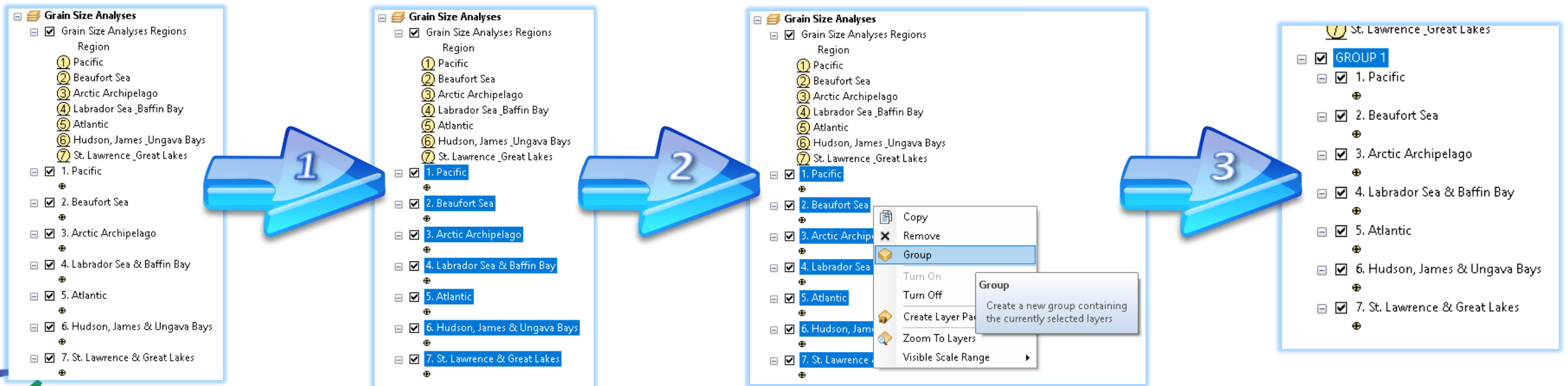
CREATING GROUP LAYERS WITH...



ArcMap

In an ArcMap project:

- 1 Select two or more layers in the table of contents by holding the CTRL/SHIFT key.
- 2 Right click and choose “Group” to create a group layer.
- 3 You have your group layer!



4

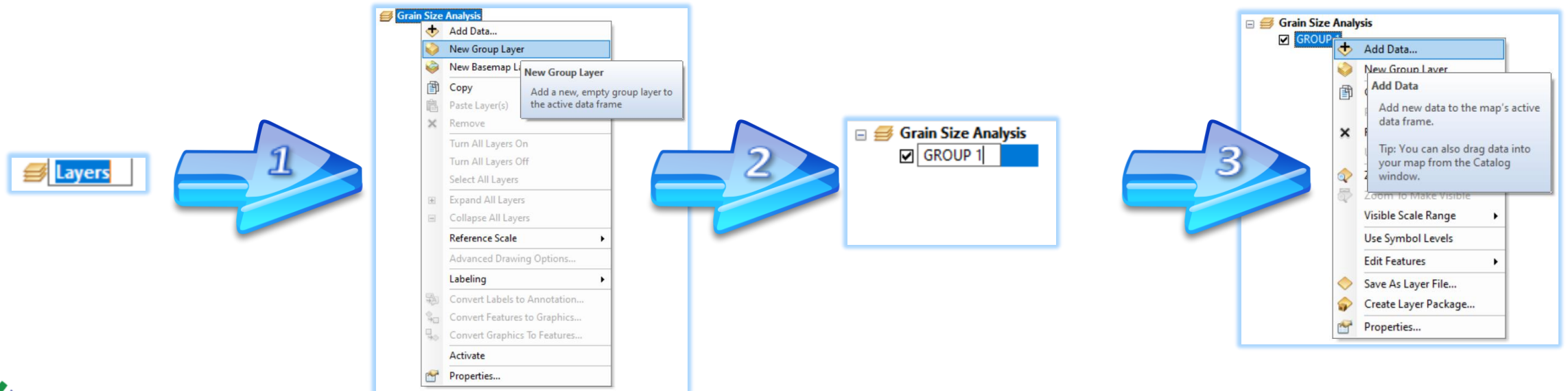
CREATING GROUP LAYERS WITH...



ArcMap

Alternatively, in an empty ArcMap project:

- 1 Rename the Data Frame “Layers” to something meaningful, right-click on it and select New Group Layer
- 2 Rename the newly created “New Group Layer”.
- 3 Right-click on it and select Add Data, browse and add the desired layers you want in that group.



4

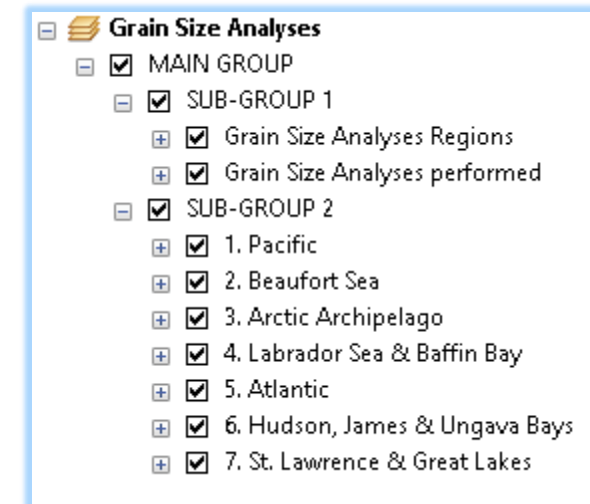
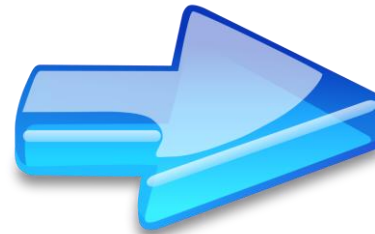
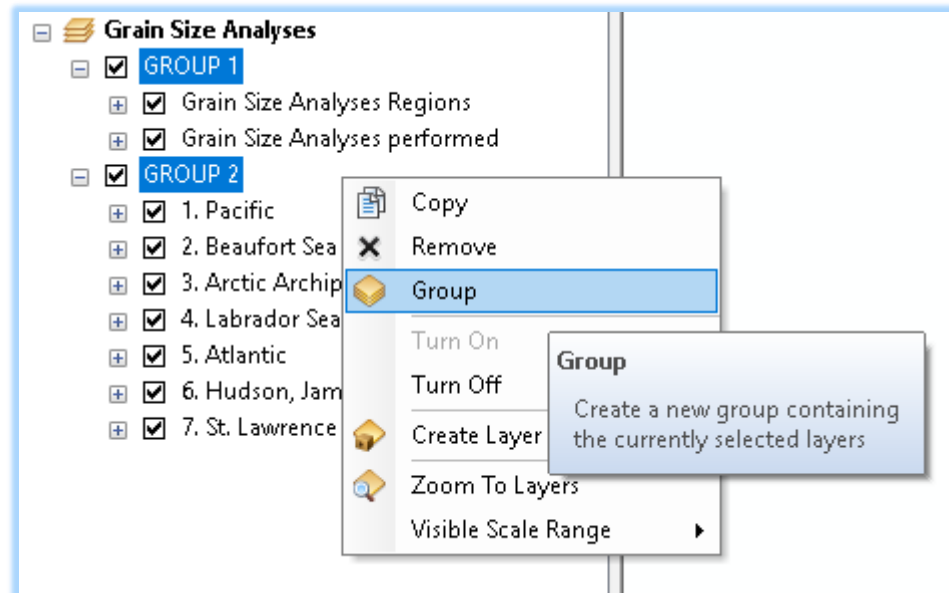
CREATING GROUP LAYERS WITH...



ArcMap



It is also possible to select multiple groups and group them.



To add a group layer as a Map Resource in the FGP catalogue:

1

Type in the root URL of the ESRI Rest or WMS service in the **Add Map Resource** dialog box.

+ Add Map Resource



Without any mention to a layer number: it should end with “/MapServer” in the case of an ESRI Rest.

Map Resource

Service Language *

URL *

Layer name

 Use layer name for resource name

Resource name *
Eng

Fra

One

Protocol *

Description *
Content type *
Format *
Language(s) *

Test service



2 Select the appropriate level required for your metadata record in the **Layer** drop-down menu.

➤ This choice will determine what appears in the viewer when clicking the “View this map” or “Add to map cart” button.

A The entire map service with all its layers and group layers.

B A single layer that is not part of a group.

C A group of layers with all its sub-layers.

D A single layer nested in a group of layers.

Map Resource

Service Language * English

URL * https://maps-cartes.services.geo.ca/server_

Resource name *

Layer name

Grain Size Analyses Regions

Use map service A

Or select a layer/group

Grain Size Analyses Regions B C

Grain Size Analyses (Group Layer)

1. Pacific
2. Beaufort Sea
3. Arctic Archipelago
4. Labrador Sea & Baffin Bay D
5. Atlantic
6. Hudson, James & Ungava Bays
7. St. Lawrence & Great Lakes



6

ADDING A GROUP LAYER MANUALLY TO THE FGP VIEWER



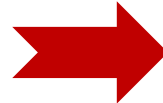
24161009

If you know the URL of a web service containing group layers, you can add it manually to the FGP viewer and select the group layers or sub-layers you want to display.

Follow these 6 easy steps...

1

Get the link from your Data Resources section in the FGP metadata record. Open the link and copy the URL.

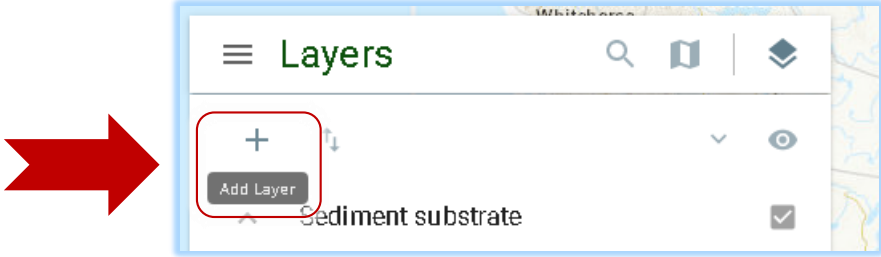


Data Resources			
Name ↑↓	Resource Type ↑↓	Language ↑↓	Format ↑↓
Seabed grain size analyses, offshore Canada - French	Web Service	French	ESRI REST
Seabed grain size analyses, offshore Canada - English	Web Service	English	ESRI REST
Seabed grain size analyses, offshore Canada - French	Dataset	French	FGDB/GDB
Seabed grain size analyses, offshore Canada - English	Dataset	English	FGDB/GDB

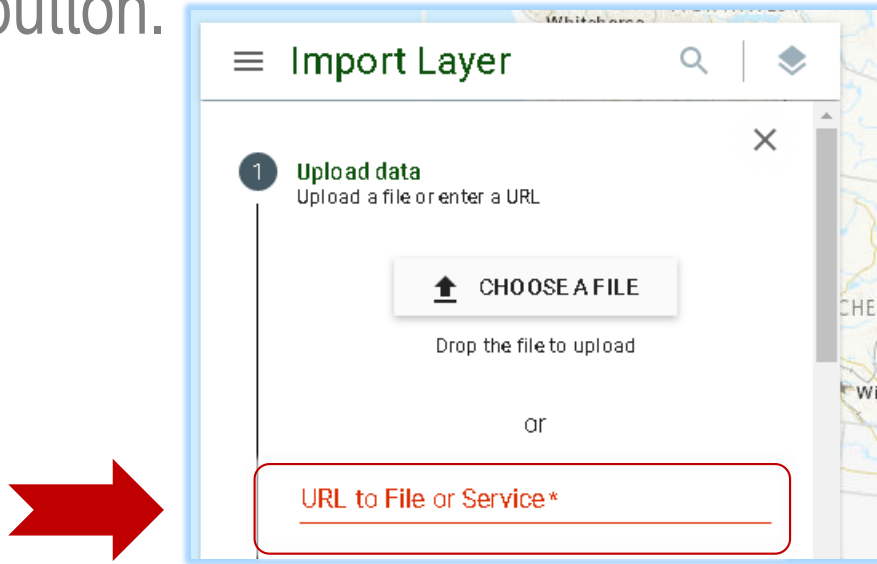


FGP ESRI Rest Service Link to [Seabed Grain Size Analyses, Offshore Canada](https://maps-cartes.services.geo.ca/server_serveur/rest/services/NRCan/GSC_Grain_Size_Analyses/MapServer): https://maps-cartes.services.geo.ca/server_serveur/rest/services/NRCan/GSC_Grain_Size_Analyses/MapServer

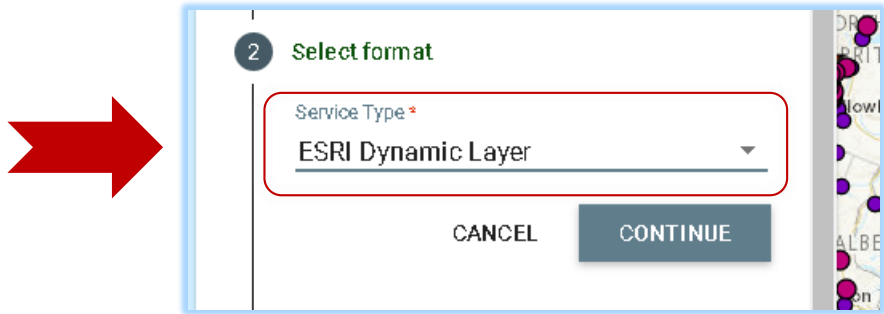
2 In the FGP Viewer - Click the plus (+) button in the upper left corner of the table of contents.



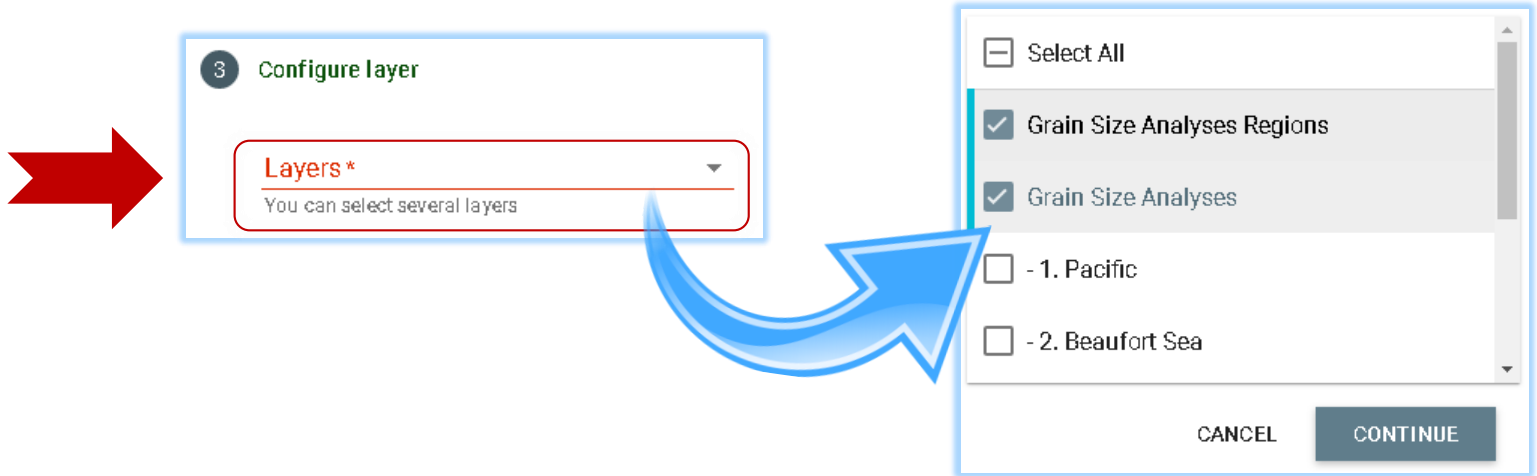
3 Type or copy the group layer URL of your choice and click the "Continue" button.



④ Select the format (service type) in the drop-down menu and click the “Continue” button.



⑤ To configure the layer, use the drop-down menu to select the group layer(s) you want to add to the map and click the “Continue” button.





The entries of the list starting with a hyphen (-) are **sub-layers**.

6

At this step, if you select a group layer **AND** one of its sub-layers, the group layer will be loaded with all its sub-layers, along with the selected sub-layer. In result, the selected sub-layer will be **duplicated**.

EXAMPLE

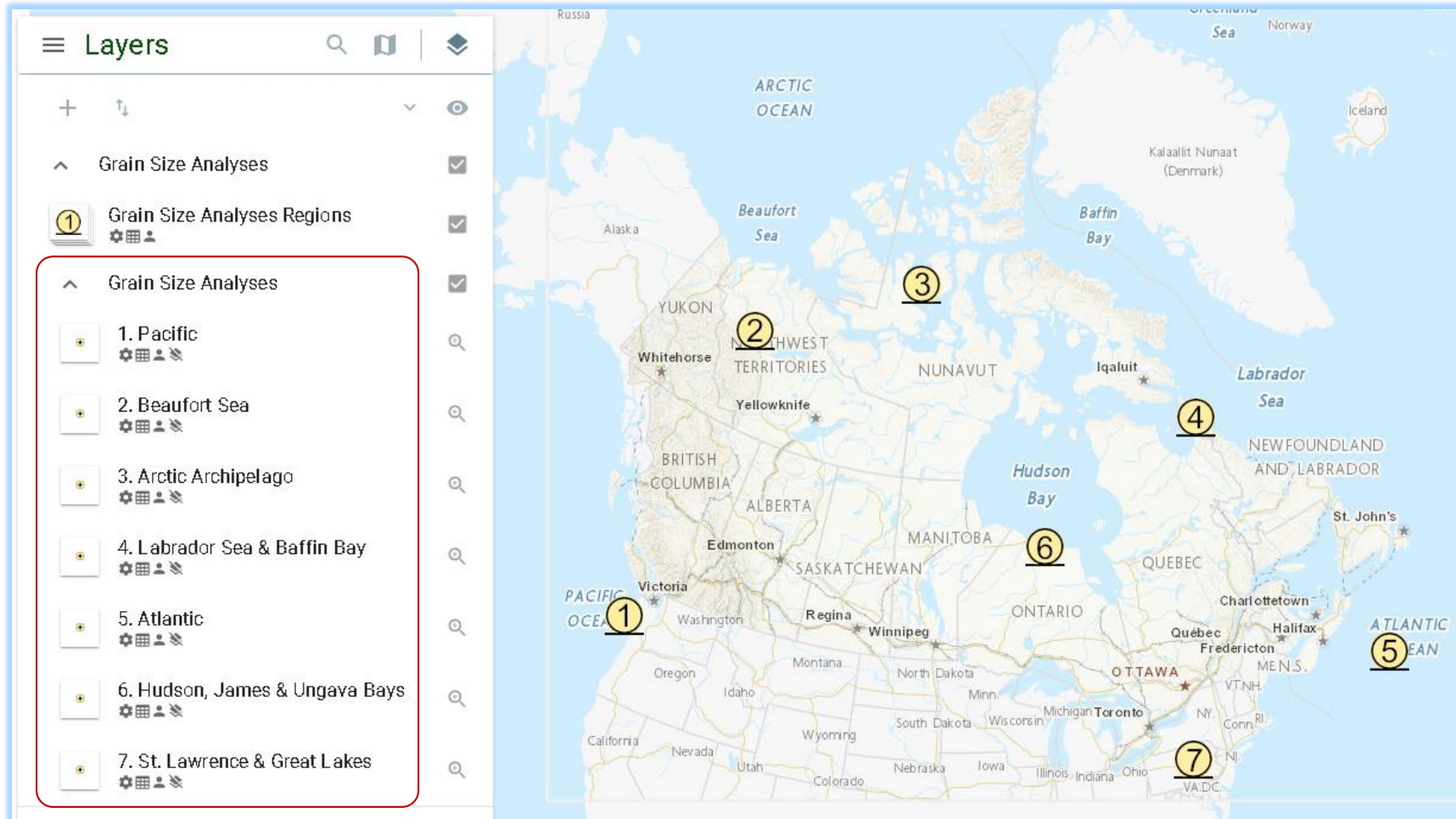


“2. Beaufort Sea” is a sub-layer of “Grain Size Analyses”. If both are checked, “2. Beaufort Sea” will appear twice on the map.

<input type="checkbox"/>	Select All	
<input type="checkbox"/>	Grain Size Analyses Regions	
<input checked="" type="checkbox"/>	Grain Size Analyses	X 1
<input type="checkbox"/>	- 1. Pacific	
<input checked="" type="checkbox"/>	- 2. Beaufort Sea	X 2
<input type="checkbox"/>	- 3. Arctic Archipelago	
<input type="checkbox"/>	- 4. Labrador Sea & Baffin Bay	
<input type="checkbox"/>	- 5. Atlantic	
<input type="checkbox"/>	- 6. Hudson, James & Ungava Bays	
<input type="checkbox"/>	- 7. St. Lawrence & Great Lakes	



The Group Layer is added and your map is ready to use.





Reminder:

- If there are too many layers, it can slow down the web service.
- Make sure to test your web service in the FGP viewer and ensure they can all be added without a lag in service.
- Please list the layers represented in your Group Layer in the Abstract. If it is not represented in the metadata, the users will not know it exists in your service.
- Group Layers from an "OGC Web Map Service (WMS)" hosted on an ArcGIS Server are not currently supported.



Now you know everything there is
to know about group layers! 😊

Thank you for listening

ANY QUESTIONS?



Thank You

