

Exercise

Work individually or as a small group, this exercise aims to introduce the use of remote sensing data from web services. If you encounter any problems during this exercise, please feel free to let me know.

SIGN-UP:

You will first need a free ArcGIS Public Account to be able to use the web services

<https://www.arcgis.com/home/signin.html>

ArcGIS Features Plans Gallery Map Scene Help

Sign In

Need an ArcGIS Public Account?

An ArcGIS Public Account is a personal account with limited usage and capabilities and is meant for non-commercial use only.

[CREATE A PUBLIC ACCOUNT](#)

If you have signed up for an **Esri Account**, you have automatically been given access to an ArcGIS Public Account and you can use the same sign-in credentials for both.

Sign In

Username

Password

Keep me signed in

[SIGN IN](#)

[Forgot password?](#) [Forgot username?](#)

OR

Sign in with [ENTERPRISE ACCOUNT](#)

Sign in with

ADD THE LANDSAT IMAGE SERVICE

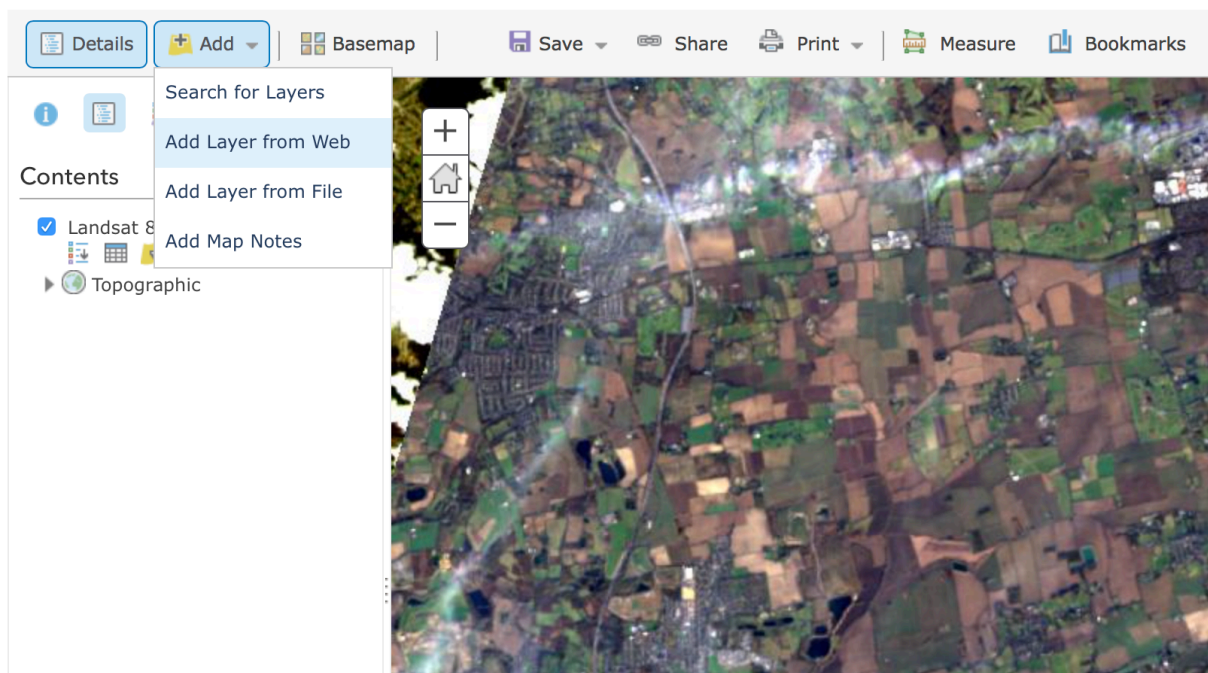
Once you have signed in using your newly created account, create a new map by clicking on 'Map' in the navigation bar

ArcGIS Features Plans Gallery **Map** Scene Groups Content

In this exercise, we will be using the 'Landsat 8 views'. Click 'Add' and select 'Search for Layers'. Then, type 'Landsat' in the search box. The result will have several options of different Landsat services. For this exercise, choose 'Landsat 8 views', which contains most Landsat 8 images from 1st Jan 2015. You can find the metadata of this service using the below URL

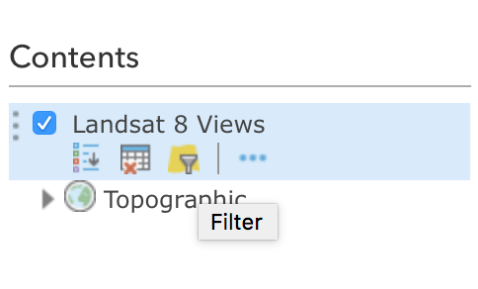
<http://www.arcgis.com/home/item.html?id=4ca13foe4e29403fa68c46d188c4be73>

ArcGIS ▾ My Map



EXPLORE THE SERVICE

The service is flexible and powerful. It not only contains the data but also methods that allow dynamic manipulation of the data, for example, filtering and visualisation. If you click on the layer itself, you will be presented with the option to a) current band combination, b) explore the attribute table and c) filter the data.



1. Explore the attribute table

If you click on the 'table' icon, the list of each image will appear on your lower right panel. You may see a different total number of 'Features' or rows, depending on your current filter. You can now select and then click on the 'more' icon on the top right in the attribute panel, for more actions. This is one way of identifying the images you want to use.

Try 'center on the selection' for a few images.

Landsat 8 Views (Features: 26211, Selected: 1)					
Name	Category	ProductName	AcquisitionDate	Month	Show Selected Records
LC81500702015071LG N00	Primary	L1GT	3/12/2015 5:55 Am	3	Center on Selection Clear Selection
LC81610652014353LG N00	Primary	L1GT	12/19/2014 7:01 Am	12	Show/Hide Columns Filter
LC81480732014358LG N00	Primary	L1GT	12/24/2014 5:44 Am	12	Select Visible Images Display All Images
LC81640762014342LG N00	Primary	L1GT	12/8/2014 7:24 Am	12	Display Selected Images
LC81510682014363LG N00	Primary	L1GT	12/29/2014 6:00 Am	12	363

2. Explore the filtering function

The filter can be used to select only those images of interest. This could be your area of interest or a specific time. It looks like a standard query expression tool in which you can specify multiple criteria. Please note that you could specify 'AND' condition by choosing 'ALL' in the drop-down option, or an 'OR' condition by choosing 'ANY'.

The 'best' field is used to identify the best quality images throughout the catalog at each location. When used in conjunction with other conditions, it may result in no images being found. By default, the layer is set to display and query only the best 3 (most recent cloud free) scene. "...The filter can be removed to gain access to all the scenes, but note that identify may take time to access all pixels in all scenes. By setting the filter to Best < QQQQ one can control to see the best N scenes. Where QQQQ=N*1million..."

Once you have specified the filter, it may take you a while for the service needs to find and fetch the images tiles for you. This could be the case for more recent images, as they are unlikely to be cached, i.e., the service must generate new 'tiles' for you to see.

Filter: Landsat 8 Views ×

View Edit
+ Add another expression Add a set

Display features in the layer that match All of the following expressions

Best is less than 3000000 ✖

Ask for values
 Value Field Unique

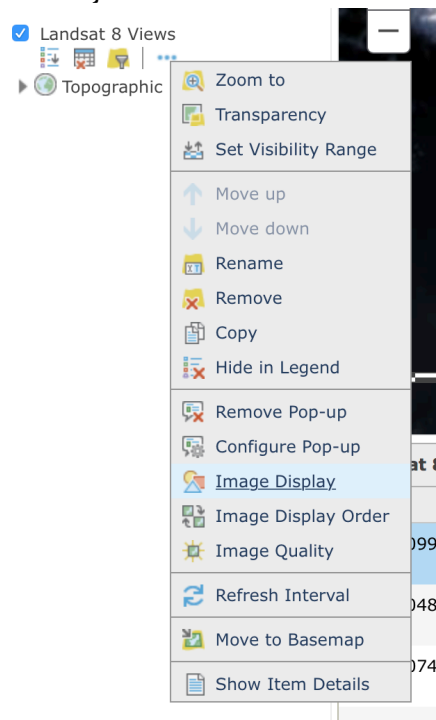
Acquisition Date is after 01/08/2017 ✖

Ask for values
 Value Field Unique

APPLY FILTER
CLOSE

3. Explore the dynamic visualisation

This used to be a rather time consuming and laborious task, but thanks to the dynamic and ‘lazy’ nature of the web service, it is very simple and intuitive.



Click on the ‘more’ icon on the layer and choose ‘image display’. Here, you will find a set of preconfigured band combinations. Try a couple of them and see the effect for yourself. Please note, in some case, you may want to add a two standard-deviations to the stretch to better aid visual interpretation. Note these changes are applied on the fly and applies only to your view, so if you move to a different location, it may take some time for the service to generate a new view. This may be slow but it fully reflects its dynamic and ‘lazy’ computing nature.

ADD NATURAL WORLD HERITAGE SITES

You will be pleasantly surprised that many of the datasets have migrated to the cloud and operate just like any other services. The natural World Heritage data service can also be found using the below link

<http://wcmc.io/world-heritage-data>

To add to your map, just search ‘world heritage’ in the search box like you did in the previous step and choose ‘Natural World Heritage sites’.

You can then click on the attributes icon again to see the features. Try and find your own or your favorite natural site.

PUT YOUR SKILLS TO THE TEST!

1. Create a new map
2. Add the natural World Heritage sites service

3. Add and filter the Landsat service for images after 2016 for your site
4. Add a different Landsat service (called 'Multispectral Landsat', which is based on AWS Landsat collection, updated daily and with more historical data) and find images before 2015
5. Save your map