CONNECTING TO THE MERCATOR SERVER

UPDATED 11/9/2023

What is the Mercator server?

The Mercator server hosts the AZSITE geospatial datasets as ArcGIS Server feature services. This allows AZSITE users with Mercator access to connect to the server as a data source in GIS applications such as ArcGIS Desktop, ArcGIS Pro, and QGIS.

What can I do with the Mercator server?

You can work with AZSITE data in your GIS software to conduct your research and generate maps. When layers are added to your map from the server, you can perform query and selection operations, change symbology, etc. You can also export selected data if you want a smaller dataset to work with for a given area of interest.

What can't I do with Mercator server?

To discourage bulk harvesting of the AZSITE data, the number of features from a given layer that can be selected at once is limited. For most areas of interest, this will not affect your work. If you have a very large area of interest, please contact the AZSITE manager (azsite@arizona.edu) to request this data using the Data Request Form. These large data clips require approval at a quarterly AZSITE Consortium Board meeting.

An additional constraint is used to prevent users from running scripts to harvest the AZSITE data using repeated selections. Most users will not run up against this constraint.

Last, the Mercator services are limited to the AZSITE GIS data; detailed attributes for projects and sites are not present in the feature services. You would need to look online in the search application or on the site cards/project registration forms for these data. Of course, you can also request these from the AZSITE manager using the Data Request Form. If you have already extracted the projects/sites GIS data for your area of interest using the Mercator services, you can provide a list of projects/sites for which you want attributes instead of providing an area of interest boundary with your data request.
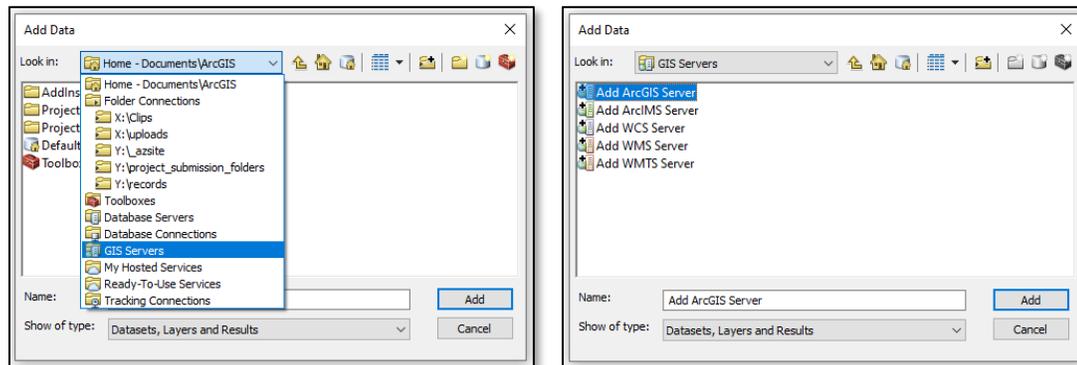
How do I connect to the Mercator server?

ArcGIS Desktop, Method 1:

1. From an ArcMap window, click the **Add Data** button:
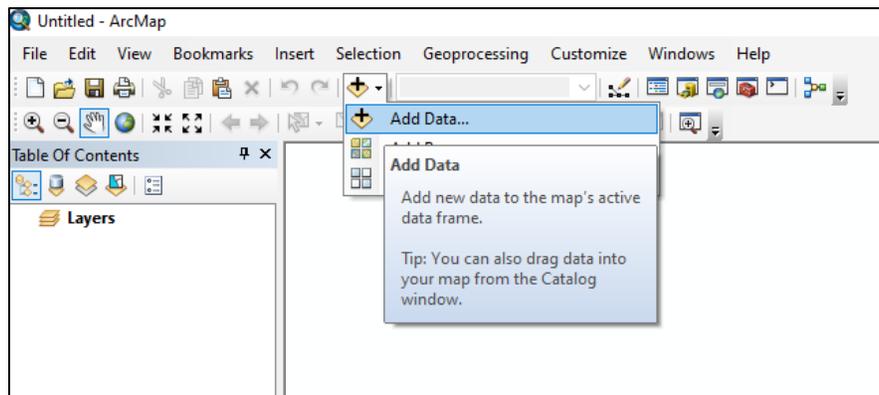
2. In the window that appears, select **GIS Servers** from the **Look In** drop-down menu and then double-click **Add ArcGIS Server**:


3. The Add ArcGIS Server Wizard appears. Leave **Use GIS Services** selected and click **Next**. In the **Server URL** field enter **https://mercator.asu.edu/arcgis/rest/services**. For the **Authentication** credentials, enter your AZSITE username and password**:**
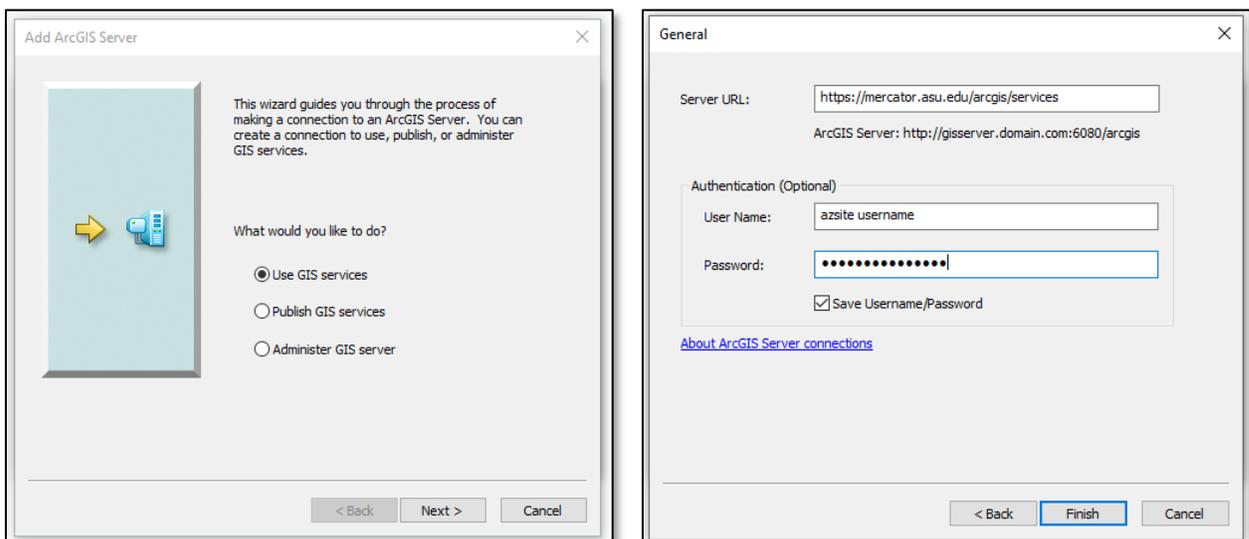
You can opt to save these in the data connection to avoid being prompted for them when connecting in the future. Please be mindful of the sensitivity of the AZSITE data and your user agreement. Click **Finish.**

4. The Mercator server connection will now be visible in the **Add Data** window. Double click it and select the **azsite feature server** (It has a small bubble at lower right, as opposed to the azsite map server, which does not. The map server allows you to the view the data, but you can't select or query the features.) and click **Add**:
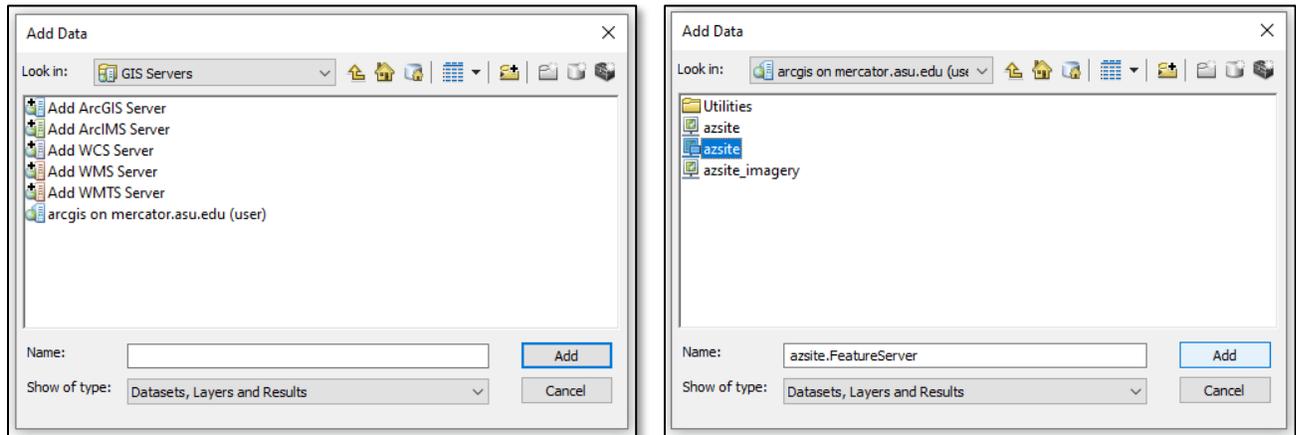
5. The **azsite feature server** will now appear in your data frame, with the various AZSITE layers contained within it. You can now interact with these layers as needed for your work.
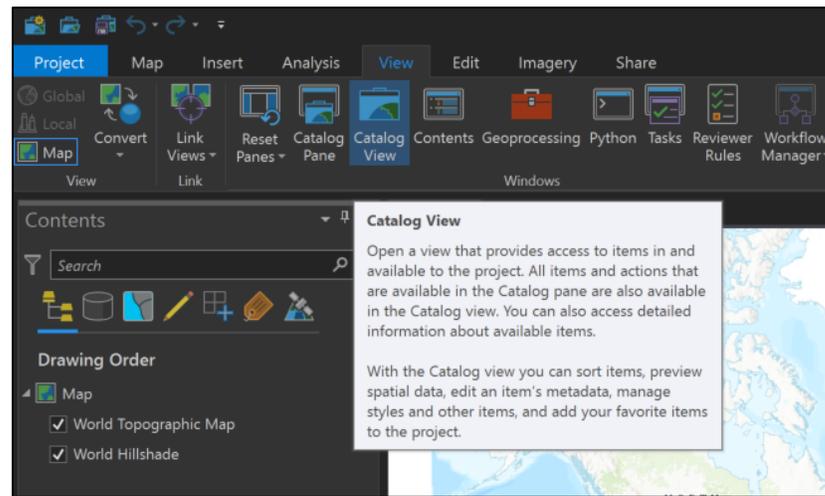
ArcGIS Desktop, Method 2:

1. From an ArcCatalog pane or window, expand **ArcGIS Servers** and then double click **Add ArcGIS Server**:
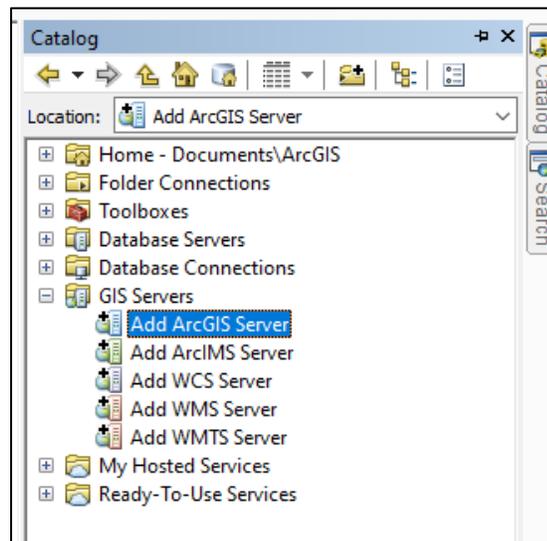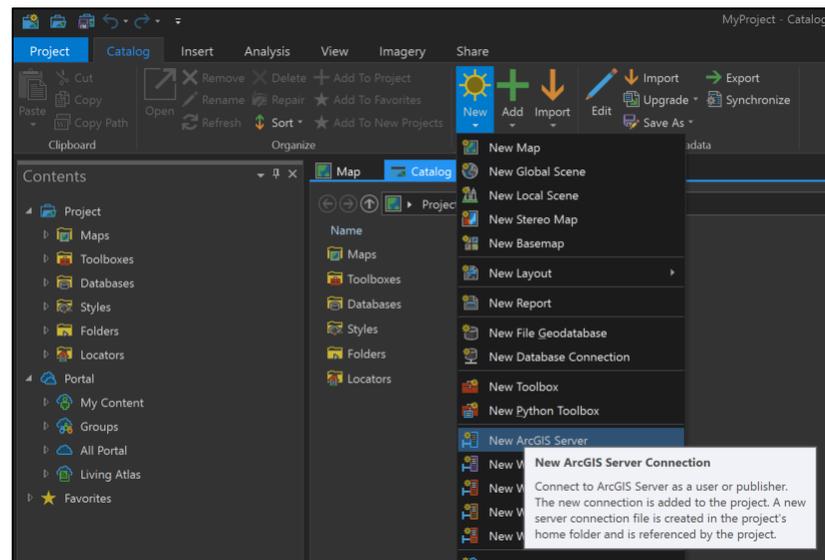

You can then proceed from Step 3 above.

ArcGIS Pro:

1. In an ArcGIS Pro project, click the **View** tab in the top ribbon, and then click **Catalog View:**

2. From the **Catalog View**, select **New** and then **New ArcGIS Server**:


3. In the **Add ArcGIS Server Connection** window that appears, enter **https://mercator.asu.edu/arcgis/rest/services** as the **Server URL**. Enter your AZSITE credentials in the **Authentication** area:
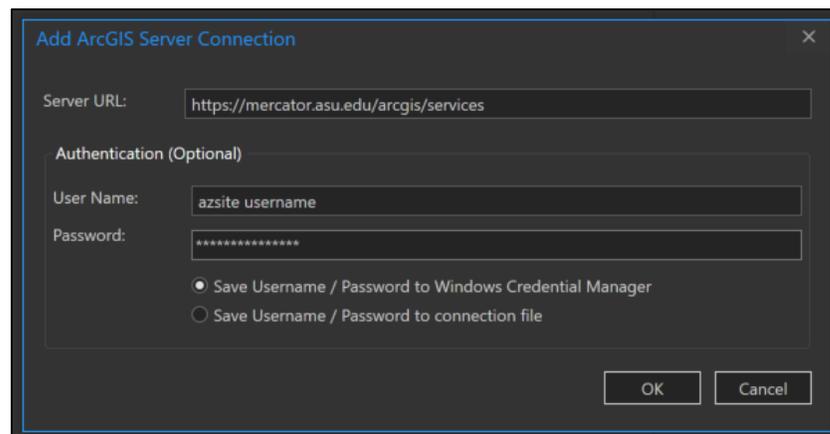
You can also select how to save your credentials. According to Esri, if your credentials are saved to Windows Credential Manager (default), they will be stored in your machine's operating system and you will not be prompted for them again unless you move the ArcGIS Pro project to another computer. If your credentials are saved to a connection file, they are stored in this project and available to anyone who opens it. Please be mindful of the sensitivity of the AZSITE data and your user agreement.

4. The Mercator server (**services on mercator.asu.edu.ags**) will now appear under **Servers** in the Catalog pane at the right of your map. Expand this item and then the **azsite feature server** (middle item with the bubble at lower right) to see the AZSITE layers:
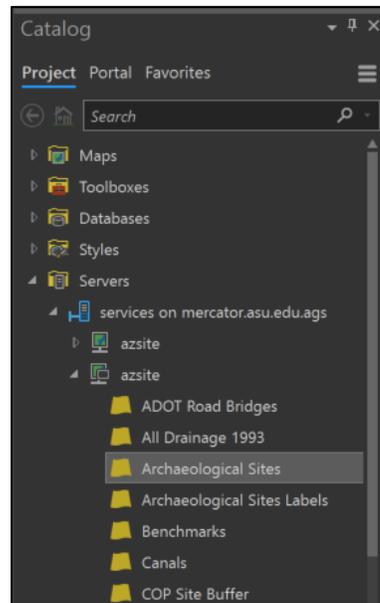
You can now select the individual layers needed for your work and add them to your project.
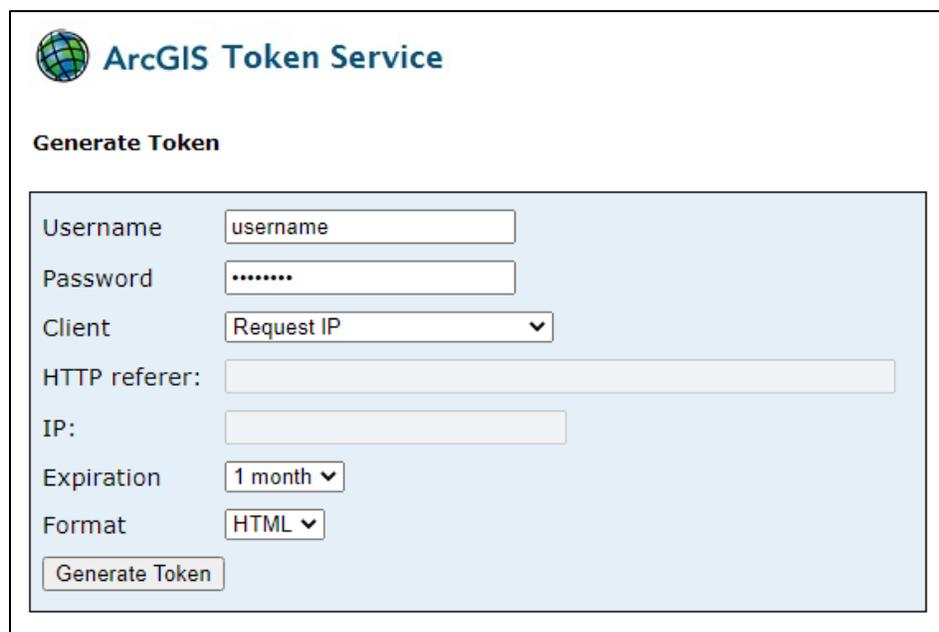
QGIS:

These instructions were written using QGIS 3.8 but should be adaptable to most recent versions. Some instability sometimes occurs with the QGIS application when using the EsriToken configuration described below. You may have to try a couple times before connecting successfully.

1. An Esri Token is required to connect to the Mercator server from QGIS. You will have to obtain a new token each day you are using the server in QGIS. First, visit the Mercator server's token generator by clicking this link:

    https://mercator.asu.edu/arcgis/tokens/

2. Enter your AZSITE username and password; select **Request IP** in the *Client* dropdown; select **1 day** in the *Expiration* dropdown (the long-lived token on the Mercator server is set to 1 day; if you select a longer duration, your token will still expire after 1 day); and select **HTML** in the *Format* dropdown:
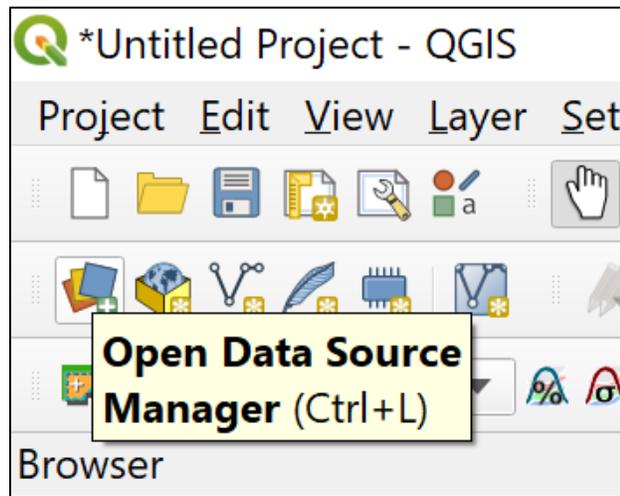

3. Click "Generate Token". A **Generated Token** box will appear with a string of text. This is your token. You will need to get a new token each day. Copy the **entire** string.
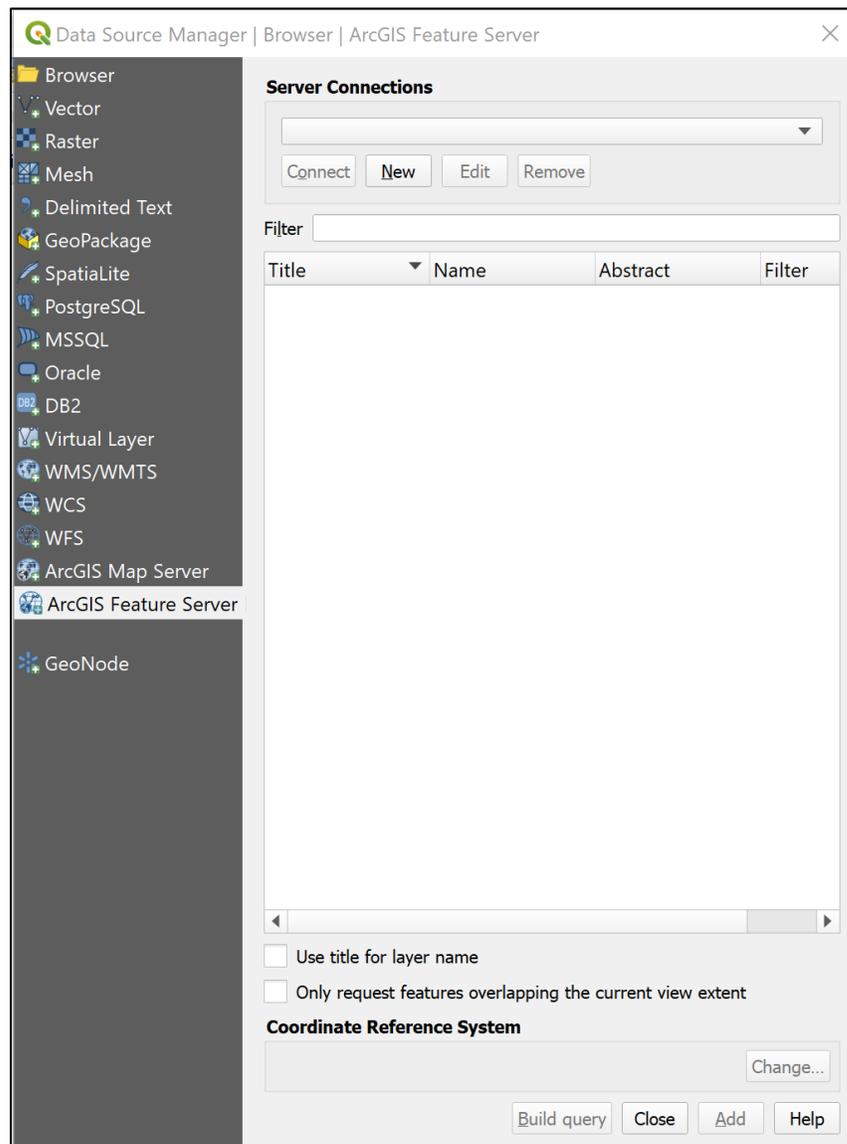
4. Open QGIS. At the upper left of the project window, click **Open Data Source Manager:**


5. At the left of the **Data Source Manager**, click **ArcGIS Feature Server**. Then, at the top under **Server Connections**, click **New**:

6. In the window that appears, name the connection as you wish and enter the URL for the AZSITE Feature Server (https://mercator.asu.edu/arcgis/rest/services/azsite/FeatureServer). Under **Configurations**, click the **+** icon to add a new authentication configuration:
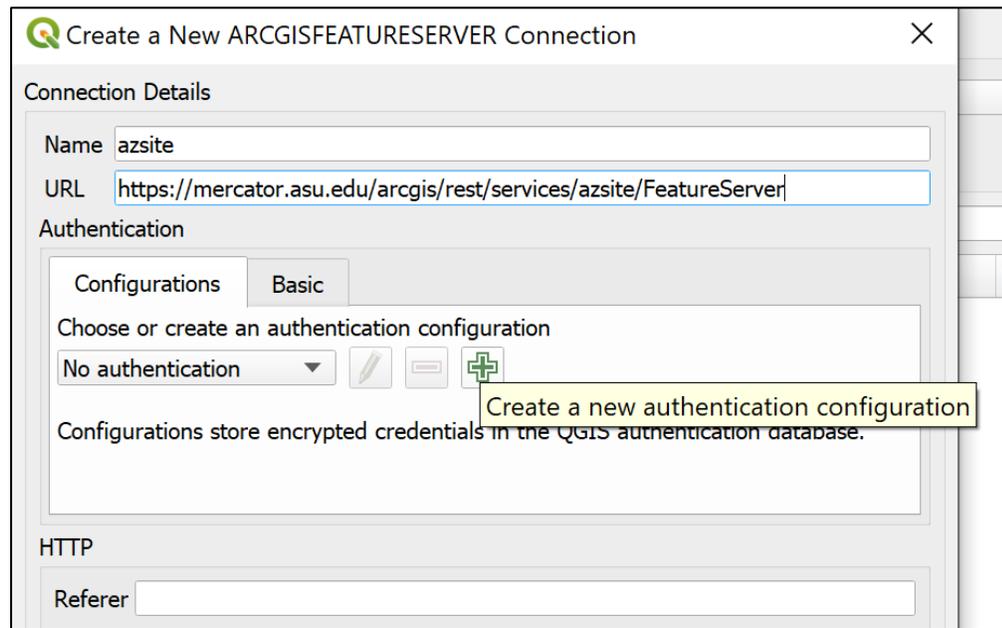

7. In the window that appears, select **ESRI token based authentication** from the dropdown, and then paste your token string in the **Token** box:
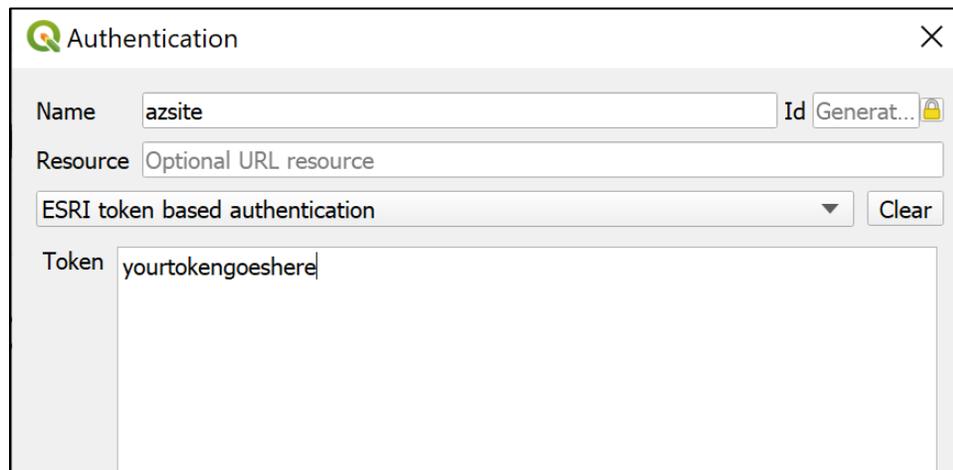
8. Save the configuration and click **OK** to return to the **Data Source Manager**. Here, under **Server Connections**, select your Mercator connection and click **Connect.** You will see the AZSITE layers populated below:
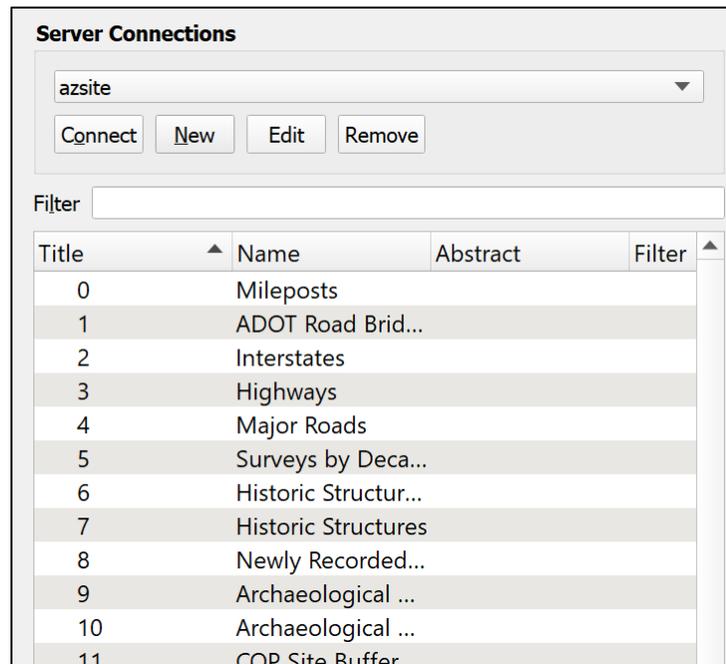
9. Close the **Data Source Manager**. In the **Browser** at the left of the project window, scroll down and expand **ArcGISFeatureServer**. You will see your AZSITE server connection with the AZSITE layers below it. These can be added to your map as desired.
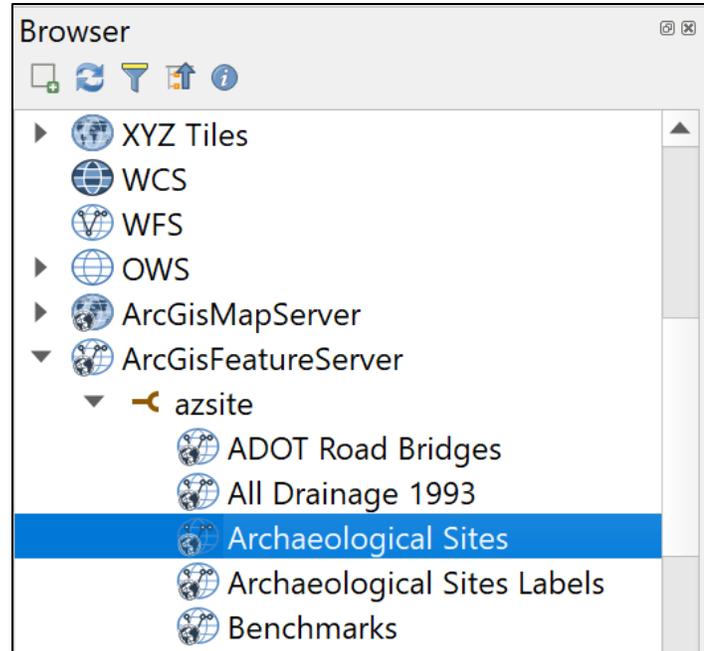
ArcGIS Earth:

ArcGIS Earth is a free software and appears to be Esri's answer to Google Earth. It is possible to connect to and view the Mercator server data with ArcGIS Earth, but query and selection abilities are limited. As such, it is best to connect to the AZSITE Map Server instead of the Feature Server for enhanced performance. The connection also seems to work best when making connections to individual layers instead of the entire Map Server.

1. Visit the Mercator AZSITE Map Server endpoint and log in with your AZSITE credentials. Look at the layer list and note the indices (number in parentheses) after your layers of interest (e.g., sites is layer 10):
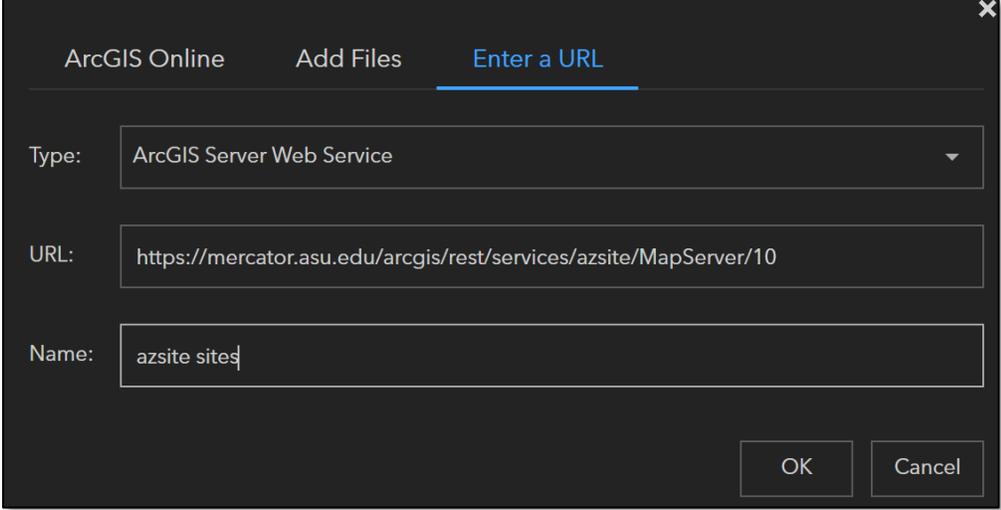
Layers:

- Mileposts (0)
- ADOT Road Bridges (1)
- Interstates (2)
- Highways (3)
- Major Roads (4)
- Surveys by Decade (5)
- Historic Structures Labels (6)
- Historic Structures (7)
- Newly Recorded Sites (8)
- Archaeological Sites Labels (9)
- Archaeological Sites (10)
- COP Site Buffer (11)
- SHPO Topo Map Sites (12)
- SHPO County Sites (13)
- Projects Labels (14)
- Projects (15)
- SHPO Topo Map Projects (16)
- Howard Canal Maps (17)
- Researched Canals (18)
- Canals (19)
- Major Rivers 1993 (20)
- Perennial Water 1993 (21)
- All Drainage 1993 (22)
- Washes 2008 (23)
- Indian Villages (24)
- Benchmarks (25)
- Wells (26)
- Structures (27)
- USGS 7.5' Quad Map Boundaries (28)
- Township, Range & Section (29)
- Towns (30)
- State Trust Parcels (31)
- Land Ownership (32)
- Counties (33)
- Historic Districts (34)

2. In ArcGIS Earth, click the Add Data button (**+)** at the upper left. In the pop-up that appears, select **Enter a URL**. In **Type**, select **ArcGIS Server Web Service**. In **URL**, enter the address of the Map Server layer. For example, for sites:

https://mercator.asu.edu/arcgis/rest/services/azsite/MapServer/10

You can enter **AZSITE Sites** or whatever you wish in the **Name** field:

ArcGIS Online	Add Files	Enter a URL	✕

Type: ArcGIS Server Web Service ▼

URL: https://mercator.asu.edu/arcgis/rest/services/azsite/MapServer/10

Name: azsite sites

OK   Cancel

3. Enter your AZSITE username and password when prompted. The AZSITE Map Server layer will be added to your map. Note that many of the layers have minimum visible scales.
4. Your AZSITE credentials can be saved by ArcGIS Earth. Please be mindful of the sensitivity of the AZSITE data, who could access these credentials, and your user agreement.