

CONNECTING TO THE MERCATOR SERVER

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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 (<u>azsite@arizona.edu</u>) to request this data using the <u>Data</u> <u>Request Form</u>. 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 <u>Data Request Form</u>. 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:



 In the window that appears, select GIS Servers from the Look In drop-down menu and then doubleclick Add ArcGIS Server:

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 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:

Add ArcGIS Server	×	General	×
	This wizard guides you through the process of making a connection to an ArcGIS Server. You can create a connection to use, publish, or administer GIS services.	Server URL:	https://mercator.asu.edu/arcgis/services ArcGIS Server: http://gisserver.domain.com:6080/arcgis
		Authentication (C	optional)
🔶 📢	What would you like to do?	User Name:	azsite username
	Use GIS services	Password:	••••••
	O Publish GIS services		Save Username/Password
	O Administer GIS server	About ArcGIS Serve	er connections
	< Back Next > Cancel		< Back Finish Cancel

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**:

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Name: Add	Name: azsite.FeatureServer Add
Show of type: Datasets, Layers and Results V Cancel	Show of type: Datasets, Layers and Results V Cancel

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:

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▷ 🍓 Groups			New ArcGIS Server
All Portal			New V New ArcGIS Server Connection
P Iving Atlas			New V Connect to ArcGIS Server as a user or publisher.
₽ ¥ Favorites			New V Server connection file is created in the project. A new
			New V home folder and is referenced by the project.

 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:

Add ArcGIS Serv		
Server URL:	https://mercator.asu.edu/arcgis/services	
Authentication (Optional)	
User Name:	azsite username	
Password:	*****	
	Save Username / Password to Windows Credential Manager	
	O Save Username / Password to connection file	
	OK Cance	

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/

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:

ArcGIS Token Service					
Generate Toke	n				
Username	username				
Password					
Client	Request IP 🗸				
HTTP referer:					
IP:					
Expiration	1 month V				
Format					
Generate Toker					

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**:

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• Delimited Text	Filter				
💱 GeoPackage	Filter				
🕰 SpatiaLite	Title	Name		Abstract	Filter
PostgreSQL					
🏬 MSSQL					
📮 Oracle					
[™] 2 DB2					
🕅 Virtual Layer					
🚱 WMS/WMTS					
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🗬 WFS					
🕅 ArcGIS Map Server					
Contraction Feature Server					
👬 GeoNode					
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					Change
			<u>B</u> uild que	ry Close Ac	ld Help

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:

Q Crea	ate a New ARCGISFEATURESERVER Connection	\times	
Connecti	ion Details		
Name	azsite		
URL	https://mercator.asu.edu/arcgis/rest/services/azsite/FeatureServer		
Authen	tication		
Con	figurations Basic		F
Choo	se or create an authentication configuration		
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7. In the window that appears, select **ESRI token based authentication** from the dropdown, and then paste your token string in the **Token** box:

Q Authentication X					
Name	azsite	Id Generat			
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ESRI toke	n based authentication	▼ Clear			
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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:

Server Connection	S				
azsite			•		
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2	Interstates				
3	Highways				
4	Major Roads				
5	Surveys by Deca				
6	Historic Structur				
7	Historic Structures				
8	Newly Recorded				
9	Archaeological	Archaeological			
10	Archaeological				
11	COP Site Buffer				

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

 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

ArcG	IS Online	Add Files	Enter a URL			
Туре:	ArcGIS Server V	Veb Service				-
URL:	https://mercato	or.asu.edu/arcgis/	rest/services/azsite/M	apServei	r/10	
Name:	azsite sites					
					ОК	Cancel

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

- 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.