



INTEGRATING PREDICTIVE SERVICES CORE DATA LAYER MAPPING SERVICES INTO ARCMAP



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ArcMap v9.2/9.3



Introduction

ArcGIS Server mapping services may be dynamically added to ArcMap. ArcMap allows for viewing of the geospatial data available in mapping services and provides basic layer functionality. These mapping services can be displayed in the context of other data either in the mapping service's native projection/coordinate system or projected on-the-fly to a different projection/coordinate system. To increase the functionality and utility of layers in ArcMap (i.e. filtering and querying the data, analysis of the data via scripts/models, or manipulating the symbology of the data, etc.) the vector data in the mapping services can be provided and accessible to ArcMap as a Web Feature Service (WFS) and Web Coverage Service (WCS). WFSs provide access to the geometry and attributes of vector geospatial data while WCSs provide access to raster geospatial data. This document demonstrates how to access Predictive Services ArcGIS Server Core Data Layer Mapping Services in ArcMap both as an ArcGIS Server mapping service and as a WFS.

Prerequisites

- ArcMap already be installed on the user's computer and access to Forest Service intranet
- ArcMap version 9.2 or 9.3 to access core data layer mapping services as a GIS Server
- ArcMap version 9.3 to access vector core data layers as a Web Feature Service (WFS) and/or access raster core data layers as a Web Coverage Service (WCS)

Overview

Part 1. Access Predictive Services Core Data Layer Mapping Services in an ArcMap client.

Part 2. Access Predictive Services vector Core Data Layers as a WFS in an ArcMap client.

Part 3. Access Predictive Services rasterCore Data Layers as a WCS in an ArcMap client.



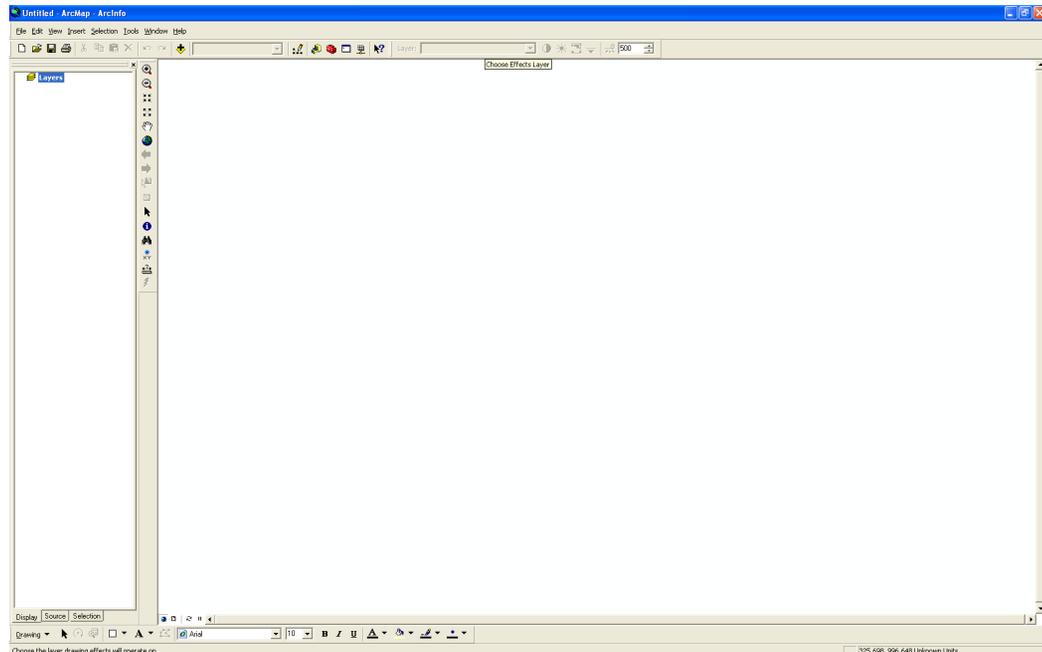
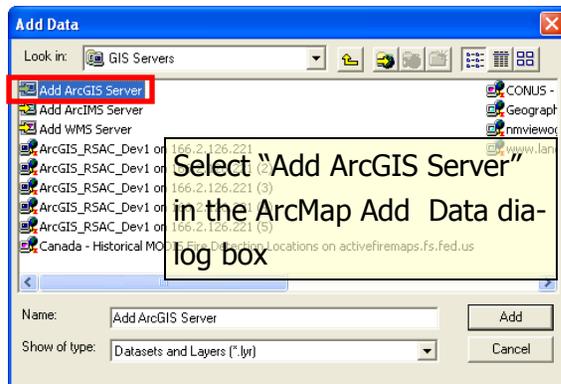
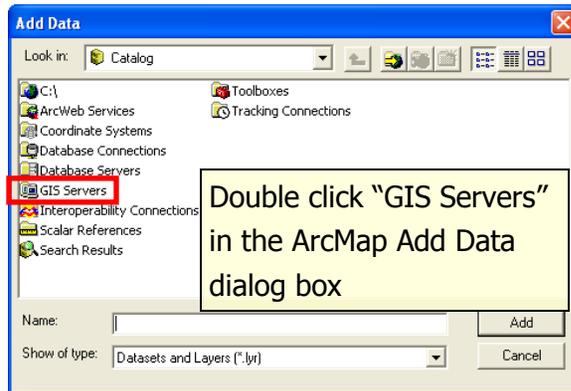
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Procedure

Part 1. Access Predictive Services Core Data Layer Mapping Services in an ArcMap client.

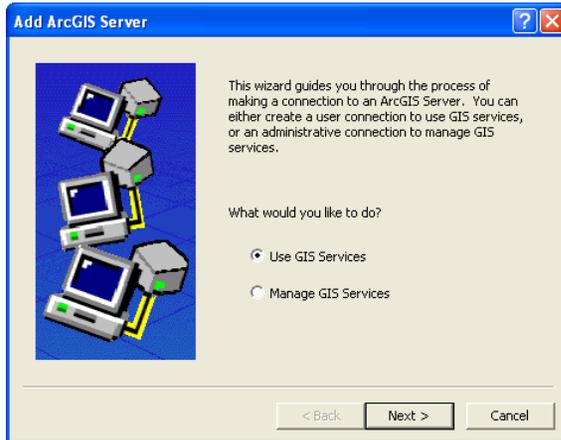
1. Start ArcMap: **Click, Start | All Programs | ArcGIS | ArcMap** or **click on the ArcMap shortcut on your desktop**
2. ArcMap will then open on your desktop.



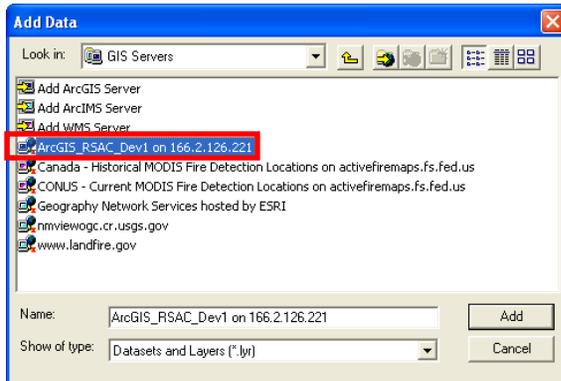
3. Add mapping services to an existing or new ArcMap mxd: **Click, Add data** button
4. In the **Add Data dialog box**, navigate to and double click **GIS Servers**
5. In the **Add Data dialog box**, double click **Add ArcGIS Server**



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Select Use GIS Services in the Add ArcGIS Server dialog box

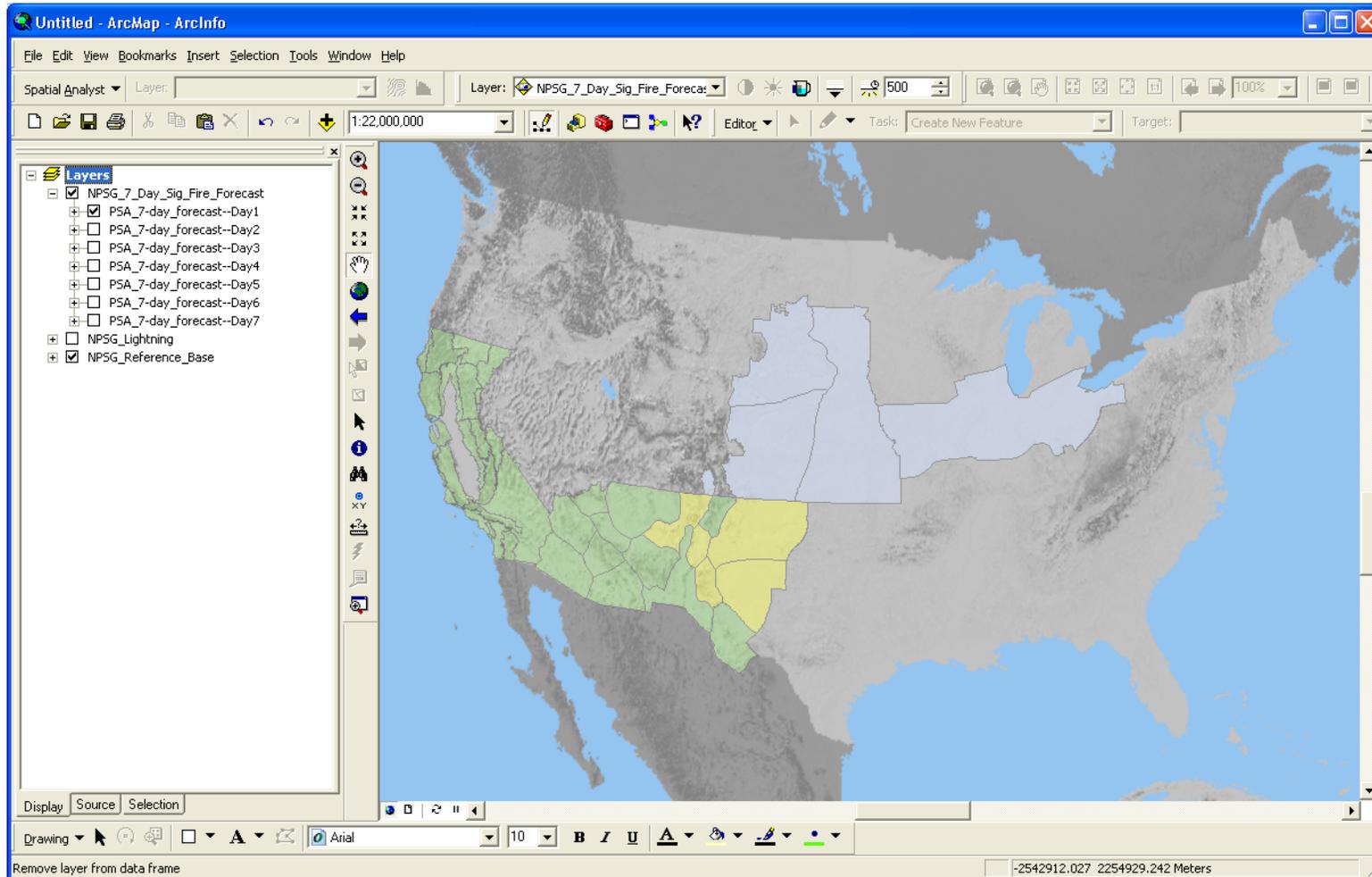


Select ArcGIS_NPSG on 199.141.1.20 in the Add ArcGIS Server dialog box

6. Click **Use GIS Services** in the **Add ArcGIS Server dialog box** and click the **Next** button
7. In the **General dialog box** that appears, enter **http://199.141.1.20/ArcGIS_NPSG/services** in the Internet Server input. No user name or password is required.
8. A new connection **ArcGIS_NPSG on 199.141.1.20** will be added to the **Add Data dialog box**. Note: Once this connection is established, you do not need to re-establish it on subsequent attempts to access the mapping services. Simply navigate to GIS Servers and this link will exist (unless it is deleted in ArcCatalog).
9. Double click **ArcGIS_NPSG on 199.141.1.20** in the **Add Data dialog box** and navigate to the **NPSG** folder. Double click on the **NPSG** folder.
10. In the **Add Data dialog box** now appears a listing of the available NPSG core data layer mapping services.
11. Available mapping services may be added to ArcMap one or more services at a time. Select one or more of the desired NPSG core data layer mapping services (hold shift button down while selecting multiple services) and click **Add** in the **Add Data dialog box**.
12. The selected mapping service(s) is added to the ArcMap display.
13. The ArcGIS Server mapping services function nearly the same as any other geospatial data source in ArcMap. They can be integrated with other layers in an ArcMap data frame (shapefiles, imagery, etc.), reprojected on the fly to a different map projection and coordinate system, adjust transparency, etc. These layer properties are accessed and controlled by right-clicking on the layer in the ArcMap table of contents and selecting properties.
14. Increased functionality to use and manipulate the services in ArcMap (i.e. change the cartographic symbology of features, use the data in scripts/models, etc.) requires accessing the services as a Web Feature Service (WFS) (vector data) and Web Coverage Service (WFS) (raster data). Access to these services are covered in the next section.



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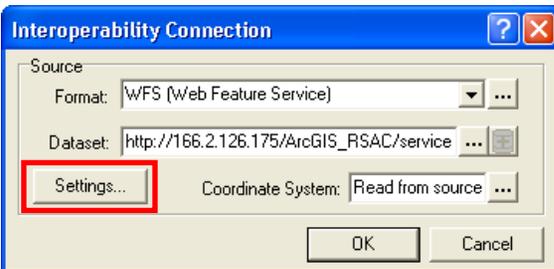


Example of the 7 day significant fire forecast mapping service from ArcGIS Server displayed in ArcMap



What is a WFS??

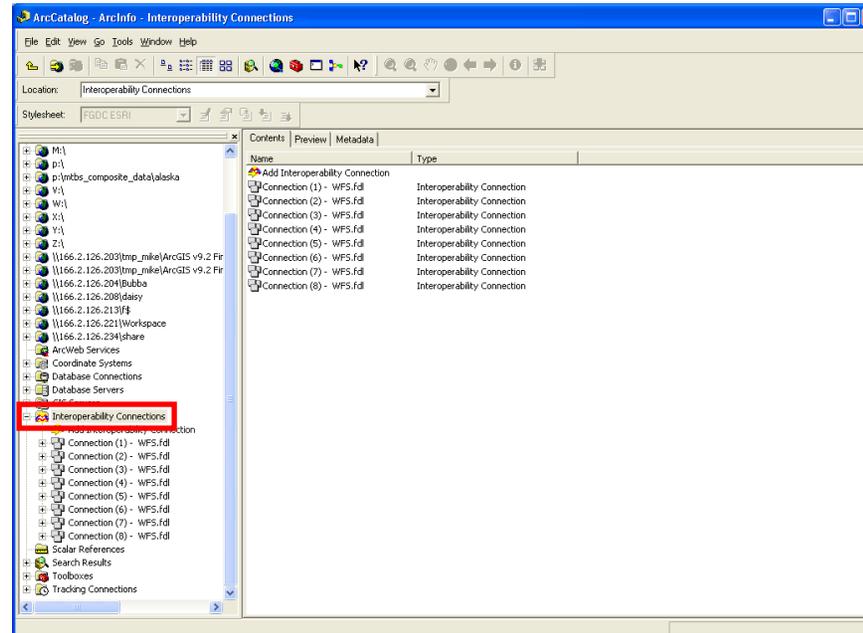
A WFS, Web Feature Service, serves vector geo-spatial data features (points, lines, polygons, etc) via the web. Client applications, such as ArcMap, can ingest WFSs and manipulate the dataset for customized mapping and analysis.



Select WFS as the Format and input the connection string in the for the Dataset in the Interoperability Connection dialog box

Part 2. Access Predictive Services vector Core Data Layers as a WFS in an ArcMap client.

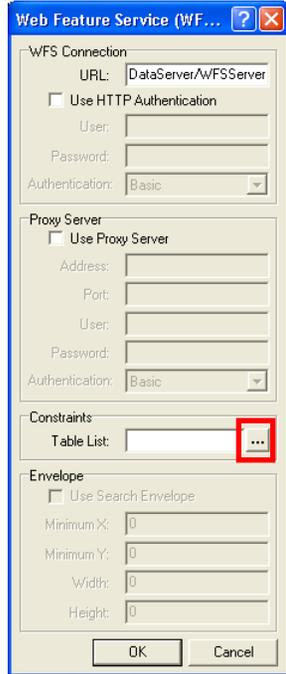
1. Connections to WFSs must first be established in ArcCatalog to be accessed by ArcMap. Start ArcCatalog: **Click, Start | All Programs | ArcGIS | ArcCatalog** or **click on the ArcCatalog shortcut on your desktop**
2. ArcCatalog will then open on your desktop.



3. Add a new connection by double clicking **Add Interoperability Connection** inside the **Interoperability Connection** group
4. In the **Interoperability Connection** dialog box that appears, select **WFS (Web Feature Service)** for the **Format** and input **http://166.2.126.175/ArcGIS_RSAC/services/NPSG/Active_fires/GeoDataServer/WFSServer** for the **Dataset**.

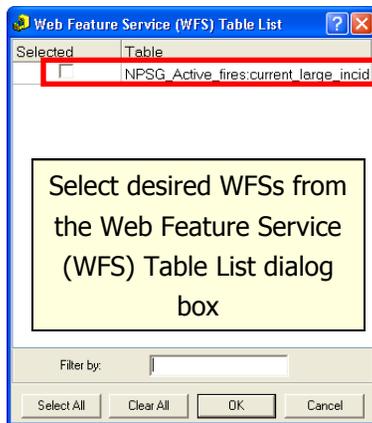


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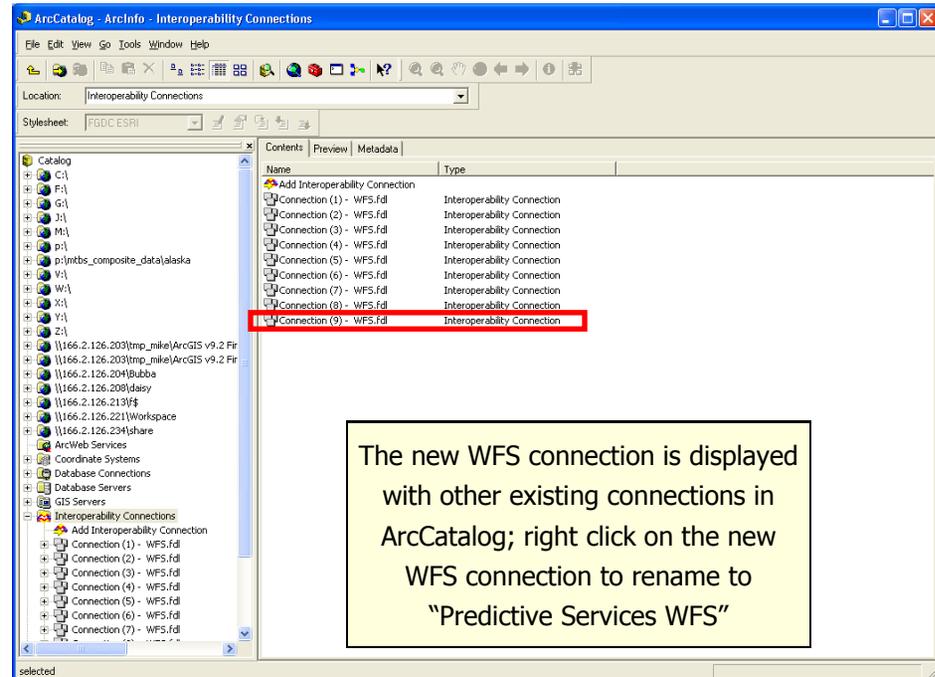


Select the ellipsis in the Web Feature Service dialog box

- Click Settings on the **Interoperability Connection dialog box**.
- In the **Web Feature Service dialog box** that appears, select the ellipsis button next to **Table List**.
- In the **Web Feature Service (WFS) Table List dialog box** that appears, contains a listing of available WFS services. Click the check box next to the desired services and click **OK**.
- Click **OK** in the **Web Feature Service dialog box**
- Click **OK** in the **Interoperability Connection dialog box**
- A new WFS connection entry will then be added in ArcCatalog. Right click on the new WFS in ArcCatalog and select Rename to rename the new connection to "Predictive Services WFS"



Select desired WFSs from the Web Feature Service (WFS) Table List dialog box



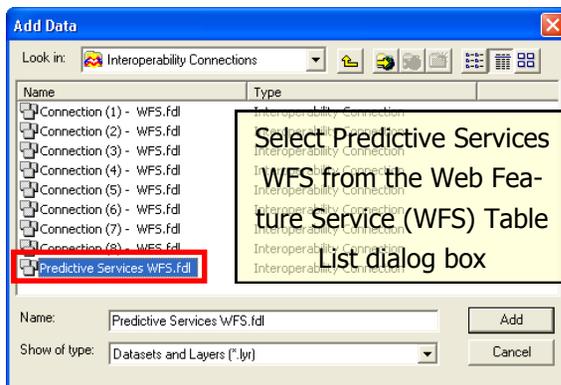
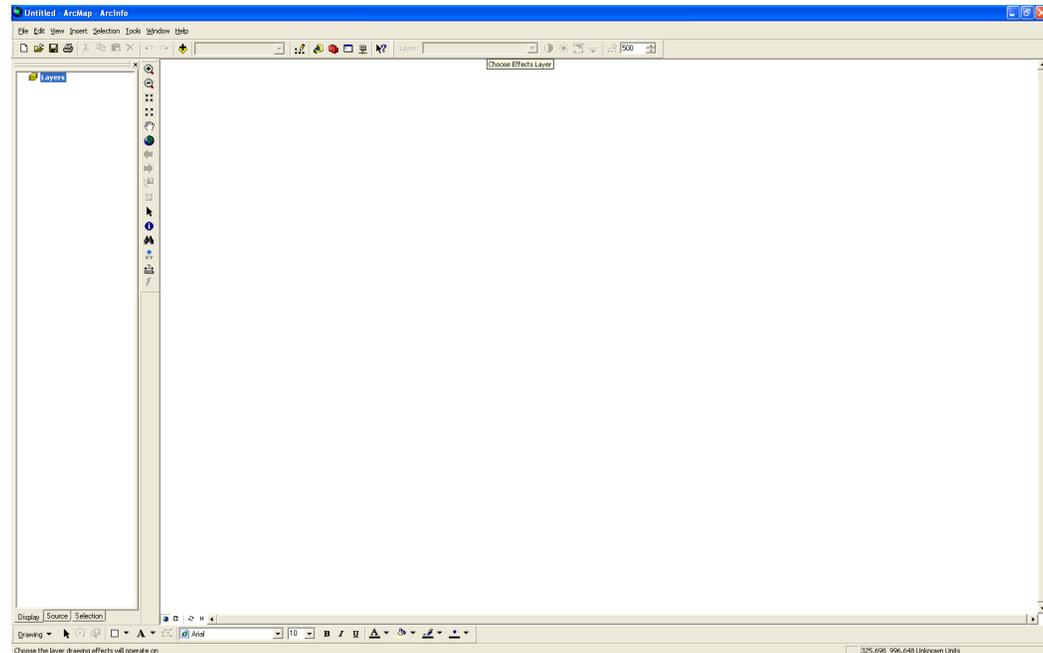
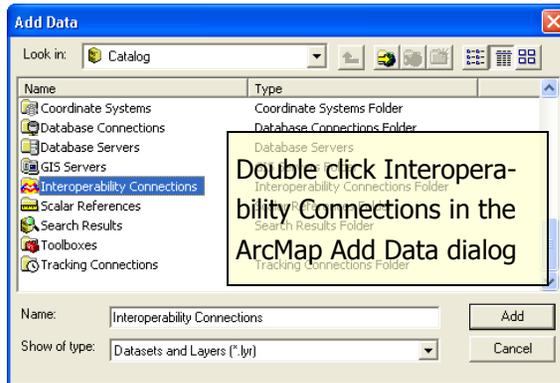
The new WFS connection is displayed with other existing connections in ArcCatalog; right click on the new WFS connection to rename to "Predictive Services WFS"



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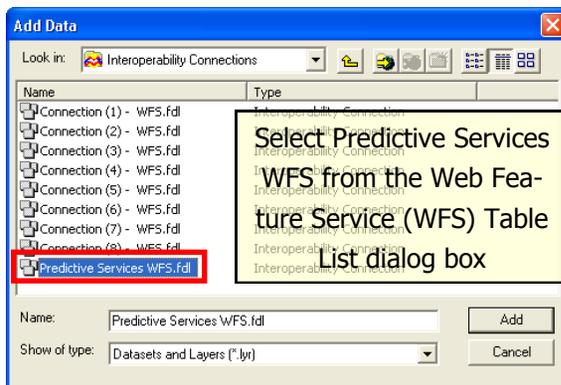
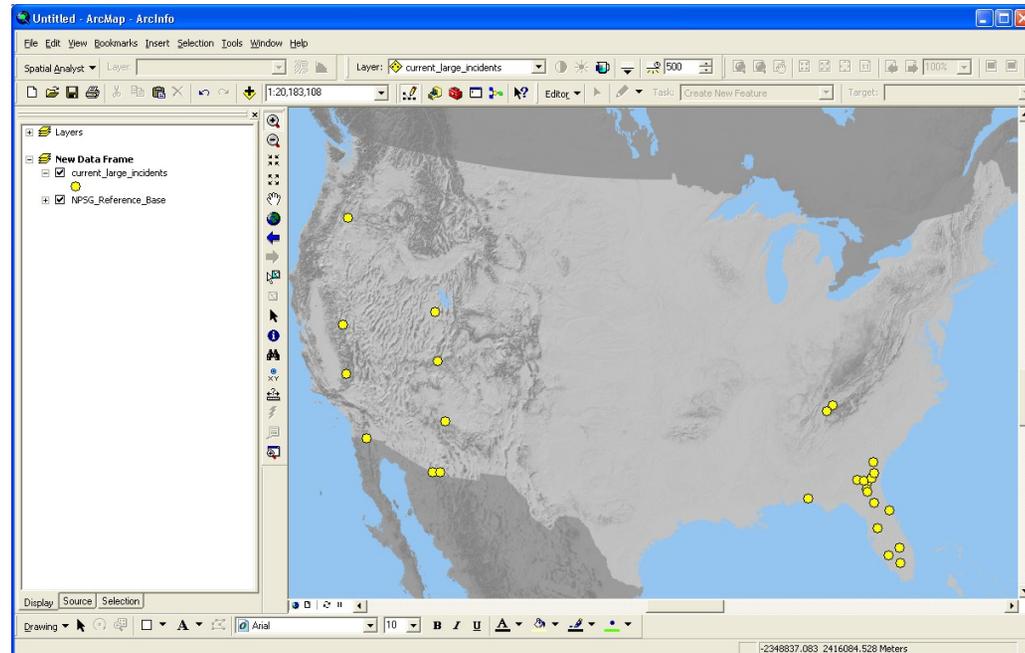
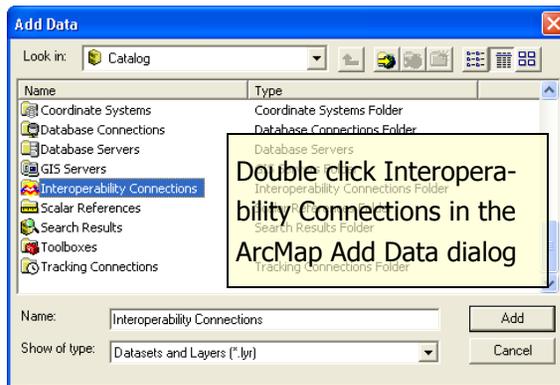
11. Start ArcMap: **Click, Start | All Programs | ArcGIS | ArcMap** or click on the **ArcMap shortcut on your desktop**
12. ArcMap will then open on your desktop.



13. Add the Predictive Services WFS to an existing or new ArcMap mxd: **Click, Add data** button
14. In the **Add Data dialog box**, navigate to and double click **Interoperability Connections**
15. In the **Add Data dialog box**, available WFS servers will be listed. Select the Predictive Services WFS and click **Add**



16. The layers available in the WFS (selected in the **Web Feature Service (WFS) Table List dialog box** in step 7) are now added to the ArcMap display



17. The WFS layers added to ArcMap can be manipulated like any vector geospatial dataset (change the cartographic symbology of features, use the data in scripts/models, etc.). Right click on the WFS layer in the ArcMap table of contents and select properties to manipulate any of the layer properties.

18. Save the mxd. When the mxd is opened again in ArcMap the linkage to the WFS added previously will be maintained and reflect the current disposition of those data in the WFS.



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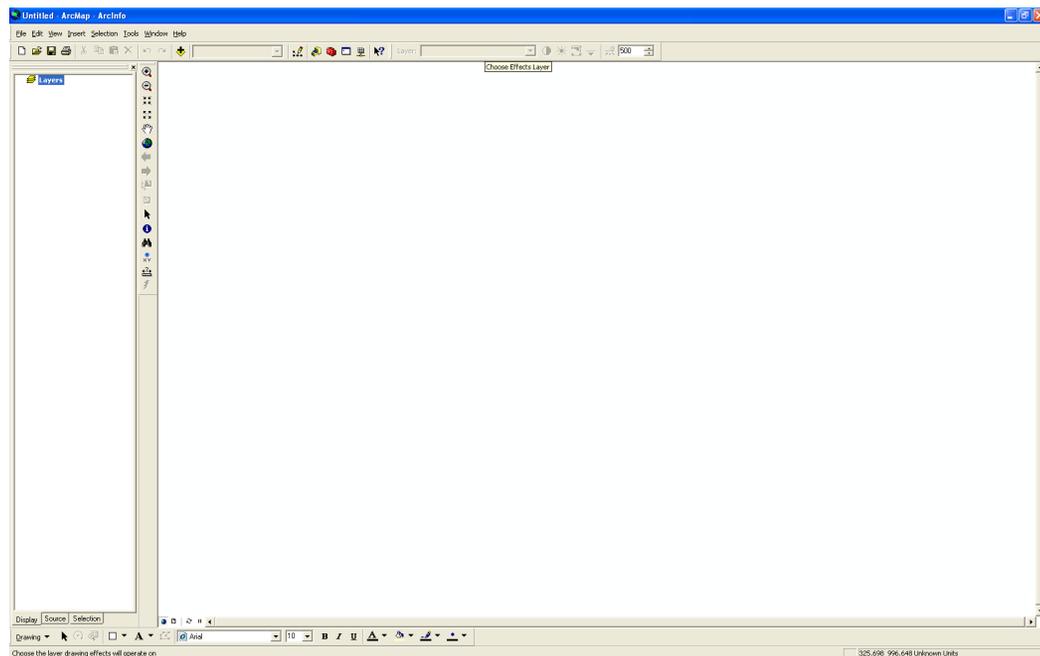
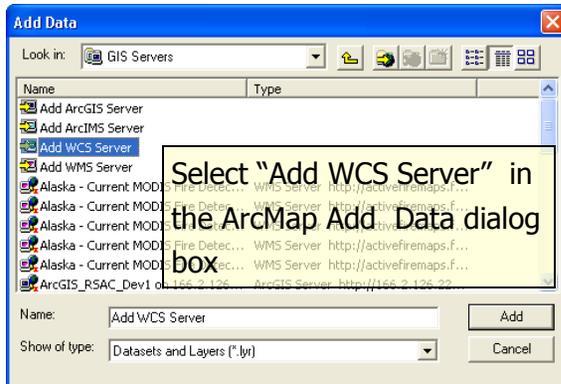
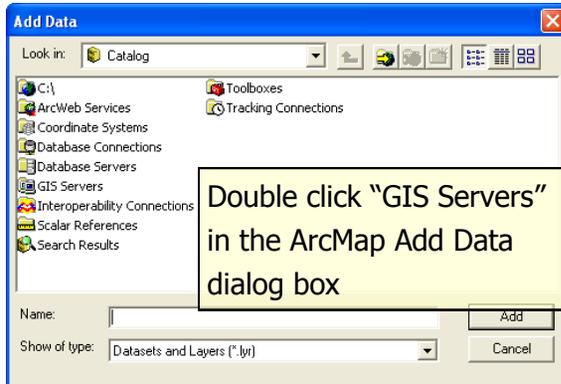


What is a WCS??

A WCS, a Web Coverage Service, serves raw, continuous raster geospatial data layers (typically digital elevation data, imagery, etc.) features via the web. Client applications, such as ArcMap, can ingest WCSs and manipulate the dataset for customized mapping and analysis.

Part 3. Access Predictive Services raster Core Data Layers as a WCS in an ArcMap client.

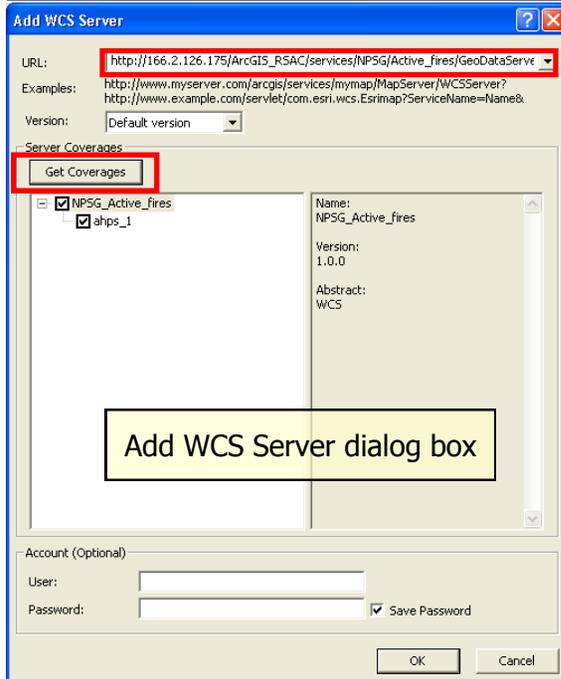
1. Start ArcMap: **Click, Start | All Programs | ArcGIS | ArcMap** or click on the **ArcMap shortcut on your desktop**
2. ArcMap will then open on your desktop.



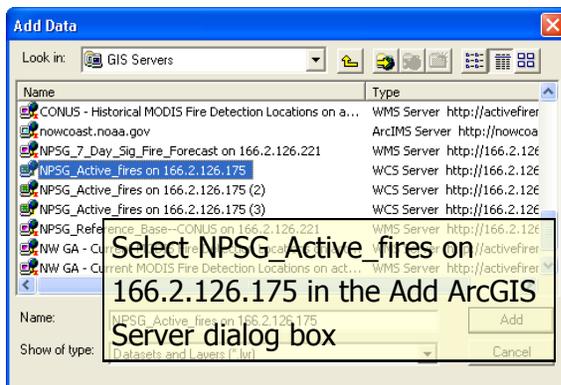
3. Add mapping services to an existing or new ArcMap mxd: **Click, Add data** button 
4. In the **Add Data dialog box**, navigate to and double click **GIS Servers**
5. In the **Add Data dialog box**, double click **Add WCS Server**



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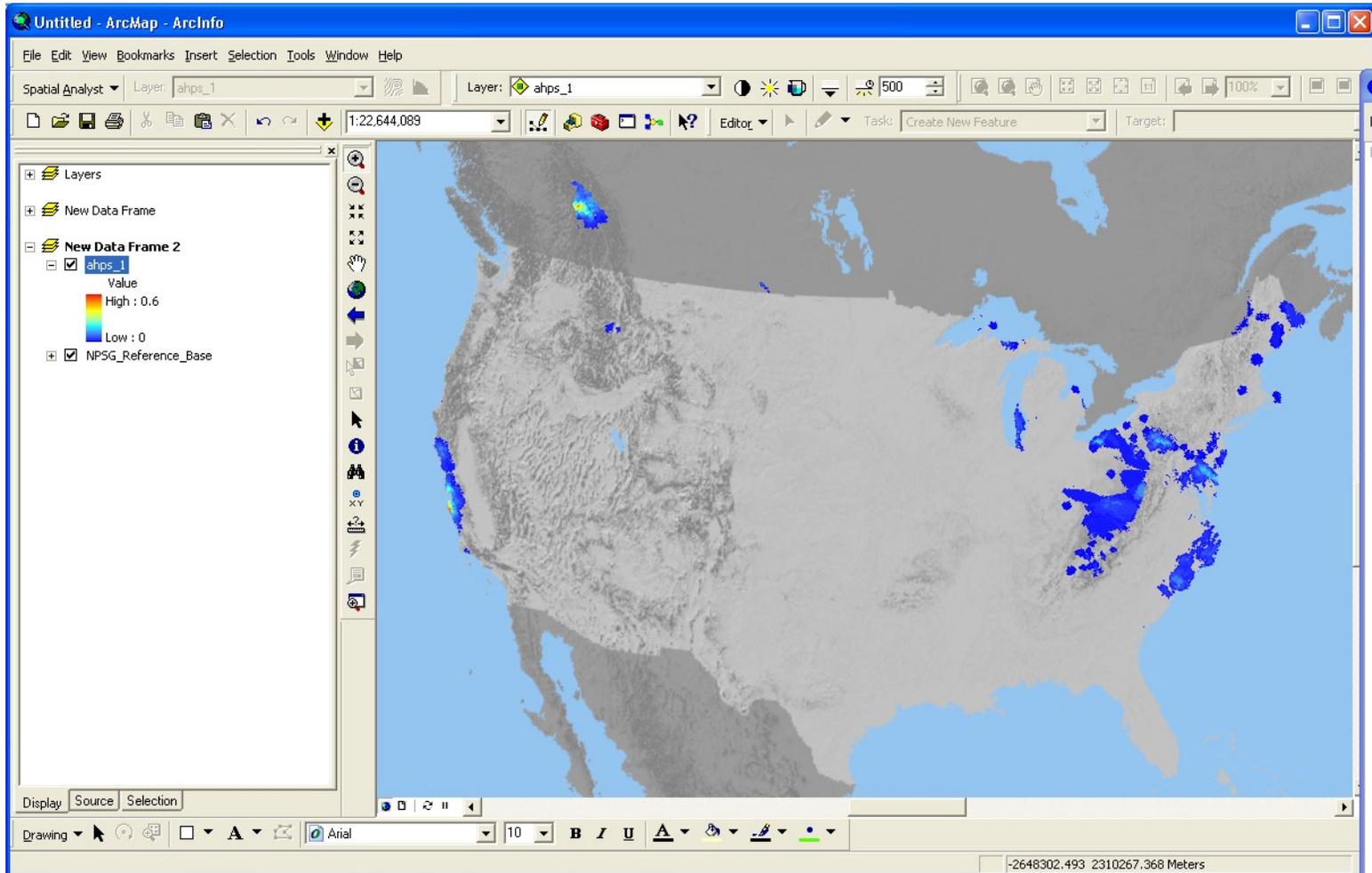


6. In the **Add WCS Server dialog box** that appears, enter **http://166.2.126.175/ArcGIS_RSAC/services/NPSG/Active_fires/GeoDataServer/WCSServer** in the URL input and click the **Get Coverages** button.
7. A listing of the available WCS layers will be listed in the **Add WCS Server dialog box**. Click the **OK** button. No user name or password is required.
8. In the **Add Data dialog box**, **double click NPSG_Active_fires on 166.2.126.175** and select **"ahps"**, then select the **Add** button. Note: **AHPS** is the **Advanced Hydrologic Precipitation Service** precipitation analysis provided by the **National Weather Service**. The AHPS data provided in the Predictive Services Core Data Layers summarizes the precipitation across the United States for the previous 24 hour period. It is currently the only layer in the Predictive Services Core Data Layers provided in raster format and, consequently, is the only layer available in the Predictive Services WCS.
9. The selected mapping service(s) is added to the ArcMap display.
10. The WFS layers added to ArcMap can be manipulated like any raster geospatial dataset (change the cartographic symbology of features, use the data in scripts/models, etc.). Right click on the WCS layer in the ArcMap table of contents and select properties to manipulate any of the layer properties.
11. Save the mxd. When the mxd is opened again in ArcMap the linkage to the WCS added previously will be maintained and reflect the current disposition of those data in the WFS.





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Example of the AHPS precipitation analysis from the Predictive Services WCS displayed in ArcMap with the Predictive Services reference base geospatial layers from ArcGIS Server mapping service