

## Geocoding: Using Addresses to Map Sites

Geocoding allows you to use addresses to plot points – buildings and businesses - on maps by using their street addresses as reference points. In this tutorial, you will learn how to use ESRI's GIS Server and the Geocoding Service to create a map of tourist sites in New York City.

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This tutorial was expanded and adapted from Kerski, J.J.. (2009). *Analyzing patterns through Geocoding using ArcGIS Online*. Redlands, CA: ESRI. Retrieved October 5, 2009, from ESRI GIS Education Community: <http://edcommunity.esri.com/arclessons/lesson.cfm?id=440>.

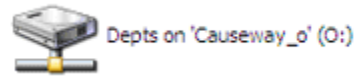
Krista White  
GIS Support Specialist  
x 3926  
[kwhite2@drew.edu](mailto:kwhite2@drew.edu)  
Office HS 337  
T, Th 8:00AM-12:00PM, 1:00PM-4:00PM  
F 8:00-11:30AM

Catherine A. Riihimaki  
Assistant Professor  
Environmental Studies and Sustainability  
x 3349  
[criihimaki@drew.edu](mailto:criihimaki@drew.edu)  
Office HS 100

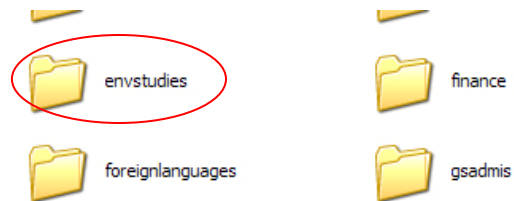
## Copy Data Files to the Desktop

To complete this tutorial, you will need to copy the **Geocoding** folder from the **O:\envstudies\GIS Tuorials** folder to the desktop of your computer. If you have done this already, skip to the next section, **Start a New Map Document**.

1. Go to the **Start** menu
2. Click **My Computer**
3. Double click on the **O:** Drive



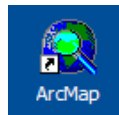
4. Folders are listed alphabetically by department acronym. Double click on the **envstudies** folder.



5. Double click on the **GIS Tutorial** folder. Inside you will see the **Geocoding** folder.
6. Right click on the **Geocoding** folder, and choose the **Copy** option.
7. Close the **GIS Tutorial** window.
8. Right click anywhere in the blank, blue space on the **Desktop**. Choose the **Paste** option. You should now see the **Geocoding** folder on your **Desktop**.


## Start a New Map Document

1. Open **ArcMap**.
2. Choose **A new empty map document**.
3. Click **OK**.



## Add GIS Services Server to Data Lists

Adding the GIS Services Server to your list of available data resources allows you to download ready-made maps for data analysis. This can save a great deal of time over using raw data files downloaded from other online sources.

1. Click the **Add Data** button. 
2. In the **Look In:** menu of the **Add Data** dialog box, choose **GIS Servers**→**Add ArcGIS Server**.

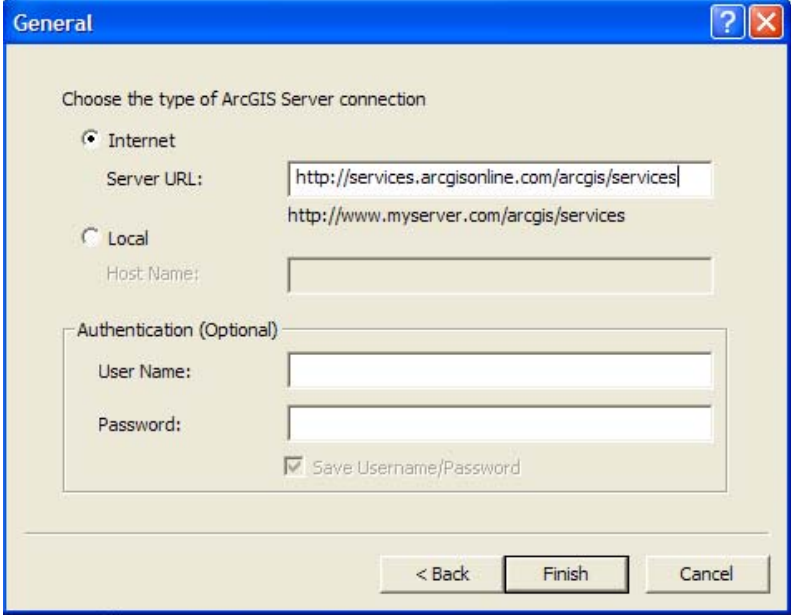
**NOTE:** If you already see **arcgis on services.arcgisonline.com** and **arcgis on tasks.arcgisonline.com** as options, skip **Step 3** in the next section.

3. Click **OK**.
4. Make sure that the **Use GIS Services** radio button is chosen.
5. Click **Next**.
6. Under **Chose the type of ArcGIS Server connection** in the **General** dialog box, make sure that the radio button next to **Internet** is chosen.
7. In the **Server URL:** field, type in the following URL:  
<http://services.arcgisonline.com/arcgis/services>

Your General dialog box should look like this:

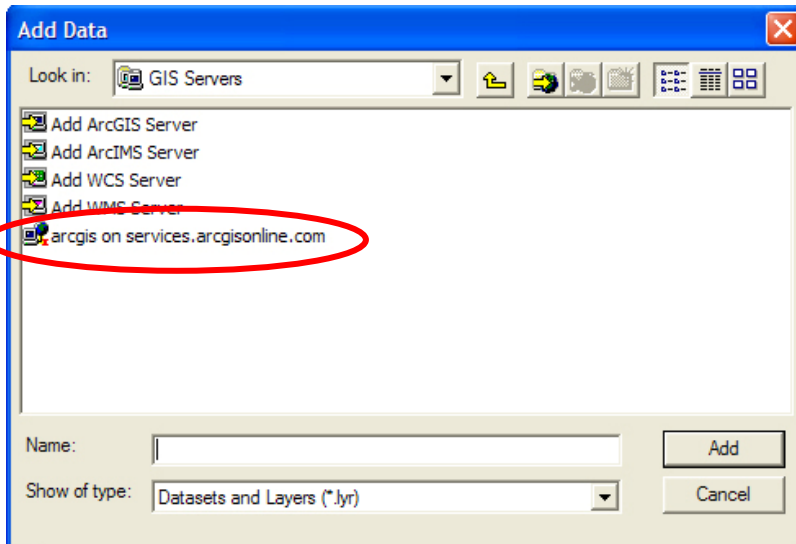
8. Click **Finish**.


The ArcGIS Services Server should now be added to your list of available data resources.



## Add the GIS Services Map of New York to Your Map Document

1. Click the **Add Data** button. 
2. In the **Look In:** menu of the **Add Data** dialog box, choose **GIS Servers**.
3. Select **arcgis on services.arcgisonline.com** from the list of options and click **Add**.



4. Choose **ESRI\_StreetMap\_World\_2D** from the list of available options. It may take a few seconds to process, since you are downloading a map from a remote server.
5. Once the map appears, click on the **Zoom In** tool. 

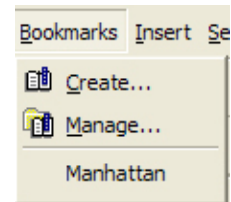
6. Click and drag with the Zoom In tool around the New York City area. Continue to use the Zoom In tool until you have the island of Manhattan between I-895 (North) and I-478 (South) centered in your viewing window.



## Create a Spatial Bookmark

**Zooming In** adjusts the map's scale so that you can see features like streets and read the labels. To make sure that you can come back to the map at this scale, you can create a **Spatial Bookmark**.

1. Click on the Bookmarks pull down menu at the top, left-hand side of the screen.
2. Choose Create.
3. In the **Spatial Bookmark** dialog box that appears, name your **Spatial Bookmark** "Manhattan."
4. Use the **Bookmark** pull down menu – your "Manhattan" **Bookmark** should be there.



Now any time you want, you can use the **Bookmark** tool to zoom out to the scale you created with the **Manhattan** bookmark. To erase or re-organize **Bookmarks**, use the **Manage** function.

## Add a Basemap from ArcGIS Online

1. Go to the **Tools** pull down menu → **Geocoding** → **Address Locator Manager**.
2. Select **Add** in the **Address Locator Manager** dialog box.
3. In the **Look In:** field, select **GIS Servers**.

NOTE: If you already see **arcgis on tasks.arcgisonline.com** as an option under **GIS Servers**, select it and click **Add**. Then skip to the next section.

4. Click **Add ArcGIS Server** and select **Add**.
5. In the **Add ArcGIS Server** wizard, select **Use GIS Services**. Click **Next**.
6. Under **Chose the type of ArcGIS Server connection** in the **General** dialog box, make sure that the radio button next to **Internet** is chosen.
7. Enter the following address into the **Server URL:** field:

<http://tasks.arcgisonline.com/arcgis/services>

Your **General** dialog box should look like this:

 A screenshot of the 'General' dialog box in a software application. The dialog box has a blue title bar with the text 'General' and standard window controls. The main content area is titled 'Choose the type of ArcGIS Server connection'. There are two radio buttons: 'Internet' (selected) and 'Local'. The 'Internet' section has a 'Server URL:' field with the text 'http://tasks.arcgisonline.com/arcgis/services' and a smaller text 'http://www.myserver.com/arcgis/services' below it. The 'Local' section has a 'Host Name:' field. Below these is an 'Authentication (Optional)' section with 'User Name:' and 'Password:' fields, and a checked checkbox for 'Save Username/Password'. At the bottom are three buttons: '< Back', 'Finish', and 'Cancel'.


8. Click **Finish**.

## Add the North American Locator service to your Map

1. In the **ArcGIS Server** list, select **arcgis on tasks.arcgisonline.com** and click **Add**.
2. Double-click the **Locators** folder, and then click **Add**.
3. Select the **North American** locator, called **TA\_Address\_NA** and click **Add**.
4. The **Address Locator Manager** dialog box will appear. Click to highlight **Locators/TA\_Address\_NA** and select **Add**. The **Address Locator** function for North America will be activated for your map automatically.
5. Select **Close**.

## Geocode NYC Points of Interest

Geocoding the addresses in the **points.shp** file will make the points of interest in the associated table display on the New York City map.

1. Go to the **Tools** pull down menu→**Geocoding**→**Geocode Addresses** command.
2. When the **Choose an Address Locator to use...** dialog box appears, highlight **Locators/TA\_Address\_NA**.
3. Click **OK**. The **Geocode Addresses** dialog box will appear.
4. Click on the **Browse** button  next to the **Address table:** field.
5. Navigate to **I:\YourUserName\Desktop\Geocoding**
6. Highlight the **points\_of\_interest.csv** file and click **Add**.
7. Click **OK**. The **Geocoding Addresses** progress box will appear.
8. When it says geocoding is 100% complete, click **Close**.

You should now have 2 elements inside your Layers list, **Geocoding Result: Geocoding\_Result** and **ESRI\_StreetMap\_World\_2D**. You should also see small dots on your Manhattan map that correlate the points of interest you just loaded from the **points\_of\_interest.csv** file.

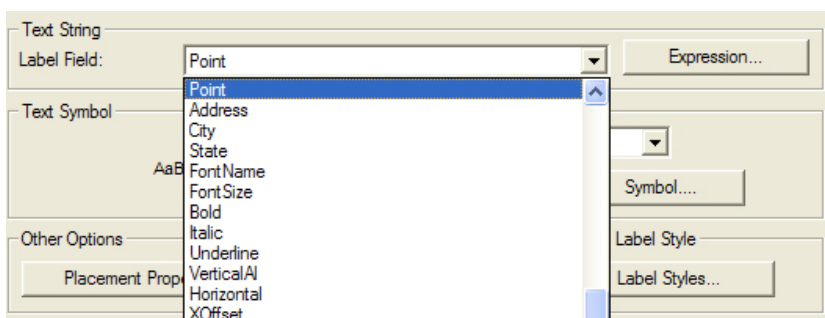


### Re-label the Geocoding Result

1. Double-click on the layer name, **Geocoding Result: Geocoding\_Result\_2**. The **Layer Properties** dialog box will appear.
2. Click on the **General Tab**.
3. In the **Layer Name** field, rename the layer “NYC Points of Interest.”
4. Click **OK**. The new name will appear in the **Layers** list.

### Turn on Labels

1. Right-click on the name **NYC Points of Interest**. Choose **Properties** at the bottom of the drop-down list. The **Layer Properties** dialog box will appear.
2. Click on the **Labels** tab.
3. Check the box at the top, left-hand corner next to **Label** features in this layer.



4. In the **Text String** area, click on the drop-down menu for the **Label Field** field.

5. Scroll down the list until you find the attribute **Point**. Choose **Point**.

6. In the **Text Symbol** area, click **Bold**, and make the font size **9 point**.
7. Click **Apply**, and then **OK**.
8. Right-click the **NYC Points of Interest** label in the **Layers** list.
9. Choose **Label Features**.  
The names of all the points of interest you geocoded now appear on the map.

### Re-symbolize Your Points of Interest

You can adjust the color and shape of the points of interest.

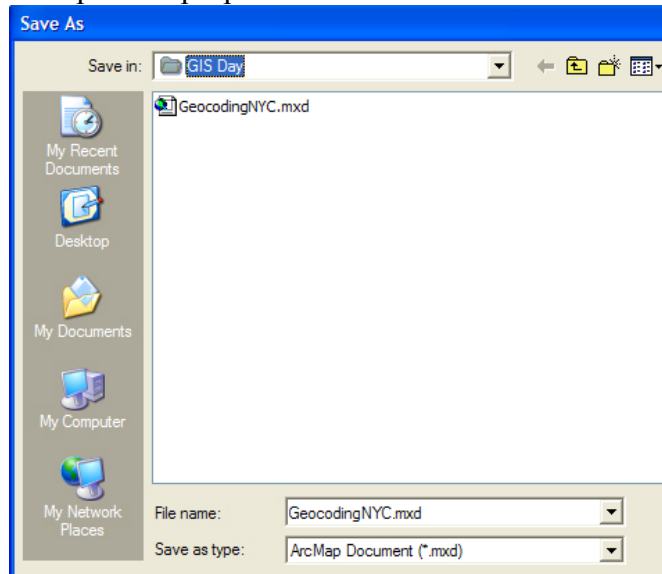
1. Right-click on the small dot below the **NYC Points of Interest** label in the **Layers** list. The **Symbol Selector** dialog box will appear.
2. Choose the type of **Symbol**, the **Color**, and the **Size** for your icons.

### Save Your Map

Save your map to use for the next tutorial exercise.

1. Go to the **File** pull down menu.

2. Choose **Document Properties**
3. In the **Properties** dialog box, at the bottom, right choose **Data Source Options**.
4. In the **Data Source Options** dialog box, check the radio button next to **Store relative path names to data sources**. This insures that, no matter where you save your map document, you will be able to direct ArcMap to the proper location of the files that make up your map.
5. Click **OK** in the **Data Source Options** dialog box.
6. Click **OK** in the **Properties** dialog box.
7. Go back to the **File** pull down menu and choose **Save As....**
8. Save your map by navigating to **I: →YourUserName→Desktop →Geocoding**. In the **File name:** field, name your file **GeocodingNYC**. Don't worry if the .mxd file extension shown at right does not appear – the computer will add this automatically.
9. In the **Save as type:** field, make sure that **ArcMap Document (\*.mxd)** is the selected file type.
10. Click **OK**.



**Use the Zoom In tool to explore the points of interest on your map.**