

GMS 10.1 Tutorial **Online Maps**

Using free, dynamic, online map data in GMS



Objectives

Learn how free online map data can quickly and easily be used to dynamically update background maps and aerial photography in GMS.

Prerequisite Tutorials

- None

Required Components

- An internet connection

Time

- 10-20 minutes

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1 Introduction

Online maps are free maps, aerial photos, and DEMs that can be downloaded from the internet and displayed in the background in plan view. As the user zooms in and out or pans the view, online maps download the required image data from the internet and update automatically. Depending on the speed of the internet connection, this usually takes just a few moments. Online maps can be saved locally as image files. Online maps can be helpful in the initial stages of setting up a groundwater model.

1.1 Outline

Here are the steps of the tutorial:

1. Position the project around Moab, Utah, and add an online map showing an aerial photo.
2. Zoom and pan to see how the image is updated automatically.
3. Add a second online map and explore image order and transparency.
4. Create a local image file from the online map.
5. Use the *Map Locator* to reposition the display.

2 Getting Started

Do the following to get started:

1. If necessary, launch GMS.
2. If GMS is already running, select the *File / New* command to ensure that the program settings are restored to their default state.

3 Adding an Online Map

To start, add an online map. First notice the current projection displayed in the bottom right of the *Graphics Window*. It should say “Local, U.S. Survey Feet.” This means that no global projection has been defined.

1. Select the **Add Online Map**  button. This opens the *Virtual Earth Map Locator* dialog.
2. Check the *Locator Tool* box.
3. In the *Where* field on the right, type “Moab, Utah.”
4. Then click *Find*.
5. Click **OK**. This opens the *Get Online Maps* dialog.
6. Select the thumbnail for *World Imagery*.
7. Click **OK** to exit the *Get Online maps* dialog.

After a few moments (depending on the internet connection), the user should see an aerial photo of the city of Moab, Utah. Notice the projection displayed in the bottom right of the *Graphics Window* now says “UTM” and “NAD83...” Because the project had no data, GMS switched the display projection to UTM.

8. Using the scroll wheel on the mouse or the **Zoom**  tool, zoom out repeatedly. Notice that the image updates with different resolution images as the zoom level changes.
9. Use the **Pan**  tool to pan around the area. Notice that the image updates with the view.

Notice the icon for the online map item in the Project Explorer looks like the typical image item icon but with the addition of a globe in the bottom right corner , indicating it is an online map. As the image is downloading from the internet, the text next to the item in the Project Explorer will change to “(processing) World Imagery”. Once the download is complete the “(processing)” is removed.

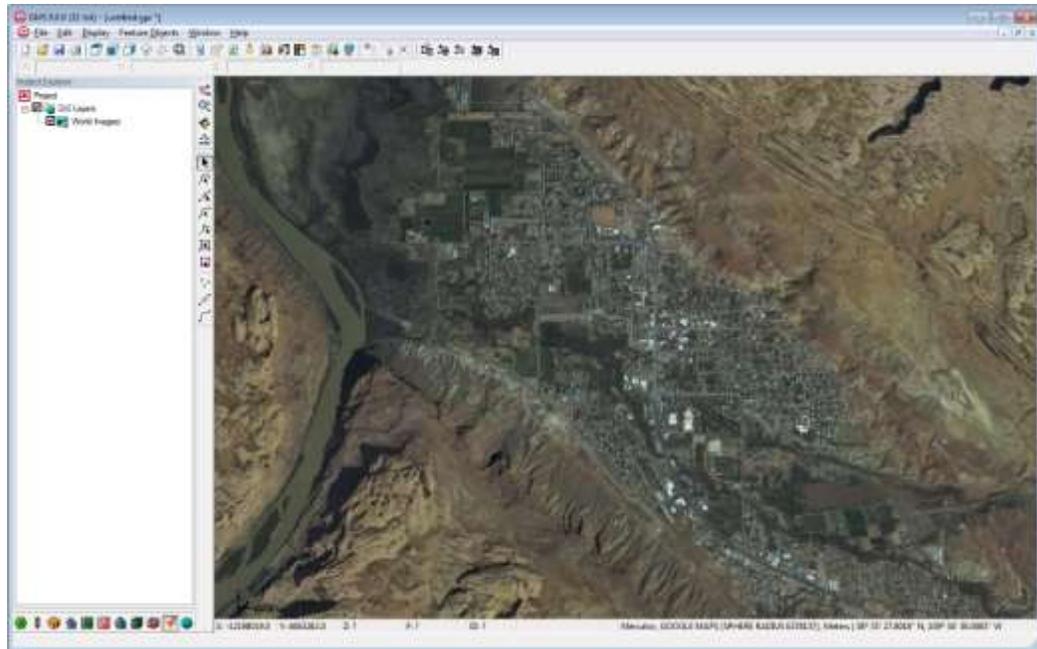


Figure 1. Online map of Moab, Utah.

4 Adding Another Online Map

The next step is to add another online map.

1. Select the **Add Basemap**  button.

Notice the *Virtual Earth Map Locator* dialog does not open this time because the user already has some data in the project. The user is taken directly to the *Get Online Maps* dialog.

2. Select the *World Street Map* thumbnail, and click **OK**.

After a few moments, the user should see a nice map of the area showing roads and other features.

5 Changing the Display Order

Images are displayed in the order they appear in the Project Explorer, with images on top getting drawn last.

1. In the Project Explorer, select and drag the *World Street Map* item so that it is underneath the *World Imagery* item.

Notice that the aerial photo is visible once again.

2. Return the *World Street Map* back on top by dragging it in the Project Explorer so that it is above *World Imagery*.

6 Transparency

The transparency of online maps can be set just as it can be set with normal images.

1. Right-click on the *World Street Map* item in the Project Explorer and select the **Transparency** command from the drop-down menu.
2. In *Layer Transparency* dialog, change the transparency to “40%.”
3. Click **OK**.

The user should now see the World Imagery photo bleeding through the World Street Map image.

7 Exporting an Image File

It is possible to save a copy of the online map currently displayed in the *Graphics Window* as an image file. The image file is saved on disk and is loaded with the project and does not need an internet connection.

1. In the Project Explorer, right click on the *World Street Map* item and select the **Export** command from the drop-down menu.

The *Export Image* dialog appears. Often, it is desirable to save the image at a higher resolution than is currently displayed on screen. Remember that the image file will not update with higher resolution imagery when zooming in and the user will be limited to whatever resolution the image is saved at.

Next, it is necessary to include the static image in GMS.

2. Make sure the *Resampling ratio* is “2.0.”
3. Make sure that the *Add to project after saving* toggle is on.
4. Click **OK**.
5. In the *Save As* dialog, accept the defaults and click **Save**.

A dialog will appear indicating the progress of the image export. Once the download is complete, three images will appear in the Project Explorer. The new image at the top of the list has the standard image icon  to indicate that it is not an online map.

8 Image Properties

Now it is important to look at the properties of the image that was just created.

1. In the Project Explorer, right click on the newly created “World Street Map.tif” image at the top of the list and select the **Properties** command from the drop-down menu.

The *Image Properties* dialog shows the path to the file on disk, the image type, the image projection (which is saved in the TIF file), the image extents in X and Y, the pixel width and height, and the real world size corresponding to each pixel.

2. Click **Done** to exit the dialog.

9 Map Locator

Earlier, when the user first downloaded an online map, GMS opened the *Map Locator* dialog so that the user could be positioned on the globe. It did this because no data was in the project at the time. Later, when the user already had an image in the project and went to get another online map, the *Map Locator* dialog did not appear.

The *Map Locator* dialog can be used at any time to move the *Graphics Window* to different places on the globe.

1. Click on the **Map Locator**  tool.
2. In the *Virtual Earth Map Locator* dialog, use the mouse scroll wheel or the - and + controls to zoom as far out as possible.

A map of the entire world should now be visible. The user can now zoom in on any location in the entire world.

3. Click **OK**.

10 Other Online Maps

At this point, the user may want to experiment with the other online map types available in the *Get Online Maps* dialog.

11 Conclusion

This concludes the tutorial. Here are some of the key concepts in this tutorial:

- Free online maps can be obtained quickly and easily in GMS.
- Online maps require a global projection.
- Image files can be saved locally from online maps.
- The **Map Locator** tool can be used at any time to move the view to different places on the globe.