

TECHNOLOGY AND INFORMATION SYSTEMS

Creating Background Images for the Weed Information Management System (WIMS)

Updated November 2007



SAVING THE LAST GREAT PLACES ON EARTH

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Creating a Background Image

A variety of spatial datalayers can be used as a background for mapping weed-related management activities. Effective background datalayers should be detailed and accurate to allow field staff to quickly orient themselves in relation to landscape features. Orthophoto imagery (orthoimagery) taken from airplanes or satellites can provide such imagery. Orthorectification removes distortions caused by the tilt and geometry of the camera lens and variations in topography. Orthoimagery is available from a variety of sources, some of which are free and available on the Internet. This document provides instructions for acquiring imagery from a free source in the United States and processing it to use as background imagery with the Weed Information Management System (WIMS).

Images to be used with the WIMS must meet certain criteria. These images must be in the following format.

Datum	WGS84 or NAD83 ONLY (no NAD27)
Projection:	Decimal degrees or UTM
Image format	MrSID (.sid) or JPEG (.jpg) preferred, although images may also be .bmp, .tif, etc.
	See the ArcPad (ESRI) manual for all available formats

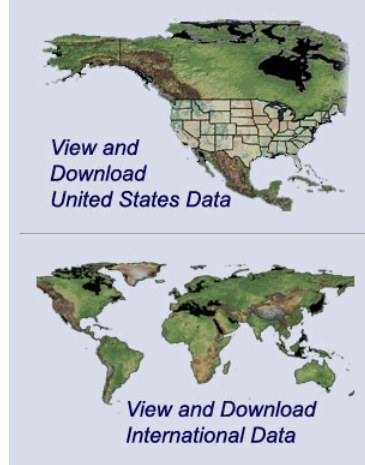
Images that meet the datum and projection requirements can be created using data from the U.S. Geological Survey's Seamless Data Distribution Web site (<http://seamless.usgs.gov/website/Seamless>). There is no fee to obtain images in this way.

Images created using this site are automatically saved in TIFF (Tagged Image File Format or .tif) format. These images must be converted to MrSID (.sid) or JPEG (.jpg) format to be used with WIMS.




To create an image using the USGS Seamless Data Distribution Web site:

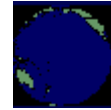
1. Select the appropriate data - U.S. or international.




An image of the data will then load.

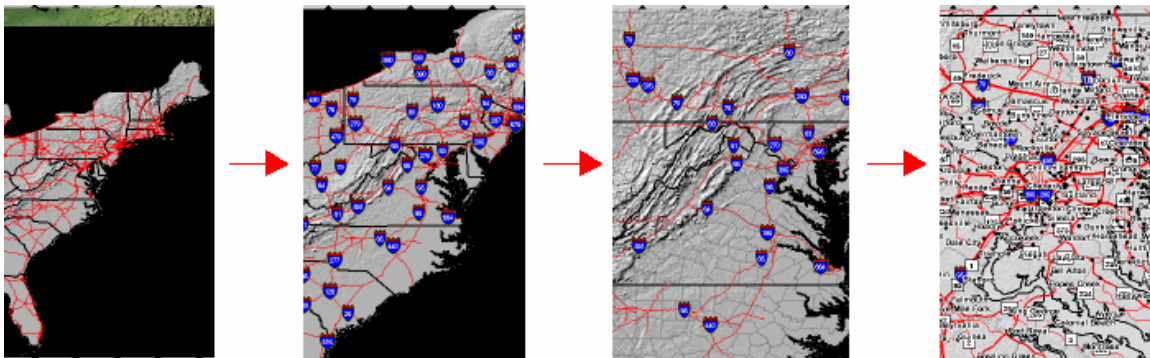
2. The **Zoom in** button  should already be selected (highlighted in red). Use it to navigate further into the map by either clicking in the appropriate part of the image or clicking and dragging in a selected part of the image.

While the site is processing your request, you will see an image of a spinning globe in the upper right of your screen. Once this globe image disappears, the map is fully loaded.



You can alternately use the **Zoom to Region or Area** button  to get started and then select either a region of the U.S., a state or a metropolitan area from the corresponding drop-down list. After being taken to that region or area, use the **Zoom in** button to hone in to your targeted site.

3. Continue to zoom in repeatedly until you find your targeted area. As you zoom in, you will see the state chosen, cities/towns and major highways, then neighborhoods and specific roads and streets.



- As you are zooming in to your desired area, go to the **Layers** portion of the right of the window, under the **Display** tab and tap the arrow in front of **Orthoimagery**. A list of available orthoimagery data will appear.



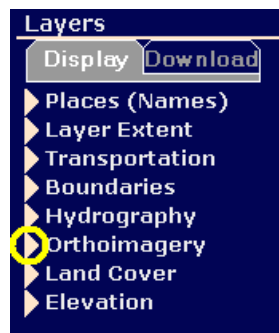
Viewing orthoimagery (aerial photography with the geometric qualities of a map) helps you hone in on the area you are seeking. However, some layers only become available to you at certain scales. Therefore, you must zoom in to access them.

- Add the layer of orthoimagery to your view by clicking in the box in front of the layer name. A check mark will then appear in that box to indicate it is selected.



To get details about the imagery, click the name of the imagery. If a natural color orthoimagery data set at 0.3-meter pixel resolution (approximately 1-foot) is available to you, you can view that layer. Otherwise, choose a DOQQ data set to view.


- When you have to your area of select the **Layers** tab in the screen and orthoimagery to be your downloadable



navigated interest, **Download** portion of choose the included in image.



1 m orthoimagery for your UTM zone would work fine if no other layers, such as the .03 meter orthoimagery, are available.

- Select the **Define Download Area** button  on the left of the screen.
- Select the portion of the map to be downloaded by clicking in the top left corner of the desired area, holding down the mouse button and dragging to the bottom right corner of the desired area.



If the area you selected is small enough to be saved, it will be bounded by a green border and you will advance to the next phase of the process - the SDDS Request Summary Page will appear. If your image is too large to be saved, it will be bounded by a red border and the map will remain in view. In this case, zoom further in to the map and select a new area to be downloaded.

- Check the datum, projection and size of your image noted on the SDDS Request Summary Page. If everything is correct, press the **Download** button.

A page appears which updates you regarding the status of your request.

10. Click the **Save** button from the **File Download** window that appeared when the raster extraction process was complete.
11. Choose the directory (folder) to which you will save the image and press **Save**. A single compressed, or zipped, folder containing four separate files (.tif, .tfw, .aux and .prj) will then be saved to that location.
12. When the download is complete and the folder with the four images is saved to your computer, press the **Close** button.
13. Unzip the folder to extract the individual files that were downloaded (.tif, .tfw, .aux and .prj). Start this process by double clicking on the folder and clicking the **Unzip** button. Then follow the wizard to complete the extraction process.



A file compression utility, such as PowerZip, must be installed on your computer in order to unzip the file. All Conservancy PCs running Windows XP, as well as some running other versions of Windows, should have this utility loaded. If it is not on your PC, contact your TIS staffperson.



For additional assistance in using this site, see the **Tutorial** link.

Converting the image format

Now that the TIFF image is saved to your computer, you will need to convert it to MrSID (.sid) or JPEG (.jpg) format so that it can be used with WIMS. Here, we will describe how to save the image in MrSID format. There are several ways of converting the file. Two methods are documented below using GIS desktop software. Should you discover another method that works better for you, feel free to use it.

Raster to MrSID conversion in ArcCatalog

The first method of converting a TIFF image to MrSID format uses ArcCatalog. The process requires you to add a button to the ArcCatalog toolbar. After you perform this one-time addition, you can use the button to convert any TIFF image to MrSID format.



To add the Raster to MrSID button to the ArcCatalog toolbar:

1. Open ArcCatalog.
2. Go to the **Tools** menu and select **Customize**.
3. Select the **Commands** tab.
4. In the **Categories** column on the left side of the window, select **ArcGIS 8x Conversion Tools**.
5. In the **Commands** column on the right, select **Raster to MrSID...** and drag it to the toolbar.

Your cursor will resemble the one shown below



At that point, you can release the mouse button and the **Raster to MrSID** button



will be added to that location.



You can place the new button anywhere on the toolbar that you choose as long as it is adjacent to an existing button.



To convert the image using ArcCatalog:

1. Navigate to the .tif file using the Explorer view on the left of the ArcCatalog screen and select it.



If you see Band 1, Band 2 and Band 3 on the right side of your screen once you do this, you can ignore it. This just refers to the three separate color components (red, green and blue) for your image.

2. Press the **Raster to MrSID** button. A pop-up window appears.
3. At the bottom of this window, push the folder button next to the **Output raster** field.
4. Navigate to the directory where you unzipped the downloaded folder using the **Look in** field. This will keep all your imagery together in one location.
5. In the **Name** field, enter the name you would like to use for your MrSID image.
6. Click **Save**.
7. Click **OK**. Three files will now be saved to the directory you specified - .sid, .sdw and .aux.
8. Using Windows Explorer, navigate to the directory you specified and rename the .prj file that was unzipped from the folder (**File** menu, **Rename** or right click and **Rename**). The first part of the file name (before .prj) should be changed to match your new .sid, .sdw and .aux files



You will need all four files - .sid, .sdw, .aux and .prj - when using WIMS on a handheld. However, converting the TIFF image via the steps outlined above does not create a new .prj file. As a result, you must rename the .prj file created by the USGS Seamless Data Distribution Web site and use that along with the new files created by the Raster to MrSID conversion process in ArcCatalog.

Converting a TIFF image using ArcMap

The second method of converting the TIFF image to MrSID format uses ArcMap. It requires you to use the ArcPad toolbar. ArcPad is the GIS handheld software used with WIMS when mapping weeds in the field. A wizard guides you through the process and automatically converts the TIFF file to the desired format for images to be used with ArcPad, MrSID.



To convert a TIFF image using ArcMap:

1. Open ArcMap.
2. On the ArcMap dialog box that appears, **A new empty map** should already be selected in the **Start using ArcMap with** part of the window. Ensure that **Immediately add data** is also checked. Click **OK**.



If you do not see this dialog box and only have a blank screen in ArcMap, simply select the **Add layers** button

3. Select the .tif file that you unzipped. Click **Add**. You should now be viewing the image.
4. Ensure the ArcPad toolbar is visible.



If you do not see the ArcPad toolbar, you can confirm it is open by going to **View, Toolbars** and confirming there is a check mark in front of ArcPad. If there is no check mark here, select **ArcPad** and the toolbar will appear.

5. Click the **Get Data for ArcPad** button on the ArcPad toolbar (the one on the far left).
6. Click the box in front of the .tif file to select it and choose **Next**.
7. Assuming you have not done anything with the tif file in ArcMap but add it as a layer, keep the default option of **The current display extent** selected under **What spatial extent do you want to get data for?**

If you have zoomed in to your image (especially if you created a bookmark), instead select **The full extent of the selected layer(s)**.

8. When ArcMap saves the MrSID file, it will automatically save it within a folder at the location specified. Change the default name of this folder to be created

(DataForArcPad) to one you prefer in the **Specify a name for the folder that will be created to store the data** field.

9. Change the default location for the **Where do you want this folder to be stored?** field. This is where the folder you named in Step 8 will be saved. To keep all your imagery together, change this to the directory to which you had unzipped your TIFF image.
10. Uncheck the **Create an ArcPad map (.apm file) referencing the data** option.
11. Click **Finish**.
12. Click **OK** when ArcMap has finished processing the request.
13. Navigate to the directory in which you had unzipped your TIFF file. Then, go to the new folder ArcMap just created within that directory. Remove the middle part of the file name - **.tif** - from the AUX, SDW and SID files. You might also find it beneficial to change the first part of the name to something more descriptive of your location.



You will need all four files - **.sid**, **.sdw**, **.aux** and **.prj** - when using WIMS on a handheld. However, converting the TIFF image via the steps outlined above does not create a new **.prj** file. As a result, you must also remember to copy that file. And, if you changed the first part of the name for the AUX, SID and SDW files, you should also change the name of this file to match those.