

Image Analysis for ArcGIS FAQs¹



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How Do I Perform a Supervised Classification?

Use the image classification tools in Image Analysis for ArcGIS to perform a simplified version of a Supervised Classification. This document describes how to use the image classification tools in Image Analysis for Supervised Classification.

What You Will Need and Other Assumptions

- A satellite image that has been properly prepared for input to an image classification (e.g., atmospheric correction, terrain correction, etc.)
- Aerial photographs and other ancillary data for the same area, as well as good local knowledge of the terrain, vegetation and soils for the area
- The Supervised Classification tools in Image Analysis are very limited as compared to those available in ERDAS Imagine

Overview of Steps

1. Load your satellite image to be classified into ArcMap's Data Frame.
2. Create and load a polygon Shapefile for collecting your training signatures.
3. Format the Shapefile for signature collection and digitize training sites based on your classification scheme.
4. Specify the required parameters for the Supervised Classification tool and run your classification.
5. Inspect the results, modify existing signatures and collect new ones, and re-run your classification, if necessary.

Step-by-Step Example

1. Start ArcMap from your Desktop, or on the Windows Taskbar click **Start | Programs | ArcGIS | ArcMap**. Ensure the Image Analysis and Editor extensions are visible. If not, from ArcMap's main menu select: 1) **Tools | Extensions** and enable **Image Analysis**; 2) **View | Customize** and enable **Editor**; and 3) **View | Toolbars** and enable **Image Analysis** and **Editor**.
2. Use the **Add Data** button on the main toolbar of ArcMap to add your satellite image to the Data Frame.
3. Click the **ArcCatalog** button in ArcMap (or start ArcCatalog from the Windows Taskbar) and navigate to your project directory.
4. In ArcCatalog, click **File | New | Shapefile**. In the Create New Shapefile dialog, name the new Shapefile in the **Name** field and change the **Feature Type** to **Polygon**.
5. Now click the **Edit** button beneath the Spatial Reference window in the Create New Shapefile dialog. Click the **Import** button in the Spatial Reference Properties dialog, navigate to the directory

¹ Produced by the USDA Forest Service RSAC (<http://fsweb.rsac.fs.fed.us>). A Forest Service version of Image Analysis for ArcGIS was used to develop this reference document. No warranty is made as to completeness or accuracy.

containing the satellite image you wish to classify, select it and click **Add**. Click **Apply** and **OK** in the Spatial Reference Properties dialog. You have just defined the Spatial Reference for your new Shapefile. Close ArcCatalog.

6. Use the **Add Data** button on the main toolbar of ArcMap to add your new Shapefile to the Data Frame.
7. **Right-click** on your Shapefile and select **Open Attribute Table** from the pop-up menu. Click the **Options** button in the attribute table and select **Add Field**.
8. In the Add Field dialog, name the new field **ClassName** (or something similar) and change the **Type** to **Text**. Click **OK** to add the new field to the table. Leave the attribute table open.
9. From the Editor toolbar, select **Editor | Start Editing**.
10. Select the **Sketch Tool** button from the Editor toolbar and digitize your first training site, and ensure the **Target** is set to your new Shapefile and the **Task** is set to **Create New Feature** (in the Editor toolbar). *Note: use **Single Left-clicks** to add vertices to your polygons and a **Double Left-click** to close them.*
11. After digitizing your first training site polygon, click in the **ClassName** field and type the name of your new training site polygon, based on your classification scheme.
12. Continue digitizing training site polygons and updating the **ClassName** field of the associated attribute table until you are satisfied that you've collected enough training sites for a complete and representative sample.
13. From the Editor toolbar, select **Editor | Stop Editing** and close the attribute table when finished collecting training sites. Click **Yes** when ArcMap asks if you want to save your edits. Alternatively, you can click **Save Edits** from the Editor pulldown menu before selecting **Stop Editing**. You are now ready to run a first iteration of your classification.
14. From the Image Analysis extension, select **Image Analysis | Classification | Supervised**. Specify the **Input Image** (your satellite image to be classified), the **Signature Features** (your Shapefile of training sites), and the **Class Name Field** (ClassName from your training site Shapefile). Select **All Features** for the Perform Classification Using option, select a **Classification Rule** (we recommend **Maximum Likelihood**, especially when running a Supervised Classification), and specify a location and filename for the **Output Image** (your new Supervised Classification). Click **OK**.
15. Inspect your results. Collect new signatures, modify existing ones, or delete bad signatures if necessary and rerun your classification until you achieve acceptable results.