

## Tutorial Set 1: Working with ArcGIS

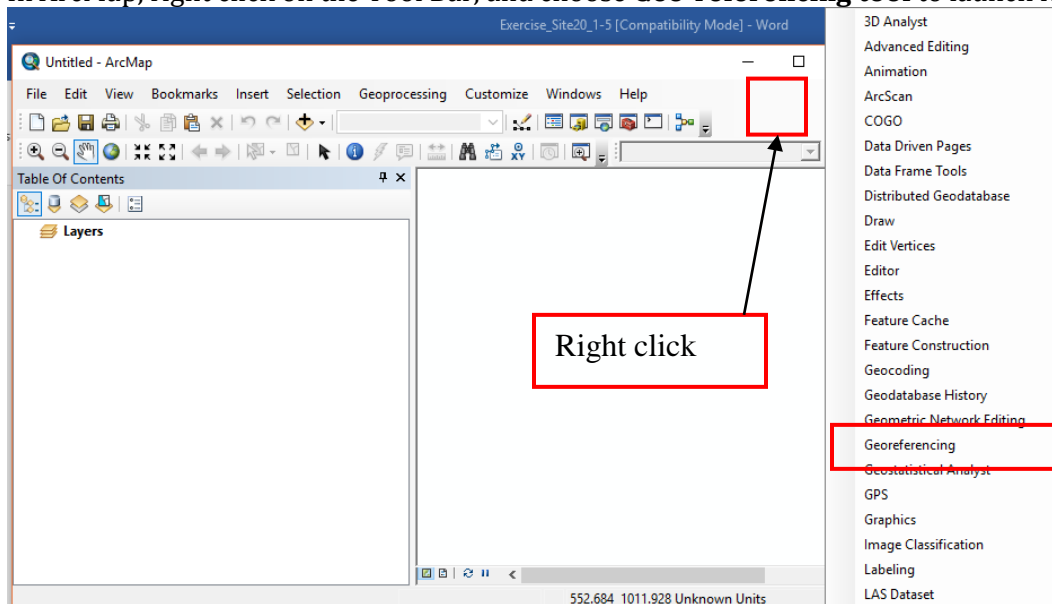
### Exercise Site20\_1-5 Geo-referencing a GoogleMap image

**Learning objective:** Geo-referencing the screenshot images from GoogleMap

**Techniques:** Geo-referencing Tool

**Data Source:** Dataset1

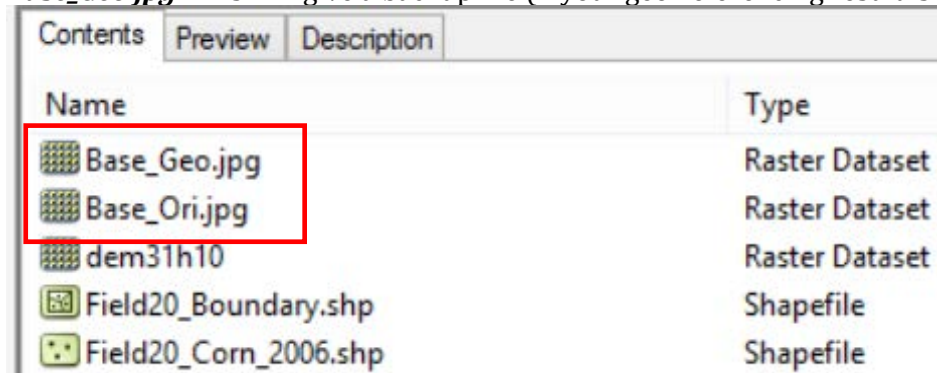
1. Launch ArcMap.
2. In ArcMap, right click on the Tool Bar, and choose **Geo-referencing tool** to launch it.



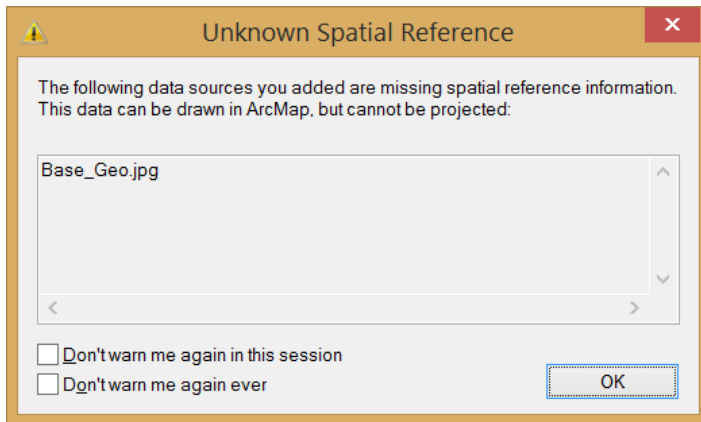
3. Drag this tool to the same spot of the right click and fix it there.



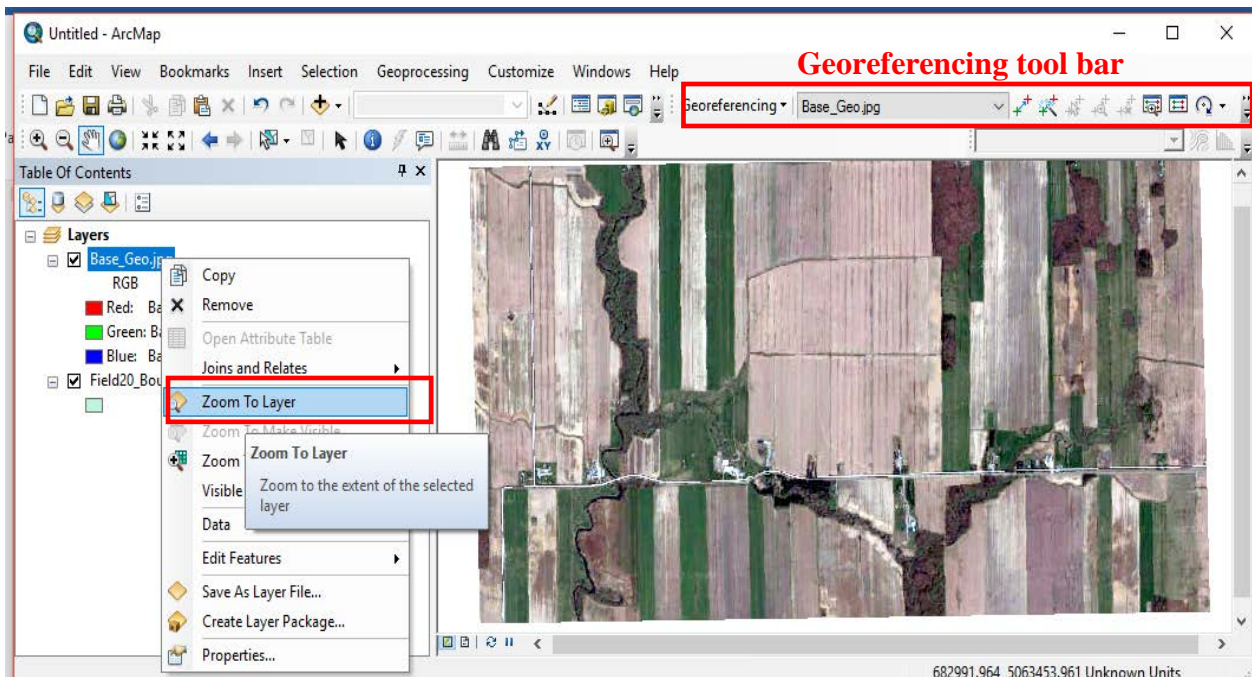
4. In ArcCatalog, make a copy of **Base\_Ori.jpg** and paste it in the same folder, and rename it to **Base\_Geo.jpg**. This will give a backup file (if your geo-referencing result is not satisfactory).



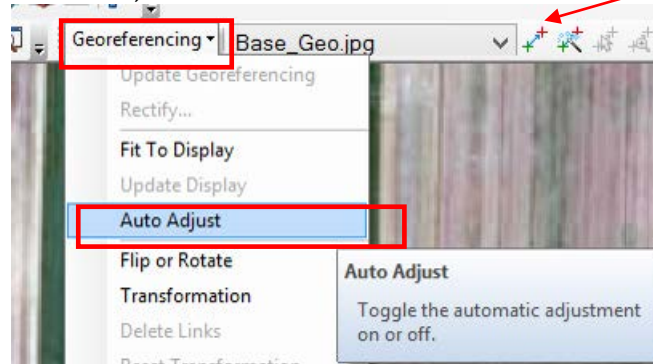
5. Bring the image file **Base\_geo.jpg** from the **ArcCatalog** to ArcMap. A message for **creating pyramids** may pop-up. Just click **Yes** to proceed.
6. Another message **Unknown Spatial Reference** is pop-up, just click **OK** to proceed. Because the added image is not geo-referenced, it locates far-away from the boundary of the study area. In **Georeferencing** toolbar, the image **Base\_Geo.jpg** is now available for georeferenced (e.g., can be moved, rotated, etc.). Make sure that the **Base\_Geo.jpg** is selected as the target image for geo-referencing.



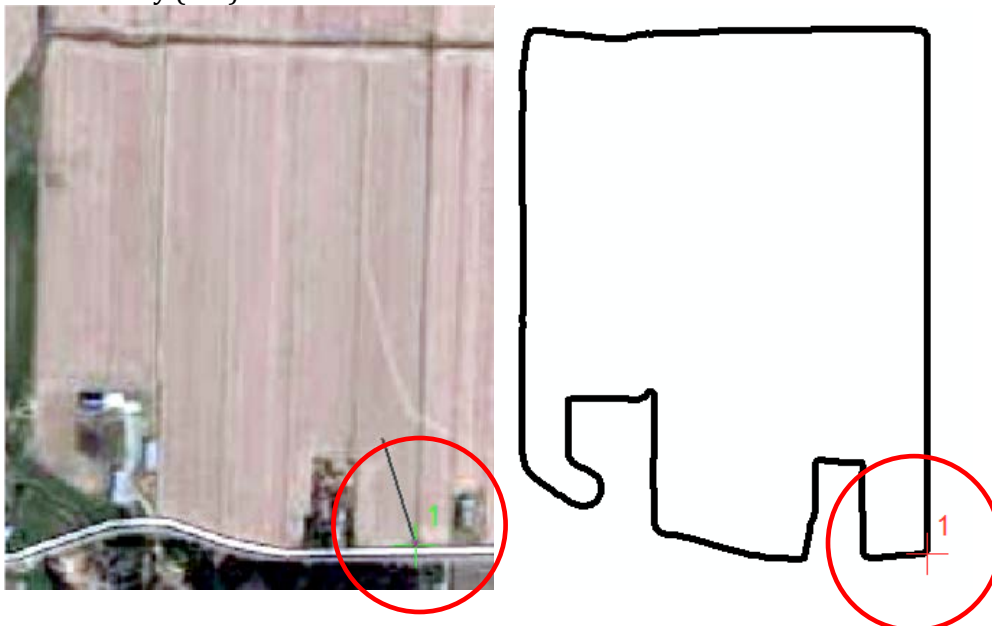
7. Bring **Field20\_boundary.shp** (already projected) from ArcCatalog to the same ArcMap. It will be used for a reference point collection.
8. Right click on **Base\_Geo.jpg** in **Table of Contents** and choose **Zoom To Layer** to view the image full extent.



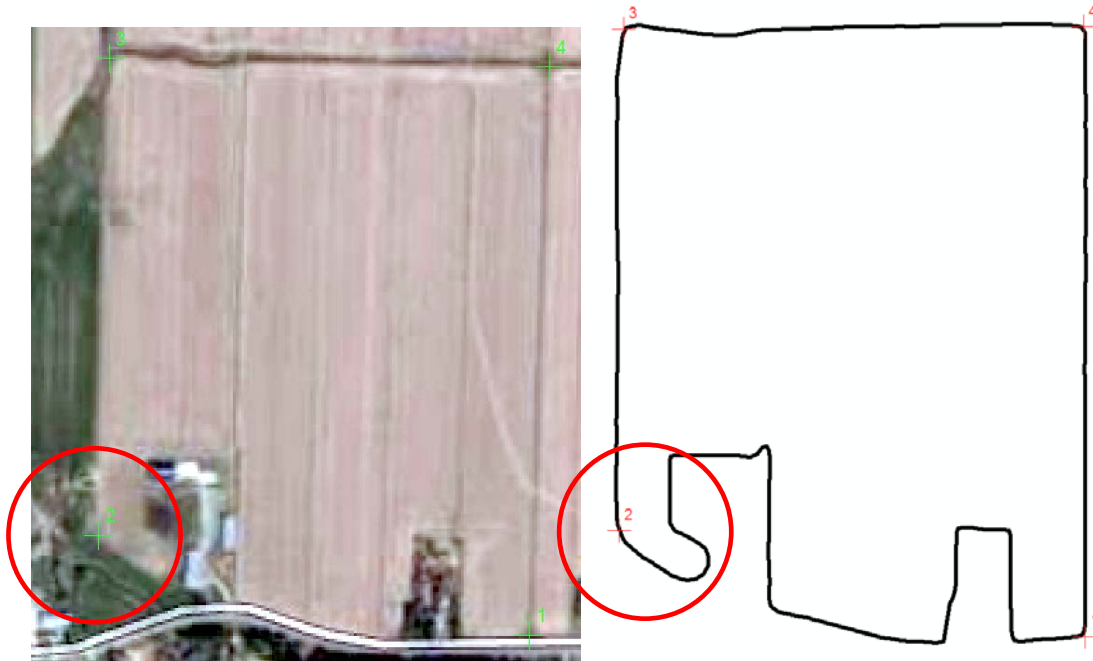
9. Now, on **Geo-referencing** toolbar, click **Georeferencing** and un-select **Auto-Adjust** from the dropdown list.
10. Then, on the same toolbar, click **Add Control Points**.



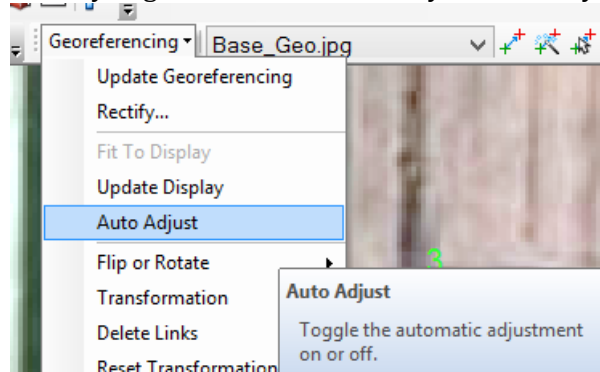
11. For first set of control point, follow the steps.
  - In order to get first control point, collect first control point by single click at the right-bottom corner of the field on the image shown below (*Base\_Geo.jpg*).
  - With plus sign and linear cursor, left click to select *Field20\_boundary.shp* from **Table Of Contents** and right click to select **Zoom to Layer**.
  - Once the study boundary is shown in the view, find same location (approximate) in the *Field20\_boundary.shp*, and collect a point for a reference (as show in the right side picture below).
  - Control points number (#1) would be shown on Raw image (green) and Georeference boundary (red).



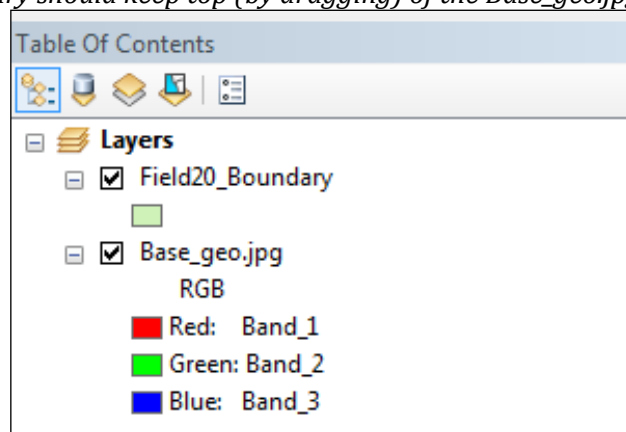
12. We are going to choose **four** significant intersections on the images as control points. Again, go back to **Table of Contents** and collect 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> points with same way.
  - Right click on *Base\_Geo.jpg* and select **Zoom to Layer**.
  - Add the second control point at the left-bottom corner of the field on the image.
  - Repeat the same process until 4 set of control points are added.

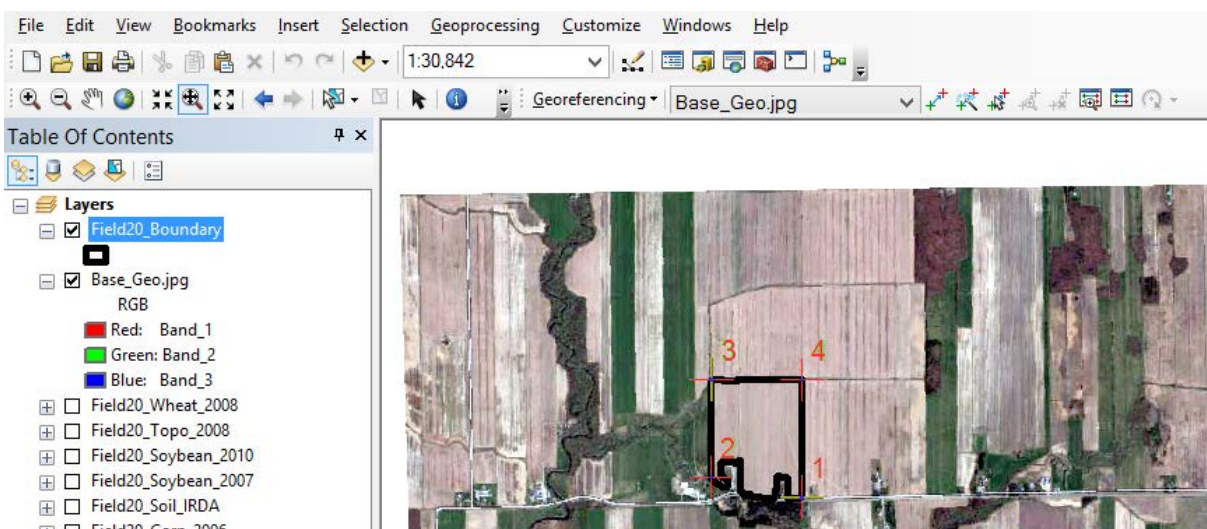


13. After adding four sets of control points, the function **Auto Adjust** can be selected. Once click, the image is automatically aligned with the boundary of the study site.

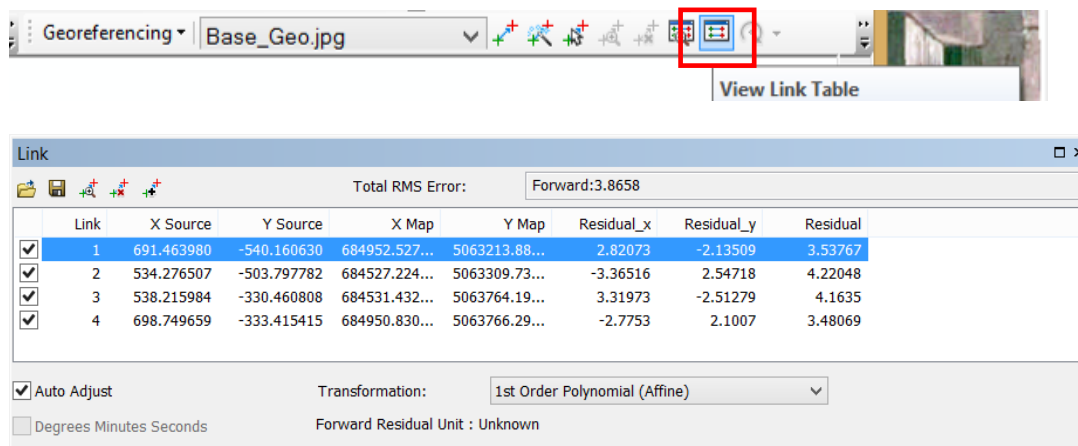


*Note: field boundary should keep top (by dragging) of the Base\_geo.jpg in the table of contents.*





14. To observe the linking information of the four control points, just go to Georeferencing toolbar and then click on **View Link Table**. In the table, four sets of coordinates are shown. You can manually delete/modify them or choose different transformation method to increase your georeferencing quality.



15. To permanently register the image at the new geo-referenced location, just go to Georeferencing toolbar, and click **Update Georeferencing**.

16. Save and close the ArcMap





