Section 1: The ERDAS IMAGINE Viewer

Section Objective

In this section, you will use the Viewer to visualize various types of raster data. The focus will be on displaying and manipulating raster data using the Viewer tools.

This section will also look at other tools available in the ERDAS IMAGINE icon panel and how to customize your workspace by setting preferences.

Tools Used

Viewer	Used to visualize data layers, zooming, inquiries, setting scales and measuring
Preferences	Used to set and change the default settings
Raster Options	Tools to display and edit characteristics associated with raster and vector coverages
Metadata	Tool used to display metadata of current datasets
Basemaps	Web based mapping services which can be connected to through IMAGINE

*Class Notes*

The ERDAS IMAGINE Viewer

Objective:

Students will set the ERDAS IMAGINE Desktop Preferences to customize their workspaces. They will also become familiar with the Viewer Toolbar and Menus while displaying various raster images.

Task 1: Setting Preferences

Students will set the ERDAS IMAGINE Desktop Preferences to customize their workspaces. They will also become familiar with the Viewer Toolbar and Menus while displaying various raster images

1. Start **ERDAS IMAGINE 2015**

2. Click **File** and Select **Preferences**
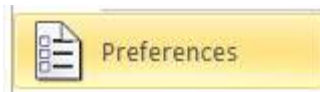
The Preference Editor window appears. The categories list of the left hand side separates preferences into categories and sub-categories. Some entries will have a grey dot marked against them which indicates the category or sub-category has had a preference changed from the default value.

3. From the **Categories** list select **User Interface** and then **User Interface & Session**
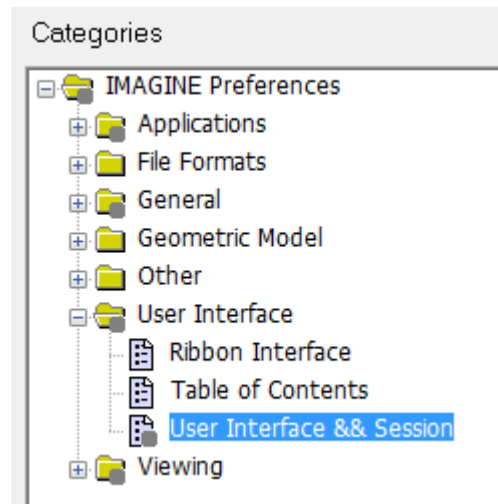
4. In the option for the **Default Data Directory**, navigate to the path where the course data is located. (Your instructor will provide you with this information).

You can use the ✏️ button to manually navigate to a preferred folder

5. In the option for the **Default Output Directory**, navigate to the path where all data generated in the course will be saved. (Your instructor will provide you with this information).

> *Alternatively, in the Select Layer to Add dialog box, navigate to the directory you would like to set and click the default data icon 🔳 or the default output icon 🔳 to record the current path in the Preference Editor.*

6. Click the **Save** button to save your preferences, then click **Close** to dismiss the Preferences Editor Dialog.
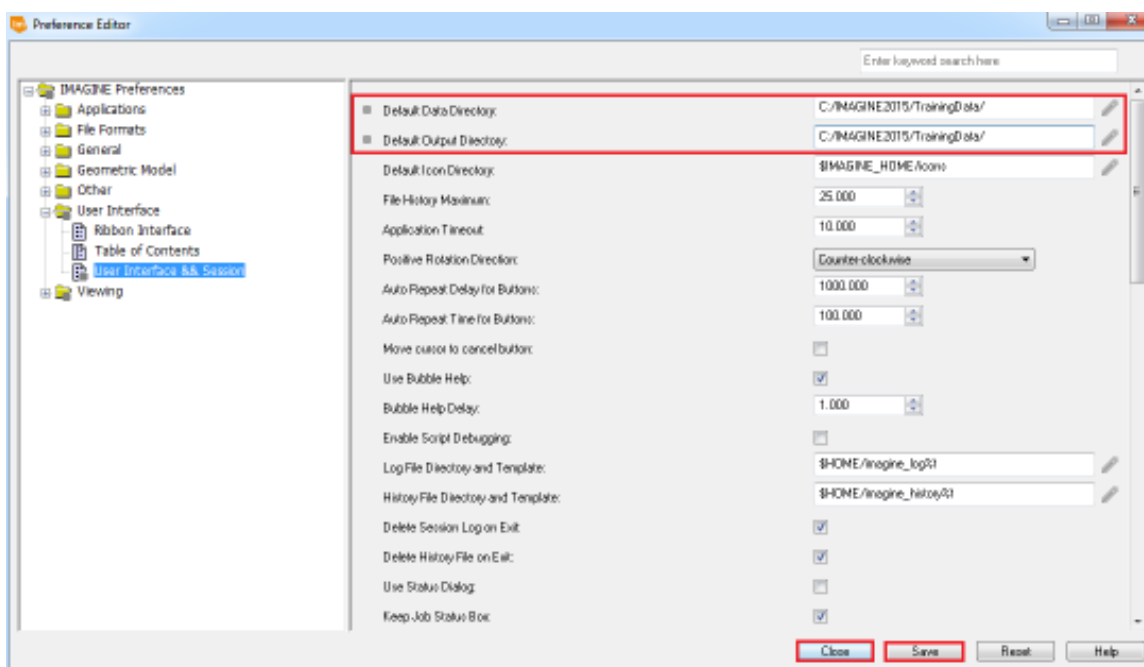
Where are the preferences saved?

Task 2: Displaying an Image

The eWorkspace Viewer is a self-contained data viewing environment, capable of displaying multiple linked geospatial views. Within the GUI, commonly used exploitation tools are available to the user as icons without the need to navigate through multiple menu choices. The analyst is not limited to simple image exploitation routines, but can also access functionality for vector GIS integration, image segmentation and categorization, map composition, change detection, geographic overlays and annotation.

1. From the eWorkspace, click File > **Open > Raster Layer**. The select Layer to Add dialog displays, this dialog is used throughout ERDAS IMAGINE.

2. Change the **Files of type** to **All File-based Raster Formats**

   The ⊞ icon next to the drop-down menu allows you to save the default data format type.

3. In the course dataset directory, locate and click once on the dataset *landsat8_melbourne.ecw*. Do not click OK.
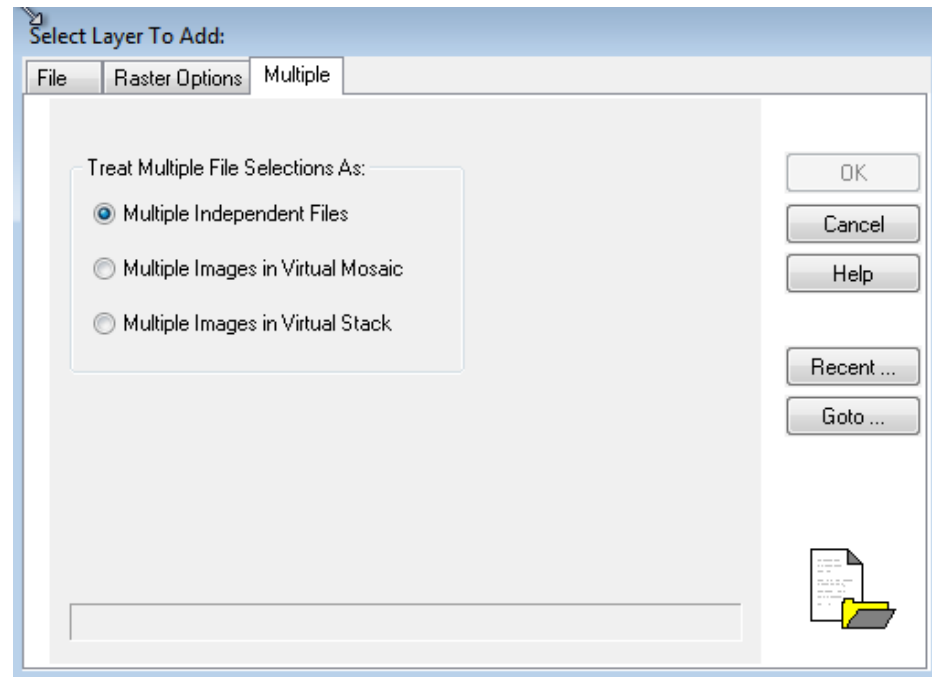
4. Click the **Raster Options** tab
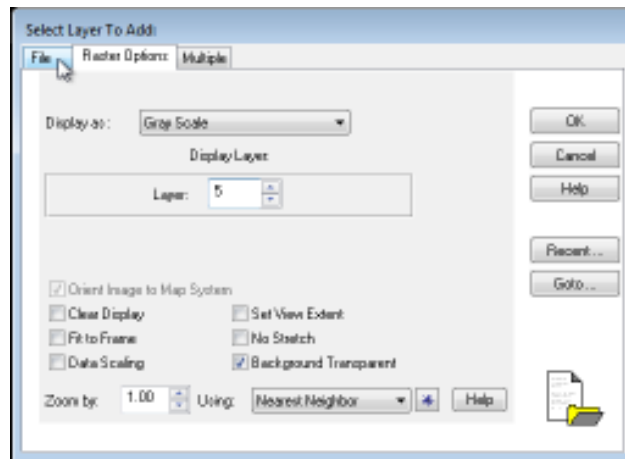
Raster layers can either be raw/multiple layer **Continuous Data**, single layer Panchromatic **Continuous Data**, or categorical/single layer **thematic data**

True Colour	Simultaneously displays continuous layers (or bands). Each layer is associated with the Red, Green, Blue colour guns of the monitor. The intensity of each colour is controlled by the values in each layer.
Pseudo Colour	Displays thematic images (classified) by associating each class value with a colour; single layer.
Grayscale	Displays one continuous layer (band). The band values are associated with a grayscale. Low values = dark; High values = bright.
Relief	Used to display elevation data. Requires extreme variations in pixel values.

5. From the Display As list select **Gray Scale**

Depending on the raster dataset type we can open as True Color, Pseudo Color, Greyscale or Relief

6. From the Display Layer Select **Layer 5**. This will open Band 5 as a single Grey Scale band.

7. Click the **Multiple** File tab to examine the options for bringing multiple files in a single viewer

Multiple Independent Files	Brings in files, individually, as separate layers that can be arranged or deleted separately from the other files in the Viewer.
Multiple Images in Virtual Mosaic	Individual files are treated as a single logical file (or layer) in a single Viewer. Contrast options apply to all images in the Viewer.
Multiple Images in Virtual Stack	Allows you to bring in separate multispectral bands (i.e. LANDSAT 7 TM) without requiring you to have one image with multiple bands. With this option, the separate files can be selected and ERDAS IMAGINE will dynamically combine them in the view pane so that they can be manipulated as one single image.

8. Click **OK** to open the image

The Landsat-8 image will open in the IMAGINE 2D View
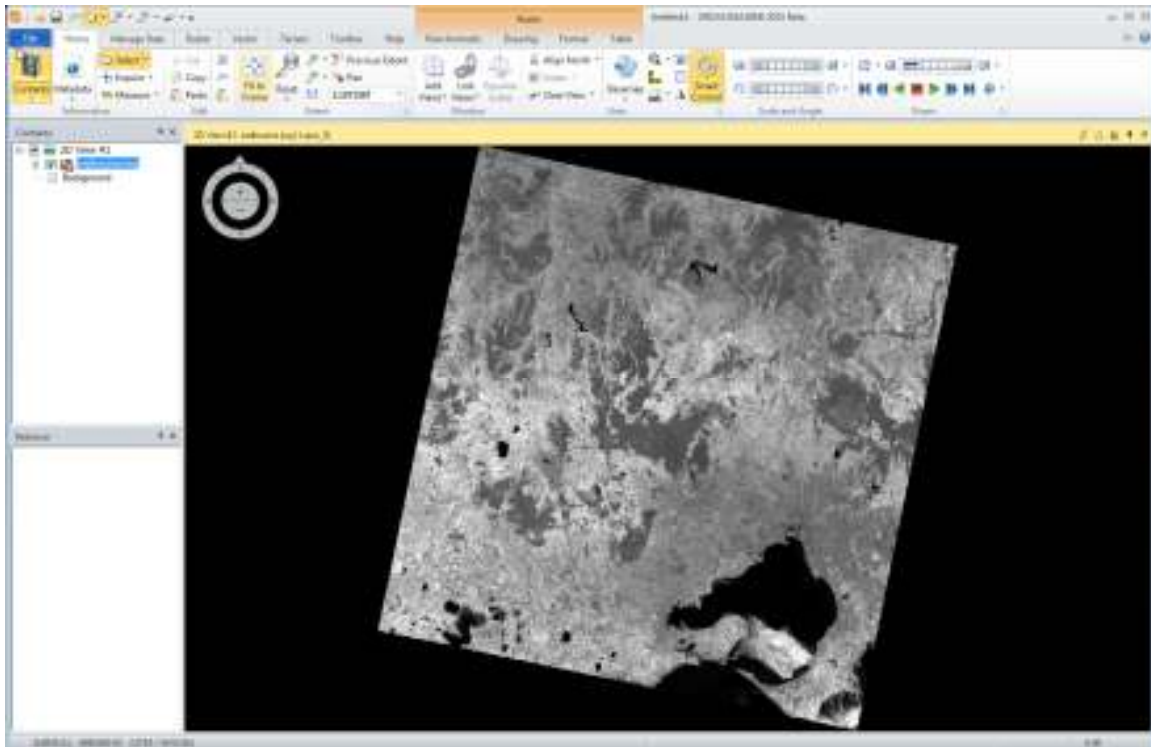
9. From the Home tab, click **Fit to Frame**

The extents of the image will fill the frame of the 2D View

> *You can also right-click anywhere in the 2D View and select Fit to Frame or right-click on the dataset in the contents pane and select Fit layer to Window.*

10. To zoom into the image, position the cursor over the area you want to zoom in on and scroll the mouse wheel up.

11. To zoom out, scroll the mouse wheel down.

12. Use the **Interactive Zoom In** and **Interactive Zoom Out** tools on the **Home Tab** to draw a box around the areas you want to view.

HEXAGON
GEOSPATIAL

> *Additional Zooming tools are contained in the Zoom Tools menu. To access them, click the menu arrow* ⬛ *and then select the tools you would like from the menu*

13. Click the **Previous Extent** Button 🔍 Previous Extent

> This icon will step you backwards to the last zoom level. You may undo all the way to the original zoom level used when images were opened.

14. From the **Scale and Angle** group, use the **thumbwheel** to zoom out and back into the image.

15. In the **Extent** group on the **Home** Tab, click on the pull-down arrow and select a scale of **1:250,000**.
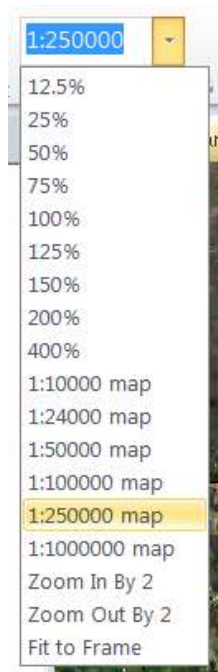
16. In the Viewer hold the **middle mouse button down** (usually the wheel) and pan through the image.

17. From the **Home** tab, **Extent** group, click the **Pan** Button. Notice the pointer

    changes to a hand in the Viewer

18. Click in the Viewer while Pan Mode is active. This will change the icon to the

    interactive roam icon: 4 arrows

19. Using the Virtual Roam capabilities of ERDAS IMAGINE, roam across the image by moving the mouse in the direction or your choice

20. To end virtual roaming, **left click** in the viewer

21. To terminate the pan mode click the **Select** tool   from the Home Tab

22. Leave the *landsat8_melbourne.ecw* image open in the 2D View

Task 3: Opening Vector Data

We can also open vector datasets in ERDAS IMAGINE by going to File > Open Vector or by using the Open Layer tool and selecting the appropriate vector file format

1. From the eWorkslapce, click **File** > **Open** > **Vector Layer**. The select Layer to Add dialog displays, this dialog is used throughout ERDAS IMAGINE.

2. From the *Files of Type* List, select **Shapefile (*.shp).**

3. Navigate to the data directory

4. Holding the **Shift** key, select the following datasets. Then click OK

.

   - TR_RAIL.shp

   - TR_RAIL_INFRASTRUCTURE.shp

   *- TR_ROAD.shp*

   - EXTRACT_POLYGON.shp

You can use either ctrl or shift key to select multiple datasets.

5. Right-click on any of the vector datasets in the Contents pane and choose Fit Layer to Window. This will fit the selected vector to the size of the viewer.

You will notice that the spatial resolution of the Landsat data is too course to use with these vectors. We will now open a finer resolution WorldView dataset over the top.

6. Right click in the 2D View and select **Open Raster Layer.**

7. Navigate to the data directory and click once on ***Pleiades_Melbourne_msi.ecw***

8. From the Raster Options tab, change the Display as option is set as True Color.

9. Confirm the Layers to Colors (Band Combination) option is set to **3,2,1.**
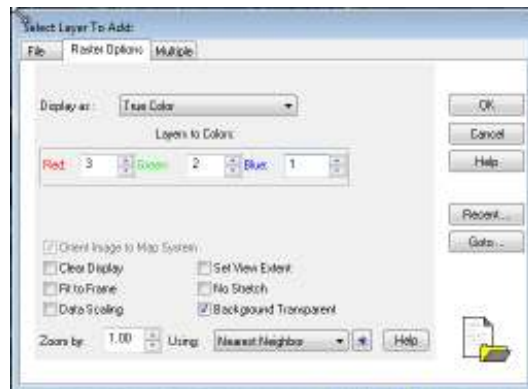
10. Click **OK**

The image has opened over the top of our vectors, we will now rearrange the order of our datasets so the vectors appear on top of the Pleiades image.

11. From the contents panel, click the ***Pleiades_Melbourne_msi.ecw*** image and drag it just above the ***Landsat8_Melbourne.ecw*** dataset.

12. Assess the vectors to see how well they line up with the Pleiades dataset. Some of the vectors may be displaced. Why?
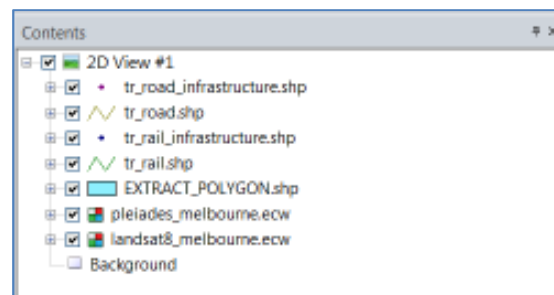

13. Leave all datasets open for the next task.

Task 4: Opening Multiple Views

We can display multiple views in ERDAS IMAGINE which can assist in comparing different datasets. Additionally we can link views together so the view and scale of each image remains the same.

1. In the **Window** group on the **Home** tab, click the **Add Views** button. Select **Display Two Views** from the Add Views menu. This open a second View within the eWorkspace.
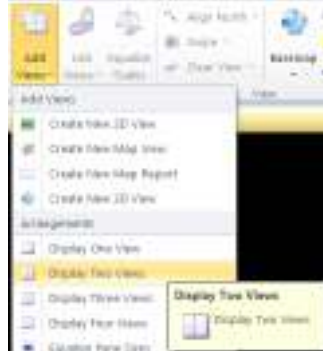
2. Select **View #2** by clicking inside the View, or by clicking on 2D View #2 in the Contents panel.

3. Go to **File > Open > Raster Layer** and navigate to your data directory. Open *Pleiades_Melbourne_pan.ecw*

4. As we haven't selected a band combination, which band has opened by default?

5. Open a third view by going to **Add Views > Create New 2D View**.

6. With **2D View #3** selected go to **File > Open > Raster Layer**, navigate to your data directory. Select *Pleiades_Melbourne_msi.ecw.*

7. Click the **Raster Options** tab and *display as* **Grayscale**. Select band 2.

Do the Grayscale images in 2D View #2 and 2D View #3 look different?

8. Close **2D View #3**

9. Leave both datasets open for the next exercise.

Task 5: Linking Views

We will now look at a number of ways to link the 2D views together. ERDAS IMAGINE provides three ways to link views together Lock, Link and Equalize.

1. Ensure you have *pleiades_melbourne_msi.ecw* in **2DView #**1 *and pleiades_melbourne_ pan.ecw* in **2DView #2**

2. On the top right frame of 2D View #1 click the **Lock** Symbol

3. In 2D View #1 Click and drag around the image using your middle mouse button (wheel). Notice how 2D View #2 follows.

4. Select 2D View #2 to highlight and set as the active view. Then from the top right frame of 2D View #1 click the Link Symbol.

5. You will notice a box appear in 2D View #1.

6. Click near the edge of the box and drag it around the image. Notice how 2D View #1 follows.

7. Click on the edge of the box and drag the handles around. This changes the zoom extent of the linked window.
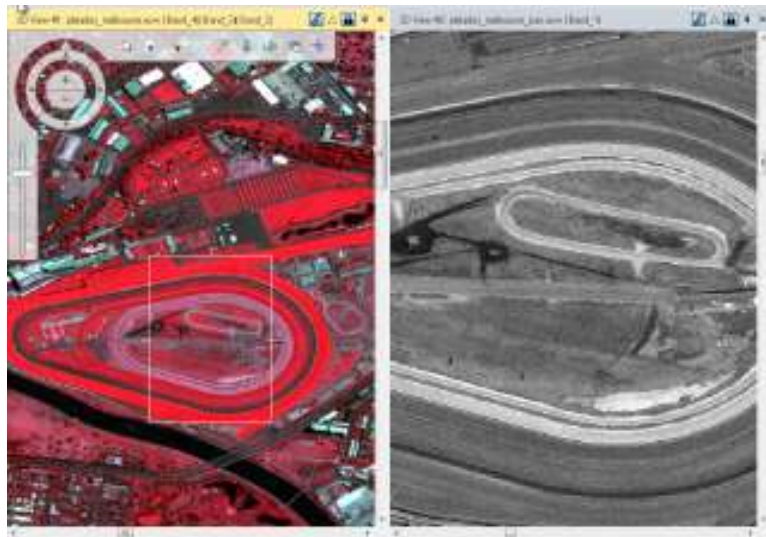
8. From the Home tab, window group. Click **Equalize Scales**

9. The scale of both images are now matched. Navigate around either image, you will notice that the scales of both images will remain the same.
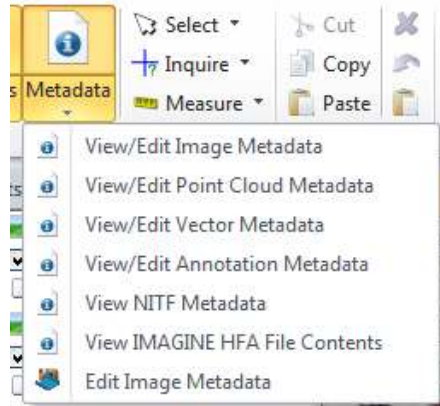

10. Leave the images open for the next exercise.

Task 6: Viewing Metadata

We will now look at how to view metadata in ERDAS IMAGINE.

1. With the **pleaides_melbourne_msi.ecw** image selected in 2D View #1. Click the metadata group and select View/Edit Image Metadata.

The Image Metadata Dialog information window will appear

2. Right-click on the **pleaides_melbourne_pan.ecw** image in 2D View #2 and select Metadata.
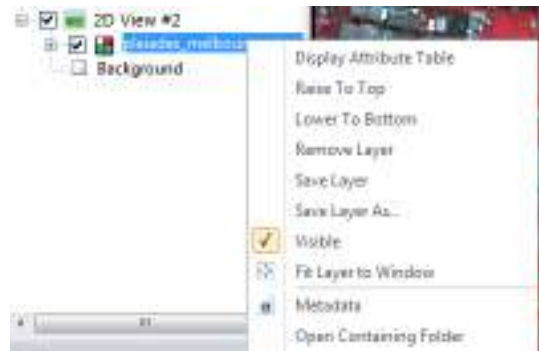
3. Arrange both metadata windows side by side so you can compare the metadata of both datasets.

4. Compare the metadata of both images.

5. From the Map Info (Pixel Centre Group). Change the units from DD to Meters.
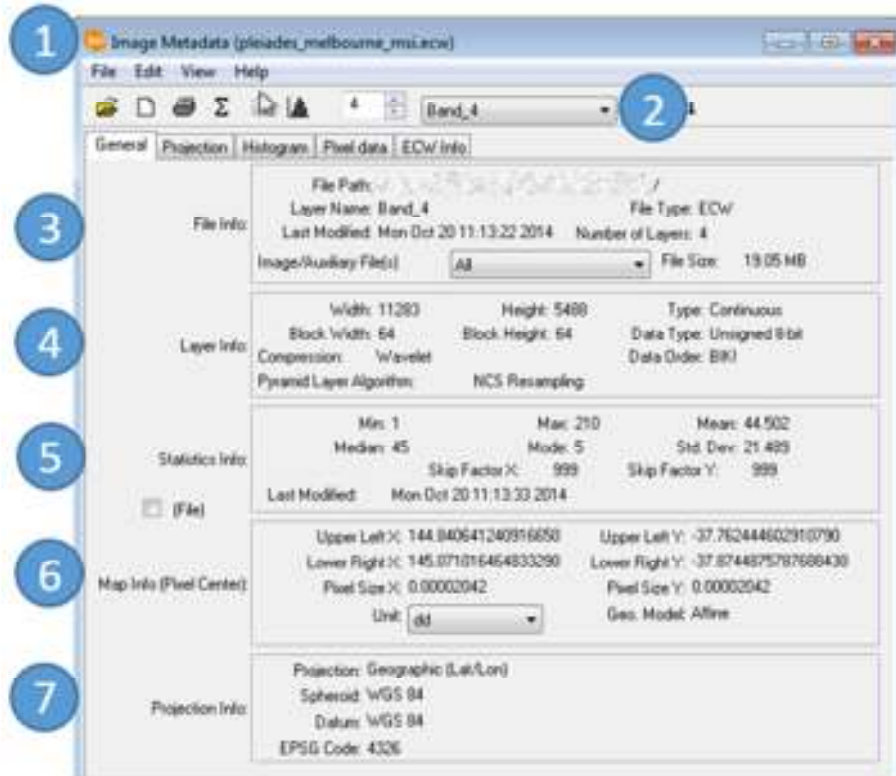
6. Close the Image Metadata Window.

What is the difference in spatial resolution (pixel size) between the two images?

What is the projection for these images?

How many layers are in each image?

7. **Close 2D View #2**.

8. **Leave 2D View #1 as is for the next task**.

| 1) File Name	The current selected dataset.
2) Band number	The current band for which the metadata is displayed.
3) File Info	Shows basic information about the entire file. The fine name displays in parentheses next to the dialog title/
4) Layer Info	Show information about the current layer.
5) Statistics Info	This group is based on the statistics that are calculated from the file pixel vales of the pixels in the layer. This information can be created or edited by selecting Edit > Compute Pyramid Layers/Statistics in the menu bar.

6) Map Info (Pixel Centre)	Shows information about the map system associated with a layer. The way this information is viewed is based on the status of the checkbox.
7) Projection Info	Shows map projection used on the file. If the file is not georeferenced, then these fields are disabled.

Task 7: Connecting to Basemaps

ERDAS IMAGINE includes a number of predefined basemaps which can be used to further understand the context of your data.

1. From the Home Tab click **Basemap > Open Street Maps**.

Note – You will need an active internet connection to connect to the Basemaps
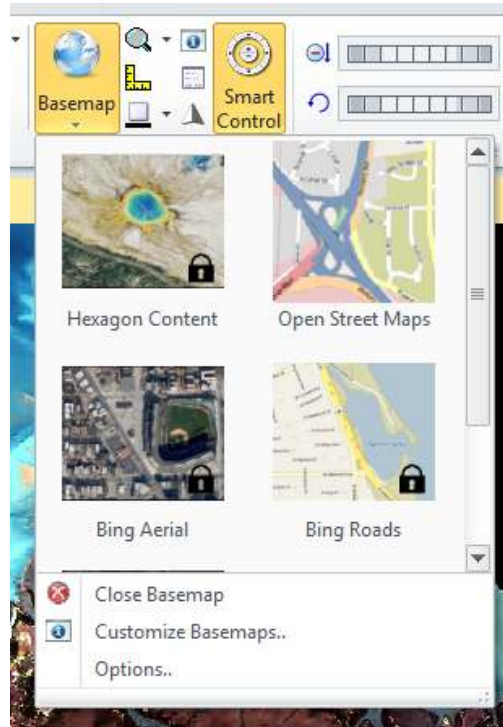
We can select a range of different Basemaps. For this exercise we will use the Open Street Maps Basemap which doesn't require any login credentials.

2. Zoom to some of the linear vector data features and assess how well these lineup to the Open Street Maps service.

3. Remove the **Open Street Maps** layer by right-clicking it from the Contents menu and selecting **Remove Layer**.

4. From the Quick access tool bar, click the **Clear View** tool to remove all datasets from the 2D View.

Class Notes

Class Notes