How to Measure Size and Distance using LT Image

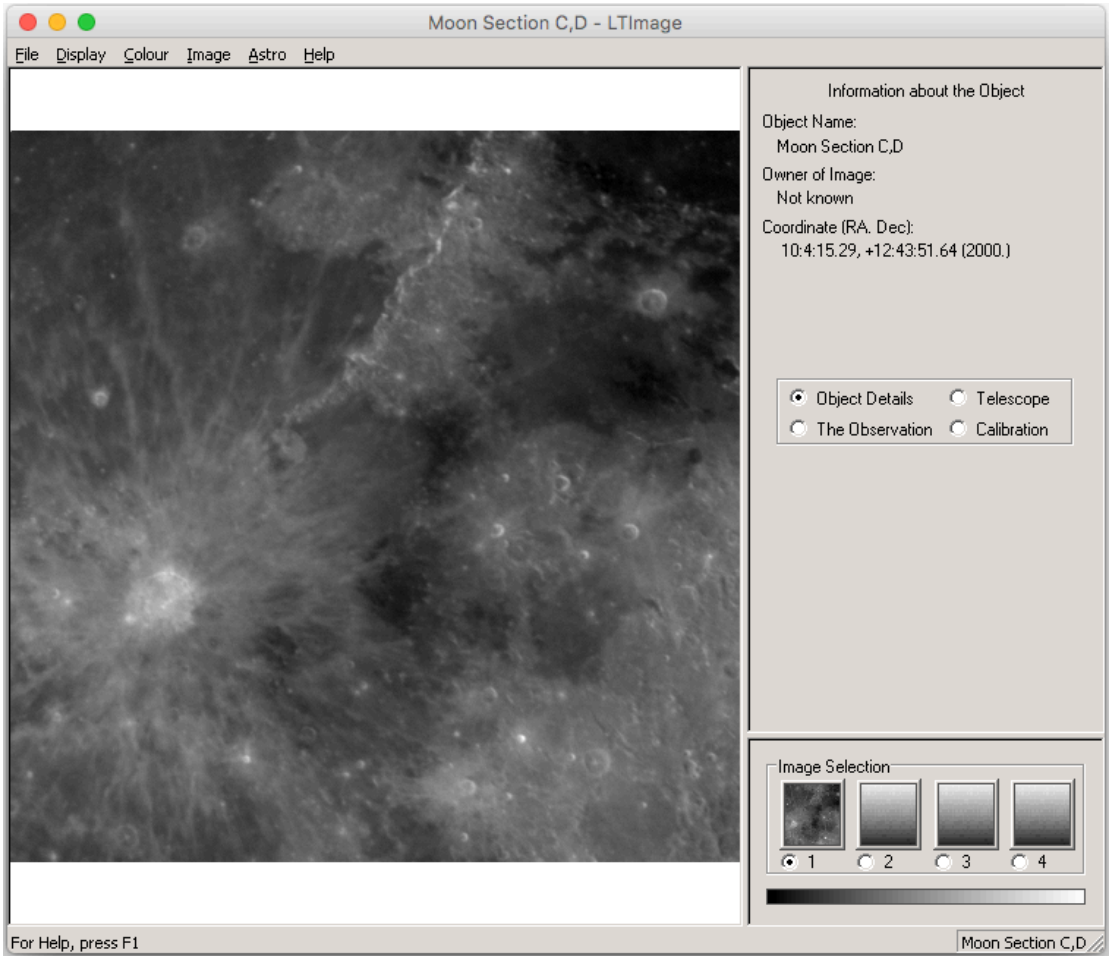
The .fits file you receive back from the Liverpool Telescope contains a great deal of hidden data. LT Image allows you to access this hidden data and use it to perform various calculations, such as measuring sizes and distances.

Stages:

1. Open the image properties
2. Open size and distance
3. Measure your distance in pixels
4. Use the calibration data to convert your pixel measurement

1. Open the Image Properties

Once you have opened and scaled your image, select 'Astro' from the menu at the top of the LT Image window, followed by 'Image Properties'.



This will then display various pieces of data on the right hand side of the screen, together with 4 sub-menus, each containing further data.

'Object Details' tells us the name of the object, who requested the image and where the object is in the night sky, using the right ascension and declination coordinate system.

'Telescope' tells us the name of the telescope that took the image, where the telescope is on Earth and some weather details for when the image was taken.

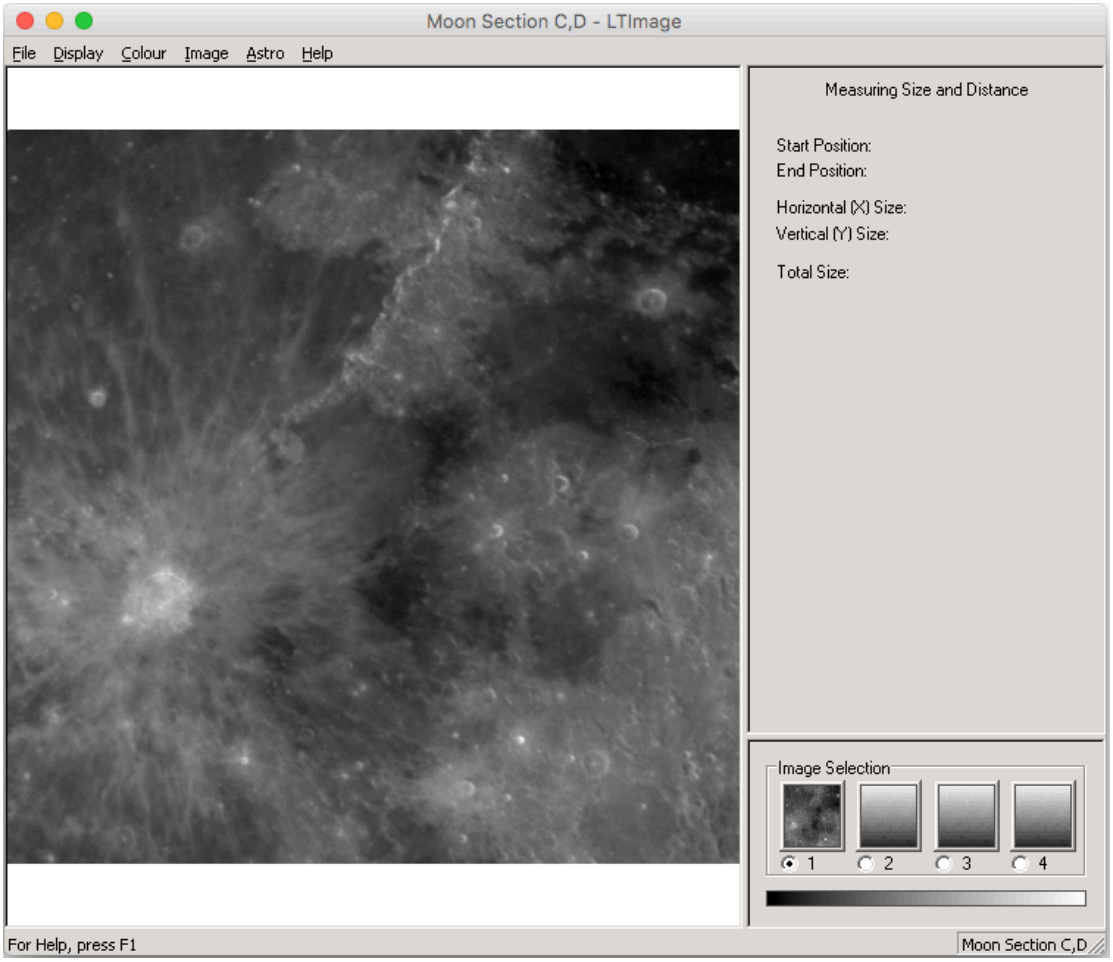
'The Observation' tells us when the observation was made, what the exposure time was, which filter was used and what the size of the image is.

'Calibration' tells us how far away the object was from the telescope, what the pixel size is in arcseconds per pixel and how many kilometres each pixel represents at the object we're looking at.

2. Open Size and Distance

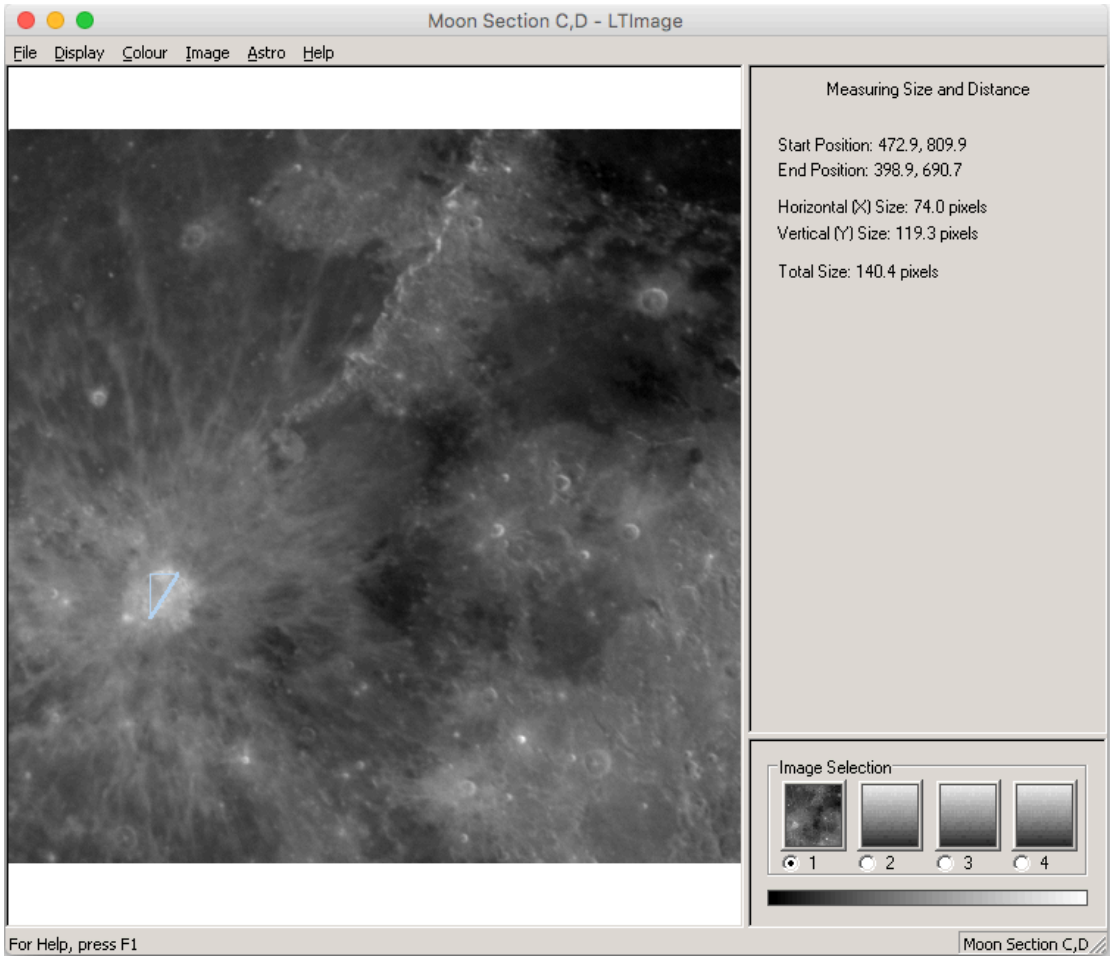
The data from the 'Calibration' menu allows us to take various measurements using LT Image.

Select 'Astro' from the menu at the top of the LT Image window, and then select 'Size and Distance'.



3. Measure Your Distance in Pixels

To measure distance we first need to measure the distance between our two points in pixels. Using the left mouse button, click and hold at one point and drag and then release the mouse button at the other point. You will then notice your results on the right hand side of the screen.



Above, you can see I am measuring the width of a crater on the surface of the Moon. The result is 140.4 pixels.

4. Use the Calibration Data to Convert Your Pixel Measurement

From step 1 we know the distance that each pixel represents, it is therefore a straightforward task of multiplying this value by the number of pixels measured in step 3, to calculate the distance.