# 3-COLOUR IMAGES

The colour images you see taken of distant objects in the night sky are in fact a combination of 3 images, each taken through a different filter. We combine red, green and blue observations to produce one beautiful colour image. The activity below will take you through the steps needed to make your own Whirlpool Galaxy, also known as Messier 51 or M51.

ACTIVITY 1: LOADING THE IMAGES

1 If you haven't already done so, download LTImage for free from:
www.schoolsobservatory.org/obs/software/ltimage

2 Extract the files and double click on 'LTImage.exe' to launch the software.

3 Go to our website: www.schoolsobservatory.org/discover/activities/3_colour_imaging and download three of the data files, e.g. 'M51_red.fits', 'M51_green.fits' and 'M51_blue.fits'.

4 In LTImage click on 'File', then 'Open Data Image', find the location of the saved files from step 3 and click on the 'red' data file, then click 'Open'.

5 Click on Image Selection 2 in the bottom right corner.

Click on 'File', then 'Open Data Image', and click on 'green', data file, then click 'Open'.
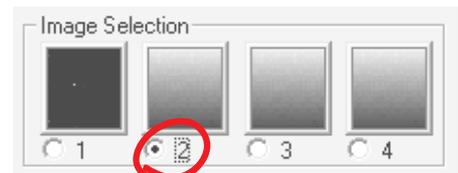
6 Click on Image Selection 3 in the bottom right corner.

Click on 'File', then 'Open Data Image', and click on 'blue', data file, then click 'Open'.

You should now have three images loaded into 1, 2 and 3. It does not matter what they look like, as you will be working on that later.

ACTIVITY 2: CREATING THE 3-COLOUR IMAGE

1 Click on Image Selection 4 in the bottom right corner.
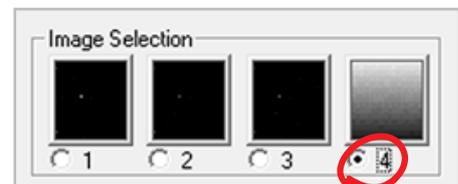
2 Click on 'Colour' in the main menu, then click '3-Colour Image'.

Then, to get everything setup and ready, click on the 'Make new image' button at the top of the tool. This will make a first-guess version of the 3-colour image and display it in the main image panel. Don't worry if this looks very dark - it will often just show black with perhaps a couple of small 'dots', but this is quite normal at this stage.

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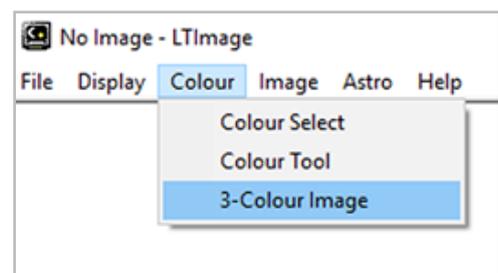
3 You now need to select 'Pixel values' to bring out the stars and colourful regions of the image.

About half-way down the panel on the right side of the window, you will find a line that says 'Colour from: X to Y' (your numbers will be different depending on which files you have loaded).

Reduce 'Y' (the larger number) by a factor of 10, e.g. if it was '20000' reduce it to '2000', then click 'Make new image' at the top.

4 Repeat step 3 for the 'Green' and 'Blue' sections in the 'Working Colour' area of the panel.

It is worth playing around a bit with these values to bring out exactly what you want. Don't forget that you can use the Display menu tools to Zoom in and out on the main picture, and the 'Zoom Preview' to explore in detail.
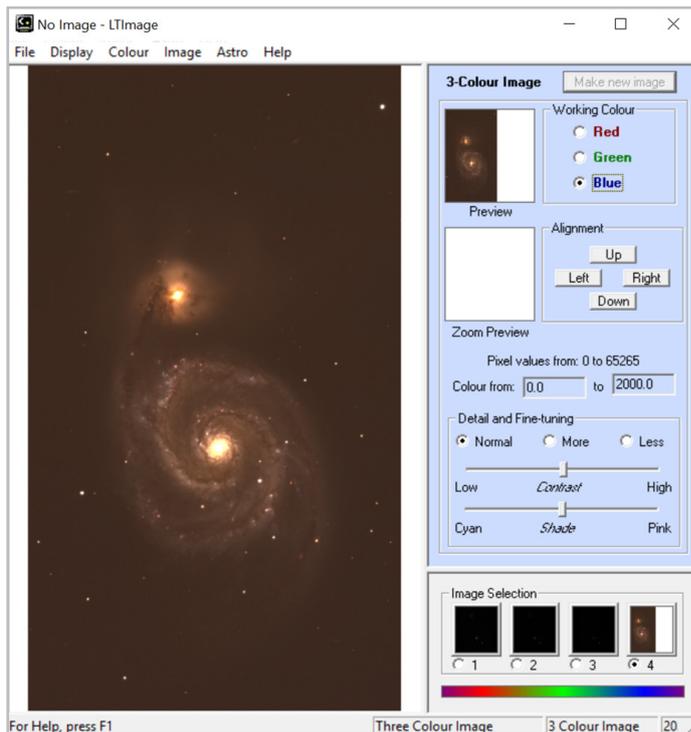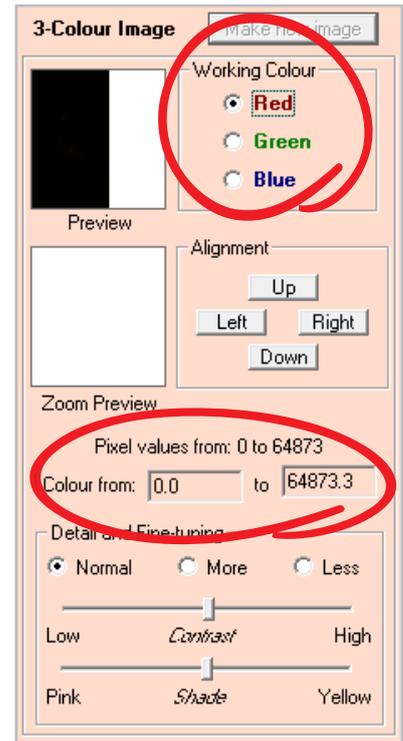
Here you can see an example finished image, but I am sure you can do better. Try and get the background to be as black as possible and the stars white.

Share your images with us on social media using the #ShowTheNSO.

5 When you have an image that you like, you can save it to your computer. Click 'File', then click 'Save picture'. Choose a location on your computer and give your file a suitable 'File name', then click 'Save'.

6 These instructions are a simplified version of the full activity on our website, you can find more detailed instructions here:
www.schoolsobservatory.org/discover/activities/3_colour_imaging

LIVERPOOL JOHN MOORES UNIVERSITY

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