



Las Cumbres Observatory Global Telescope

# Colour Imaging

## Making Colour Images with The GIMP



FAULKES TELESCOPE

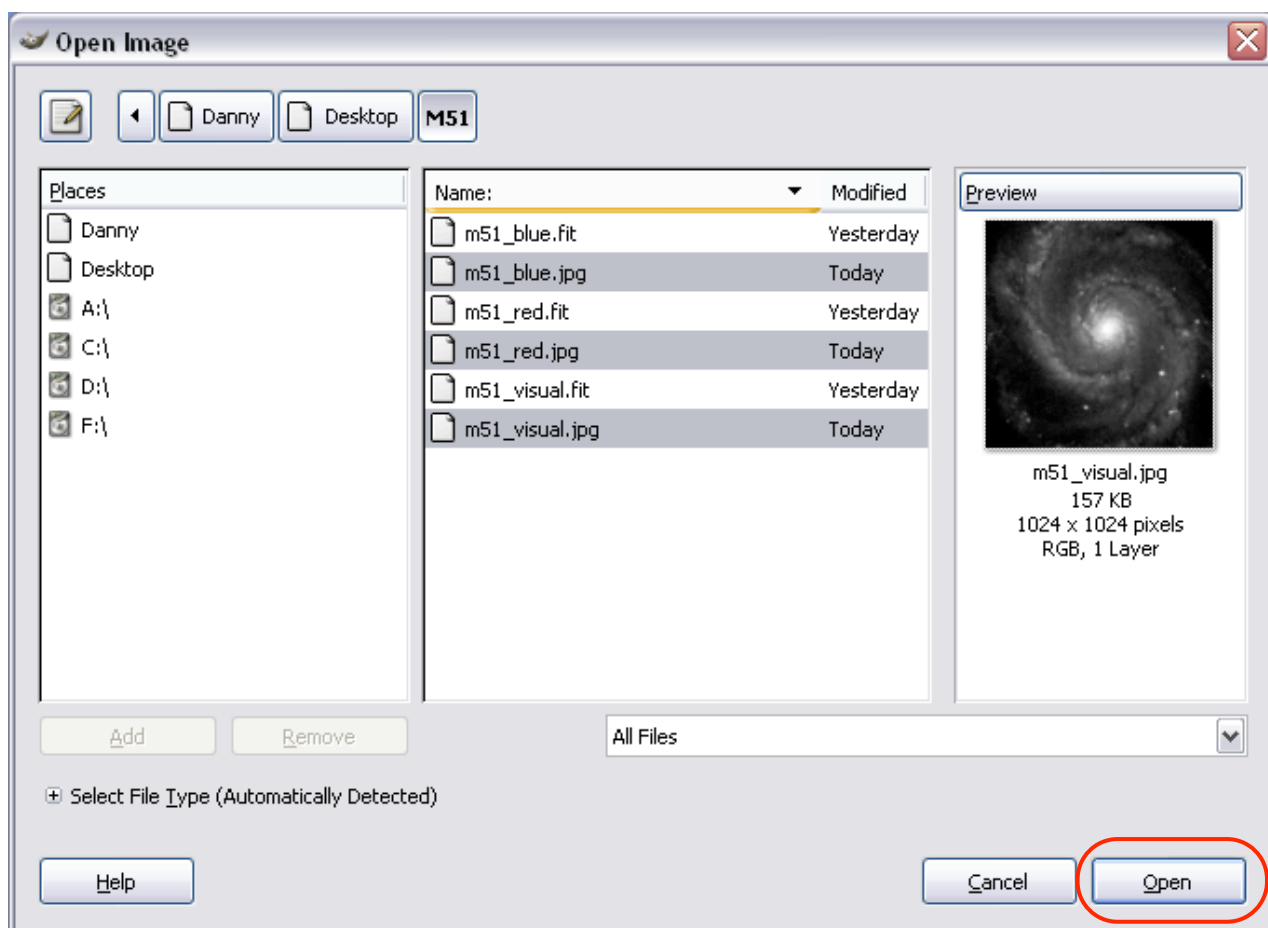
*Author: Daniel Duggan*

# Colour Imaging

## Making Colour Images with The GIMP

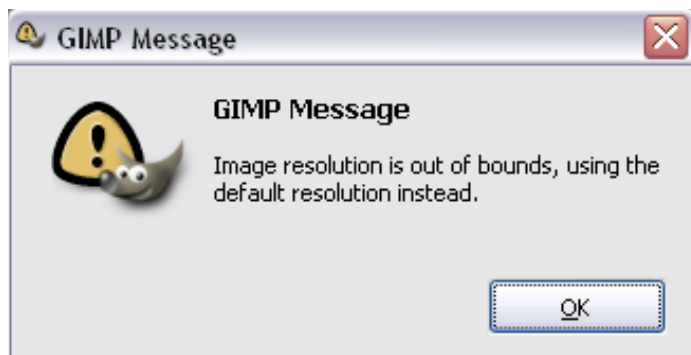
### Load your JPEGs

To load your three JPEG files in The GIMP, go to **File>Open** or use **Ctrl+O**. Navigate to the folder on your computer with the JPEG files.



You can use the **Ctrl** key when selecting your files, and select them all at once. Then click the **Open** button.

**Please Note:** When selecting your files, you may get an error message appear like the one below.



This message can be safely ignored as it does not effect your files in any noticeable way, so just click OK each time you see it.

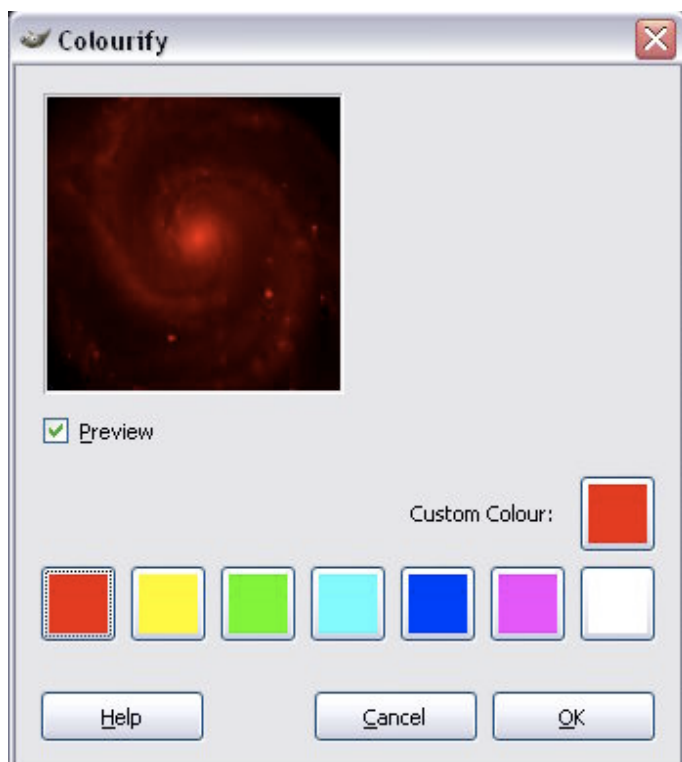
When your images load, they open in separate windows. It makes working easier if you arrange your images across your monitor without maximising each window.

## Adding Colour

What you are looking at in these images is the intensity of light from the object your observed, but no actual colour information.

We can add colour to the images very easily - first find and select your red image; and go to **Filters>Colours>Colourify**.

You will now see a window appear with coloured thumbnails.



Because this is the red image - click on the **red thumbnail** on the left hand side.

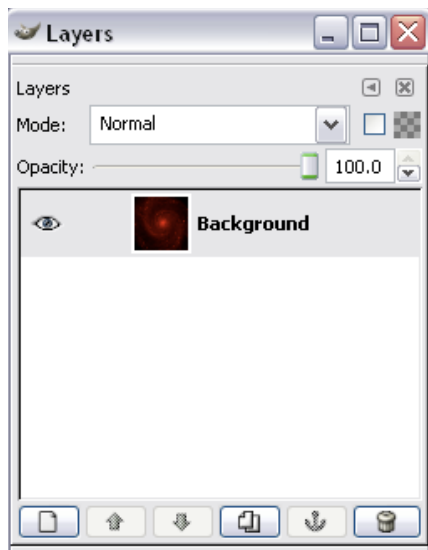
The preview of the image will turn from black & white to red - now click **OK**.

It will then apply the colour to your image.

Now do the same for your visual and blue images, but use the **green** and **dark blue thumbnails** respectively.

## Combining Images

Now that colour has been added to the images, they can be combined to form a colour image.



First, you need to make sure you have the Layers window open. If it's not open, click on any of your three images and go to **Dialogues>Layers** or use **Ctrl+L**.

The small thumbnail will change colour depending on which image you have selected - in this example I had the red image selected.

Now - to combine the images, we simply have to copy and paste them on top of each other; and for this we shall use the red image as the base.

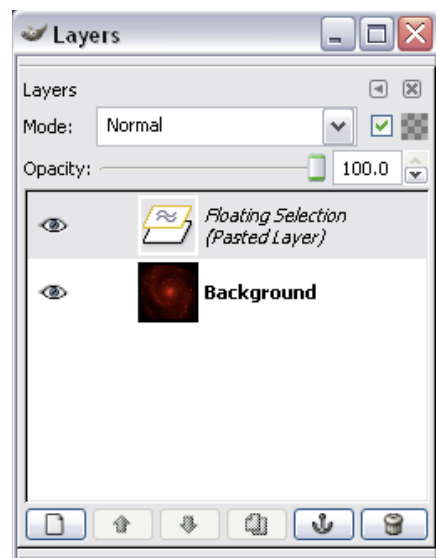
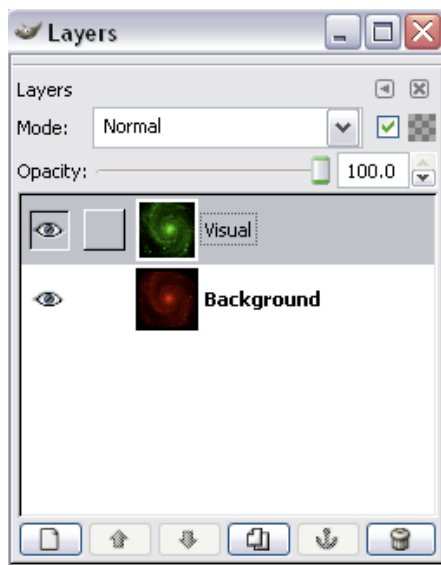
So click on your visual image. Go to **Select>All** or use **Ctrl+A**. Then **Edit>Copy** or **Ctrl+C**.

Now click on the red image again and go to **Edit>Paste** or **Ctrl+V**.

Go back to the layers window and you should see that a new layer has appeared, it should be called **Floating Selection** or **Pasted Layer**.

Double click over the text of that layer and you will get the option to rename it. Because this is the visual layer, type in **Visual** and press **Enter**.

The thumbnail will then change to assume a green preview.

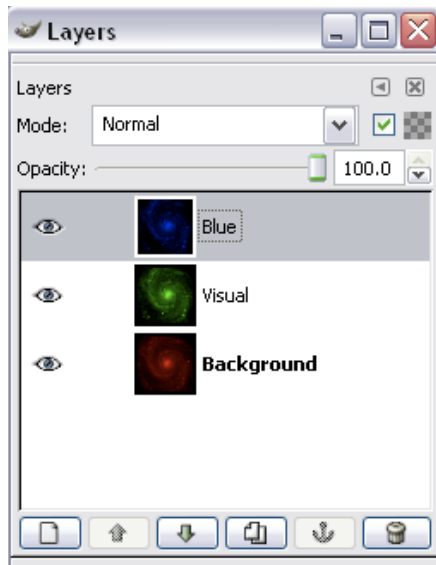


You no longer need the original visual image now, so close or minimise it to free up some space.

Next click on your blue image - **Select>All (Ctrl+A)** and **Edit>Copy (Ctrl+C)**.

Then go back to the red image with the visual image on top of it and go to **Edit>Paste (Ctrl+V)**.

Rename the new Floating Selection in the layers window to **Blue**, and close/minimise the original blue image.

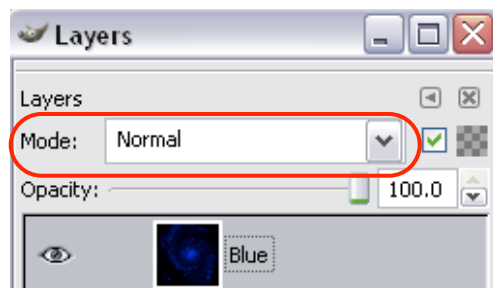


## Blending Mode

You now have your three images layered up, but your image still looks blue as it the top layer. It is like looking down at a sandwich and seeing the top slice of bread.

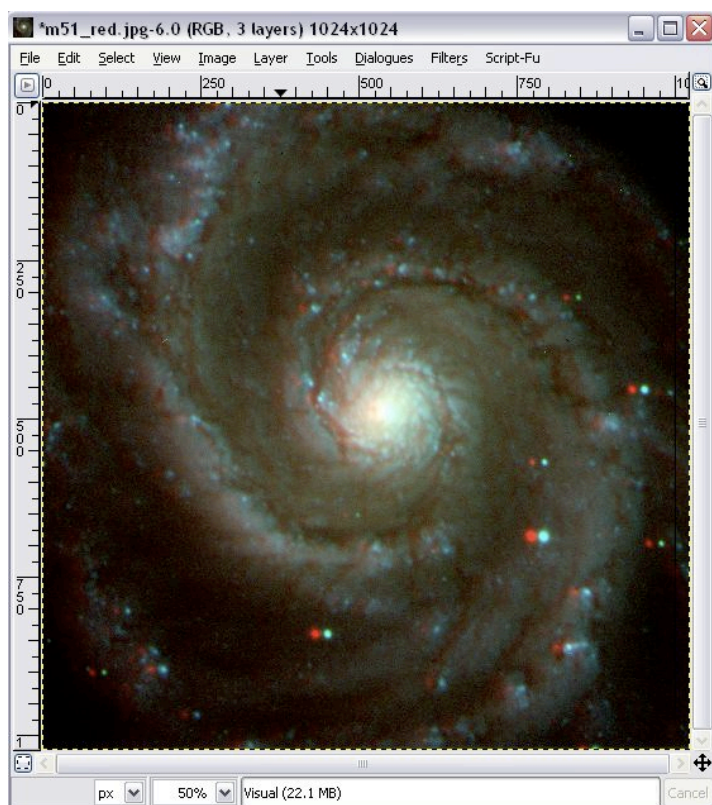
We can change the mode of the layers so we can effectively see through each of them - it has the effect of a projector with separate red, green and blue bulbs and projecting an image onto a surface.

The mode for each layer is in the layers window - a small drop down menu at the top.



Select the blue layer from the layers window, and change the blend mode from Normal to **Screen**. Now select the visual layer and change its mode to Screen.

You should now have a colour image which looks a little like the one below.



As you can see, the layers are not aligned - this does not make much of an attractive image - but we can correct this in the next section.

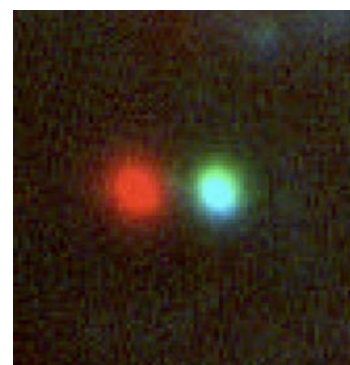
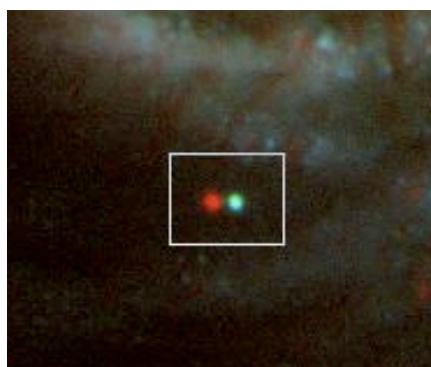
## Aligning Layers

To align the layers, zoom closely into a single star on the image.

Do this by selecting the **Zoom Tool** from the main GIMP window.



Now, click and drag a small square around the star you want to zoom into. Now you can clearly see how unaligned the layers are.



Now select the Move Tool from the main GIMP window.

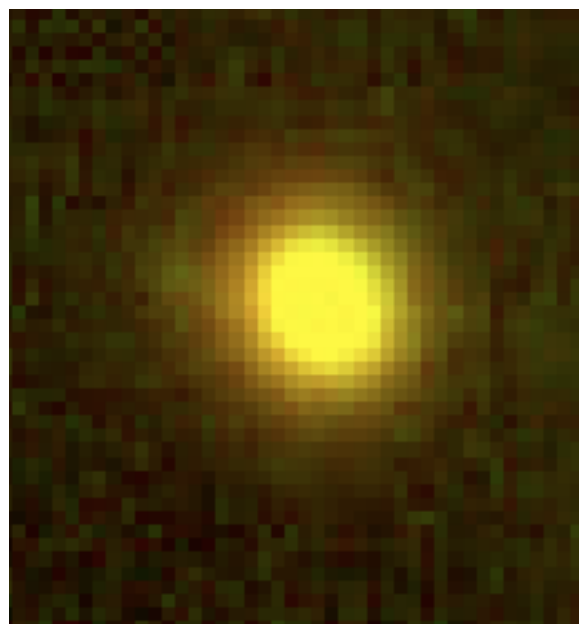
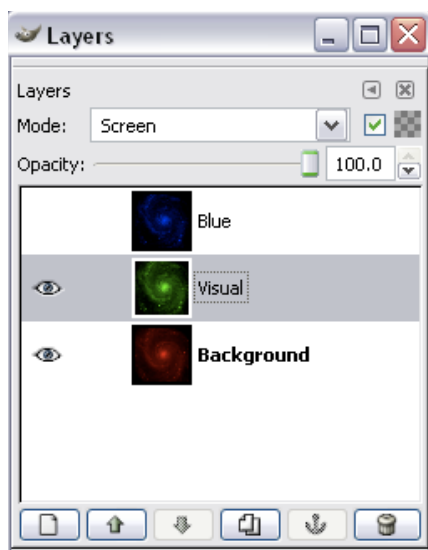


Juggling the layers and moving the correct ones are a little tricky here - because the red image is the background layer, it cannot be moved - so we shall use this as our reference.

We shall move the visual layer first, and to do this we need to make the blue layer invisible. Click on the small eye next to the blue layer in the layers window and the blue layer will disappear.

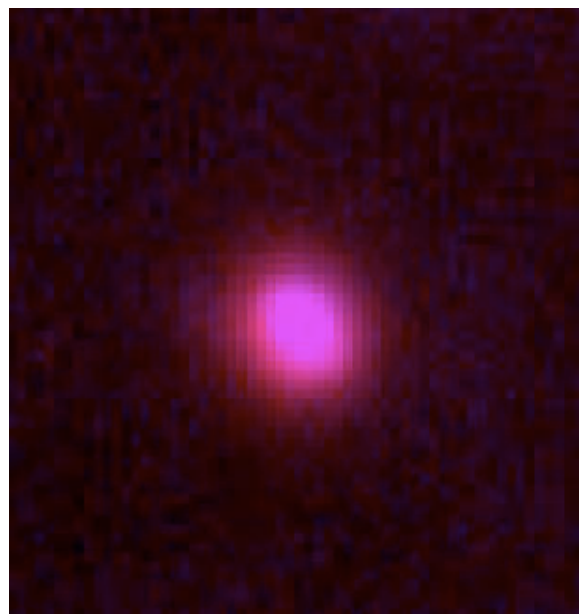
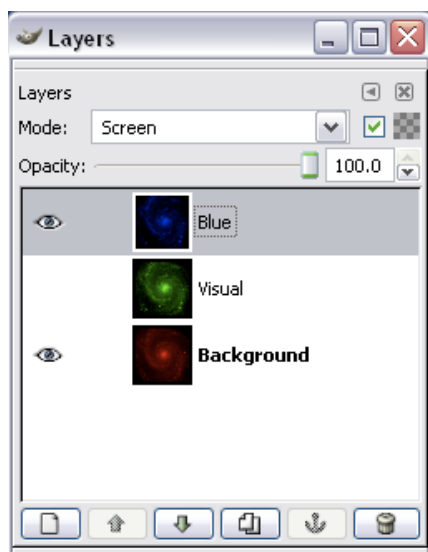
Click on the visual layer so that it is highlighted grey in the layers window. Now click on the image, you can now click and drag the visual layer - move it so that the two stars line up.

*Please Note:* You can also use the keyboard arrows for smaller movements.



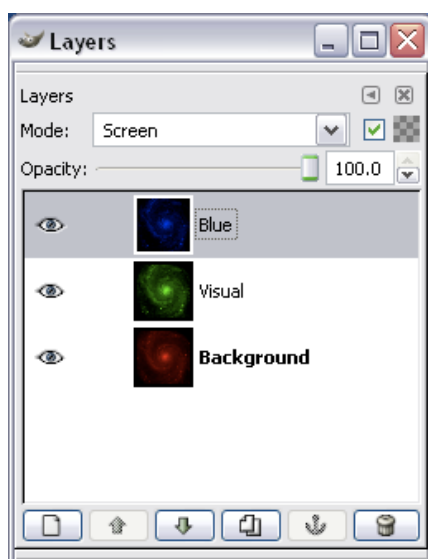
Now, to move the blue layer - make the visual layer invisible, and the blue layer visible again by toggling the eyes.

Click on the blue layer so that it is highlighted grey in the layers window and move the layer in the same way as before.

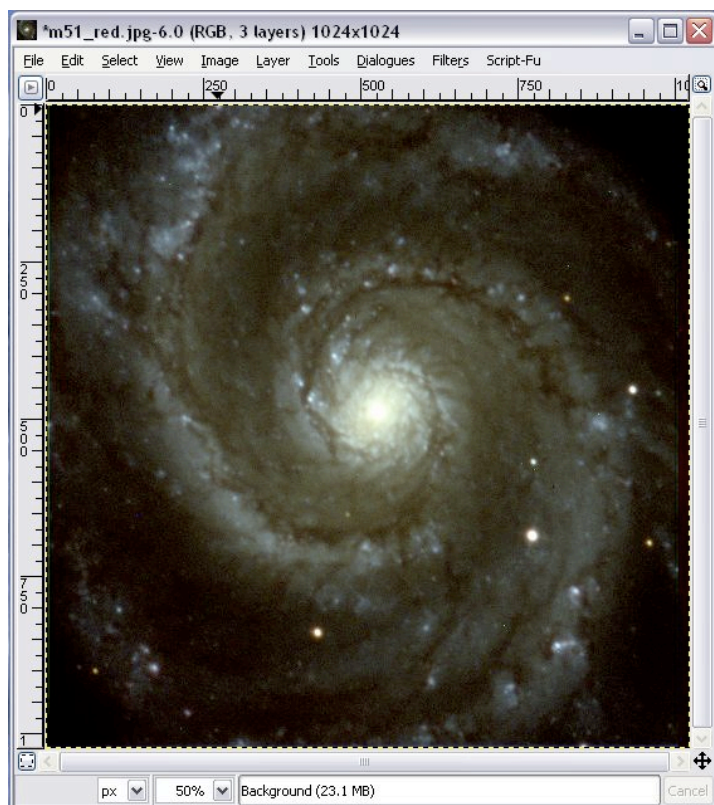




Now, when you finally make all layers visible again, you should have all the layers aligned and a nice white star.



Zoom back out so you can see the whole image by going to **View>Zoom>Fit Image in Window** or use **Shift+Ctrl+E**.



There are still many changes you can make to this image - for example this one looks a bit brown and murky.

This can be changed to make the galaxy look more blue (or whatever colour you would like it to look).

These techniques are not covered here however, for more information see the **Correcting Imperfections** section on the Faulkes Telescope Astronomical Imaging page.

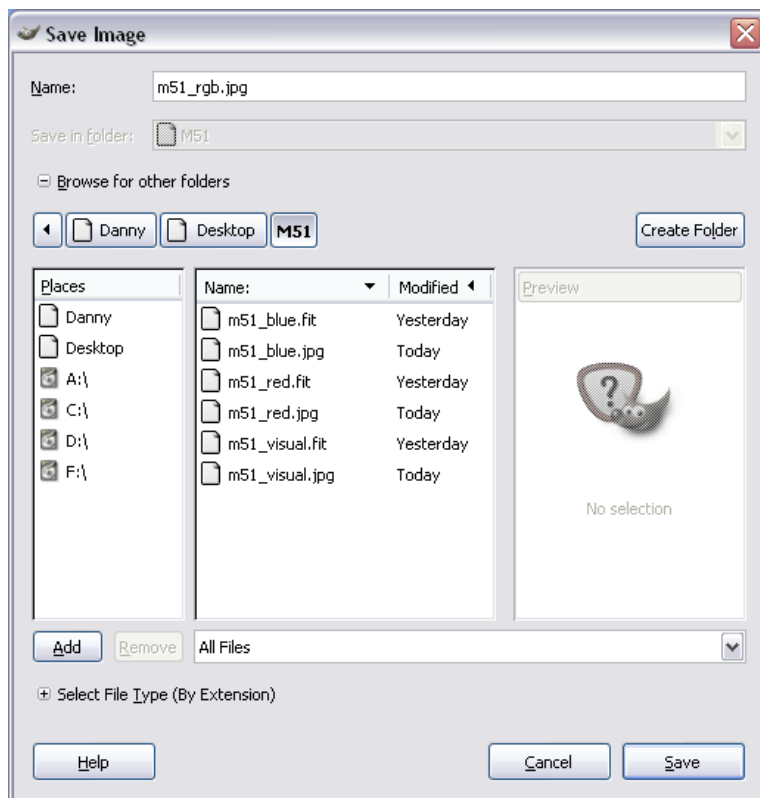
For now, we shall simply save the image...



## Saving Your Image

First, you should flatten your image - **Image>Flatten Image**. This will merge the three separate red, visual and blue layers into a single layer.

**Please Note:** Ensure you have fully aligned your layers, as this action cannot be undone and prevents you from doing this later.



Now go to **File>Save As** or **Shift+Ctrl+S**.

Navigate to the folder you want to save the image in, click the small + next to **Browse for other folders**.

Type in an appropriate name, such as, **m51\_rgb.jpg**

Now click **Save**.

You may now get another window appear with a **Quality** option - anything between **85-100%**.

Choosing a lower quality will obviously reduce the quality of your image but will create smaller files. Click **OK** to save your image.

