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Three-Color Images

Part 1:

1. Go to this website: Image Channel Splitter (RGB) | AAT Bioquest
2. Upload a selfie. Your selfie must include you holding red, green, and blue colored pencils.
3. Click the different color channels on the left side to see how a color image is made.

Question 1: Explain what you discover.

Question 2: If you were observing something through haze, which color channel would provide the most clear image? Explain your reasoning.

Part 2:

1. Go to IRSA Viewer and click FinderChart. Type in the name of the object you wish to look-up, and click the blue "Search" button at the bottom of the screen.
2. You will see a variety of images in rows. The letters on the left side indicate the observatory or sky-survey that imaged your target. Use the internet to look up the following:

   Question 3:
   What does DSS stand for, when was the data collected and what type of light does it detect?
   What does SDSS stand for, from which part of the sky was the data collected and what type of light does it detect?
   What does 2MASS stand for, what did it survey, when was the data collected and what type of light does it detect?
   What does WISE stand for, when was it launched, what data does it collect/what type of light does it detect?
   What is Spitzer, when was it launched and what type of data does it collect/what type of light does it detect?
   What is Akari, what space agency launched it and what type of data does it collect/what type of light does it detect?

3. Click the button with the three colored dots near the top of the screen. Use the hammer/wrench button to save each color image as a PNG and then insert them in the correct row.

DSS	
SDSS	
2MASS	

WISE	
Spitzer	
Akari	

For each of the color images you have inserted - here are the wavelengths that the colors stand for:

survey	red	green	blue
DSS	DSS 2 IR	DSS 1 red	DSS 1 Blue
SDSS	z (0.9 um)	g (430 nm)	u (354 nm)
2MASS	K (2.2 um)	H (1.65 um)	J (1.25 um)
WISE	W4 (22 um)	W2 (4.6 um)	W1 (3.4 um)
Spitzer/SEIP	I3 (5.8 um)	I2 (4.5 um)	I1v (3.6 um)
AKARI	WideL (140 um)	WideS (90 um)	n60 (65 um)
IRAS	IRAS-100	IRAS-25	IRAS-12

Part 3:

1. Go to IRSA viewer
2. At 1. Choose Image Type select Create 3-Color Composite
3. At 2. Select Image Source select Search and look up the same image from part 2
4. At 3. Select Target type in the object name
5. Decide which wavelengths you want to choose to make your image and note above where it says 2. Select Image Source there are three color options: Red, Green, Blue.
6. At 4. Select Data Set, decide which channels of data you would like to use. For example, if I am going to use WISE, check the WISE box, use the dropdown arrow to decide which dataset you would like to use, and choose your first channel - this will be the red color because red is the default color that is selected. Then, scroll back up, choose Green, and decide which channel will be green. Then do the same for blue.
7. Lastly, click the Search button in the bottom left corner.
8. Insert your picture in the space below and record which data set and wavelengths you chose for each color.

Question 4: Compare your image to the images made in part 2. What differences do you notice in the images? What information can you learn about the object you are viewing?