

Astrophotography: On the Boundary of Art & Science

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What is Astrophotography?

- It's when you photograph any astronomical structure that's in outer space. By taking long exposure pictures, you can capture faint objects like nebulae, galaxies and comets! In fact, this extends to ANYTHING that's in the UNIVERSE.
- By using a telescope or even a photography lens, you can zoom in and brighten up these objects to capture them with a camera.
- BUT! These objects move throughout the night because of the rotation of the Earth, so you need to track them by placing your imaging system on a precise motorized mount.
- When imaging the Sun, the Moon or the planets in our solar system, the tracking is not as necessary as shorter exposures suffice to capture these bright objects. However, when taking long exposures of faint nebulae or galaxies, countering the rotation of the Earth is essential.
- If you use optical filters, you can isolate specific wavelengths and get interesting data! This data can then be processed for either scientific or artistic purposes.
- Amateur astronomers can contribute too! We can image seldom-seen objects, discover brand new objects, confirm observations made by professional telescopes, do huge amateur collaborations on single targets and even photograph things that big telescopes can't do themselves.



1883

Orion Nebula by Andrew Ainslie Common. The first image to show that long exposures could capture objects invisible to the human eye.



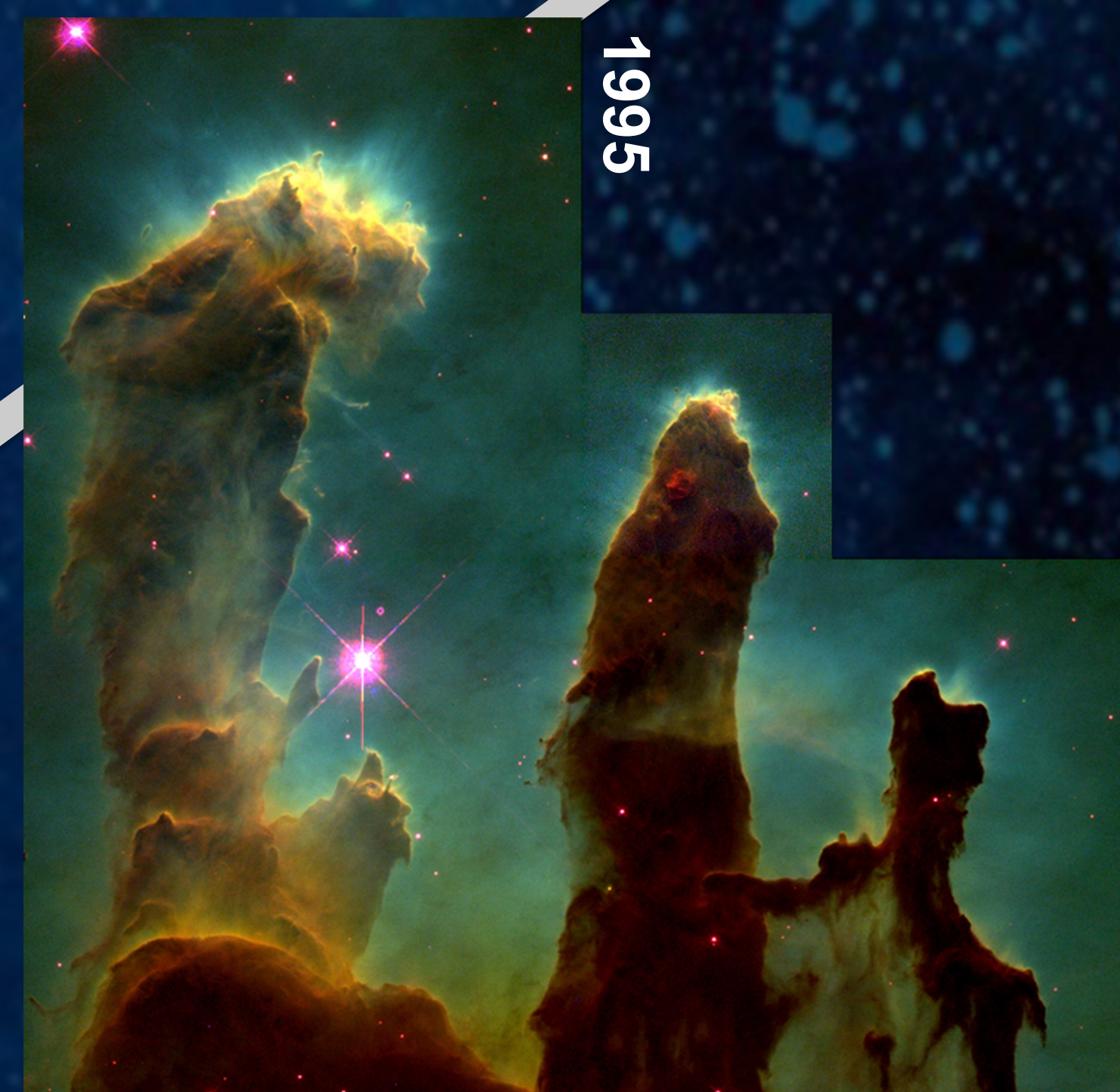
1880

The very first image of the Orion nebula by Henry Draper.



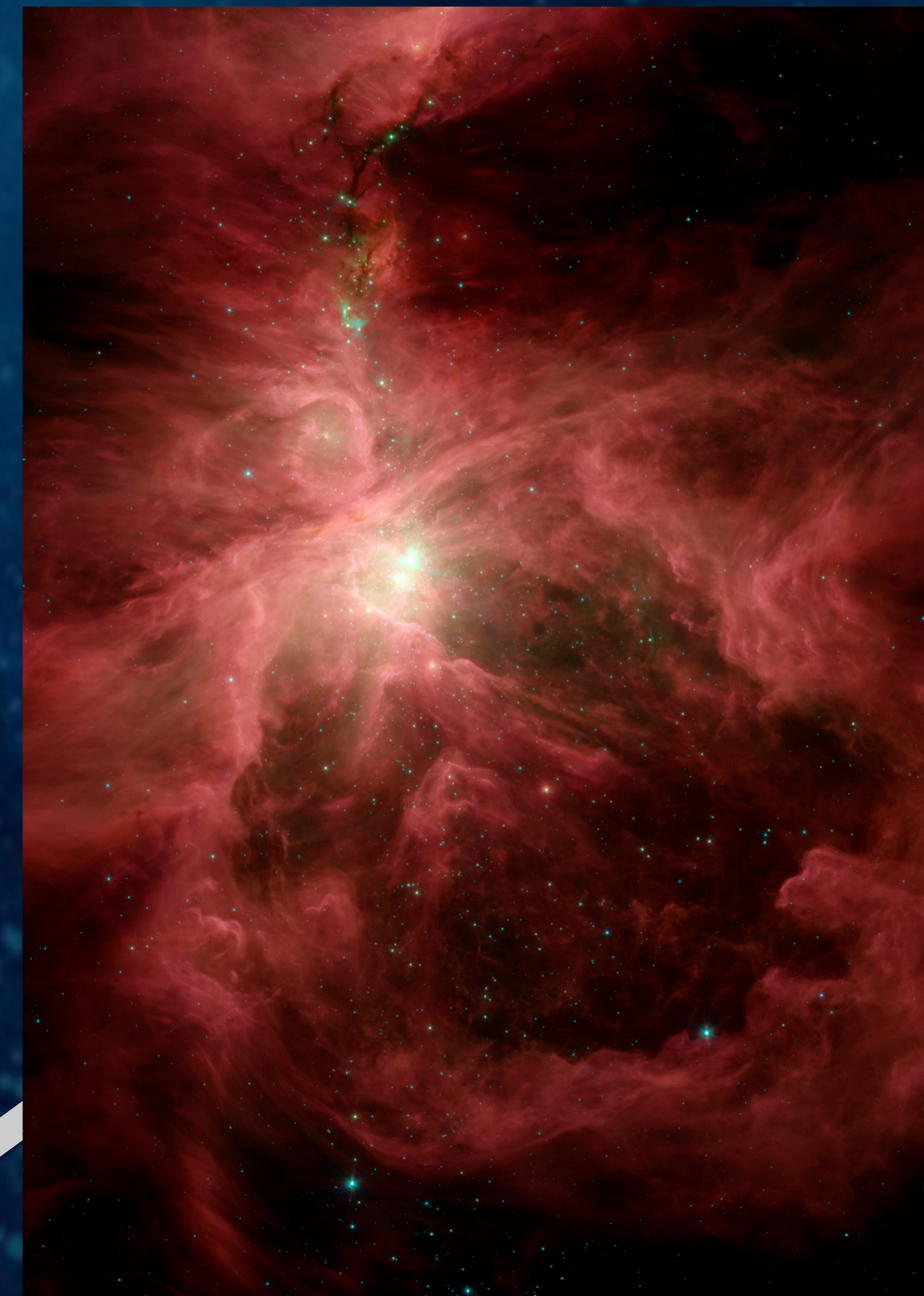
2006

The Orion Nebula in visible light, captured by the Hubble Space Telescope. Source: NASA.



1995

The Pillars of Creation by the Hubble Space Telescope in Visible Light. Source: Nasa.



2006

The Orion Nebula in infrared light, captured by the Spitzer Space telescope. Source: NASA.



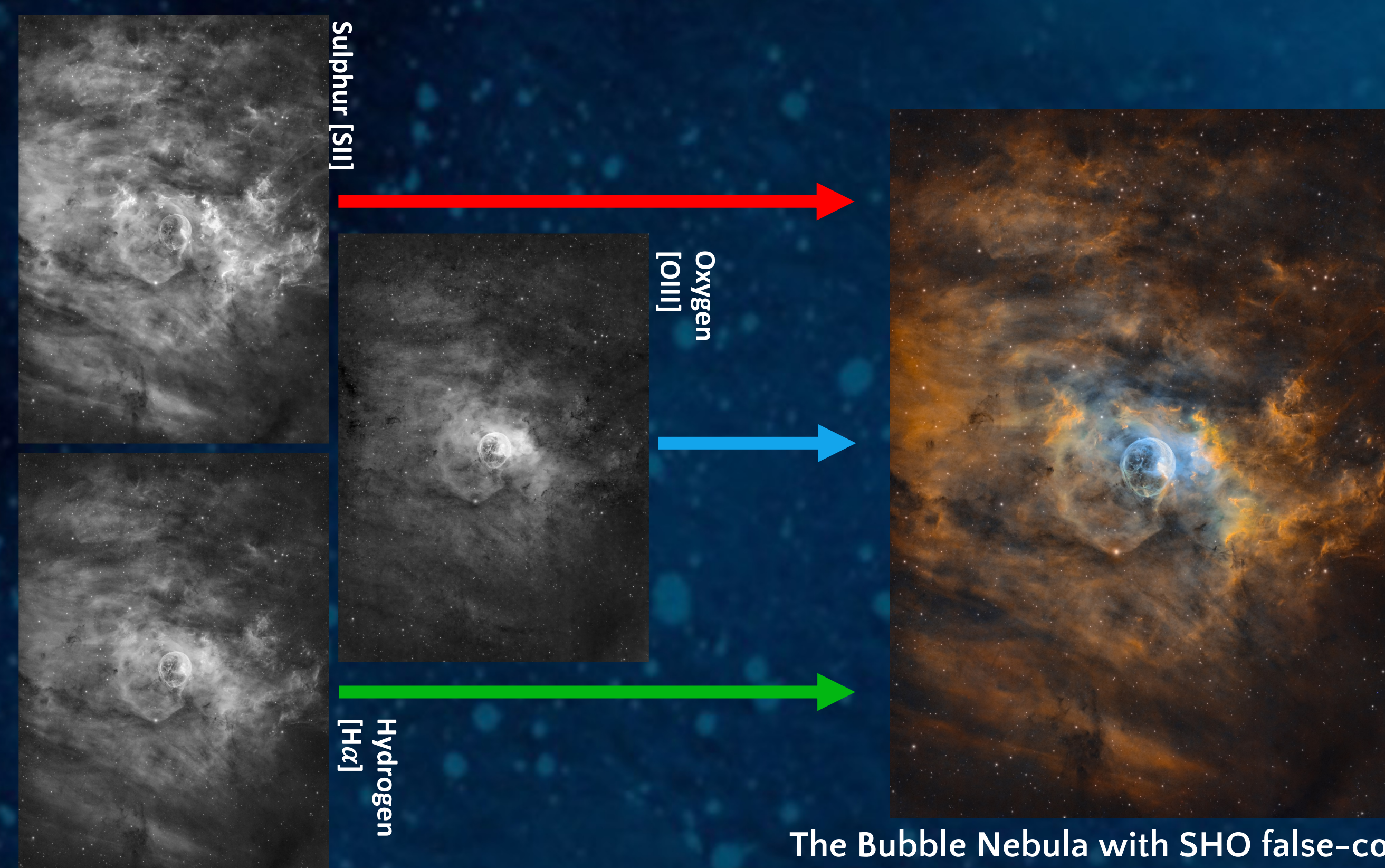
2020

Rosette nebula mapped to HOO (top) and SHO (bottom) to show the striking differences in colour palette. With a bit of creative freedom, we can focus on making the images extra stunning! Image by Jaco Moolman.



2022

The Pillars of Creation in infrared, by the James Webb Space Telescope. Source: Nasa.



2022

The Bubble Nebula with SHO false-colour mapping. These pictures help us visualize different structures and the atomic composition of our subject! Image by Ben Coull-Neveu.

Why Should We Care?

- Astrophotography is great for outreach, especially for the youngsters!
- The public gets interested too, which is great, since we get to appreciate the importance of science even more in society.
- And in the long term, these projects help us develop new technologies and better understand our origins in the universe.

So What Can YOU Do?

- If you want to check out some of the best photos amateurs send in to NASA, check out the Astronomy Picture of the Day (APOD) at apod.nasa.gov.
- Check out what's above your head! Sky Guide is a great free app with augmented reality to show you what's in the night sky! Leave Montreal and its terrible light pollution to bask in the starry night sky. Bring a camera, a friend and some binoculars!
- If you're wanting to contribute to ongoing efforts in the astronomical community, be that professional or amateur, feel free to explore the following links:
 - www.zooniverse.org
 - www.darksky.org
 - www.amsmeteors.org