Comet Swan C/2020 F8 (image & spectra)
Pretoria – 08.05.2020 @ approx.. 05:15 to 05:40 (local time)
Percy Jacobs

A difficult target that led to a reasonably good quality spectrum, referring to the “blue-side” of the spectrum, 400nm to 535nm, and a relatively poor quality spectrum on the “red-side”, 540nm to 640nm. Based on this, what could be seen in the spectra, particular the 400nm to 535nm range spectra, was the so-called Swan Bands, typically seen in comets. Swan bands are generated from burning hydrocarbons.

The challenges faced;
• Waiting for the comet to rise high enough above the horizon, out of the natural light-polluted part of the sky, the area below the 15 deg altitude mark, and beating the start of the pre-dawn twilight, which started at 05:15

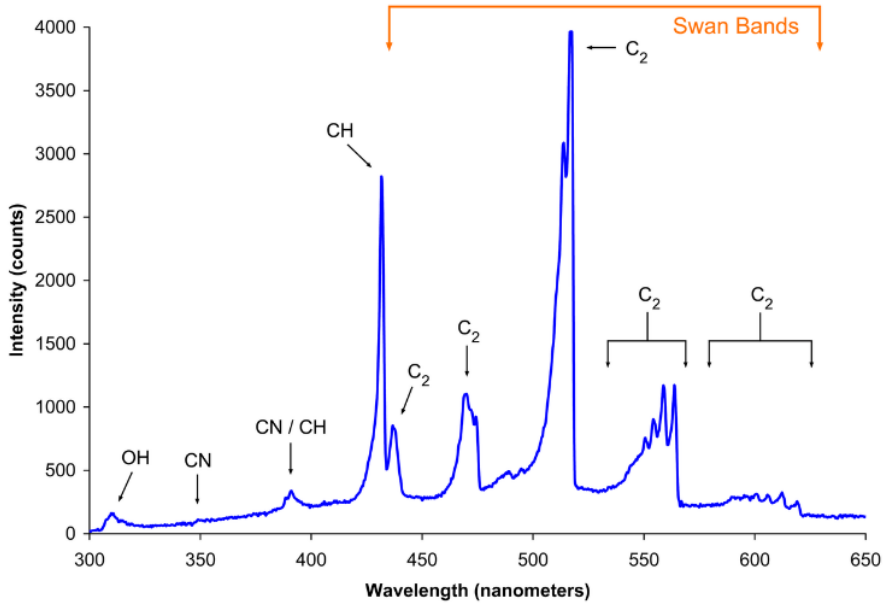
• Contend with a target that had an estimated total surface area magnitude of approx. 8. In comparison to the surrounding stars, using my finder scope, I could see up to 8 magnitude stars, but not the comet. So, the comet was not visible in my finder scope which is my primary finder for targets.

• A comment on this specific point, positioning a target on the slit in the spectroscope, is controlled via the camera on my spectroscope, specific for this purpose, which in this task, was not possible. The actual auto-guiding, through the PHD Guide Software, is done through another camera connected to a 80mm, F800, guide scope. It is through this camera that the target was seen, the guide scope camera. Time was taken to position a virtual slit in the guide scope camera, to the same position as the slit in the spectroscopes camera. Once on this virtual slit, the target was then exactly on the slit in the spectroscope. This took some time to verify and setup and match through the two different camera's view as viewed on my PC screen.

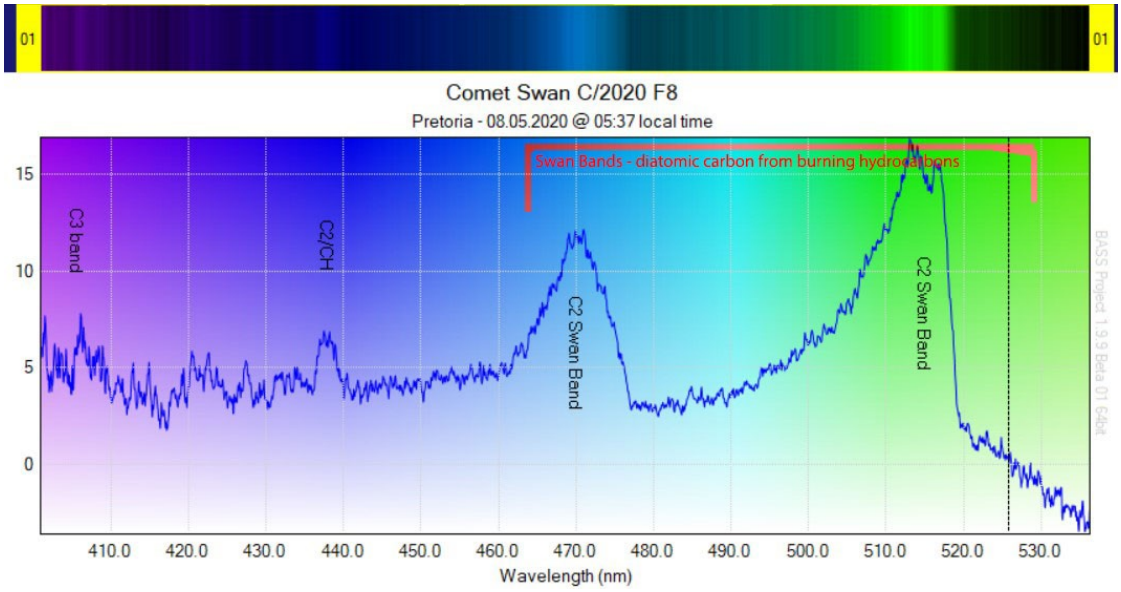
• Due to the low magnitude, the exposure time was set at 4 min's x 5 for each side of the spectrum, 10 images. The challenge here, simply time. Through all this, guiding had to be checked and corrected every so often, and the need to complete the task before the twilight time of 05:15.

Image of Swan (taken by Percy Jacobs)

Example of the Swan Bands – diatomic carbon (C_2) from burning hydrocarbons



Images of spectra



The red side of the spectra is unfortunately of very low quality, therefore low resolution, due to a very faint red side of the comet spectra. However, the Swan Bands are at least still seen.