Comet 46P/Wirtanen as viewed with the Faulkes Telescope North, Las Cumbres Observatory, Hawaii, on 9 December 2018.

The image was produced by combining images taken with three narrow-band filters at 385, 511, and 683 nm, which are part of a series of filters that were provided by ESA to study Comet 67P/Churyumov-Gerasimenko from the ground during the Rosetta mission, and are now being used to observe 46P.

The green diffuse cloud is the comet's coma – the green colour being caused by carbon (C₂) molecules. The narrow-band filters allow light from different gases in the coma to be separated, giving a measurement of the comet's composition. The three filters used here isolate CN (blue), C₂ (green), and sunlight reflected from dust grains (red). The coma's asymmetry is visible in the image. The reddish stripe in the lower part of the image is a background star, trailed due to the fact that the telescope was tracking the fast-moving comet.

The comet reached perihelion, the closest point to the Sun along its orbit, on Wednesday, 12 December, and is on the way to its closest approach to Earth this weekend, when it might become visible to the naked eye from dark locations.

A bright comet with a period of 5.5 years, 46P had been chosen in the 1990s as the target of ESA's Rosetta mission. However, a launch delay prompted the mission team to select a new target, Comet 67P/Churyumov-Gerasimenko, which was visited by Rosetta between 2014 and 2016.