

FAN-SHAPED DUST EMISSION FROM THE NUCLEUS OF COMET 3I

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FIGURE CAPTIONS

Figure 1

The median stack of images taken with the Hubble Space Telescope (F350LP filter) on July 21, 2025, was analyzed by applying equidistant isophote starting from the background value. The nucleus of 3I is shown as a white dot at the center of the main condensation of the isophote. A prominent emission asymmetry toward PA 280° is clearly visible.

At the bottom left, the bar indicates a size of 2 arcsec. The comet was 3.83 AU from the Sun.

Figure 2a+b

2a. Stack of 90 images of 60s exposure, taken with g, r, i filters on July 4, 2025, with the 2.0 m LCOGT telescope at Siding Spring. The image orientation and the direction to the Sun are shown at the top left of the figures. At the bottom left, the bar indicates a size of 10 arcsec. The comet was 4.41 AU from the Sun and 3.4 AU from Earth.

2b. The application of the Larson-Sekanina spatial filter ($\alpha = 45^\circ$) centered on the optocenter of comet 3I, indicated in red, highlights the presence of a marked asymmetry in the NW quadrant of the comet's inner coma.

Figure 3a+b

3a. The application of a Larson-Sekanina filter ($\alpha = 30^\circ$) centered on the optocenter of comet 3I, shown in green, highlights the presence of a dense fan in PA 280° and a faint tail in the opposite direction.

The original image is a stack of images of 60s exposure, taken with the g, r, i, z filters on August 13 and 14, 2025, with the LCOGT 2.0 m telescope in Haleakala.

3b. The same image is displayed as equidistant isophote, the faintest corresponding to the background value. The faint tail of comet 3I is visible in PA 100°, while in the solar direction the asymmetry of the inner coma created by the presence of the fan in PA 280° can be observed.

The image orientation and the direction of the Sun are shown at the top left of the figures. The comet was 3.08 AU from the Sun. At the bottom left, the bar indicates a size of 5 arcsec.

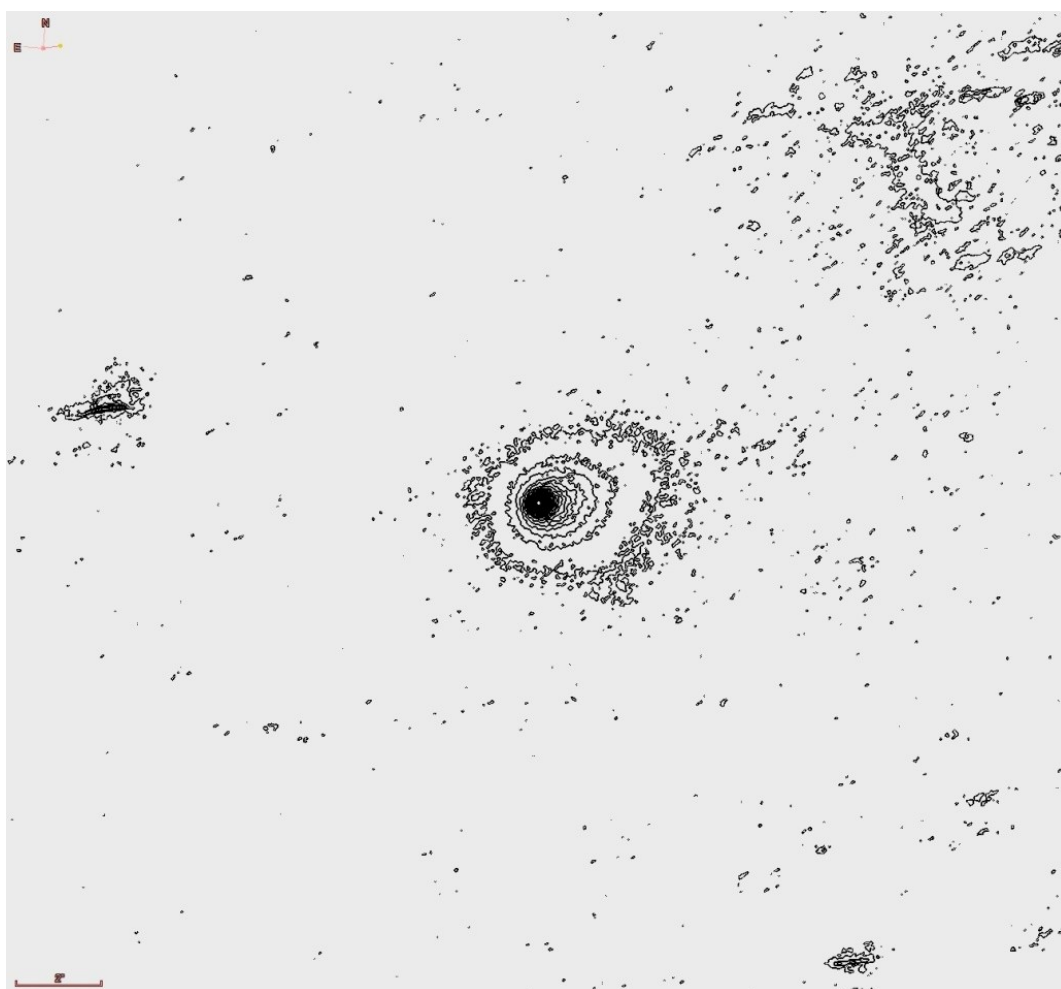


Figure 1

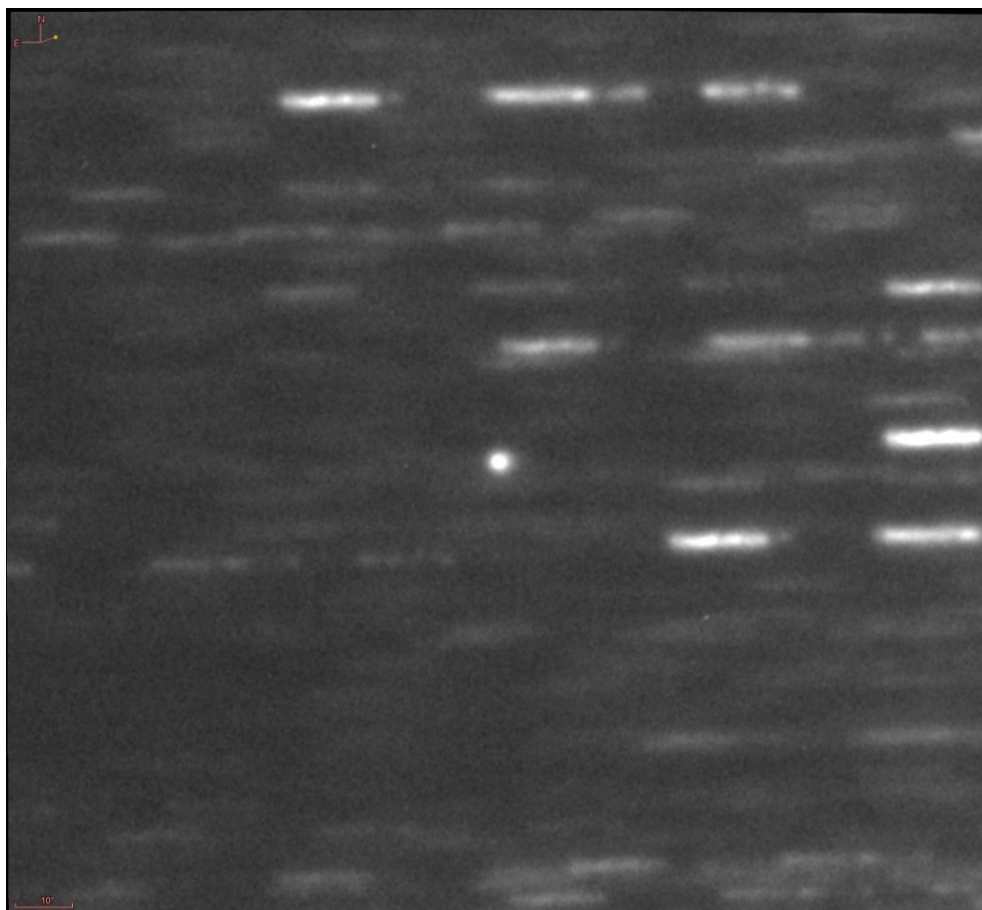


Figure 2a

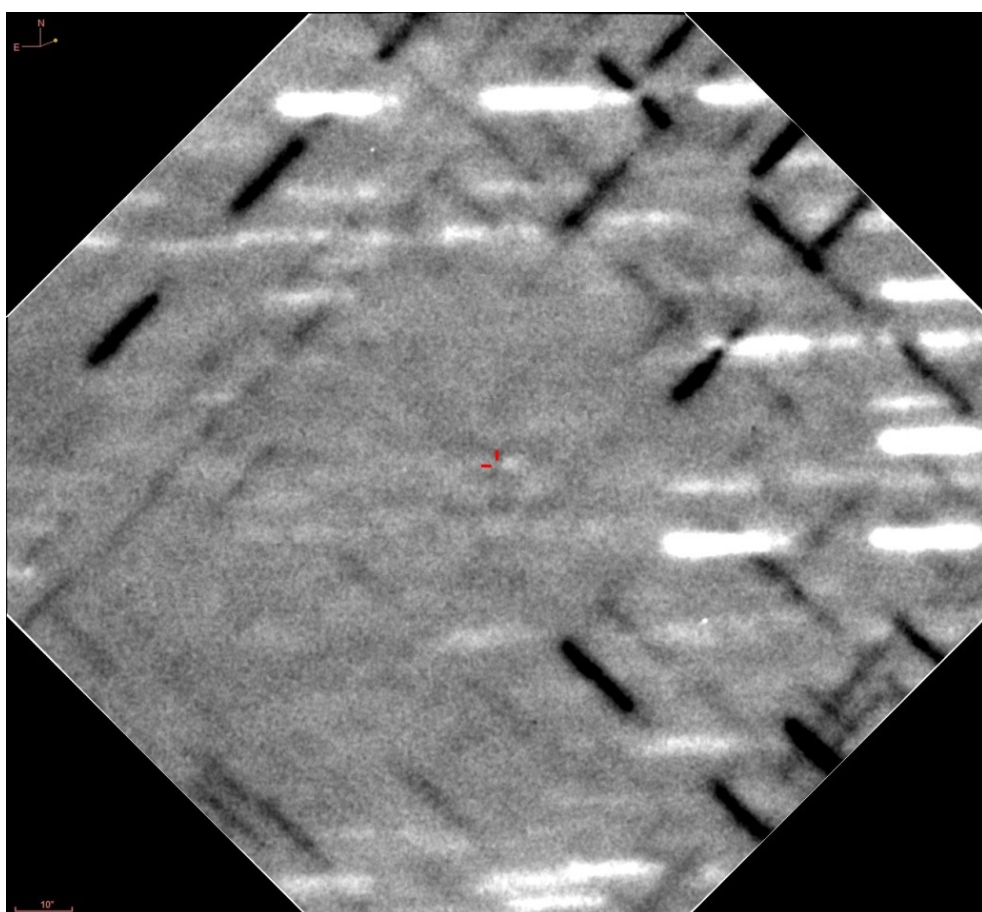


Figure 2b

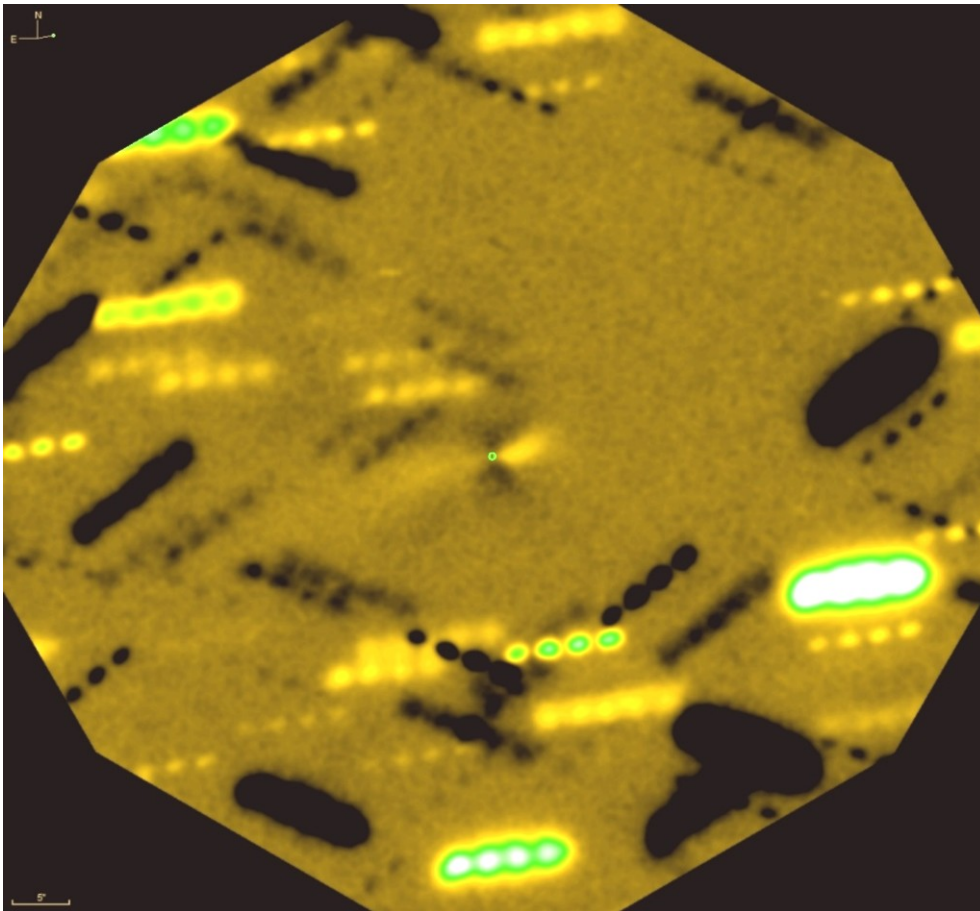


Figure 3a

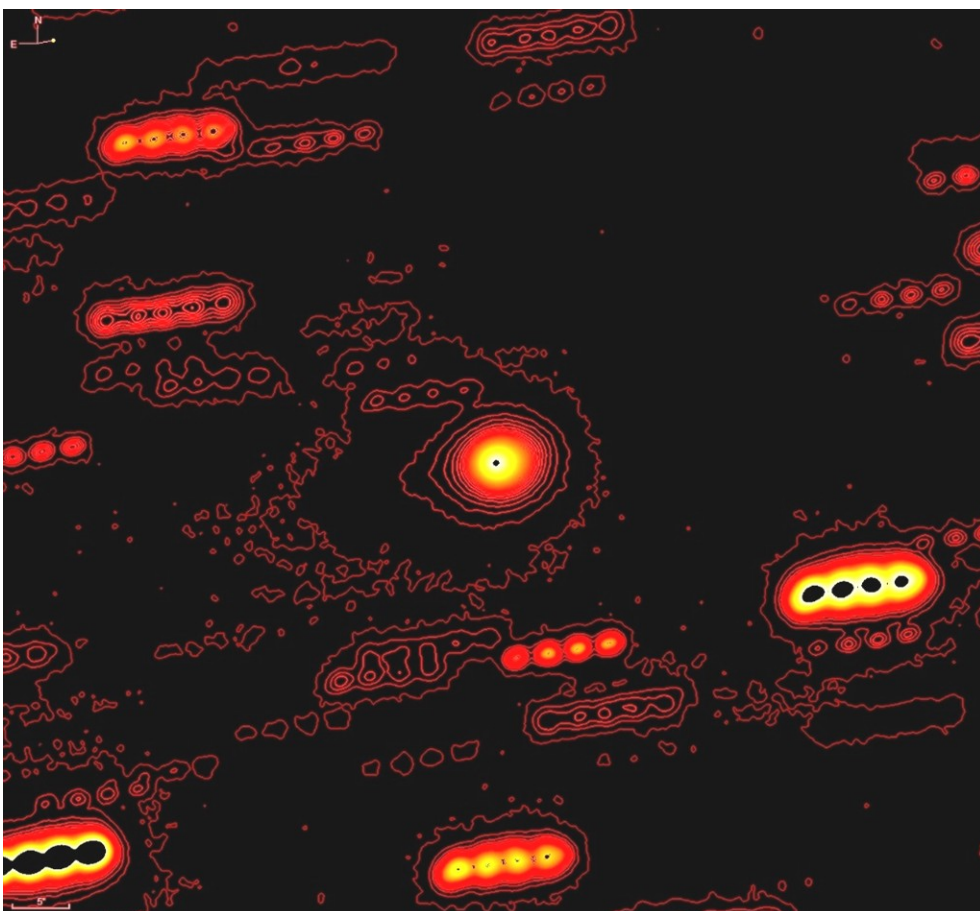


Figure 3b