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Near-Earth Object Wide-Field Infrared Survey Explorer (NEOWISE) Observations of Hyperactive Long-Period Comets C/2017 K2 (Pan-STARRS) and C/2014 B1 (Schwartz): Initial Results

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Abstract

Hyperactive comet activity typically becomes evident well beyond the frost line around 3 AU where it is too cold for water ice to sublimate. If CO and CO_2 are the supervolatiles suspected to drive activity at extreme distances from the Sun, studies on the production rates are extremely valuable to the study of the formation of the Solar System and cometary populations. The NEOWISE reactivated mission operates at two bandpasses, (hereafter W1 and W2) at 3.4 and 4.6 microns, respectively, with the W2 channel being fully capable of detecting CO and CO_2 at 4.67µm and 4.23µm, for each respective species. Furthermore, it is impossible to study CO_2 from the ground due to Earth's atmosphere being rich in this gaseous species. We will discuss initial W1 and W2 measurements of hyperactive comets C/2017 K2 (Pan-STARRS) [1] and C/2014 B1 (Schwartz) [2] and use them to assess CO and CO_2 gas production rates [3, 4, 5].

Figures

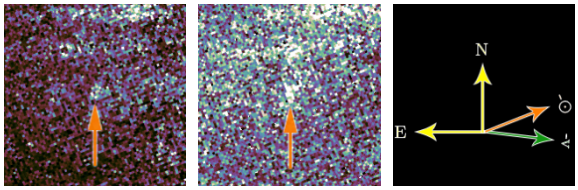

Figure 1: Composite frames Comet C/2014 B1 (Schwartz) taken between UT 2017 November 27-28 at heliocentric distance 9.57 AU. B1 is denoted by an arrow. W1 is left, W2 is center, and direction vectors are listed on the right, corresponding to the midpoint of exposures taken. The antisolar (−⊙) and negative velocity (−v) vectors are also shown. Each frameset is 3.5' on a side. (Milewski et al. 2019; in preparation)

References

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