

Water Production Rate Variation of Comet 103P/Hartley 2

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Abstract

The SWAN all-sky Lyman- α camera on the Solar and Heliospheric Observatory (SOHO) satellite observed the EPOXI target comet throughout its 1997 and 2010 apparitions [1]. The water production rates, derived from the hydrogen coma distributions, were 3 times lower in 2010 than in 1997 [2]. There were very steep variations of production rate with heliocentric distance in both apparitions, typical of Jupiter Family Comets. It increased by a factor of ~ 2.5 within one day on September 30 with a similar corresponding drop between November 24 and 30. The total surface area of sublimating water required to explain the production rates within ± 20 days of perihelion in 2010 was about half the mean cross section of the entire nucleus with a peak value of about 90%, implying that a significant fraction of the total water production had to come from the released icy fragments.

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References

- [1] A'Hearn, M.F. et al.: EPOXI at Comet Hartley 2, *Science*, (in press), 2011.
- [2] Combi, M.R., Lee, Y., Pattel, T.S., Mäkinen, J.T.T., Bertaux, J.-L., & Quémerais: SOHO/SWAN Observations of short-period spacecraft target comets. *Astron. J.* 141:128 (13pp), 2011.

