

**COMET 103P/HARTLEY-2: ROTATIONAL AND SPIN TEMPERATURES OF H<sub>2</sub>O AND EVOLUTION OF WATER PRODUCTION RATE DURING THE 2010 APPARITION.** B. P. Bonev<sup>1,2</sup>, G. L. Villanueva<sup>1,2</sup>, J. Keane<sup>3</sup>, M. A. DiSanti<sup>1</sup>, E. L. Gibb<sup>4</sup>, L. Paganini<sup>1,5</sup>, G. A. Blake<sup>6</sup>, R. S. Ellis<sup>6</sup>, K. Magee-Sauer<sup>7</sup>, M. Combi<sup>8</sup>, H. Boehnhardt<sup>9</sup>, M. Lippi<sup>9</sup>, K. Meech<sup>3</sup>, and M. J. Mumma<sup>1</sup>. <sup>1</sup> NASA GSFC and Goddard Center for Astrobiology, MS 690.3, Greenbelt, MD 20771, <sup>2</sup> Dept. of Physics, Catholic U. of America, Washington, DC 20064 (bonev@cua.edu), <sup>3</sup> Institute for Astronomy, HI, <sup>4</sup> Univ. of Missouri – St. Louis, <sup>5</sup> NASA Postdoctoral Fellow, <sup>6</sup> Caltech, <sup>7</sup> Rowan Univ., <sup>8</sup> Univ. of Michigan, <sup>9</sup> Max Planck Institute for Solar System Research.

We acquired high resolution near-infrared spectra of comet 103P/Hartley-2 with NIRSPEC at the W. M. Keck Observatory and CRIRES at ESO's VLT, emphasizing parent volatiles before, during, and after the comet's close approach to Earth. We will present results on the evolution of the water production rate in time and on the H<sub>2</sub>O rotational and spin temperatures on several dates.

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