Further characterization of the physical makeup and dynamical behavior of water ice and dust in comet 103P/Hartley 2

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We present an updated characterization of the type of mixing (areal vs. intimate), relative abundance, grain size, spatial distribution, and dynamical behavior of water ice and refractories detected in the inner ∼10 kilometers of the coma of comet 103P/Hartley 2. The Deep Impact eXtended Investigation (A'Hearn, 2011) allowed us to observe the near-nucleus coma at high resolution with both visible cameras (HRI-VIS, MRI-VIS) and the infrared spectrometer (HRI-IR). These data interpreted together have strengthened our understanding of the coma particles. We discuss the possibility that the observed water ice grains in the HRI-IR data are likely to be aggregates, the relationship between these particles and those detected in the visible images [Kelley et al., 2013], and their contribution to the total water production rate of this hyperactive comet.

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References: A'Hearn, M. F., et al., 2011. EPOXI at Comet Hartley 2. Science 332, 1396–1400; Kelley, M. S., et al., 2013. A distribution of large particles in the coma of Comet 103P/Hartley 2. Icarus 222, 634–652.