

Volatiles in asteroids

H. Campins¹

¹University of Central Florida

For more than three decades, hydrated minerals have been identified in asteroids. The distribution of these minerals among asteroid spectral types and heliocentric distance has been somewhat unexpected, and there is also diversity in the composition of these hydrated minerals (e.g., Takir and Emery 2012). In addition, water ice and organic molecules have been detected on two asteroids (Campins et al. 2010; Rivkin and Emery 2010; Licandro et al. 2011) and water vapor is emanating from (1) Ceres (Küppers et al. 2014). These discoveries have important implications on current views of primitive asteroids, the nature of active asteroids or main-belt comets, the dynamics of the early Solar System, and the delivery of water and organic molecules to the Earth. They are also relevant to several space missions, including Dawn, Gaia, Hayabusa2, OSIRIS-REx ,and WISE.

References: Campins et al. (2010) *Nature*, 464, 1322; Licandro et al. (2011) *Astron. Astrophys.*, 525A, L34; Küppers et al. (2014) *Nature*, 505, 525; Rivkin and Emery (2010) *Nature*, 464, 1322; Takir and Emery (2012) *Icarus*, 219, 641.