



Investigation into the Origin of a Crater Complex on Titan Observed by Cassini VIMS

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Recent images obtained by the Cassini Orbiter Visual and Infrared Mapping Spectrometer (VIMS) during the T38 and T40 Titan flybys have observed a crater complex on the surface of Titan approximately 600 km north-northwest of the Huygens Probe landing site. The complex consists of a primary circular feature approximately 60 km in diameter and two secondary overlapping circular features, approximately 100 km east of the main feature. The secondary features are each approximately 50 km in diameter and are less pristine than the primary feature. A possible flow-like feature that extends to the east approximately 300 km is also observed. While the main feature is very similar in appearance to Sinlap, an impact crater identified by Radar and VIMS [1,2,3], the probability of an impactor being disrupted before or during entry into the atmosphere producing multiple impacts in such close proximity on a body with a 1.5 bar atmosphere is low, suggesting a cryovolcanic origin.

The morphology and spectral characteristics of this crater complex are compared to those of Sinlap [1,2,3], and other impact craters identified by Radar [2], possible cryovolcanic features identified by VIMS, including the dome-like morphology reported

by [4] and the 5- μm bright features, Hotei Regio and Tui Regio [5,6], and possible cryovolcanic features identified the Cassini Radar [7].

References: [1] Soderblom et al. (2007) *Planet. & Space Sci.*, 55, 2025-2036, [2] Elachi et al. (2006) *Nature*, 441, 709-713, [3] Le Mouélic et al. (2008) *J. Geophys. Res.*, in press [4] Sotin et al. (2005) *Nature*, 435, 786-789, [5] Barnes et al. (2005) *Science*, 310, 92-95, [6] Barnes et al. (2006) *Geophys. Res. Lett.*, 33, L16204, [7] Lopes et al. (2007) *Icarus*, 186, 395-412.