AOGS 2006

Dust Environment of the Deep Impact Mission Target Comet 9P/Tempel 1 Prior to the Impact: A Contextual Investigation

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The dust environment of the Deep Impact mission target, comet 9P/Tempel 1, prior to the impact is essential for accurately interpreting the nuclear activity of the comet as well as the coma structure after the impact of the probe with the nucleus. The characteristics of the dust coma of 9P/Tempel 1 during the first half of 2005 prior to the impact and a detailed analysis of the coma structure will be presented. It was found that the dominant dust feature seen towards the southern direction in the images is consistent with extremely low dust outflow velocities of the order of few tens of m/s. Possible implications of this result in the context of the Deep Impact experiment as well as a comparison with other comets will be presented. A discussion on dust and gas comae of comets as well as on the image enhancement techniques will be presented in the context of interpreting the coma physics.