

Secondaries of Martian Impact Craters: A Study on Ejecta Size and Velocity

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Ejecta size-velocity relation may be dependent on the material property of the target body. Melosh (1984) proposed a hydrodynamical model that the ejection velocity of spalls is proportional to the strength of the target body and in inverse proportion to the density and the sound velocity.

Vickery (1987) studied the ejecta size-velocity distribution by analyzing the size of secondary craters and the distance between the secondaries and the primary craters. The diameter of the primary craters was from a few tens to a hundred km. Hirase et al. (2004) studied the distribution of the secondary craters of three smaller, km-size primary craters using the images of the Mars Orbiter Camera (MOC), and filled the data of the ejecta having velocity of a hundred m/s into the gap of the previous results of the Vickery's and laboratory works. The data fit in the tendency shown by the previous works.

Based on similar analyses of other primaries, we will discuss whether the distribution of the secondaries around primaries change with terrain.

