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Possible lunar analogy of the Phobos grooves

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Abstract

Recent lunar images from the NASA Lunar Reconnaissance Orbiter - LRO [1] Lunar Reconnaissance Orbiter Cameras – LROC [2] show surface features having similar morphologies with some of the Phobos grooves. The lunar surface features are related to trails left by boulders from crater ejecta rolling on the surface. These boulders follow topography loose angular momentum imparted at the impact and end up at local lower elevation areas. The boulders are at the ends of these trails.

The lunar images combined with Viking and Mars Express images of Phobos provide an excellent data set for comparative studies of the Phobos grooves and the lunar boulder trails. The large crater Stickney on Phobos would be one obvious source of boulders but few boulders are seen on Phobos. The Phobos grooves tend to be absent from the antipodal point of Stickney, possibly indicating that the boulders left the surface near this area. There are many questions to be answered to support or disprove this analogy; however there is an excellent dataset to study this hypothesis.

Acknowledgements

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References

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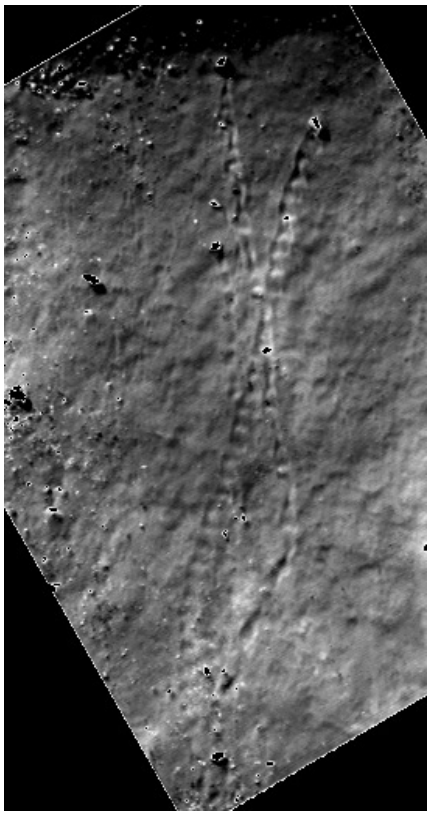

Figure 1: Example of Phobos-like grooves left by rolling boulders on the Lunar surface.