

A New Look at the Topography of the Lunar South Pole with the Lunar Orbiter Laser Altimeter (LOLA)

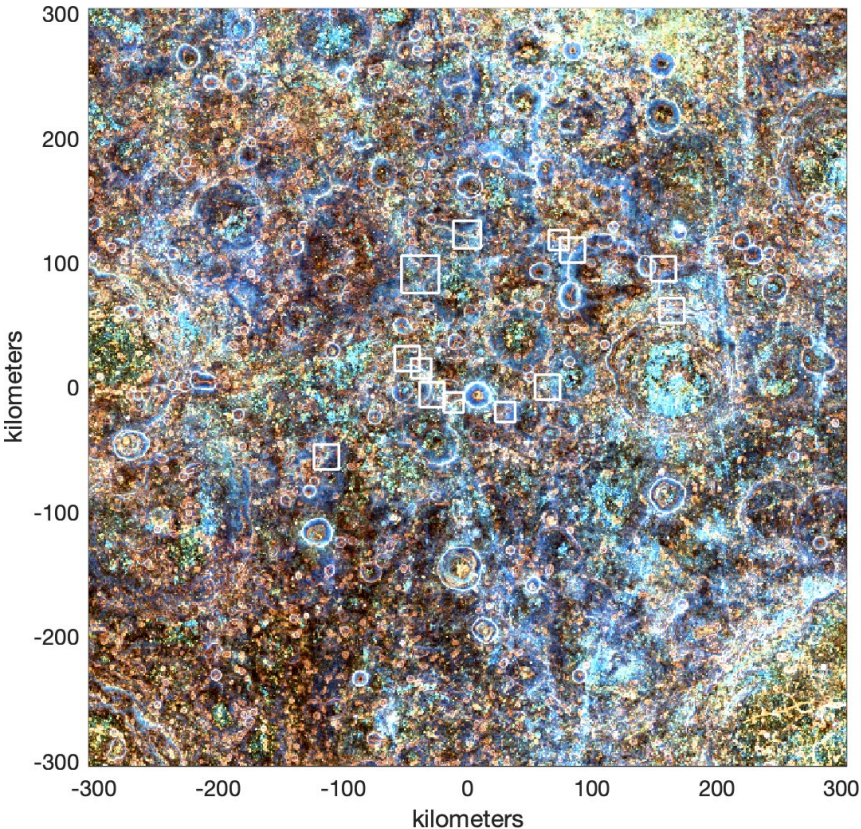
New maps of topographic roughness of the south polar region reveal signatures of landscape evolution and secondary impact cratering.

PROBLEM Our understanding of surface modification processes on the Moon is incomplete.

METHOD Using enhanced LOLA data, we computed maps of topographic roughness (surface height variation) on different horizontal baselines and combined the maps into a color composite image.

IMPLICATIONS The south polar topography exhibits a diversity of roughness characteristics which are modified over time by impacts and downslope mass movement. Linear roughness features hypothesized to be secondary cratering highlight the role that even far-away impacts have had on shaping the terrain.

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LOLA roughness map centered on the south pole. Each baseline is assigned to a different color: 50 m (blue), 100 m (teal), 200 m (cyan), 400 m (yellow), 800 m (orange) and 1600 m (red). White boxes are the 13 candidate Artemis III sites.