NEW MAPS OF THE APOLLO 16 LANDING SITE

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Abstract

Introduction: Previous geological maps of the Apollo landing sites were made to provide geological context for mission operations and the interpretation of data collected during the missions. New remote sensing datasets now allow the production of refined maps and foster studies to confirm and improve Apollo-era work. In particular, our group is using new geological maps to check and improve the lunar cratering chronology [e.g. 1]. Using Lunar Reconnaissance Orbiter Camera (LROC), SELENE (Kaguya), and Clementine data, we produced two new maps for the Apollo 16 landing site at scales of 1:1.3M and 1:80.000. Stratigraphic relationships were further investigated via crater size-frequency distribution measurements, and chronology calibration points for the Descartes Formation and North Ray were reinvestigated.

Results: The new geological maps are roughly similar to prior maps [e.g. 2], but unit boundaries differ significantly e.g., in the southern Descartes highlands (Fig.1: Idh) and Fra Mauro formation (Fig.1: Ifm). The difference can be traced to our smaller mapping scale, which allows the boundaries to be mapped in more detail. Additionally, the cumulative number of craters for key units are consistent with measurements done previously, which supports the fit of the Neukum et al. [3-5] chronology function.


Figure 1: (left) New geologic overview map (1:1.3M) of the Apollo 16 landing site in the Descartes highlands region west of Mare Nectaris. (right) 1:80K map of the landing site with the traverse (white).