

NEW MAPS OF THE APOLLO 17 LRV TRAVERSES. P. J. Stooke^{1,2}, ¹Department of Geography, University of Western Ontario, London, Ontario, Canada N6A5C2; ²Institute for Earth and Space Exploration, University of Western Ontario, London, Ontario, Canada N6A3K7.

Introduction: I describe new mapping of the Apollo 17 rover traverses, part of a project to re-map all Apollo foot and LRV traverses using LRO images. Maps published at the time were only approximations because Apollo Panoramic Camera images lacked the resolution to show tracks or to compare with images taken during the drives. Apollo 15 mapping was described in [1]. Apollo 17 mapping has been completed and will be available in the Apollo Lunar Surface Journal and as a dynamic map on the LROC Featured Sites website (Apollo 15 and 16 maps are already there). Mapping presented here is intended for an updated version of [2].

Data sources: Data used for Apollo 17 include LROC NAC ortho-images (used for control), individual NAC frames, voice transcripts and Hasselblad images taken by the crew, chiefly by astronaut Harrison Schmitt, during traverses. 16 mm video which was attempted on Apollo 15 and used on Apollo 16 was not taken on Apollo 17. Some Hasselblad images show tracks made earlier (e.g. at Hole in the Wall on EVA 2, or in panoramas at science stations) and these are incorporated into the mapping.

Image processing: Image processing methods include extreme contrast enhancements of 16-bit NAC images and image shadow cancellation methods described in [1] in which images with opposite lighting are merged to suppress shadows and enhance albedo markings (only marginally useful for Apollo 17). Hasselblad frames were contrast-stretched, particularly images taken facing up-sun or down-sun where topography is difficult to discern. Processed frames were approximately reprojected (perspective only, not correcting for relief distortion) to make comparison with LROC NAC images easier. Figure 1 shows an example of this.

Results: A revised EVA2 map is shown in Figure 2. The path is more accurate than in earlier maps with some discrepancies as large as 200 m. LRV Sample sites are more accurately placed. Specific errors such as the approach to Hole in the Wall, site of LRV stop 3 and driving between the 'Big Mamoo' rocks on EVA 3 are corrected.

References: [1] Stooke P. J. (2018) *LPS XXXIX*, Abstract #1007. [2] Stooke, P. J., 2007. *The International Atlas of Lunar Exploration*, Cambridge University Press.

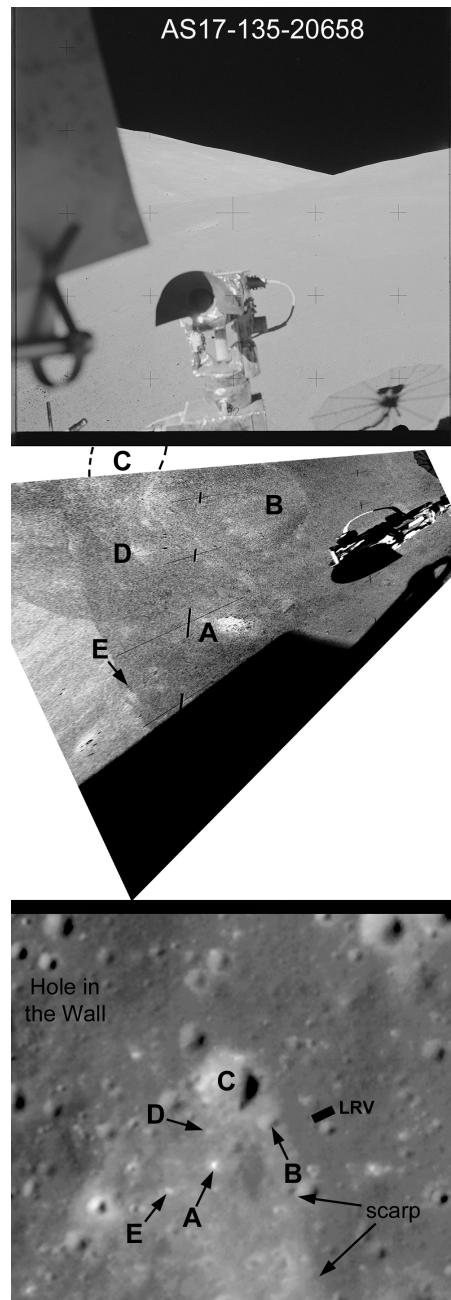


Figure 1. Apollo 17 Hasselblad frame 135-20658 (top), processed frame (middle) and comparison with LROC NAC orthoimage NAC_DTM_APOLLO17_9 M1190504960_120CM (bottom). This is the point where the scarp was climbed just south of Hole in the Wall. LRV not to scale.

Figure 2 (below). New EVA 2 map.

