

LUNAR ORBITER DIGITAL FRAME MOSAICS: READY FOR PRIME TIME. L. Gaddis, T. Becker, L. Weller, T. Hare and C. Isbell, U. S. Geological Survey, Astrogeology Program, 2255 N. Gemini Drive, Flagstaff, AZ 86001 (lgaddis@usgs.gov).

Introduction: Lunar Orbiter (LO) digital frame mosaics at high, moderate and very high ground resolution [1-3] are available at <http://astrogeology.usgs.gov/Projects/LunarOrbiterDigitization/>. Previously released LO frames were largely 'raw' in that they were unprojected and retained stripes and white reseau and synchronization marks. This abstract announces the online release of map-projected and cosmetically processed ('no-dashed' and destriped) versions of the global medium (~200-1000 m), high (~40-200 m) and very high resolution (VHR, 1-40 m) LO frames. Thus far ~55% of the global and ~45% of the VHR frames have been cosmetically processed and projected. Additional frames will be added as processing is completed.

Relation to Global Mosaic: High and medium resolution LO frames were used to create a global LO mosaic of the Moon [4]. The mosaic was geodetically controlled [5] and is available at the PDS Map-a-Planet site (<http://www.mapaplanet.org/>) and via the Planetary GIS Web Server (PIGWAD; http://webgis.wr.usgs.gov/pigwad/down/LunarOrbiter_mosaic.htm). Although the global mosaic is valuable as a controlled map base for scientific research and uses such as targeting for the Chandrayaan-1 Moon Mineralogy Mapper [M3; 6] and Lunar Reconnaissance Orbiter Camera [LROC; 7, 8], it is also important to be able to examine individual frames of the mosaic, especially in areas where multiple images overlap. For example, LO frames of the south pole can be examined individually to identify sites where solar illumination and local topography create desirable conditions for either solar energy collectors or cold traps.

Lunar Orbiter Frame Viewer: Individual controlled, map-projected and cosmetically processed LO frames are available at the PIGWAD site as part of the Lunar Orbiter Frame Viewer (http://webgis.wr.usgs.gov/website/lunorb_html/viewer.htm). Using this Viewer, a controlled Clementine 750-nm mosaic [9] serves as a map base, and users can choose among available LO frames and view them individually and in combination in their correct positions on the lunar surface (*Figure 1*). Equatorial and polar viewers are available, and LO frames in a variety of image formats can be selected for download and local processing and analysis.

Summary: The projected LO frames are complementary to the familiar Clementine lunar views and, as individual projected frames, can be readily retrieved and used for detailed analysis of LO coverage, illumination conditions, geologic analyses of potential landing sites, etc. The LO data provide detailed views of the lunar surface that will also serve as temporal baselines for comparison to data to be acquired by M3, LROC, and other lunar orbiting instruments.

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References: [1] Weller, L. et al. (2007), LPS XXXVIII, 2092. [2] Becker, T. et al. (2005), LPS XXXVI, 1836. [3] Gaddis, L. et al. (2003), LPS XXXIV, 1459. [4] Becker, T. et al. (2008), LPS XXXIX, 2357. [5] Archinal, B. et al. (2006), USGS Open File Report 2006-1367, <http://pubs.usgs.gov/of/2006/1367/>. [6] Petro, N. et al. (2008), LPS XXXIX, 1696. [7] Robinson, M. et al. (2006), 36th COSPAR Scientific Assembly, #1104. [8] Jolliff, B. et al., this volume. [9] Lee, E.M. et al., this vol.

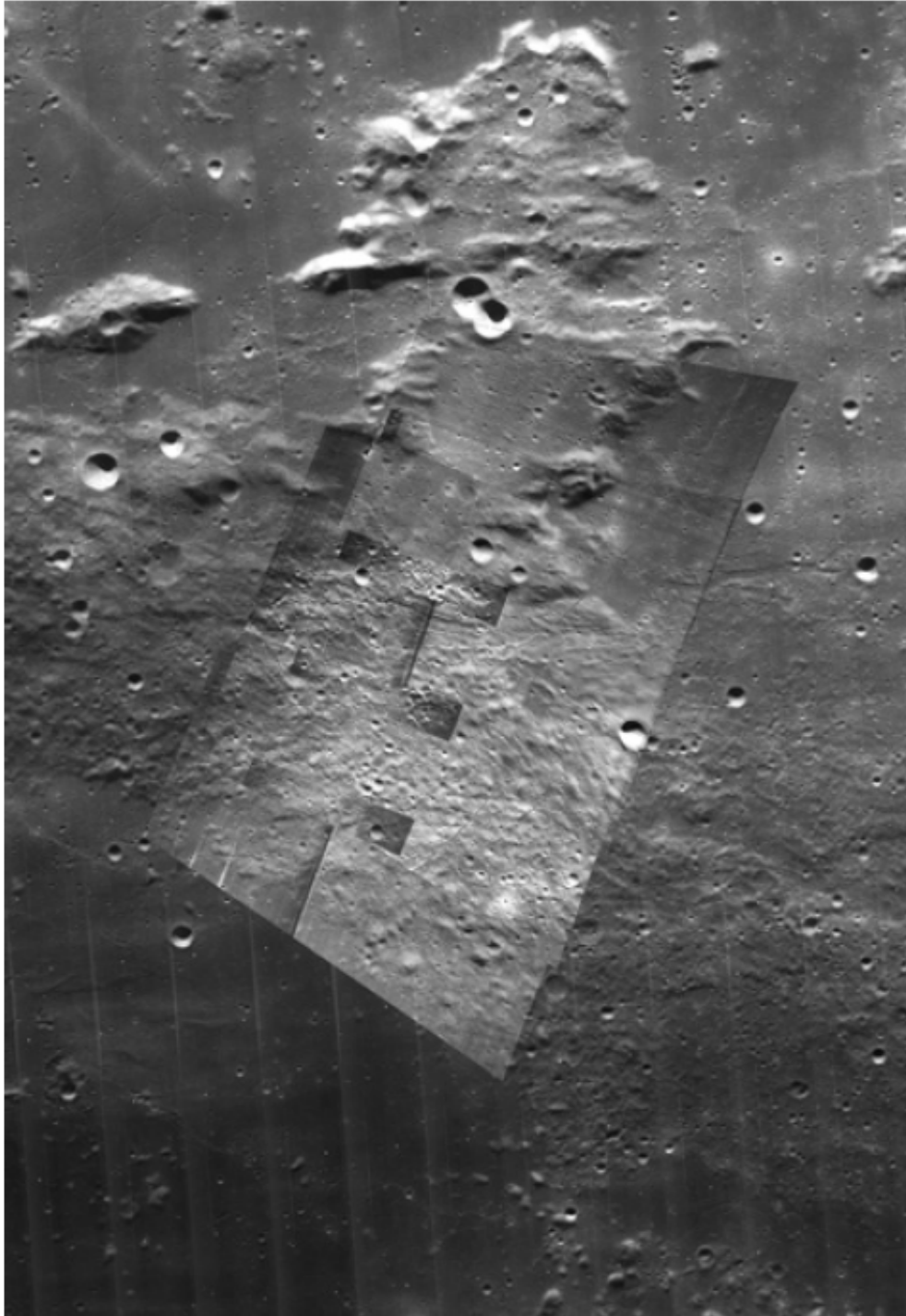


Figure 1. LO views (cosmetically processed and projected) of the Apollo 14 landing site area at Fra Mauro (1.5° to 6° S, -20° to -15°). The base image is LO-IV 120H3. Superimposed on the base are four LO-III frames from site 23 (left to right): 132H-135H and 132M-135M. Average resolution of the VHR medium resolution (M) frames is 6 m/pixel and high (H) is 0.7 m/pixel. North is up.