ALBA MONS, MARS: GEOLOGIC MAPPING INVESTIGATIONS OF THE SUMMIT REGION AND WESTERN FLANK. David A. Crown[1], Daniel C. Berman[1], Stephen P. Scheidt[1], and Ernst Hauber[2], [1]Planetary Science Institute, 1700 E. Ft. Lowell Rd., Suite 106, Tucson, Arizona 85719 (crown@psi.edu); [2]Institute of Planetary Research, German Aerospace Center, Berlin, Germany.

ABSTRACT

Geologic maps of the summit region (32.5-47.5°N, 245-255°E) and western flank (37.5-47.5°N, 230-245°E) of Alba Mons at 1:1M-scale have been produced to determine its geologic history and volcanic evolution (Figure 1). Systematic mapping of volcanic, tectonic, erosional, and impact features utilizes THEMIS IR and CTX images. Mapped features include lava flow margins, lava tubes, valleys, sinuous channels/grooves, impact crater rims, faults, graben, and troughs. We defined six geologic units that characterize the two map regions; these are grouped into the following categories: surficial units (unit Am—*Mantling material*, impact crater units (unit Ac—*Crater material*), Alba Mons caldera units, and Alba Mons flank units. *Alba Mons caldera units 1 and 2* (units AAc_1 and AAc_2) comprise the floors of the two collapse depressions at the summit. The western flank of the volcano consists of a vast flow field (or flow fields) that exhibit numerous lava flows and lava tube systems. The western flank materials are mapped as *Alba Mons lava flow material* (unit AAfl) and *Alba Mons tube-fed lava flow material* (unit $AAfl_t$). Lava flow material typically superposes tube-fed lava flow material; however, volcanic stratigraphy is complex and obscured by mantling deposits in places. Crater size-frequency distributions for mapped volcanic units suggest Early Amazonian ages.

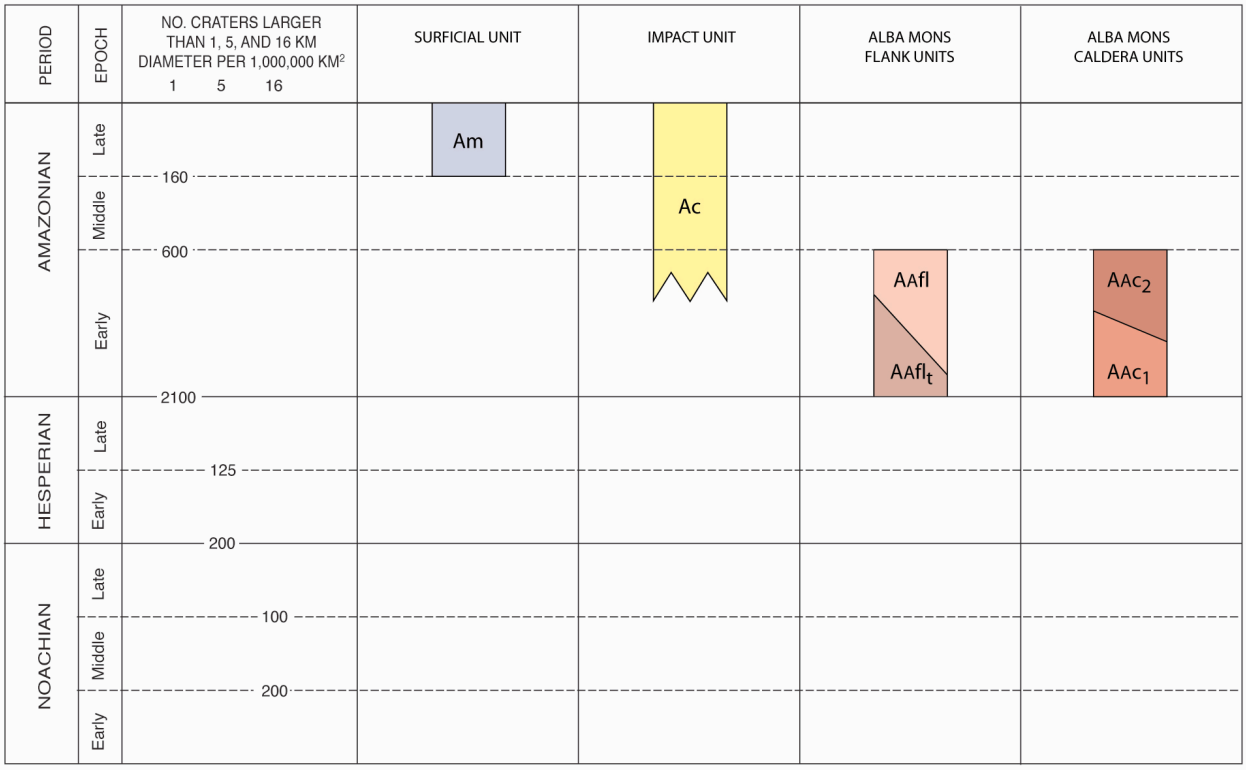

Figure 1. Correlation of Map Units for Alba Mons