

formed during the main shield building phase.

The mottled unit is typified by a rough surface thought to be covered by dust or ash making it difficult to determine distinct surface features [1,2]. This unit is found near the summit of AM, as well as on the west flank where imagery is poor.

Channel-fed flows are distinguished by subparallel linear channels often displaying levees [1,2]. These flows dominate the main shield and are found beginning at the caldera complex and in the lava fan unit further downslope.

The raised ridge unit is similar to the tube-fed flow unit, but lacks collapse of the lava tube and consists of a sinuous to linear ridge or group of adjacent hills [1,2].

Rift Aprons. Ascræus Mons has two large rift aprons on the NE and SW flanks (Fig. 1). These rift aprons are the main source for the large amount of lava flows seen on the plains surrounding AM. These flows have been divided into 7 different units: channel, muted, knobby, smooth, undifferentiated, and ridged. The channel and ridged apron units are comparable to the channel-fed and ridged units found on the main shield.

The muted apron unit is similar to the mottled unit found on the main shield. This unit is heavily mantled by dust making it extremely difficult to distinguish surface features.

The knobby unit is typified by almost karst-like topography and is only found on the west side of AM where the base is heavily modified by possible glacial processes (the Aureole unit), potentially suggesting lava/ice interaction or previous emplacement of the lava flow that was later eroded by glacial ice.

The smooth unit is distinguished by flow features that have a smooth surface without a distinct change in topography. This unit is found on the floor of the rift aprons and on the northwest area of the map and is assumed to be heavily mantled by dust or has experienced less erosion.

The undifferentiated unit has been added for flows from the rift aprons that are difficult to see due to poor image resolution. This unit is undergoing more study and may not be on the finished map.

Plains. The plains surrounding Ascræus Mons have been subdivided into 6 units: aureole, mottled, tabular, channel-fed, fissure-fed, and low shield. The Aureole and low shield unit can be divided up into three separate units each. The mottled and channel-fed units are characterized by the same distinctions found on the main shield and rift apron units.

The Aureole unit is located on the base on the west side of AM. This unit characterizes where potential glaciation altered the flank/base of AM. Long

horseshoe shaped ridges are seen at the western edge of the Aureole unit resembling glacial moraines found on Earth. The western flank has been heavily eroded and shows steep cliff face accompanied by a very low sloped deposit, this makes up the aureole scarp unit. Associated with this unit is an Aureole fan unit that resembles alluvial fans found on Earth.

The tabular unit is defined by large lobate flows whose source is not located in the mapping area. This unit overlies the rift apron and other plains units and is believed to be the youngest flows found in the map area.

The fissure-fed flow unit is typified by flows originating from a fissure found on the plains surround AM.

The low shield unit is distinguished by small shield volcanoes located on the plains NW and East of AM. This unit has been subdivided into two separate flow units based on superposition of flows extruded from a small shield.

Discussion: Mapping reveals a similar sequence of events for the evolution of Ascræus Mons that agrees with [1,2,3,7]: 1) main shield forms, 2) eruptions from the NE/SW rifts emplace long lava flows that surround main shield, 3) eruptions wane and build up the rift aprons and shield fields, 4) glaciers deposit aureole deposit material, and 5) localized recent eruptions along the main flanks, in the calderas, the small-vent field, and possibly within the glacial aureole deposits. Further mapping will reveal the relative geologic timing of eruptive units on and surrounding Ascræus Mons and provide a more complete analysis of the spatial distribution of lava flows.

References: [1] Bleacher J. E. et al. (2007) JGR, 112, E04003, doi:10.1029/2006JE002826. [2] Bleacher J. E. et al. (2007) JGR, 112, E09005, doi:10.1029/2006JE002873. [3] Garry W. B. et al. (2014) LPSC 45, #2133. [4] Bleacher J. E. et al. (2013) LPSC 44, #2074. [5] McGovern and Morgan (2009) *Geology*, 37, 139-142, doi:10.1130/G25180A.1. [6] Bleacher J. E. et al. (2011) LPSC 42, #1805. [7] Crumpler L. S. and Aubele J. C. (1978) *Icarus*, 34, 496-511.

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