GEOLOGIC MAP OF THE ACIDALIA MENSAE AND COLLES REGIONS ON MARS. 
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Background: Acidalia Mensae is an oblong field of tilted mesas roughly trending east-west, with Acidalia Colles encompassing a regime of knobby terrain trending northeast from the heart of the mesa region. Each province extends for approximately 300km in their respective directions in the heart of the vast plains of Acidalia Planitia. This region was mapped as three morphologic units at a 1:20M scale by Tanaka \textit{et al.} \cite{1}. As part of efforts in the 1980s targeting evidences for a putative northern Martian paleo-ocean \cite{2}, Acidalia Mensae was selected and divided into three quadrangles ranging across 26.8\degree W to 36\degree W and 47.5\degree N to 52.5\degree N. The region was then partially mapped using Canvas on a Viking base map, but was unfinished. We propose a completed draft of this document reproduced in ArcMap at a 1:1M scale with four quadrangles (the new quadrangle covering the bulk of the Acidalia Colles region). Previously mapped units have been updated according to the availability of new higher-resolution data – particularly, THEMIS Daytime IR data as a base map across the entirety of the mapping area using ArcGIS/ArcMap 10.4. MOLA was also used to support elevation investigations. Contacts between geologic units were digitized as sensitive to a 1:1M scale and then used to generate polygons representative of the geologic units they bind. Linear features such as levels (paleoshorelines) and point features such as pitted cones (pingos) were mapped after the establishment of units and contacts.

Method: As taken from the Mars Orbital Data Explorer, CTX and HRSC imagery was georeferenced to a THEMIS Daytime IR basemap across the entirety of the mapping area using ArcGIS/ArcMap 10.4. MOLA was also used to support elevation investigations. Contacts between geologic units were digitized as sensitive to a 1:1M scale and then used to generate polygons representative of the geologic units they bind. Linear features such as levels (paleoshorelines) and point features such as pitted cones (pingos) were mapped after the establishment of units and contacts.

**Figure 1.** CTX (VIS, 6m/px) Image is \textasciitilde 13km across. This Image displays either the Acidalia or Deuteronilus level (paleoshoreline).

**Figure 2.** CTX (VIS, 6km/px) The only fluvial rill observed in this study’s mapping area. Structure is \textasciitilde 13km long.

Figure 3: The preliminary geologic map of the Acidalia Mensae and Colles regions described within. The reddish unit is the Acidalia Mensae province, the purple unit is the Acidalia Colles province, scattered blue dots are pitted cones (pingos) and orange lines indicated mapped levels (paleoshorelines).