The northeastern part of the Thaumasia quadrangle is located in the heavily cratered southern part of Mars between the Tharsis Montes and the Argyre basin. An arcuate, relatively high region extends from the southwest part of the map area to the northeast corner. These highlands are bordered by broad, low-lying plains. Another relatively high area in the southeast appears to be resurfaced by either lava or eolian deposits.

Geologic units were distinguished on the basis of morphology, crater and fault density, superposition relations, and albedo. The following units are discussed from oldest to youngest.

The cratered plateau (unit pc) shows little faulting and contains many large craters that have been buried up to their rim crests by either lava, eolian deposits, or both. Cutting this unit are three long, dendritic channels of possible fluvial origin that extend onto the smooth plains unit.

To the north lies the densely-cratered highlands (units hcu, hcm, and hch) whose northern and southern edges show intense faulting. Near the middle and eastern edge of the highlands, many of the faults are buried by deposits that may be volcanic, or eolian, or both.

Within the highlands, two possible volcanic constructs (unit v?) have caldera-like structures surrounded by radially grooved terrain (1,2). At least three other features may also be volcanic, but poor image resolution makes identification uncertain.

The faulted, smooth plains (unit psf) have a higher density of craters and faults and may be higher in elevation than the smooth plains (unit ps). The faulted smooth plains unit may have undergone faulting at the time of the Tharsis uplift.

The smooth plains unit occurs in relatively low areas north and south of the highlands, and in a few intercrater areas on the highlands. It embays the highlands and partially buries the faulted smooth plains unit. The presence of wrinkle ridges on the surface of the smooth plains unit suggests they are lava flows.

After a period of early and intense cratering, the highlands region was elevated by tectonism which produced a set of N-S trending faults (3,4). Uplift may have been associated with volcanic activity, and subsequent flooding and resurfacing of intercrater areas (5). Later uplift of the Tharsis region produced a series of NW-SE faults that cut the western and southern part of the highlands. These events were followed by another period of extensive volcanism. Lava flows filled the low areas to the north and south of the highlands, and buried many pre-existing faults and craters.

**REFERENCES**

Fig. 1. Geologic map of Thaumasia NE quadrangle of Mars.

Symbols:
- ps: smooth plains
- psl: smooth plains-faulted
- v: volcanic flow
- hcu: undifferentiated highlands
- cr: cratered highlands
-chn: moderately faulted highlands
- ch: highly faulted highlands
- pc: cratered plateau
- ct: contact
- gmnw: graben-narrow/width
- r: ridge
- e: escarpment

(Chart details)

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