The Volcanic Evolution of Syrtis Major Planum, Mars

Thesis

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Map Sheet 1: Geological Map of Syrtis Major Planum, Mars (1:2,000,000)

**Stratigraphy**

**Explanation of Map Symbols**

- **Long ridge (discontinuous)**
- **Long narrow linear depression**
- **Small pits**
- **Large linear pits**
- **Tiny rubbly mounds**

**Surficial and Units Basis Formation**

- **Very early volcanic material or remnants**
- **Smooth infilling material**
- **Smooth bedrock ridges**
- **Crater central peak**

**Early Hesperian Formation**

- **Hosts a lobate raised margin**
- **Elongate tongues of material 10-30 m high. A channel runs parallel to long axis close to the tongues axis.**
- **Elongate tongues of material 3-10 m high**
- **Elongate tongues of material**

**Late Hesperian Formation**

- **Very late volcanic material or remnants**
- **Materials associated with the area characterised by, and embayed by later surfaces.**
- **Material associated with the crater.**
- **Lobate margin.**

**Late Hesperian Upper Caldera Floor (Nili/Meroe)**

- **Very bright material with surficial and Isidis basin formation (lHkp)**
- **Smooth bedrock ridges (Montgomery et al., 2012) as remnant of a widespread pyroclastic layer.**
- **Areas which are directly under degraded early Isidis materials.**
- **Indicators of early degradation and sediments and material derived through erosion/deposition, sedimentation, and lava flows.**

**Noachian Formation**

- **Noachian bright plains unit**
- **Noachian dark plains unit**
- **Slopes in CTX and Colour data, the Eo and are not part of the Vpg and not part connected to Vpg and not part**
- **The eHvp and are not part of the**

**Volcanic Plains Formation**

- **Early Hesperian volcanic ridge unit**
- **Early Hesperian knobbed plains unit**
- **Late Hesperian upper Caldera floor (Nili/Meroe)**
- **Late Hesperian lower Caldera floor (Hff)**

**Hesperian Formation**

- **Early Hesperian volcanic ridge unit**
- **Early Hesperian knobbed plains unit**
- **Late Hesperian upper Caldera floor (Nili/Meroe)**
- **Late Hesperian lower Caldera floor (Hff)**

**Amazonian Formation**

- **Early Amazonian volcanic ridge unit**
- **Late Amazonian volcanic ridge unit**
- **Late Amazonian lower Caldera floor (Hvp)**
- **Late Amazonian upper Caldera floor (lHvf)**

**Eo Formation**

- **Lobe in a lobate ejecta blanket.**
- **Volcanic Plains Formation**
- **Hosts a lobate raised margin**
- **Elongate tongues of material 10-30 m high. A channel runs parallel to long axis close to the tongues axis.**

**Explanation of Mapping Symbols**

- **Negative relief features**
- **Aeolian features**
- **Vent regions**
- **Elevation contours**
- **Channels**
- **Wide channels**
- **North East Fissure Zone**
- **Caldera Complex**
- **Syrtis Major Central**
- **Approximate**

**Legend and Description**

- **Map symbols include:**
  - **Volcanic features:**
  - **Geological features:**
  - **Structural features:**
  - **Surface features:**

**Distribution and Characteristics**

- **Detailed mapping of volcanic features:**
- **Identification of geological units:**
- **Distribution of structural features:**
- **Surface mapping and characteristics:**

**Conclusion**

- **Analysis of geological and structural evidence:**
- **Interpretation of volcanic activity:**
- **Implications for Mars' history:**

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*All model ages with error bars are from this thesis and use the Hartman [2004] production function and uses the error bars as a guide to the total range of time over which the group could have been active. A '?' indicates uncertainty about the timing of events.*

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*Figure completely appropriate of image.*