Geophysical Research Abstracts
Vol. 16, EGU2014-9355-1, 2014
EGU General Assembly 2014

Phlegra Montes Climate Geomorphology

Julia Schulz (1), Stephan van Gasselt (1), Csilla Orgel (1,2)

(1) Freie Universitaet Berlin (FUB), Planetary Sciences and Remote Sensing Group, Institute of Geological Sciences, Berlin, Germany, (2) Department of Physical and Applied Geology, Institute of Geography and Earth Sciences, Eötvös Loránd University

The Phlegra Montes (PM) are a north-south trending ridge and catchment-system northeast of the Elysium volcanic rise. They are located in the Martian northern hemisphere spanning more than 12 degrees in latitude. Together with the Tartarus Montes they form a complex system of ridges and isolated hills that provide insight into large-scale climate-controlled geomorphologic settings on Mars. Despite their representative character the PM have been studied in very little detail yet and require a more systematic assessment as it helps to put constraints on the evolution of Amazonian climate and its associated landforms.

Surface features on Mars indicative of ice, such as debris aprons and lineated valley fill, are known to occur within two latitude belts between approximately 30°-50° north and south. A transect of this latitude belt is covered by features of the Phlegra Montes that have long been known to host ice-related erosional features. Our research is motivated by the assumption that if young-Amazonian climate variations have controlled formation and appearance of geomorphic landforms on Mars as suggested by earlier research work, it must be observable in this system and, secondly, latitudinal trends and variations should provide measurable characteristics. If so, and if surface ages based on crater-frequency analysis in the range of 50-100 Myr are consistent with these assumptions, the exact timing of climate shifts is assessable. Our analyses show that not only a detailed timing can be assessed but that landforms have different morphometric characteristics as a function of latitude.