Claritas rise, Mars: Pre-Tharsis Magmatism?

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ABSTRACT. Claritas rise is a prominent ancient (Noachian) center of tectonism identified through investigation of comprehensive paleotectonic information of the western hemisphere of Mars. This center is interpreted to be the result of magmatic-driven activity, including uplift and associated tectonism, as well as possible hydrothermal activity. Coupled with its ancient stratigraphy, high density of impact craters, and complex structure, a possible magnetic signature may indicate that it formed during an ancient period of Mars' evolution, such as when the dynamo was in operation. As Tharsis lacks magnetic signatures, Claritas rise may pre-date the development of Tharsis or mark incipient development, since some of the crustal materials underlying Tharsis and older parts of the magmatic complex, respectively, could have been highly

resurfaced, destroying any remanent magnetism. Here, we detail the significant characteristics of the Claritas rise, and present a case for why it should be targeted by the Mars Odyssey, Mars Reconnaissance Orbiter, and Mars Express spacecrafts, as well as be considered as a prime target for future tier-scalable robotic reconnaissance.
