

Edgett, K. S. (2002), Sedimentary rock outcrops of northern Terra Meridiani, Mars, Abstract 26-7, *Geological Society of America Abstracts with Programs*, vol. 34, no. 6, p. 71.

SEDIMENTARY ROCK OUTCROPS OF NORTHERN TERRA MERIDIANI, MARS.
EDGETT, Kenneth S., Malin Space Science Systems, P.O. Box 910148, San Diego, CA 92191-0148, edgett@msss.com.

Over 52,000 1.5–12 m/pixel images have been acquired by the Mars Global Surveyor (MGS) Mars Orbiter Camera (MOC). The images show that heavily cratered terrain, considered to record the early history of Mars, is layered. Unfortunately, much of Mars is mantled by dust, silt and sand, thus most outcrops are in crater and trough walls. However, there are a few places exhibiting large regional exposures. The largest is in north Terra Meridiani (8°N–5°S, 8°W–9°E). These layers are laterally continuous over hundreds of kilometers. Some can be traced west and northwestward until they disappear amid craters of ancient, heavily cratered terrain. The layers are interbedded with craters that also contain layers. Beds are nearly horizontal and form cliffs. In some places they form buttes and mesas of a scale similar to those of Monument Valley in Arizona/Utah. The bedding properties, buttes, and cliffs indicate the material is indurated and is sedimentary. Observations from the Viking Infrared Thermal Mapper and MGS Thermal Emission Spectrometer suggest the outcrop surfaces have effective particle sizes of very coarse sand (or coarser); this might indicate that a thin regolith has developed on the outcrops. A Phobos 2 Termoskan image shows that different layers (or groups of layers) exhibit different thermal properties, indicating differing physical properties of the overlying, thin regolith. The Termoskan and MOC images, together, also show that eolian mantles obscure formerly-exposed outcrops in adjacent intercrater plains. True lithostratigraphic geologic mapping of the layers is underway. Determination of processes that exposed the layers is difficult. There are no streambeds to indicate fluvial, nor yardangs to indicate eolian, erosion. Likewise, the depositional environments and sediment provenance cannot be uniquely determined. Colleagues have proposed a tremendous range of origins, but all are speculative, at best: the geology and relation to surrounding terrain is very complex.

Key Words: Mars, martian, sedimentary rock, stratigraphy