



Characterization of Aqueous Surface Deposits on Mars

Justin Thompson, Paul Benoit, Derek W.G. Sears, Mikhail Kareev
Arkansas Oklahoma Center for Space and Planetary Sciences, Fayetteville, AR 72701

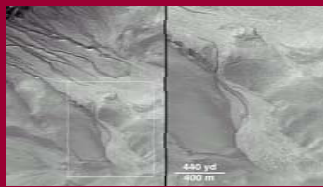
Water on Mars

Surface features on Mars indicate that the planet was once abundant in water on its surface. However, at present temperature and pressure conditions on the surface either would freeze or evaporate water immediately. In contrast, recent observations sent back by NASA Mars missions suggest the presence of near surface water and its possible seepage out onto the Martian surface.

My research centers on the characterization of Aqueous like surface deposits on Mars through visible spectroscopy and visual analysis.

Mars Surface Features

- East Gorgonum Crater
- Mars Global Surveyor (MOC)
- September 10, 1999
- Vista of martian gullies on the northern wall of a 12km wide impact crater east of the Gorgonum Chaos region



Methods

Experimentation will be conducted in the Andromeda Chamber using JSC-1 martian soil simulant. Mixtures of water/soil content will be produced in volume percentages of 5%-50% in intervals of 5%. These mixtures will then be placed under martian conditions and a visible spectra of each will be taken. The process will be recorded using a wireless camera system and any surface features produced during the process will be analyzed and compared to current Mars surface



Visible

Spectroscopy

Visible Spectroscopy of JSC-1 martian soil simulant will be conducted in the andromeda chamber under martian conditions in order to determine the effect on the spectra due to water content.

Visual Analysis

Visual analysis of results will be conducted by digital camera in order to classify possible features formed during experimentation into classes presently seen on the martian surface, such as outflow channels, gullies, valleys, and dry riverbeds, flood plains, and sedimentary deposits.

Schedule

Experimentation with JSC-1 martian soil simulant in order to characterize martian aqueous surface features will be conducted in the Andromeda Chamber over the next three weeks.

Predictions

Preliminary Predictions are:

1. The spectra for each set of water volume contents will differ greatly.
2. Aqueous-like surface features on Mars are reproducible under martian conditions as a result of water contained in the soil.

