



Environmental Sciences Seminar Series Presents:

Martian River Deltas and the Origin of Life

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McLane Hall Room 161, CSUF, Fresno

(Reception at 5:00 pm, followed by seminar at 5:20 pm)

There remains significant debate as to whether there were persistent water flows, significant precipitation and standing water bodies during the early Noachian history of Mars. Recent Mars Global Surveyor (MGS) Mars Orbiter Camera (MOC) images of meandering channels associated with a Noachian-age, lacustrine delta within Holden NE Crater show evidence for persistent water flows.

The topmost layer shows clear evidence of meandering streams associated with four depositional lobes. The channels record a complex history of migration, avulsion and bifurcation, forming a distributive pattern with up to 5 orders of branching. Several channels show a distinct transition from initially straight, to highly sinuous followed by classic chute cutoffs.

Relatively smooth and more brightly reflective layers deeper in the crater fill may represent more-flat lying lacustrine bottom sets, and could speculatively be evaporitic. The transition from smooth lower layers that lack channel belts, to straight channels to meandering channels suggest a progressive evolution of the sedimentary fill.

Our analysis of the surface features, as well as estimates of accumulation rates of the underlying 150 meters of strata within the crater fill, suggests that Holden NE Crater may have contained a lake that persisted for a few thousand to possibly as long as a few million years. This supports the hypothesis that early Mars was both warmer and wetter during the Noachian. In addition, these sediments represent a probable watery habitat that should be investigated for evidence of possible extinct Martian life.

All members of the professional, educational, and research communities are welcome. For additional information, please contact the Earth & Environmental Sciences department office at (559) 278-3086 or vengieb@csufresno.edu. Parking restrictions will be relaxed in Lots O and P (Barstow and Maple Avenues) between 4:30 and 7:00 pm for seminar participants. An online campus parking map is available at: <http://www.csufresno.edu/univrelations/map>.