



Physical Research Laboratory, Ahmedabad

Colloquium 17-06

- Speaker:** Dr. S. Vijayan
Scientist - SD, Planetary Science Division, PRL, Ahmedabad.
- Title:** "Mars: Impact Cratering and volatiles "
- Time:** Wednesday, 22 February 2017, 16.00 hrs.
- Venue:** K. R. Ramanathan Auditorium, PRL

Abstract

Impact craters are the natural windows to explore the planetary bodies. They are one of the predominant surface features on the planetary bodies that formed from the early stage of planetary evolution and continuing till date (sporadically in very small size and scale). Though billion-year-old Cratering records on the Earth are not well preserved, Mars and other planetary bodies do preserve it. On Mars, the recent to older impact craters are preserved and they vary in sizes from few meters to 100's of km. Mars hosts unique type of craters called layered ejecta craters, which are formed due to interaction with the subsurface volatiles. Along with craters, the Mars holds ample evidence for fluvial activities. The outflow channels on the Martian surface are the typical representative for surface fluvial flows. However, majority of the Martian fluvial activities ceased during the Noachian epoch ($\sim >3.7$ Ga), which is still a quest. This talk will discuss about the Cratering history on Mars, their likely correlation to fluvial activities and their contextual relationship to Mars. The geomorphic and chronological evidence suggests that the Martian fluvial activity not completely ceased during Noachian epoch, but occurred sporadically at localized zones during Amazonian ($< \sim 3.4$ Ga) and Hesperian ($\sim 3.4-3.7$ Ga) epochs. Chronologically, this implies that the volatile source was preserved in the Martian subsurface to form fluvial related channels on the surface or by forming layered ejecta craters on the surface of Mars.

The Speaker

Dr. Vijayan obtained Ph.D in 2013 from Anna University, Chennai. During his Ph.D he worked on understanding the formation of impact craters on the moon and correlated that to the terrestrial crater (Lunar crater). He also developed an automated algorithm for detection of craters from lunar remote sensing images. After finishing his Ph.D, he joined PRL for his postdoctoral fellowship and his research interest focused on Martian impact craters, through which he aim to understand the volatile distribution on Mars. He is the recipient of the Lunar and Planetary Institute Career Development award.

Tea at 15:30 hrs.

ALL ARE WELCOME

