[EJ] Evening Poster | P (Space and Planetary Sciences) | P-PS Planetary Sciences

# [P-PS07]Mars and Mars system: results from a broad spectrum of Mars studies and aspects for future missions

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Sun. May 20, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

Unprecedented progress in being made in our understanding of the planet Mars, especially because of new data from the US, European, Russian, and Asian missions to Mars. Eight spacecraft are currently operating at Mars, with six in orbit (Odyssey, MRO, MAVEN, Mars Express, Mangalyaan and TGO) and two on the surface (MSL-Curiosity and MER-Opportunity), the largest number ever at any given time. In addition InSight Lander is on track for launch in 2018, and Mars 2020, ExoMars and the Emirates Mars Mission in 2020. All this is a clear demonstration of public's strong fascination with and commitment to Mars exploration and the resulting scientific bonanza. Synergistic investigations with ongoing or already completed missions along with modeling studies and earth-based observations are gradually revealing the nature of Earth's most closely resembling planet that took on a different evolutionary track. Morphology and variable phenomena seen on the surface (RSLs, for example) indicate the red planet may possibly be still active, and require a clear understanding of its current geologic and atmospheric state, climate evolution and habitability. Thus, this session is planned to discuss recent results from a broad spectrum of Mars studies encompassing the interior, surface, atmosphere, plasma environment, and the Mars system including its two satellites. Abstracts on instrumentation and future mission plans are also encouraged for this session, as both the presenters and the audience would greatly benefit from ensuing discussions and feedbacks.

# [PPS07-P05]Reconstructing paleoenvironments in Robert Sharp Crater, Mars: Evidence for a fluvio-lacustrine system

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Keywords:Geological Mapping, Mars Geology, Robert Sharp crater

Recent mineralogical studies suggest the presence of an iron chlorine hydroxide, namely akaganeite. This mineral is known to form under specific conditions, and it has been detected in the Robert Sharp Crater, located at Martian low-latitudes (133.59E, -4.12N) [1]. Its detection implies an acidic and oxidizing environment in this region. Indeed, akaganeite typically forms in highly saline and chlorinated aqueous environments on Earth. These akaganeite deposits might be the ultimate alteration phase of a drying lake within the Robert Sharp Crater. Hence, we carried out morphological and stratigraphical studies, as well as age determination by crater counting to constrain the geological and hydrological history of the region [2]. Finally, we found that the Robert Sharp Crater has known a varied geological history, including the formation of fretted terrains and an airfall filling during the Hesperian epoch. Furthermore, the presence of valleys and fan-shaped deposits, and the detection of various aqueous minerals, in the region suggest the possibility of a fluvio-lacustrine activity phase within the crater during the last period of the Martian chronology, also named Amazonian epoch. The presence of a putative paleolake should be short-time and estimated between 1.3 Ga and 500 Ma. Thus, by reconstructing the paleoenvironments in the Robert Sharp Crater, we demonstrate that Mars has known several episodes of aqueous activities well after the late Noachian/ early Hesperian period.

***References:*** [1] Carter, J. et al. (2015) *Icarus*, 253. [2] Brossier, J. F. et al. (*in prep*).