
[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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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-P08] A simulation for Phobos gravity field recovery from a quasi-satellite orbit

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Owing to the gravitational acceleration of Phobos is far less than Mars, the satellite cannot orbit Phobos. Currently the information of Phobos gravity field are mainly retrieved from several Mars Express flybys. The Mars missions in plan, like Martian moons exploration mission (MMX) from JAXA and DePhine proposed by ESA, will apply a quasi-satellite orbit on Phobos, which is supposed to make a great contribution to gravity field recovery. In this work, a quasi-satellite orbit is designed for Phobos gravity field recovery. This orbit has nearly a comprehensive global mapping on Phobos surface and do not need frequent track maneuvering. The simulation shows that a ten-degree gravity field model could be recovered and the model accuracy is assessed by power spectrum analysis. With such a quasi-satellite orbit, the Phobos gravity field will gain significant improvement.