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MELOS 火星探査ミッションの概要
Mars Exploration Mission MELOS: An Overview

佐藤 毅彦 [1*], 今村 剛 [1], 松岡 彩子 [1], 岡田 達明 [1], 宮本 英昭 [2], 並木 則行 [3], 石原 吉明 [4], 橘 省吾 [2], 山岸 明彦 [5], 久保田 孝 [1]
Takehiko Satoh[1*], Takeshi Imamura[1], Ayako Matsuoka[1], Tatsuaki Okada[1], Hideaki Miyamoto[2], Noriyuki Namiki[3], Yoshiaki Ishihara[4], Shogo Tachibana[2], Akihiko Yamagishi[5], Takashi Kubota[1]

[1] 宇宙航空研究開発機構, [2] 東京大学, [3] 千葉工業大学, [4] 国立天文台, [5] 東京薬科大学
[1]Japan Aerospace Exploration Agency, [2]University of Tokyo, [3]Chiba Institute of Technology, [4]National Astronomical Observatory, [5]Tokyo U of Pharmacy and Life Science

While the scientists group continues discussion on the scientific target for Japan's Mars mission, a "sure" step of exploration needs to be followed from the engineering point of view. The idea is that we will achieve an orbital insertion plus entry-descent-landing (EDL) demonstration in MELOS1 mission. The EDL module will also carry a fair amount of science payload so it is not a mere demonstrator but also a platform of scientific mission. A upscale MELOS2 mission with a well-equipped lander will follow and enhance, together with MELOS1 and future MELOSX missions, our understanding about the red planet, Mars.

Currently, there are 2 proposals for the orbiter mission. One is Martian meteorology that complements the comparative study of terrestrial planet's meteorology. Unfortunately, Akatsuki's first attempt of Venus orbital insertion (December 2010) turned out to be unsuccess, there is a good chance of another orbital insertion a few years later. The knowledge of the Earth meteorology will be improved by Akatsuki at Venus and by MELOS1 at Mars. Another is the escaping atmosphere that is thought to be a key process of today's tenuous atmosphere of Mars. To overcome NASA's MAVEN (launch in 2013), a group of people proposes a "2 orbiter" configuration for this mission. The mission needs to be around the maximum of 25th solar cycle (~2024). The lander group proposes 4 themes: the surface environment study with a rover; the interior study through seismology and rotation measurements that benefit most from a network of ground stations; astrobiological study that focuses Martian methane and related possible metabolism; and a "flyby" sample return mission that captures the dust and the atmosphere ~40-45 km altitude while flying.

Proposed ideas are all unique and valuable for the study of Martian system that produced today's dry/cold environment of Mars. We continue evaluation of proposals in 2011 and 2012. Will decide what we will do with MELOS1 (an orbiter and an EDL demo) by fall of 2012. The mission will then be proposed for launch in early 2020's that will be a similar time frame with NASA's MSR (Mars Sample Return) Orbiter and ESA's network lander mission.
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