



## **MELOS - Japan's Mars Exploration Plan for 2010's -**

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Since an unsuccessful end of the NOZOMI mission, the second Mars mission has been long-awaited in Japan's planetary science community and here it is now. The new Mars mission is named MELOS which is an abbreviation of "Mars Exploration with a Lander and OrbiterS", a full explanation of how the mission looks like. This fully utilizes the capability of Japan's H-IIA rocket (with 4 solid-propellant boosters), putting up to 3 tons of spacecraft into Mars orbit.

The first orbiter performs in-situ observations of escaping atmosphere (one of NOZOMI's science objectives) along its low-altitude polar orbit. To acquire data under conditions of high solar activity (expected solar maximum of 2022), MELOS is required to be launched during the window in 2018. The second orbiter captures snapshot images, in the EUV range, of escaping atmosphere from a distance of several Mars radii. The second orbiter also monitors the solar-wind condition outside of the bow shock, essential information to understand atmospheric escapes as a response to the solar wind. The second orbiter's main target is Mars meteorology. Japan's Venus Climate Orbiter, PLANET-C, will be launched in 2010 to study unique meteorological system on Venus. To complete our understandings on meteorology of terrestrial planets, Mars is going to be the target after Venus. The lander will carry several science packages: the seismology package, the geochemical package, the meteorological package, etc. Scientific objectives as well as appropriate instruments have been under discussion.

Collaboration with ESA's Mars NEXT (ESA) is considered extremely valuable as this could be the first opportunity to challenge the outstanding problems which would only be solved by network observations. An overview of mission planning, as well as the instruments under consideration, will be presented.