

# Japanese Mars mission in the future space program

S. Sasaki (1), S. Tanaka (2), T. Okada (2), H. Miyamoto (3), N. Terada (4)

(1) Mizusawa Astrodynamical Observatory, National Astronomical Observatory of Japan, Oshu, Japan, (2) ISAS/JAXA, Japan, (3) Univ. Tokyo, Japan, (4) NICT, Japan  
(sho@miz.nao.ac.jp / Fax:+81-197-22-7120)

Japan Aerospace Exploration Agency (JAXA) is now constructing a new category of space activity, “Exploration”, in the course of the long term vision released in 2005. At present, this “Exploration” program is focused on investigation and utilization of the moon. A couple of lunar landing missions at the period around the year 2015 will be followed by missions aiming at lunar utilization. Scientific investigation following SELENE is also involved. A task team in JAXA is now discussing that the target of “Exploration” should not be necessarily limited to moon but include other planetary bodies. One candidate is Mars.

Various Mars missions are either ongoing or actively planned by several space agencies in the world. At this moment, the most prominent objectives among Mars missions are concentrated on possible life and water on Mars. Not only US but also ESA is setting a biological target for Martian expedition. The aim of planned Exo-Mars is to characterize the biological environment on Mars for robotic missions and then human exploration. However, we would like to remind that Mars is a planet holding other various and significant scientific targets. Recent high resolution images by Mars Global Surveyor and Mars Express show very young volcanic activities, some of which might be associated with water discharges. Studying young activities by a landing mission, especially with the integrations of observations by geological/geochemical/geophysical instruments should have significant importance in understanding the present red planet. Moreover, studying the Martian interior by geophysical observations is prospective for Japan after experiencing SELENE, Lunar-A, and other lunar missions. In “Exploration” program for the moon, JAXA with other institutions will develop surface rover with scientific instruments, a broadband seismometer, thermal measurements, and measurements of planetary rotation. These instruments will hold capabilities to applied to future Martian missions, which will be fulfilled under the international collaboration.

Moreover, some consider a future back-up mission after Japanese Mars mission NOZOMI. Although NOZOMI produced interplanetary observation data, the insertion to circummartian orbits was finally given up in 2003. Future landing missions will require an orbiter for efficient data transfer. If 20kg payload would be allowed in the data communication orbiter, important measurements of the plasma environment around Mars can be executed with a scientific target to clarify the atmospheric escape.