

The MMX mission

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Martian Moons eXplorer (MMX) is the mission studied intensively by JAXA with the planned launch in 2022. It will explore the two moons of Mars, namely, Phobos and Deimos, and return samples from Phobos. The sampling will be done after detailed inspection of the moon from quasi-orbits around it is performed, while less detailed remote-sensing is planned for Deimos. The main objective of MMX is to understand the origin of the two Martian moons that remains controversial, with its goal being to reveal how small bodies at the outer-edge of the rocky-planet region behaved upon formation of the solar system. Mars is located at the outer-edge of the rocky-planet region, or at the gateway position to the snow line that demarcates the inner- and the outer-solar system. It is from beyond the snow line that water and volatiles were transported to the rocky planets. Without the across-the-snow-line transport, habitability is not an option for a rocky planet that was born dry inside the snow line. Small bodies, like those we find as primordial asteroids today, must have been the capsule for the transport, and thus, understanding the behavior of small bodies around the snow line during the formation of the solar system is one of the goals of planetary science as well as of MMX. In this talk, the mission scenario of MMX will be introduced and also discussed is the science strategy towards the mission goal via achieving its objectives.