

## Examination of Mission Strategy and Spacecraft System to Study Martian Atmospheric Escape

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The atmospheric escape from Mars is considered to be closely associated with the evolution of the Martian atmosphere as well as the existence of the water on Mars. We are now investigating a project to study the global feature and the physical process of the atmospheric escape from Mars. It is expected to consist of two orbiters; the mother satellite is aimed to make in-situ observation of plasma and thin atmosphere at about 150 km altitude, and atmospheric imaging at the apo-apsis of 3RM altitude. The daughter satellite is the solar-wind monitor. We are planning to make simultaneous observation of the atmospheric escape by the interaction with the solar wind by these two satellites. Now we are examining the quantitative measurement targets to fully understand the Martian atmospheric escape. At the same time, the sorts and performance of scientific instruments on these orbiters are examined. And furthermore, the preliminary spacecraft design, orbit design and mission plan to achieve the scientific goal are investigated.

Keywords: Mars, Planetary atmosphere, Solar wind, Planetary Magnetic Field, Plasma