

IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Governmental Human Spaceflight Programmes (Overview) (1)

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JAXA'S ACCOMPLISHMENTS AND CHALLENGES FOR HUMAN SPACE FLIGHTS PROGRAM

Abstract

JAXA's Human Space Flight Programs is based on its accumulation of space development and research and is continuously accumulating new history. JAXA has been steadily carrying out various missions in the Japanese Experiment Module, "Kibo", since its assembly complete in 2009, while expanding and improving the functions of the Kibo. Utilizing such facilities that have become more convenient to use, JAXA is expanding the utilization not only for a wide range of scientific experiments use, but also for commercial use and international cooperation missions including Asian countries. In addition, JAXA is providing cargo resupply missions to ISS in regular cadence (H-II transfer Vehicle: HTV), and also is performing technology demonstration in Kibo including the environmental control and life support system (ECLSS). The outcome of these missions will contribute to the maturity of technology for the future crewed space exploration. Regarding the Japan's policy for Space Exploration, Japan decided to participate in the U.S.-proposed international space exploration program, the Artemis Program" in October 2019. In 2020, Japan signed Artemis Accords in October, and the Memorandum of Understanding regarding Gateway entered into force in December. According to the MOU, JAXA is planning to develop the ECLSS for the International Habitation Module (I-HAB), and furthermore, to supply logistics with the new space vehicle, HTV-X. ECLSS and HTV-X are under development based on the experiences of the ISS program. In December 2021, Prime Minister Kishida referred that Japan aimed to put a Japanese astronaut on the moon in the late 2020s, that indicates the strong supports of the Japanese government to the Artemis Program. For lunar exploration, JAXA is developing Smart Lander for Investigating Moon (SLIM) to demonstrate precision landing on the lunar surface (targeting JFY2023). In addition, under collaboration with Indian Space Research Organisation (ISRO), JAXA is preparing for the Lunar Polar EXploration (LUPEX) to study water resources on the Moon (targeting in 2025). Furthermore, JAXA has been conducting concept study regarding crewed lunar surface mobility (Pressurized Rover) and started development of ground models for its key technologies. For Mars exploration, utilizing the experiences through HAYABUSA2, JAXA is working on developing Martian Moon eXploration (MMX) aiming to bring back samples from one of the Martian Moon, Phobos. This article provides JAXA's recent activities for future Human Space Flight Programs brushing up the technique and knowledge obtained through the ISS program and other past missions.