

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

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JAXA'S OVERVIEW OF HUMAN SPACEFLIGHT PROGRAMS AND SPACE EXPLORATION

Abstract

This paper highlights JAXA's dynamic Human Spaceflight Programs, built upon a foundation of space research and development, continuously shaping new chapters in space exploration. Since the completion of the Japanese Experiment Module, "Kibo", on the International Space Station (ISS) in 2009, JAXA has conducted diverse missions, enhancing Kibo's capabilities and broadening its utility for scientific, commercial, and international cooperation endeavours, extending outreach to Asian, African and South American nations. These activities have been strongly supported by various Japanese commercial companies throughout the assembly, operation and utilization of Kibo. The successful execution of nine cargo resupply missions to the ISS by HTV (H-II transfer Vehicle) emphasises JAXA's commitment, with the HTV-X representing the next frontier in cargo transfer vehicles. Looking beyond 2030, JAXA is exploring commercial module concepts and transfer vehicles, envisioning a vibrant future for low Earth orbit (LEO) economy. Japan's participation in the Artemis Program, underscored by its signing of the Artemis Accords and Memorandum of Understanding on the Gateway, reflects its forward-looking approach. JAXA's commitment to developing the Environmental Control and Life Support System (ECLSS) for the International Habitation Module (I-Hab) and supplying logistics to the Gateway using HTV-X highlights its pivotal role in lunar exploration. In January 2024, JAXA succeeded in the Smart Lander for Investigating Moon (SLIM) mission to demonstrate precision landing on the lunar surface. In addition, under collaboration with Indian Space Research Organisation (ISRO), JAXA is preparing for the Lunar Polar EXploration (LUPEX) mission to study water resources on the Moon. Concurrently, JAXA has been conducting concept study regarding crewed lunar surface mobility (Crewed Pressurized Rover) and started development of ground models for its key technologies. This article presents a comprehensive overview of JAXA's latest endeavours in Human Spaceflight Programs, leveraging its rich expertise garnered from the ISS program and previous missions, charting a course toward the future of space exploration.