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HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Utilization & Exploitation of Human Spaceflight Systems (3)

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NASA COMMITMENT TO EXTEND THE INTERNATIONAL SPACE STATION THROUGH AT LEAST 2024: THE RESEARCH AND BENEFITS OF THE DECADE AHEAD

Abstract

In January 2014, at the 15-year anniversary of the launch of the first International Space Station (ISS) element, the United States President announced a commitment to extend ISS to at least 2024, with remaining option to continue beyond. The U.S. commitment is based on a variety of benefits, from achieving milestones in research critical for exploration, to continuing to foster commercial development in low Earth orbit. For external facilities, extension of ISS to 2024 offers 90% more research opportunities for external instruments in the Earth sciences, astrophysics, and heliophysics. Major instrument selections are expected over the coming two years. For internal experiments using the multi-purpose research facilities on ISS, extension offers 45% more access, including signifanctly more research in new life sciences facilities and for open source science including geneLab and materialsLab, where systematic data collections will be made available to a much broader scientific community than can participate in individual experiments onboard ISS. Technology demonstrations currently under development will have the time needed to develop and validate new systems for sustained use on future missions. For crew-tended science, extension from 2020-2024 offers 45% more hands-on research and the participation of about 48 more total crewmembers in human health experiments. As we head into the first U.S.-Russian joint 1-year expedition, and work internationally to address on a consolidated set of international human health risks for exploration, this extension offers the time needed to reduce these risks and be ready for sustained missions beyond Earth orbit.

Major research accomplishments during the first 3 years of full utilization (scientific discovery, exploration applications, and benefits here on Earth) provide an important context for the need to commit to extending ISS at this time. A decade of research ahead provides significant motivation for planning additional capabilities and scientific campaigns. Extension is particularly important for commercial research development being fostered by the Center for the Advancement of Science in Space as part of the designation of U.S. capabilities on ISS as a National Laboratory as it allows for iterative development cycles to take advantage of new discoveries.