

Canada
Agenda Item 5 – Space Debris
Delivered by: Laura-Alexe Marcoux, Canadian Space Agency

Committee on the Peaceful Uses of Outer Space
Scientific and Technical Subcommittee
Sixty-second session, Vienna, Feb 3-14, 2025

Chair, Distinguished Delegates,

Canada recognizes the pivotal role of international collaboration in addressing the challenges to the safety and sustainability of the outer space environment. As our reliance on space-based applications grows, Canada reaffirms its commitment to work collaboratively with other States to advance space science, technology, and other solutions to address the complex issue of space debris.

Space Situational Awareness remains central to Canada's approach to space sustainability, and Canada continues to operate its own space telescope in low-Earth orbit, the Near-Earth Object Surveillance Satellite or NEOSSat. Launched in 2013 and operating at 800km altitude, NEOSSat continues its dual mission of space astronomy and space situational awareness. NEOSSat has expanded its capability to track objects in low-Earth orbit, including objects involved in close approaches with NEOSSat, cis-Lunar orbits and beyond, such as the James Webb Space Telescope (JWST). NEOSSat's unique capabilities allow Canada to contribute high-quality observation data for many applications, including orbital predictions, object characterization and collision avoidance.

In keeping with open data-sharing practices, NEOSSat's precision ephemeris, both definitive and predicted, are published on the Canadian Space Agency's Open Data Portal. This data is useful for researchers aiming to develop better models of the orbital environment around the Earth, including relationships between space weather and atmospheric drag. The raw images from NEOSSat's astronomy dataset are also

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published on the Open Data Portal and could facilitate characterization of the space environment.

Canada also leverages data from its Sapphire satellite to enhance international tracking and monitoring of space objects. Sapphire contributes to risk mitigation efforts by providing essential data for collision avoidance and tracking space debris. Canada is actively investing in advanced space debris removal technologies. For instance, in September 2024, the Government provided funding for the on-orbit demonstration of microthruster technology and further reaffirms Canada's leadership in innovating debris mitigation efforts.

Chair,

Sustainable space operations also require robust analytical capabilities to assess the data and decision-making processes to ensure that timely and appropriate action is taken in response to close approaches. Canada's Conjunction Risk Assessment and Mitigation System (CRAMS) has been operational since 2011 to provide actionable insights to private and public satellite operators based on the conjunction data messages produced by the US Space Surveillance Network. Recent updates allow improved data quality and maneuver assessment, designed to stay ahead of emerging concerns including increased launch cadence and modern on-orbit propulsion technologies. Through CRAMS, Canada supports international efforts to share critical data with satellite operators worldwide to enhance safety and sustainability.

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Humanity is returning to the Moon and, for the first time, pursuing a sustained human presence. This time, it will not just be one country, but several countries have ambitions to land humans on the lunar surface. A sustainable lunar presence requires strong international collaboration. This underlines the role of COPUOS as a platform for international collaboration and space governance development.

Within the Long-Term Sustainability of Outer Space Working Group, Canada submitted a conference room paper in 2023 that proposed extending relevant elements of the 21 Long-Term Sustainability Guidelines to deep space activities. Although not originally designed for deep space exploration activities, several LTS Guidelines are relevant to the safety and sustainability of exploration activities related to the Moon and other celestial bodies. However, specifically including those related to the Moon is an area that is not clarified in the current guidelines. This includes working through considerations such as measures to avoid harmful interference. The unique dynamics of this region mean that debris can remain for extended periods, posing risks to lunar missions as well as Earth's orbital environment.

Chair,

Canada welcomes the increased global attention to the issue of space debris, and we stand ready to collaborate to ensure a sustainable space environment for the benefit of all. Addressing this challenge holistically is essential to ensure the safe and sustainable exploration of space for future generations.

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Thank you.