

Canadian Statement
Agenda Item 11 – Space Weather
Statement delivered by: Pierre Langlois, CSA

Committee on the Peaceful Uses of Outer Space
Scientific and Technical Subcommittee
Fifty-seventh Session, Vienna, Feb 3-14, 2020

Madame la présidente,

En raison de sa situation géographique, le Canada est particulièrement touché par la météo spatiale. Bien que la météo spatiale crée de magnifiques aurores qui traversent notre pays, elle est également capable de perturber considérablement les satellites et d'endommager les systèmes d'alimentation électrique. Elle affecte aussi les systèmes de navigation, de communications radio et peut exposer les passagers et membres d'équipage de vols transpolaires à des doses élevées de radiations. Le Canada participe à des initiatives de collaboration et à des activités de recherche qui ont une incidence sur notre capacité à prédire la météo spatiale et à maintenir notre infrastructure fonctionnelle et sécuritaire.

To this end, the Government of Canada manages the Canadian Space Weather Forecast Centre, which is one of sixteen Regional Warning Centers linked to the International Space Environment Service. The Canadian Space Weather Forecast Center works with Canadian and international scientists to monitor and research space weather phenomena and their impacts to reduce the risk of interruptions to, and the safe operation of, critical infrastructure. Significant contributions have been made towards the goal of increased resiliency of critical technology to space weather hazards and Canadian researchers continue to investigate new and emerging topics to improve space weather forecasts and to seek to mitigate the potentially catastrophic impacts of space weather.

Madame Chair, distinguished delegates,

Under the Canada-European Space Agency Cooperation Agreement, Canada also continues its collaboration on the Swarm mission, which aims to accurately survey the Earth's magnetic field

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and its evolution over time to provide better insight into many natural processes, including space weather. The Government of Canada contributes to the mission by supporting the operations for the six Electric Field Instruments which contribute to the measurement of the electric field around the spacecraft and enhancing the scientific return from the mission.

Data collected by the Canadian satellite CASSIOPE allows Canada to make a significant contribution to space weather research. CASSIOPE makes in-situ measurements of the magnetic field and particles, and remotely probes the ionosphere with GPS receivers, radio signals and auroral imaging. Since 2018, CASSIOPE is working closely with the Swarm mission to increase our understanding of the Earth's magnetic field and ionosphere.

Madame Chair, distinguished delegates,

Canada also continues its collaboration with NASA on the Time History of Events and Macroscale Interactions during Substorms (THEMIS) mission which aims to observe space weather events in the night side of the magnetosphere and their effects. Canada, benefiting from its uniquely extensive access to the aurora borealis, operates all-sky cameras and magnetometers and records the auroral displays resulting from the impact of magnetic reconnection and other dynamics observed by the THEMIS satellites.

To fully benefit from Canada's privileged access to the aurora borealis and other northern space weather impacts, the Canadian Space Agency is funding the operation of multiple scientific instruments arrays under an initiative called the Geospace Observatory Canada, or simply 'GO Canada'. These instruments study the optical, magnetic, and electromagnetic aspects of space weather over Canada, and help understand the impacts of space weather on critical Canadian

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infrastructure. Data gathered by the GO Canada is available openly through the participating Universities websites and the Canadian Space Agency's data portal.

Canada will be providing an Ultraviolet Imager to the ESA-China (the National Space Science Center of the Chinese Academy of Sciences) Solar-Wind Magnetosphere Ionosphere Link Explorer (SMILE) mission, whose goal is to simultaneously observe the impact of the incoming solar wind on the magnetopause and its effect on the aurora borealis, even during daytime, to better understand the role of the magnetosphere in shielding the Earth from incoming solar radiation.

Madame Chair, distinguished delegates,

On the COPUOS front, Canada continues to support the goals of the Expert Group on Space Weather. In particular, its work promoting enhanced collaboration and coordination between national and international space weather organizations, which could include implementation of specific joint projects by the participating entities, is essential to meet the challenges posed by extreme space weather. The Expert Group will also continue to promote development of an improved understanding of space weather and its effects in order to mitigate their potentially catastrophic impacts on ground- and space-based infrastructure.

To conclude, the Canadian delegation looks forward to a fruitful session of the Scientific and Technical Subcommittee and, in particular, to advancing the work of the space weather group.

Merci