

STSC 57th Session,
Vienna, 03 February - 14 February 2020, Germany

Item 8: Space debris

Madam chair,

Distinguished Delegates,

The hazards to satellites in Earth's orbit posed by the growing number of close encounters between operational satellites and space debris are widely recognized. An event last week, where two defunct satellites passed very close to each other at a distance of estimated less than 50 m, was prominently highlighted in the news – but this was not a rare event: Similar close approaches occur often unrecognized by the public – and one of these close approaches in the future will inevitably lead to another collision in space. Models predict these collision to happen every 5 to 9 years. Space debris is a topic that is being addressed by scientists and engineers for many years now – worldwide – at various levels in order to limit the number of defunct objects in Earth's orbit and to minimize the risk to operational spacecraft.

The related challenges are also actively addressed in Germany by several means: a research program for matters related to space debris is established since many years. Space debris mitigation guidelines for Germany's national space missions are implemented by the DLR Space Administration consistent with the "UNCOPUOS Space Debris Mitigation Guidelines" and the "IADC Space Debris Mitigation Guidelines". Germany is also continuously increasing its capabilities in the field of surveillance and tracking of space debris with the German Space Situational Awareness Centre – GSSAC – being the focal point on operational aspects of space situational awareness (SSA) for the German government.

Madam Chair, Distinguished Delegates,

The further development of guidelines for space debris mitigation is considered necessary given the changing uses of space – especially the rapid increase in the number of satellites launched into low earth orbit requires to be taken into account. The IADC – the Inter-Agency Space Debris Coordination Committee – as the primary forum of technical and scientific expertise on all space debris matters should continue to play the major role in the further development of technical space debris mitigation guidelines. We invite the Subcommittee to further consider the reporting of the IADC on its technical work and to take these inputs into account in the Subcommittee's deliberations on the agenda item on space debris – and also under the topics to be addressed by the new working group on the long-term sustainability of outer space activities..

Madam Chair, Distinguished Delegates,

Research activities in Germany continue to address various fields of relevance to better understand the effects of space debris.

With their research, scientists at the University of Brunswick contribute to the studies of the IADC to assess the long term evolution of space debris. The objective of one of their nationally performed studies is to pre-quantify the impact certain missions or types of mission would have on the future space environment. This study for the first time also takes into account more complex geometries of satellites and how these affect the number of fragments created in simulated future scenarios.

A second study addresses our understanding of the “impact effects” of debris particles and micro-meteoroids on spacecraft, as even small particles can cause significant damage to satellites if they impact on vital systems of a spacecraft. The software developed to model these impact-effects is expected not only to help spacecraft manufacturers to better protect their satellites, but also to increase our understanding of secondary effects like sizes and numbers of additionally created small debris particles.

Finally, the development of an experimental surveillance and tracking radar system is progressing. The German Experimental Surveillance and Tracking Radar – GESTRA – reached a first milestone by transmitting and receiving signals during integration testing. Equipped with modern radar technology that allows simultaneous observing and tracking of space debris in the Low Earth Orbital regime, the system will become fully operational within the next months. The system will be operated by the German Space Situational Awareness Centre – GSSAC – and its measurements will contribute to the information processed at the GSSAC, but also be used to conduct further research projects.

Madam Chair, Distinguished Delegates,

Germany is committed to a responsible and sustainable use of the Earth’s orbit by minimizing the impact of its space missions on the future orbital environment in order to support a sustainable use of outer space.

We thank you for your kind attention.