

International Committee on Global Navigation Satellite Systems

International Space Weather Initiative Workshop

20 – 24 May 2019, Trieste, Italy

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UNITED NATIONS
Office for Outer Space Affairs



International Committee on GNSS (ICG)

- Promote voluntary cooperation on matters of mutual interest related to civil satellite-based positioning, navigation, timing, and value added services
- Contribute to the sustainable development of the world
- Encourage coordination among GNSS Providers to ensure greater **compatibility, interoperability, and transparency**
- Promote the introduction and utilization of GNSS services in developing countries, by assisting with the integration into their infrastructure
- Assist GNSS users with their development plans and applications, by encouraging coordination and serving as a focal point for international information exchange



ICG: Membership and Annual Meetings

- *Members:* Current and future core, regional or augmentation systems providers: China (BeiDou), EU (Galileo/EGNOS), Russia (GLONASS/SDCM), United States (GPS/WAAS), India (IRNSS/GAGAN), Japan (QZSS/MSAS), Nigeria (NIGCOMSAT)
- State Members of the United Nations with an active programme in implementing or promoting a wide range of GNSS services and applications: Italy, Malaysia, United Arab Emirates, *Australia (satellite based augmentation system)*
- *Associate Members and Observers:* 21 organizations
- *Annual Meetings:* UNOOSA (2006), India (2007), ... **China (2018), India (2019),** Vienna (2020), UAE (2021)
- **Providers' Forum: 22nd Meeting, 10 June 2019, Vienna, Austria: Open Service Information Dissemination, Open Service Performance, Spectrum Protection**
 - *ICG-14 meeting, Bengaluru, INDIA, 8 – 13 December 2019*



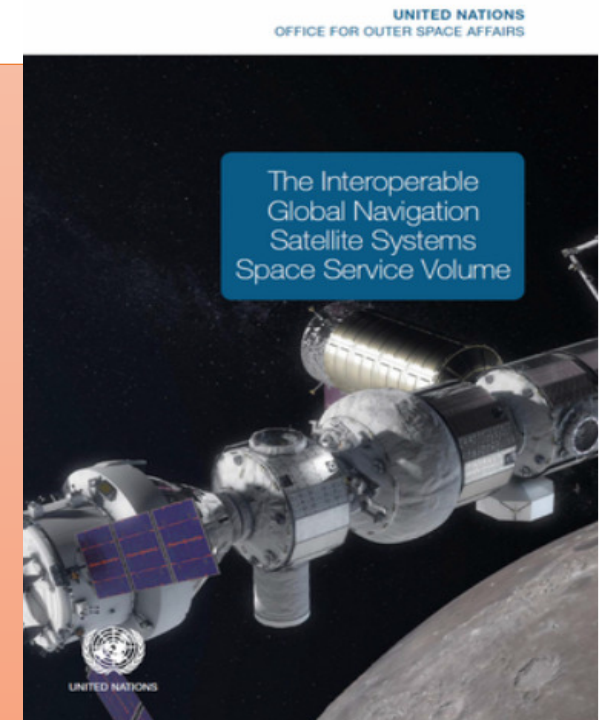
Working Group Systems, Signals and Services (S)

- **The subgroup on compatibility and spectrum protection:**
 - continued its campaign to promote adequate protection of GNSS spectrum through education and outreach;
 - continued to investigate methods of implementing interference detection and mitigation capabilities through permanent network-based solutions and through crowdsourcing techniques;
 - progress in encouraging national regulators to use relevant ITU protection criteria for GNSS was assessed, and the compatibility of search and rescue downlink broadcasts by GNSS in the L band was added to the scope of the subgroup's work, as cooperation with the International Satellite System for Search and Rescue (Cospas-Sarsat) programme was envisaged, and taking into account the role of ITU and national administrations.
- **The subgroup on interoperability and service standards:**
 - focused on open service performance standards and international GNSS monitoring and assessment. A dedicated team of experts completed a document defining guidelines for developing open service performance standards, completing work that has been under way since 2012



Working Group Enhancement of GNSS Performance, New Services and Capabilities (B)

- All providers have agreed on the information presented in this booklet, and on several recommendations to continue development, support, and expansion of the multi-GNSS SSV concept.
- This publication, and the work of WGB, show the significant value of GNSS SSV for a much wider scope of future space exploration activities for countries all over the world.
- GNSS SSV and its potential augmentations can enable ambitious future missions and activities in the context of space exploration going beyond low-Earth orbit to the Moon, Mars and other celestial bodies.

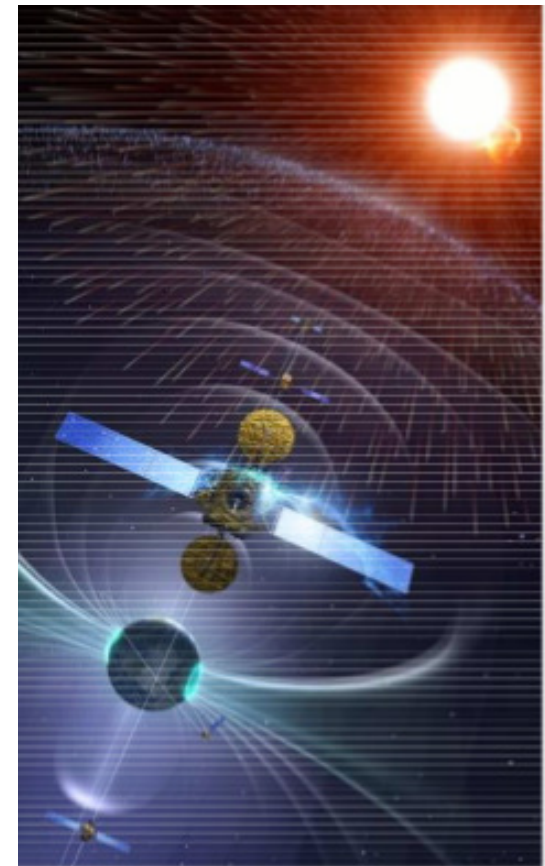


http://www.unoosa.org/res/oosadoc/data/documents/2018/stspace/stspace75_0_html/st_space_75E.pdf



Working Group Enhancement of GNSS Performance, New Services and Capabilities (B)

- The importance of exploiting the multitude of signals broadcast by GNSS enabling better monitoring of **space weather phenomena** and progressing the understanding of the ionosphere will be continued to be addressed
 - Examine the performance of atmospheric models to correct single frequency measurements and recommend models for implementation to Service Providers;
 - Establish a dialogue with Space Weather/Remote Sensing community in order to identify how GNSS can better support the advancement of Space Weather/Remote Sensing products and vice versa.





Working Group Reference Frames, Timing and Applications (D)

- Specific progress in the following areas:
 - the refinement of the alignment of GNSS reference frames to the International Terrestrial Reference Frame (ITRF); and
 - information on GNSS timing references and the inter-comparison of GNSS time offsets.
 - the templates on geodetic and timing references will be updated by the GNSS providers to reflect the changes.
- A joint meeting with WG B & S to discuss *“Interoperability of GNSS precise point positioning services”*





Programme on GNSS Applications

United Nations Regional Workshops/training courses on the use and applications of GNSS:

Workshop on the applications of GNSS, 24 – 28 June 2019, Suva, Fiji

- **WGS:** Seminar on GNSS Spectrum Protection and Interference Detection and Mitigation
- **WGD&B&S:** Special technical session on Interoperability of GNSS PPP services
- International Space Weather Initiative Workshop, 20 – 24 May 2019, ICTP, Trieste, Italy

Promoting the use of GNSS technologies as tools for scientific applications (WGD):

Technical Seminars on Reference Frames in Practice, FIG Working Week 2019, 20 April
Hanoi, Vietnam

Space Weather (WGC): Workshop on Ionospheric Forecasting for GNSS operations in developing countries: Findings and challenges, 27 – 31 May 2019, Trieste, Italy



ICG Information Portal



Our Work > ICG

International Committee on Global Navigation Satellite Systems (ICG)

MISSION STATEMENT

The International Committee on Global Navigation Satellite Systems (ICG), established in 2005 under the umbrella of the United Nations, promotes voluntary cooperation on matters of mutual interest related to civil satellite-based positioning, navigation, timing, and value-added services. The ICG contributes to the sustainable development of the world. Among the core missions of the ICG are to encourage coordination among providers of global navigation satellite systems (GNSS), regional systems, and augmentations in order to ensure greater compatibility, interoperability, and transparency, and to promote the introduction and utilization of these services and their future enhancements, including in developing countries, through assistance, if necessary, with the integration into their infrastructures. The ICG also serves to assist GNSS users with their development plans and applications, by encouraging coordination and serving as a focal point for information exchange.



International Committee on
Global Navigation Satellite Systems

VISION STATEMENT

The International Committee on Global Navigation Satellite Systems (ICG) strives to encourage and facilitate compatibility, interoperability and transparency between all the satellite navigation systems, to promote and protect the use of their open service applications and thereby benefit the global community. Our vision is to ensure the best satellite based positioning, navigation and timing for peaceful uses for everybody, anywhere, any time.

At the "United Nations International Meeting for the Establishment of the International Committee on Global Navigation Satellite Systems (ICG)" held on 1- 2 December 2005 in Vienna, Austria, the ICG was established on a voluntary basis as an informal body for the purpose of promoting cooperation, as appropriate, on matters of mutual interest related to civil satellite-based positioning, navigation, timing, and value-added services, as well as compatibility and interoperability among the GNSS systems, while increasing their use to support sustainable development, particularly in the developing countries. The participants in the meeting agreed on an establishment of the ICG information portal, to be hosted by UNOOSA, as a portal for users of GNSS services.

Our Work

Secretariat of COPUOS

Programme on Space Applications

UN-SPIDER

ICG

- Members
- Providers' Forum
- Working Groups
- ICG Annual Meetings
- ICG Programme on GNSS Applications
- Resources
- ICG Documents
- Space Weather & GNSS
- Other Events
- ICG Timeline

UN-Space

Space Law

Topics

Photo Gallery

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