



UNITED NATIONS
Office for Outer Space Affairs

ICG and its Programme on GNSS Applications

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Background

- 2001 – 2004: Action Team on GNSS (Italy and the United States) – *in implementation of the recommendations of UNISPACE-III, 1999, Vienna*
 - An international framework to support operational coordination and exchange of information among system operators and national and international user communities would be important
 - The assumption was that current and future system operators would soon move from a competitive to a collaborative mode where there is a shared interest in the universal use of GNSS services regardless of the system
- 2005: Establishment of the ICG (noted by UNGA 61/111 of 14 December 2006)
 - Promote the use of GNSS and its integration into infrastructure, particularly in developing countries;
 - Encourage **compatibility** (“do no harm”) and **interoperability** (“better together than separate”) among global and regional systems

Main challenge is to provide assistance and information for those countries seeking to integrate GNSS into their basic infrastructure, including at governmental, scientific and commercial levels



Annual Meetings

- Members: 9 nations and the European Union
- Current and future core, regional or augmentation systems providers: China (BDS), EU (Galileo/EGNOS), Russia (GLONASS/SDCM), United States (GPS/WAAS), India (NavIC/GAGAN), and Japan (QZSS/MSAS)
- 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
- Associate Members and Observers: 21 international & regional organizations and associations dealing with GNSS services and applications: UN system entities, IGOs, NGOs
- UNOOSA (2006), India (2007), United States (2008), Russian Federation (2009), Italy & European Union (2010), Japan (2011), China (2012), United Arab Emirates (2013), European Union (2014), United States (2015), **Russian Federation (2016)**, **Japan (2017)**, China (2018), India (2019), Vienna (2020)
- Working Groups: Systems, Signals and Services (USA/Russian Federation); Enhancement of GNSS Performance, New Services and Capabilities (India, China, ESA); **Information Dissemination and Capacity Building (OOSA)**; Reference Frames, Timing and Applications (FIG, IGS, IAG)



Providers' Forum

■ 2007: Establishment

- Members: Current and future global and regional satellite navigation systems and Satellite-based Augmentation Systems (SBAS) providers
- PF provides ways and means of promoting communication among system providers on key technical issues and operational concepts such as the GNSS spectrum protection, orbital debris, and orbit de-confliction
- Scientific and Technical Subcommittee of UNCOPUOS (UN GA Res. 62/217 of 1 February 2008) started consideration of an agenda item "Recent developments in GNSS"



2 – 7 December 2017

Kyoto, Japan

**Cabinet Office,
Government of Japan**

<http://icg12.jp/>



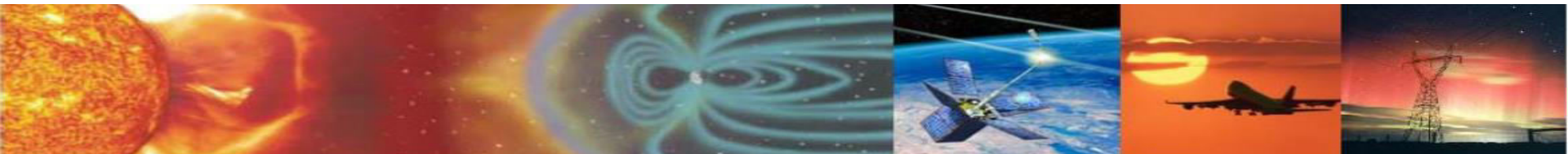
Programme on GNSS applications

- **United Nations Regional Workshops/training courses**
 - These activities increase awareness among decision and policy makers of the benefits of GNSS, and develop regional and national pilot projects on GNSS applications
 - **United Nations/United States of America Workshop on Space Weather, 31 July – 4 August 2017, Boston** (*In-line with COPUOS' Thematic Priority Area on Space Weather*)
 - <http://www.unoosa.org/oosa/en/ourwork/psa/gnss/workshops.html>
- **Promoting the use of GNSS technologies as tools for scientific applications**
 - These activities are to provide technical knowledge on the operational and practical aspects and issues relating to reference frames, in particular to facilitate a regional forum for geodetic agencies, improve data sharing (GNSS leveling, tide gauge, gravity)
 - Technical Seminars on Reference Frames in Practice, FIG Working Week 2017, 29 – 30 July 2017, Kobe, Japan: <http://www.unoosa.org/oosa/en/ourwork/icg/activities.html>
- **United Nations/Italy Long-term Fellowship Programme: Master in Navigation and Related Applications (MNA), Politecnico di Torino, Turin, Italy, October 2017**
 - The curriculum is structured to meet effectively work market demands for high-level technicians endowed with a broad vision of the navigation/localization state-of-the-art
 - <http://www.unoosa.org/oosa/en/ourwork/psa/gnss/fellowships.html>



Programme on GNSS applications: Space Weather

- **International Centre for Theoretical Physics (ICTP), Italy – Boston College, USA**
- The series of activities are carried out since 2009 in order to give theoretical and practical training on the physics of space weather and its main effects on the GNSS operations with particular emphasis on the low latitudes ionospheric processes
 - URSI/ICTP School on Radio Physics, 27 – 31 March 2017, Trieste, Italy (Commission G and H topics)
 - Extended Workshop on Space Weather Effects on GNSS Operations, 22 May – 2 June 2017, Trieste, Italy
- **Many opportunities for training courses/regional workshops and research**
 - ICTP and Boston College: Workshop on Space Weather Effects on GNSS Operations at Low Latitudes, 23 April – 4 May 2018, Trieste, Italy





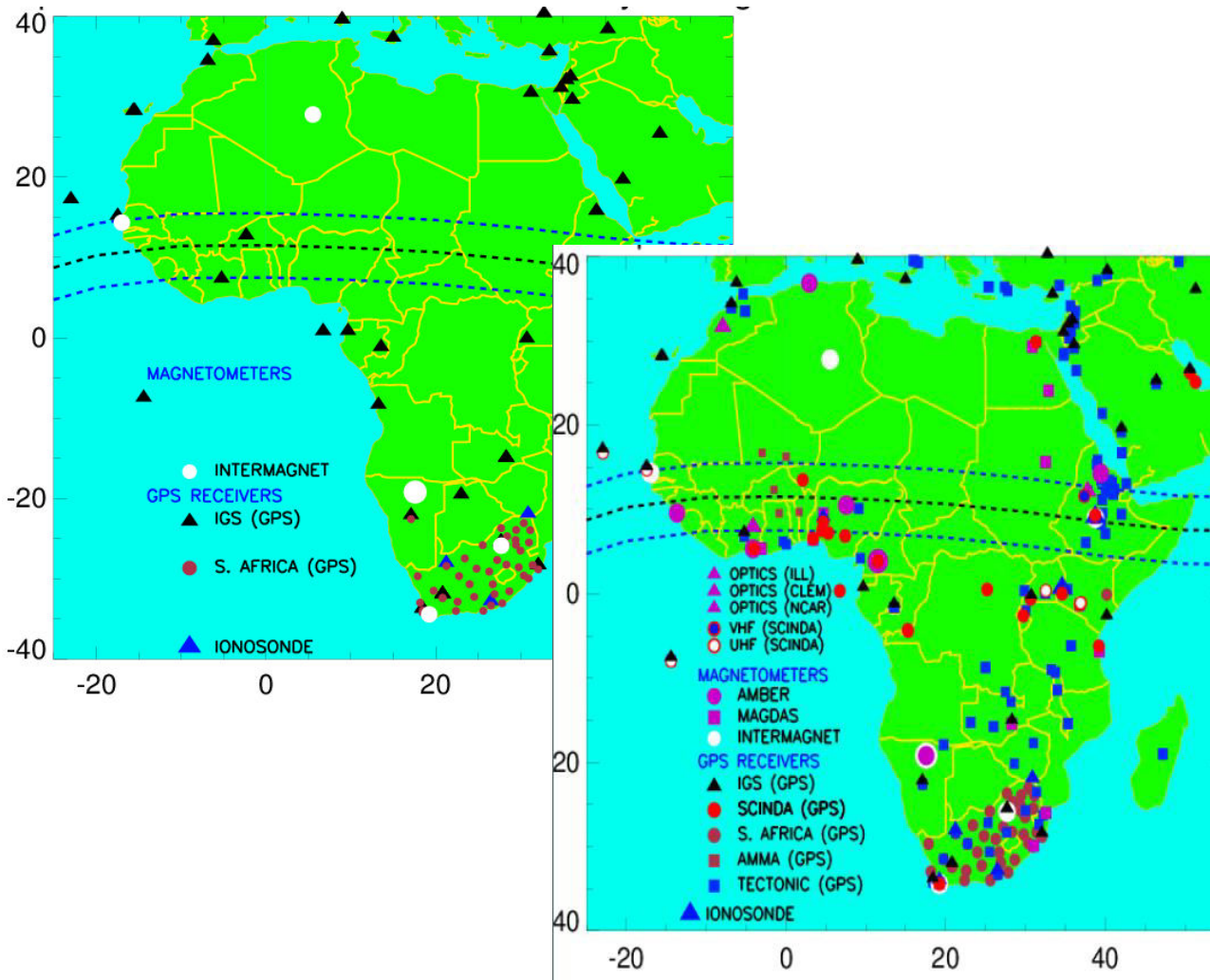
ISWI Instrument Sites: 1000s trained



- Scientists from developing and developed nations work together in deploying and operating space weather instruments (currently there are more than 1000 deployments in more than 100 countries)
- Students and faculty participate at all levels of the instrument project and science
- 18 instrument networks from 8 countries (USA, Germany, Japan, Brazil, France, Israel, Armenia, Switzerland)



ISWI Instruments Sites: Space Science Instruments in Africa

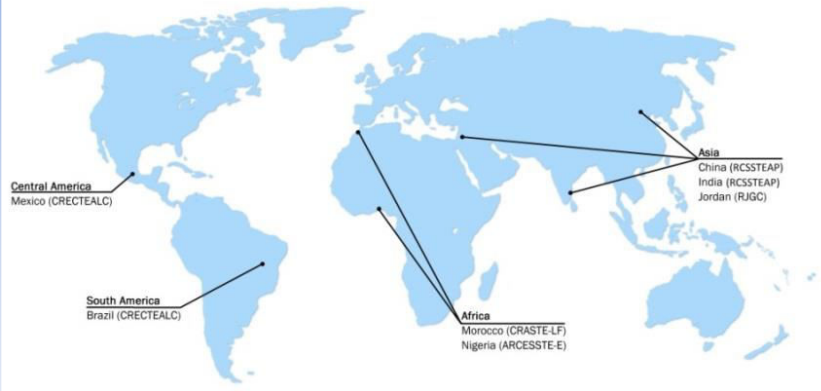


- Provide GNSS education at the university level
- Encourage the use of GNSS for societal and economic development
- Build GNSS infrastructure
- Establish space weather studies in Africa



Information Centres for ICG

Regional Centres for Space Science and Technology Education
(affiliated to the United Nations)



United Nations-affiliated Regional Centres for Space Science and Technology Education

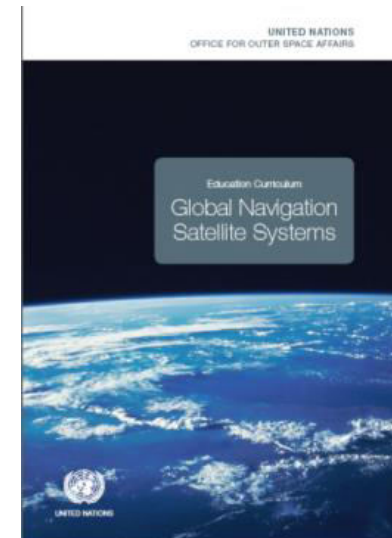
Africa: Morocco and Nigeria

Latin America and the Caribbean: Brazil/Mexico

Asia and the Pacific: India and China

Western Asia: Jordan

- The Technical Level: explore the benefits of GNSS technologies for regions and to spread their applications; exchange information and knowledge
- The Cooperative level: facilitate collaboration with the GNSS providers (seminars/trainings and educational material), as well as communication and outreach to the wider community through the ICG information portal





- Increasing number of students and young scientists studying space science
- Increasing participation by women





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International Committee on
Global Navigation Satellite Systems

ICG Information Portal



International Committee on Global Navigation Satellite Systems (ICG)

MISSION STATEMENT

The International Committee on Global Navigation Satellite Systems (ICG), established in 2006 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

- 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



International Committee on Global Navigation Satellite Systems (ICG): Annual Meeting



Eleventh Meeting of the International Committee on Global Navigation Satellite Systems (ICG) organized by the State Space Corporation "Roscosmos" on behalf of the Government of the Russian Federation, Sochi, Russian Federation, 6 - 11 November 2016.

Meeting Agenda-at-a-glance
[Website \(external link\)](#)

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- WWW.UNOOSA.ORG
- WWW.UNOOSA.ORG/OOSA/EN/OURWORK/ICG/ICG.HTML



Conclusion

- The activities and opportunities provided through the ICG result in the development and growth of capacities that will enable each country to enhance its knowledge, understanding and practical experience in those aspects of GNSS technology that have the potential for a greater impact on its economic and social development, including the preservation of its environment
- The ICG is an important vehicle in the multi-lateral arena, as satellite-based positioning, navigation and timing becomes more and more a genuine multinational cooperative venture



UNITED NATIONS
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UNISPACE+50 in 2018

UNISPACE+50 high-level segment:

20-21 June 2018

as part of the 61st session of the Committee
(20-29 June 2018)

Special events and symposia:

18-19 June

Vienna International Centre
Vienna, Austria

More information:

www.unoosa.org

THANK YOU

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ICG Executive Secretariat

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