



UNITED NATIONS
Office for Outer Space Affairs

ICG and its Programme on GNSS Applications

SHARAFAT GADIMOVA

United Nations Office for Outer Space Affairs
United Nations Office at Vienna
www.unoosa.org



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 International Committee on GNSS (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"

2018: Nineteenth Meeting, 2 December, Kyoto, Japan

- Open Service Information Dissemination
- Open Service Performance
- Spectrum Protection (interference detection and mitigation)
- Report on a multi-GNSS demonstration project in Asia/Oceania region



UNITED NATIONS
Office for Outer Space Affairs



International Committee on
Global Navigation Satellite Systems

Twelfth Meeting of the ICG, Kyoto, Japan



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*)
- *United Nations/Argentina Workshop on the applications of GNSS, March 2018*

<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

▪ ICG Information Centres

- Use of Global Positioning System (GPS) Data for Ionospheric Studies, 16 – 20 January 2017, CRASTE-LF, Rabat, Morocco:

<http://www.unoosa.org/oosa/en/ourwork/icg/activities/2017/icg2017-event.html>

▪ International Centre for Theoretical Physics (ICTP), Italy – Boston College, USA

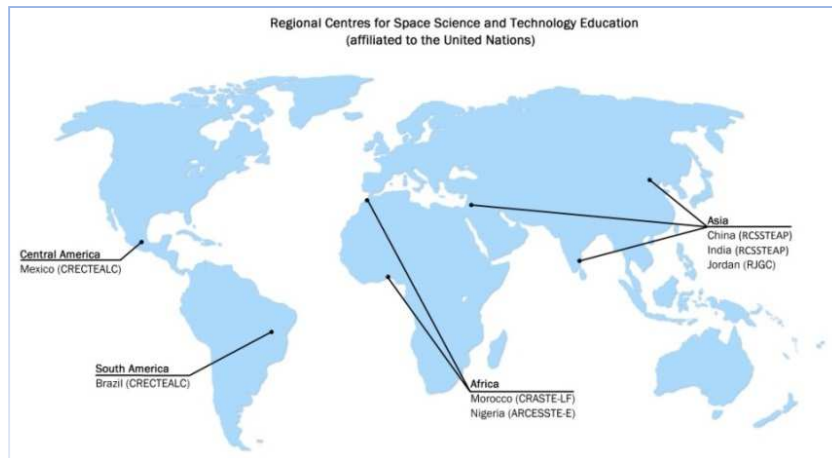
- The series of activities are carried out since 2009 in order to give theoretical and practical training on the physics of space weather and its main effects on the GNSS operations with particular emphasis on the low latitudes ionospheric processes:

<https://www.ictp.it/scientific-calendar.aspx>

- 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



Information Centres for ICG



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

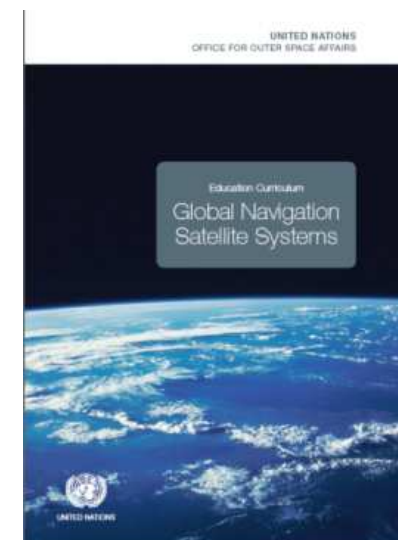
Africa: Morocco and Nigeria

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





UNITED NATIONS
Office for Outer Space Affairs



International Committee on
Global Navigation Satellite Systems

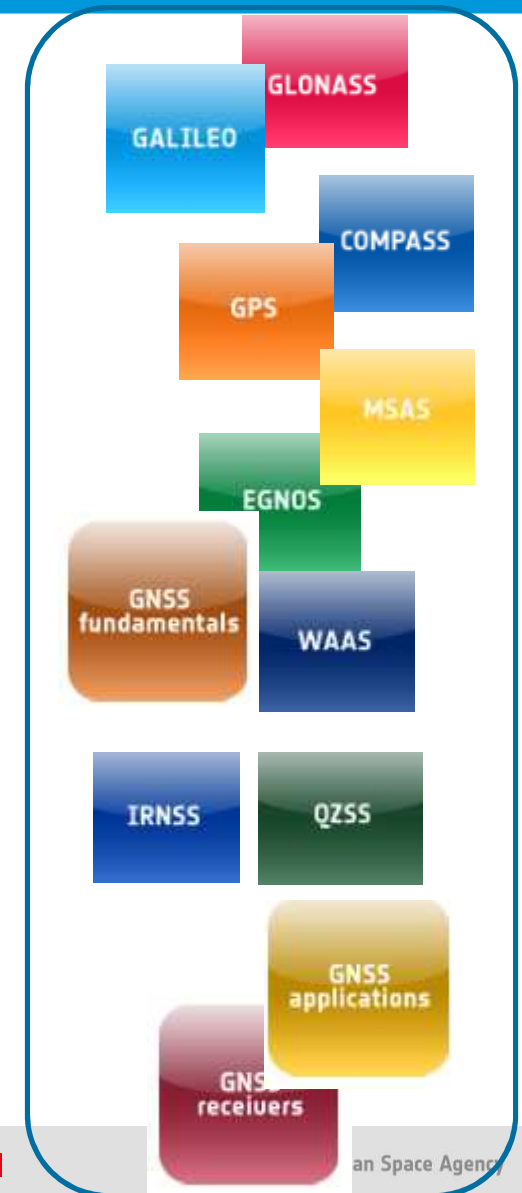
ICG Information Portal

The collage features several key documents and website elements:

- Top Left:** A screenshot of the UNOOSA website header with the United Nations logo and navigation menu.
- Top Right:** A poster titled "The Way Forward" celebrating 10 years of achievement (2006-2016) for the International Committee on Global Navigation Satellite Systems.
- Middle Left:** A screenshot of the ICG website's "Our Work" section, listing various activities like the Secretariat of COPUOS, Programme on Space Applications, and UN-SPIDER.
- Middle Right:** A brochure titled "Current and Planned Global and Regional Navigation Satellite Systems and Satellite-based Augmentations Systems" published by the International Committee on Global Navigation Satellite Systems.
- Bottom Left:** A screenshot of the ICG website's "Annual Meeting" page for the 11th meeting in Sochi, Russian Federation, November 2016, featuring a photo of the venue and a meeting agenda.
- Bottom Right:** A poster titled "10 years of achievement of the United Nations on Global Navigation Satellite Systems" with a background image of a satellite launch.

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

- In line with ICG2012 recommendation on NAVIPEDIA, ESA has been maintaining and developing further NAVIPEDIA with up-to-date information.
- NAVIPEDIA is today extensively used by universities and Galileo application developers.
- NAVIPEDIA is also used as reference as part of the European Satellite Navigation Conference (ESNC) for the GNSS application developers
- An APP version of NAVIPEDIA (for both Android and iOS operational systems) is currently under development.
- By October 2016, **more than 1 million visits** received on NAVIPEDIA website: Most visited articles are on GNSS fundamentals and GNSS applications



www.navipedia.org

ESA UNCLASSIFIED - For Official Use



an Space Agency



Conclusion

- Significant progress continues to be made through ICG, and the results of this work not only promote the capabilities of GNSS to support sustainable development, but also promote new partnerships among members of ICG and institutions of the broader user community, particularly in developing nations
- 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
Office for Outer Space Affairs

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

United Nations Office for Outer Space Affairs
ICG Executive Secretariat

www.unoosa.org
ooosa@unoosa