



Office for Outer Space Affairs
United Nations Office at Vienna



International Committee on
Global Navigation Satellite Systems

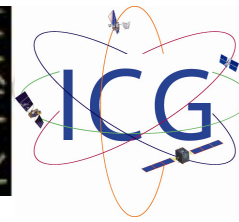
International Committee on Global Navigation Satellite Systems

ICG

United Nations Inter-Agency Meeting on Outer Space Activities

Twenty-ninth session, 4 – 6 March 2009

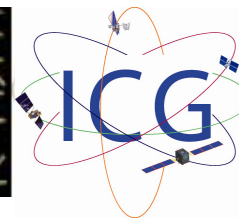
Vienna, Austria



I. United Nations Office for Outer Space Affairs (UNOOSA)

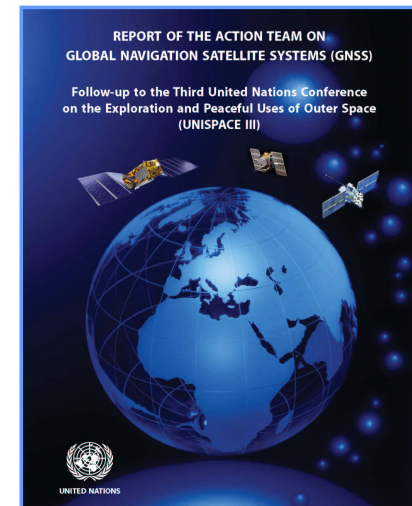
- ◆ **Mandated by the Fourth Committee of the UN General Assembly (UN GA) and the Committee on the Peaceful Uses of Outer Space (UN COPUOS) and its subsidiary bodies: Scientific and Technical Subcommittee and Legal Subcommittee**
- ◆ **COPUOS reports annually to Fourth Committee of the UN GA, which annually adopts a GA resolution on “International cooperation in the peaceful uses of outer space”**
- ◆ **Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), 1999: “The Space Millennium: Vienna Declaration on Space and Human Development”**
 - ◆ **Recommendation concerning Global Navigation Satellite Systems (GNSS):**

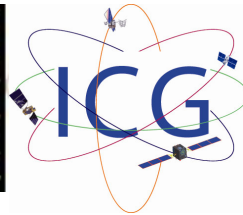
...to improve the efficiency and security of transport, search and rescue, geodesy and other activities by promoting the enhancement of, universal access to and compatibility of space-based navigation and positioning systems.



II. UNISPACE III: Action Team on Global Navigation Satellite Systems (GNSS)

- ◆ 12 Action Teams established by UN COPUOS under voluntary leadership by Member States
 - ◆ *Recommendations that have been assigned highest priority by Member States of the United Nations*
- ◆ **GNSS Action Team** co-chaired by the United States and Italy
 - ◆ Membership: 38 nations & 15 organizations
 - ◆ Working Groups on 5 thematic areas:
 - ◆ *Surveying, mapping, and Earth science*
 - ◆ *Agriculture and management of natural resources*
 - ◆ *Environmental monitoring and management*
 - ◆ *Transportation*
 - ◆ *Education and training, awareness increase*
 - ◆ **UN OOSA: 2001 – 2002: Regional Workshops**
 - ◆ Malaysia (ESCAP) - Austria (ECE) – Chile (ECLAC) – Zambia (ECA)
 - ◆ 2002 – **2004: International Meetings**
 - ◆ Action Team concluded its work: Report of the Action Team on GNSS
 - ◆ *2004 International meeting (A/AC.105/846)*
 - ◆ *ICG ToR / Work Plan*
 - ◆ *Working Groups' Recommendations*

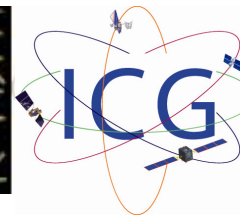




III. International Committee on Global Navigation Satellite Systems (ICG)

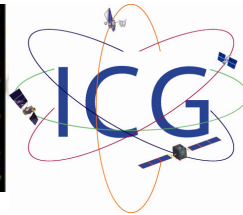
- ◆ **2005: Establishment of ICG**
 - ◆ **ICG Membership: Members, Associate Members and Observers**
 - ◆ *9 nations & the European Community*
 - ◆ *15 organizations (UN system entities, IGOs, NGOs)*
 - ◆ **ICG Executive Secretariat: UN OOSA**
- ◆ **2006: First Meeting of the ICG, UNOV, Vienna, Austria**
 - ◆ **Work plan**
 - ◆ **Compatibility and Interoperability (USA and Russian Federation)**
 - ◆ **Enhancement of performance of GNSS services (India and ESA)**
 - ◆ **Information dissemination (UN OOSA)**
 - ◆ **Interaction with international organizations, national, and regional authorities (IAG, IGS, FIG)**
- ◆ **2007: Second Meeting of the ICG, ISRO, Bangalore, India**
 - ◆ **Within the ICG is the Providers' Forum, consisting of those countries operating GNSS systems or with plans to develop one. The Forum provides a venue for coordination and cooperation to improve overall service provision**
 - ◆ **Providers' Forum: U.S., Russian Federation, European Community, China, India, Japan)**

ICG participation is open to all countries and entities that are either GNSS providers or users of GNSS services, and are interested and willing to actively engage in ICG activities.



IV. Third Meeting of the ICG, Pasadena, CA, USA, 8 -12 December 2008

- ◆ ICG-3 Local Host: *Jet Propulsion Laboratory*
- ◆ ICG-3 Chair: *U.S. State Department*
- ◆ Agenda:
 - ◆ Plenary Sessions: *Providers/Regional System and Service Updates*
 - ◆ Providers' Forum Session:
 - ◆ Focused discussions on **compatibility and interoperability**, encouraging development of complimentary systems
 - ◆ Exchange detailed information on systems/service provision plans
 - ◆ ToR and Work Plan
 - ◆ GNSS Science and Technology applications: *Earthquake applications, Global Scientific applications, Space Weather*
 - ◆ Working Group Meetings:
 - ◆ Progress on implementing ICG Work Plan within established working groups
 - ◆ Task Forces on Geodetic References and Time References established
 - ◆ Exhibits
- ◆ UN Regional Centres for Space Science and Technology Education will act as ICG Information Centres



V. Education and Capacity Building in the Use of GNSS Technologies: ICG 2009 Activities

I. Use of GPS for **space weather** utilizing a ground-based world-wide instrument arrays (**IHY2007**)

◆ **International Space Weather Initiative (ISWI)**

- ◆ *Aspects of the response of the mid- and low-latitude ionosphere to magnetic storms and their space weather effects, including in-situ and ground-based observations as well as modelling and theoretical studies, particularly using GPS*
- ◆ *To complement the ground based data, huge amounts of data from space based missions on Earth and heliospheric phenomena, which are freely accessible, and the analysis and interpretation of this data will be carried out*

II. Use of GNSS equipment in Africa for various disciplines (**geodesy, geophysics, space weather and meteorology**) and in attempt to coordinate and to facilitate scientists and organizers of networks of instruments – with a focus on GPS-based instruments (**RegionalReferenceFrames**)

◆ **Satellite Navigation Science and Technology for Africa, 23 March – 09 April 2009, the Abdus Salam International Centre for Theoretical Physics, Trieste, Italy**

- ◆ *“Geo-science” instruments in Africa (GPS Africa): African Array, AFREF, IHY projects, atmospheric monitoring of water vapor, space weather observations*
- ◆ *Standards, communication of data policies to maximize the benefits of the networks*

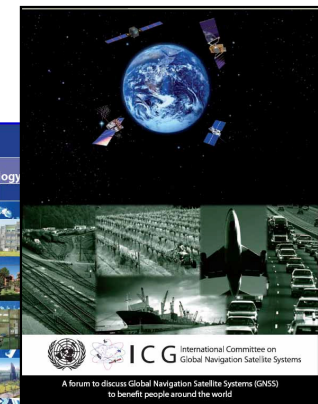
VI. Education and Capacity Building in the Use of GNSS Technologies: ICG 2009 activities (cont.)

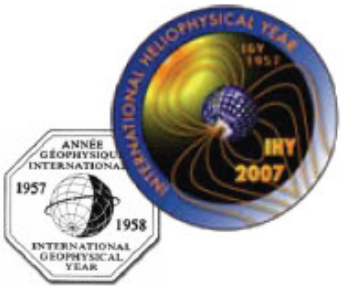
III. Capacity building efforts in space science and technology (**EducationCurriculum**)

- ◆ **UN/ESA/USA Training Course on Satellite Navigation and Location Based Services, at the African Centre for Space Science and Technology – in French language (CRASTE- LF), 29 September – 24 October 2009, Rabat, Morocco**
- ◆ **UN/USA Training Course on Satellite Navigation and Location Based Services, at the Regional Centre for Space Science and Technology Education in Latin America and the Caribbean (CRECTEALC), Puebla, Mexico, the second half of 2009**
 - ◆ *Initiating development of the GNSS Education Curriculum*
 - ◆ *ICG Information Centre: To foster a more structured approach to information exchange in order to fulfill the reciprocal expectations of a network between ICG and Regional Centres*

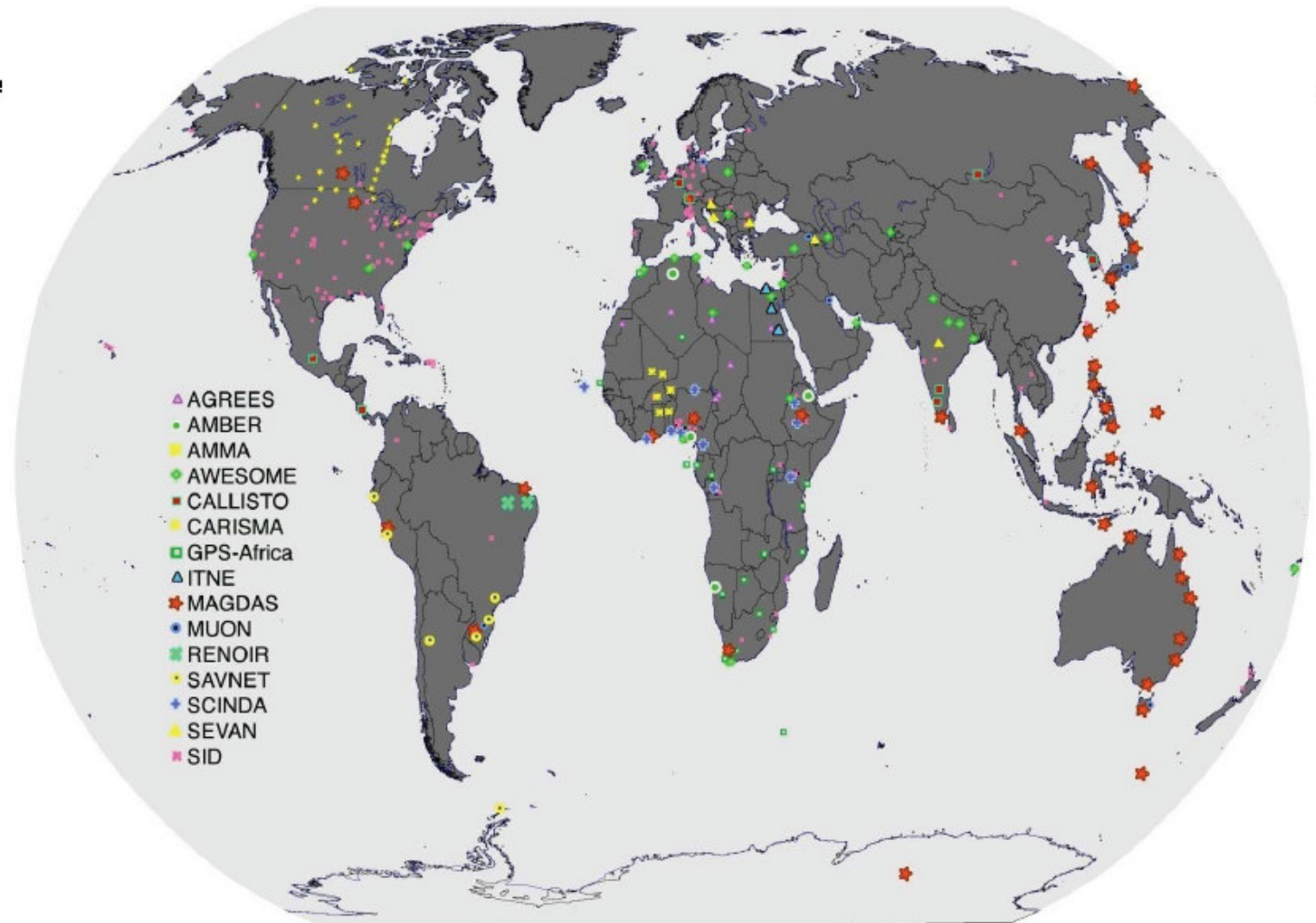
IV. Applications of GNSS (**GNSSGlobalApplications**)

- ◆ **UN/Azerbaijan/ESA/USA Workshop on the Applications of GNSS, 11 – 15 May 2009, Baku, Azerbaijan**
 - ◆ *GNSS technology: Practical applications and scientific exploration perspective*
 - ◆ *Land-based and marine applications*
 - ◆ *Space weather monitoring*





IHY Participation

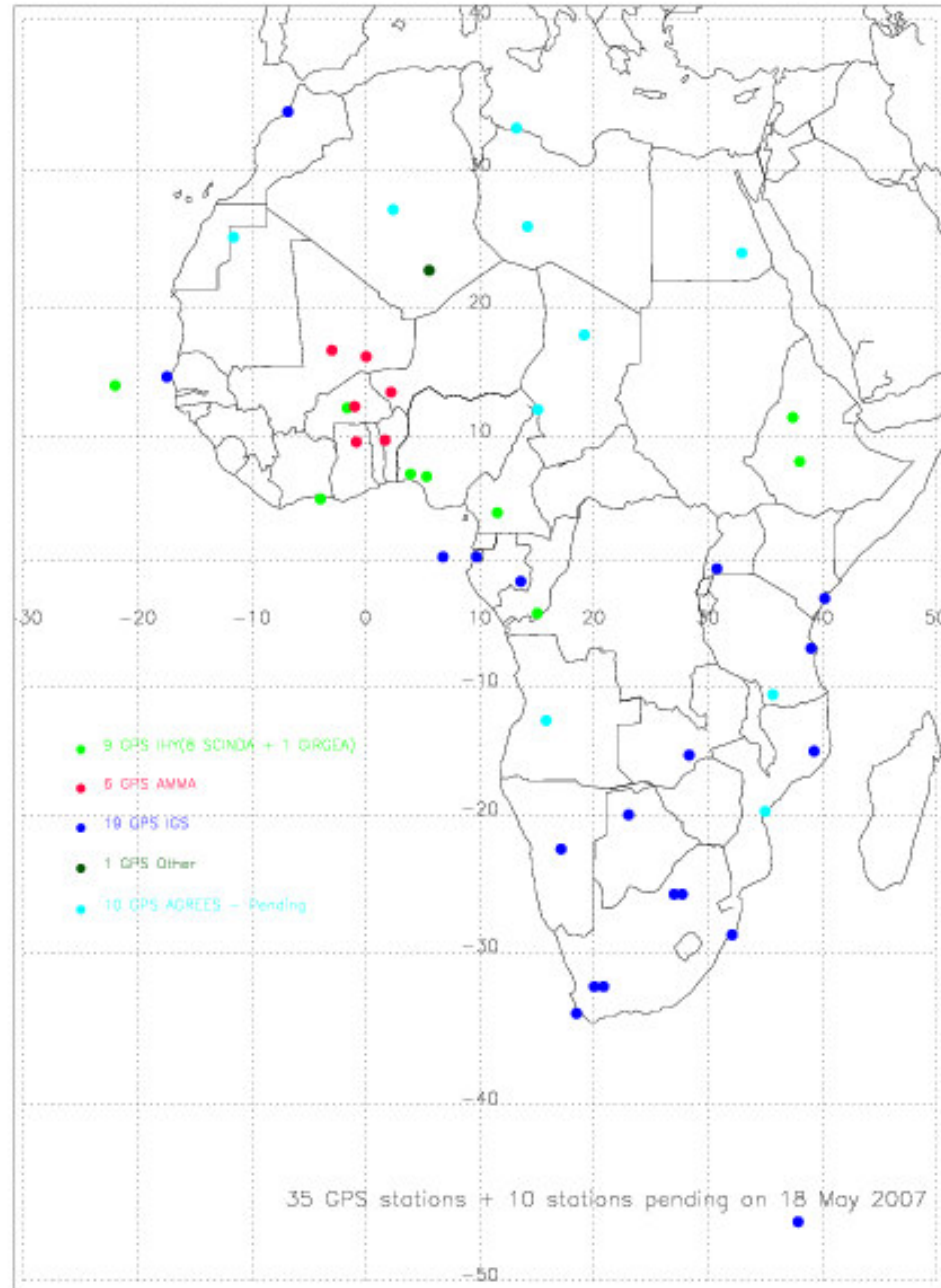


- UNBSS

- 17 Distributed instrument observatory programs
- 5 New data analysis programs for space data

IHY (<http://ihy2007.org>)

GPS Africa



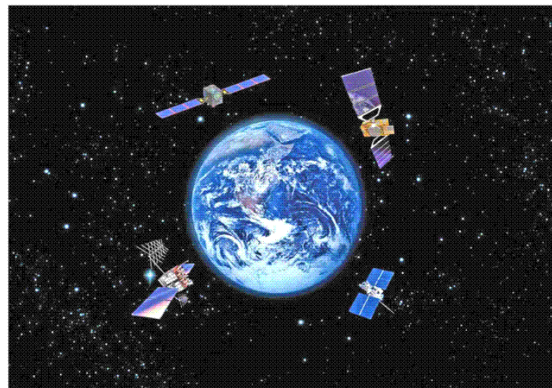
AFREF, SIRGAS, EUPOS, EUREF, APRSAF



International Committee on
Global Navigation Satellite Systems



International Symposium on Global Navigation Satellite Systems, Space-Based and Ground-based Augmentation Systems and Applications



Berlin, Germany

11 - 14 November 2008

organised and co-organised by the Federal State of Berlin, represented by the Senate Department for Urban Development, the International EUPOS Steering Committee, the International Committee on Global Navigation Satellite Systems and the United Nations Office for Outer Space Affairs

Lectures, trade exhibition, excursions

Location of the event is the Berlin City Hall,
Rathausstraße 15, 10178 Berlin

Contact:

Berlin Senate Department for Urban Development
Division III - Geoinformation, Land Surveying, Valuation
Section III B - Geodetic Survey, Three-dimensional Geodesy
Fehrbelliner Platz 1, 10707 Berlin, Germany
phone: +49 30 90 12 56 15 fax: +49 90 12 37 09
eckhard.bock@senstadt.berlin.de

Organiser's and co-organisers' links:

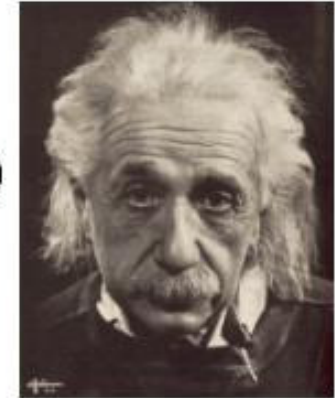
www.stadtentwicklung.berlin.de www.eupos.org www.unoosa.org/oosa/en/SAP/gnss/icg.html



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



$$ds^2 = -\left(1 + \frac{2\Phi}{c^2}\right)(c dt)^2 + \left(1 - \frac{2\Phi}{c^2}\right)(dx^2 + dy^2 + dz^2)$$



<p>REGIONAL CENTRES FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION</p> <p>Satellite meteorology and global climate <i>Education curriculum</i></p> <p>United Nations</p>	<p>REGIONAL CENTRES FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION</p> <p>Satellite communications <i>Education curriculum</i></p> <p>United Nations</p>	<p>REGIONAL CENTRES FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION</p> <p>Remote sensing and the geographic information system <i>Education curriculum</i></p> <p>United Nations</p>	<p>REGIONAL CENTRES FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION</p> <p>Space and atmospheric science <i>Education curriculum</i></p> <p>United Nations</p>
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Meteorology

Communications

Remote Sensing

Space Science

Future: GNSS, Space Law



VII. UNOOSA and ICG: Future Cooperation

...to enhance the utilization of existing and planned opportunities

International Committee on Global Navigation Satellite Systems provides...

- ◆ *web-based information, “a one-stop shop” for knowledge and information-sharing*
- ◆ *information brochures*
- ◆ *technical workshops and expert meetings*

International Committee on Global Navigation Satellite Systems is also...

- *open for collaboration and cooperation*
- *would welcome your participation in and contribution to the ICG*



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Global Navigation Satellite Systems**

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