



**Office for Outer Space Affairs**  
United Nations Office at Vienna



International Committee on  
Global Navigation Satellite Systems

# **International Committee on Global Navigation Satellite Systems: 2008 activities**

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**Third Meeting of the International Committee on Global Navigation satellite Systems (ICG-3)**

**8 – 12 December 2008**

**Pasadena, CA, USA**



## **Outline of the Presentation**

- I. Objectives**
- II. Training and education for capacity building in developing countries**
- III. Promoting the use of GNSS technologies as tools for scientific applications**
- IV. Technical advisory services**
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- VI. UNOOSA and ICG: 2009 Activities and Future Cooperation**



## **I. Objectives**

- ◆ **Providing support for education and training on satellite positioning, navigation and timing for capacity-building in developing countries through the regional centres for space science and technology education, affiliated to the United Nations**
- ◆ **Organizing workshops and special sessions on the use of GNSS technologies as tools for scientific applications**

*Implemented as part of the ICG workplan in the framework of the Working Group C: Information Dissemination and Capacity Building lead by the Office for Outer Space Affairs*



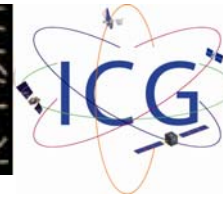
## II. Training and Education for Capacity Building in Developing Countries

- ◆ to provide support to the regional centres for space science and technology education, affiliated to the United Nations, which would also act as the ICG Information Centres, and
- ◆ to work further towards fostering a more structured approach to information exchange on GNSS services and applications in order to fulfil the reciprocal expectations of a network of ICG and the regional centres, and hence to connect the institutions involved or interested in GNSS applications with GNSS system providers
- ◆ **International Training Course on Satellite Navigation and Location Based Services, CSSTEAP, 18 June – 18 July 2008, Ahmedabad, India**
  - ◆ *Initiating development of the GNSS Education Curriculum*
  - ◆ *ICG Information Centre*



### III. Promoting the use of GNSS technologies as tools for scientific applications

- ◆ Use of GPS for **space weather investigations** utilizing ground-based world-wide instrument arrays
  - ◆ 12th International Symposium on Equatorial Aeronomy (ISEA-12): Session on GPS applications, 18 – 24 May 2008, Crete, Greece
    - ◆ *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*
  - ◆ 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
    - ◆ AFREF Steering Committee Meeting and Africa Array Meeting: Session on coordinating GPS and “Geo” instrumentation in Africa, 17 – 20 June 2008, Johannesburg, South Africa
      - ◆ *“Geo-science” instruments in Africa (GPS Africa): African Array, AFREF, IHY projects, atmospheric monitoring of water vapor, space weather investigations*
      - ◆ ***Standards, communication of data policies to maximize the benefits of the networks***



### III. Promoting the use of GNSS technologies as tools for scientific applications (cont.)

- ◆ Increase of knowledge and expertise relating to GNSS world-wide: Exchange of views
  - ◆ ICG Expert Meeting on GNSS Systems and Services, 37th COSPAR Scientific Assembly, 13 – 20 July 2008, Montreal, Canada
    - ◆ *Working group overviews*
    - ◆ *Overview of GNSS systems*
    - ◆ *Compatibility and Interoperability at the User Equipment Level*
- ◆ Use and global influences of GNSS: Sustainable social and economic benefits for developing countries
  - ◆ ION GNSS 2008 Conference: 21st International Technical Meeting of the Satellite Division of the Institute of Navigation, Panel Discussion on Global Influences of Global Navigation Satellite Systems, 16 – 19 September 2008, Savannah, Georgia, USA
- ◆ Applications of GNSS
  - ◆ UN/Colombia/USA Workshop on the Applications of GNSS, 23 – 27 June 2008, Medellin
    - ◆ *Sistema de Referencia Geocéntrico para las Américas (SIRGAS)*
    - ◆ *Aviation*
    - ◆ *Land based applications*
    - ◆ *Education and GNSS knowledge map*
    - ◆ *Tele-health and landscape epidemiology*



#### IV. Technical advisory services

- ◆ *Munich Satellite Navigation Summit “Towards a GNSS System of Systems”, 19 – 21 February 2008, Munich, Germany*
- ◆ *International Satellite Navigation Forum 2008, 7 – 8 April 2008, Moscow, Russian Federation*
- ◆ *International Symposium on GPS/GNSS 2008, 11- 14 November 2008, Tokyo, Japan*
- ◆ *International Symposium on GNSS, Space-based and Ground-based Augmentation Systems and Applications, 11-14 November 2008, Berlin, Germany*
- ◆ ***GEO-V, 19 – 20 November 2008, Bucharest, Romania***
  - ◆ ***a coordinated approach between ICG and GEO***



## V. Voluntary Contributions

- ♦ ***India: provided support for participants and lecturers in the Training Course in Ahmedabad***
- ♦ ***European Community: provided sponsorship for experts to participate in the workshops/expert meetings, and to participate in GEO-V, Bucharest***
- ♦ ***Russian Federation: provided sponsorship for experts to participate in the workshops/expert meetings, and to participate in the International Navigation Forum in Moscow***
- ♦ ***United States of America: provided in support of capacity building and technical advisory services, arranged for experts to make technical presentations during the workshops/expert meetings, to support 28 participants from developing countries, and to participate in the international conferences***





## VI. UNOOSA and ICG: 2009 Activities and Future Cooperation

### UNOOSA: Programme on Space Applications

- ◆ *UN/Azerbaijan/ESA/USA Workshop on the Applications of GNSS, Baku, Azerbaijan, 11 – 15 May*
- ◆ *UN/ESA/USA GNSS Training Course, CRASTE-LF, Rabat, Morocco, 29 September to 24 October*
- ◆ *UN/USA GNSS Training Course, CRECTEALC, Mexico*

### ICG: Work plan

- ◆ *Cooperation with Regional Reference Frames:*
  - ◆ *AFREF - EUPOS and EUREF – SIRGAS - APRGP and PCGIAP (through APRSAF)*

### GNSS Technology: *practical applications and scientific exploration perspective...*

- ◆ *Land Based Applications: Development of standards to address performance requirements for the use of positioning systems in land applications...*
  - ◆ *to be feasible with applications in poverty and food monitoring, and sustainable development*
- ◆ *Marine Applications: Including vessel tracking systems, marine archeology, off-shore construction...*
  - ◆ *to detect and predict changes in ecosystem conditions*
- ◆ *Space Weather Monitoring: Space weather impacts on GNSS and the use of GNSS for general ionospheric determination...*
  - ◆ *to improve GNSS accuracy for all users, making GNSS a tool of large-spectrum utility*
- ◆ *Defining GNSS interoperability and compatibility through the user's perspective*



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