UNITED NATIONS
Office for Outer Space Affairs

Regional Centre for Space Science and Technology Education for Latin America and the Caribbean

INFORMATION NOTE

United Nations/Regional Centre for Space Science and Technology Education for Latin America and the Caribbean/Benemerita Universidad Autónoma de Puebla/Instituto Nacional de Astrofísica, Óptica y Electrónica

Training Course – The Use of Global Navigation Satellite Systems for Development

(16 – 20 November 2009, Tonantzintla, Puebla, Mexico)

1 Background

The use of the signals received from the existing global navigation satellite systems (GPS of the United States of America and GLONASS of the Russian Federation) has become a cross-cutting tool to support high-level research and sophisticated applications whose results are greatly enhanced by accurate determination of timing and position of events. With the advent of two additional global navigation satellite systems (GNSS) that are currently under development (Galileo of the European Union and Compass/Beidou of China), the number of satellites that will be visible to a user at a given time will greatly increase.

For developing countries, GNSS applications offer a cost-effective way of pursuing sustainable economic growth while protecting their environment. Satellite navigation and positioning data are now used in a wide range of areas that include mapping and surveying, monitoring of the environment, precision agriculture and natural resources management, disaster warning and emergency response, aviation, maritime and land transportation and research areas such as climate change and ionosphere studies.

In its resolution 61/111 of 14 December 2006, the General Assembly noted with appreciation that the International Committee on Global Navigation Satellite Systems (ICG) had been established on a voluntary basis as an informal body to promote cooperation, as appropriate, on matters of mutual interest related to satellite-based positioning, navigation, timing and value-added services, as well as the compatibility and interoperability of global navigation satellite systems, while increasing their use to support sustainable development, particularly in developing countries.

The successful completion of the work of the ICG, particularly in establishing the interoperability among the four global systems, will allow a user in Latin America and the Caribbean region to utilize one instrument to receive signals from multiple systems of satellites. This will provide additional data and greater accuracy in timing or position measurements. To benefit from these achievements, developing countries need to stay abreast of the latest developments in GNSS-related areas and build the capacity to use the GNSS signal.

From 2001, the United Nations Office for Outer Space Affairs has organized a series of regional workshops and international meetings to promote the use of GNSS. These workshops and meetings presented the status of existing and future GNSS systems and their augmentations as well as examples of GNSS applications that support sustainable development and protect the environment. In 2008 and 2009, the Office for Outer Space Affairs has supported training courses on GNSS that have been held at the regional Centre for Space Science and Technology Education for Asia and the Pacific (CSSTEAP) and at the Africa Regional Centre for Space Science and Technology Education in French language (CRASTE). The courses are part of the work that the Office is conducting to develop an in-depth GNSS curriculum that can be introduced at all the Regional Centres and other institutions of higher-level education. As a further step in this process, the United Nations Office for Outer Space Affairs and the Regional Centre for Space Science and Technology Education for Latin America and the Caribbean (CRECTEALC, by its acronym in Portuguese and in Spanish) will jointly organize a training course on GNSS in collaboration with the Benemerita Universidad Autónoma de Puebla (BUAP) and the Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE) for the benefit of countries in the Latin America and Caribbean region.

The “UN/CRECTEALC/BUAP/INAOE Training Course – The Use of Global Navigation Satellite Systems for Development”, will be held from 16 to 20 November 2009, at the Mexico Campus of CRECTEALC. The Training Course will benefit from and build upon the experiences of the two previous courses on GNSS that have been supported by the Office. The Course will aim at establishing or strengthening networks in the region for the exchange of information.

2. Objectives

The objectives of this Course are: (i) to present updates on the status and plans for future developments in GPS, GLONASS, Galileo and Compass/Beidou; (ii) present GNSS technology and its use in the establishing geographical reference systems, transportation and communications, aviation, surveying, mapping and Earth science, management of natural resources, precision agriculture, the environment and disasters; (iii) to provide a “hands on” experience in the use of off-the-shelf software to use the GNSS signal in specific application and (iv) strengthen regional information and data exchange networks on the use of GNSS technology.

3. Venue of the Course

The Course will be organized at the Mexico Campus of CRECTEALC, co-located with the Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE) in Tonantzintla, Puebla and at the Campus of the Benemerita Universidad Autónoma de Puebla.

4. Programme of the Course

The programme will include lecture sessions during which the participants will be informed on the status and projected developments of the four global GNSS. Other presentation will demonstrate selected applications of the GNSS signal to in diverse fields. Thus, the programme will include:

- Update on global satellite-based navigation systems in operation and under development (GPS, GLONASS, GALILEO, Compass/Beidou);
- Thematic Presentations may include the following:
    - Aviation;
    - Transport and communications;
    - Surveying, mapping and Earth science;
    - Protection of the environment;
    - Management of natural resources,
    - Disaster management;
- Hands-on training in the use of off-the-shelf software packages for selected applications.
- Regional cooperation in the use of GNSS applications

5. Participants

The course is being planned for a total of 60 participants from the region of Latin America and the Caribbean. These individuals will include practitioners and policymakers, as well as experts from the following groups: international, regional, national and local institutions, research and academic institutions, multi-lateral and bi-lateral development agencies, non-governmental organizations, and private industry.

6. Requirements to participate

Some participants should already be using, or be able to integrate the use of the signal for GNSS, in their work. Other participants should be in academic positions through which they might include the use of GNSS as a tool in their course work. Still other participants should be in positions to strengthen the use of GNSS by the private sector. Participants should have received university degrees in physics, electrical engineering, computer science, mathematics or in other related scientific or technical fields.

7. Language of the Course

The lectures of the course will be offered in English or Spanish and simultaneous interpretation will be provided for the lecture part of the Course. As most of the reference materials and software to be used in the hands-on exercises will be in English, it is highly recommended that applicants to the course be fluent in both languages.

8. Financial support

Within the limited financial resources available to the co-sponsors, a limited number of selected participants will be offered financial support to attend the Course. This financial support will defray the cost of travel (a round trip ticket – most economic fare – between the airport of international departure in their home country and Mexico City and/or the room and board expenses for the duration of the Course. The co-sponsors will also cover the expenses of land transportation between Mexico City and Tonantzintla, Puebla.

9. Deadline for submission of applications

Copies of the completed application form, properly endorsed by the applicant's Government/Institution/company should be sent by email, preferably, or fax to the Mexico Campus of the Regional Center for Space Science and Technology Education for Latin America and the Caribbean (sgcrectealc@inaoep.mx ; Fax: + 52 222 247 - 2580) to arrive no later than **26 October 2009**. The applicant may also submit his/her application through the Office of the Resident Representative of the United Nations Development Programme in the applicant's respective country

10. Life and major health insurance

Life/major health insurance for each of the selected participants is necessary and is the responsibility of the candidate or his/her institution or government. The co-sponsors will not assume any responsibility for life and major health insurance, nor for expenses related to medical treatment or accidents.

11. Point of contact

For information regarding the agenda and programme of the Course, please contact Dr. Jesús González, Academic Coordinator, Mexico Campus, CRECTEALC at the above email address and fax number or at the following e-mail address: jagonzalez@inaoep.mx. Selected participants who will receive financial assistance will be provided with a point of contact regarding air travel and subsistence arrangements.