



African Regional Centre for Space Science and Technology Education in English (ARCSSTE-E), Ile-Ife, Nigeria.

In Collaboration With

United Nations Office for Outer Space Affairs (UNOOSA), National Space Research and Development Agency (NASRDA), Office of the Surveyor General of the Federation (OSGOF), Nigerian Geological Survey Agency (NGSA) and Regional Centre for Training in Aerospace Survey (RECTAS)

Training Course – Global Navigation Satellite Systems and Location Based Services for Surveying/Mapping and Africa Reference Frame (AFREF) Implementation

(18 - 23 March, 2012, NASRDA, Abuja, Nigeria)

Information Note

1. Background

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. 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.

The Africa Reference Frame project (AFREF) which is fundamental to all infrastructure, planning and development projects in Africa in areas such as geodesy and surveying, geo-information, earth and atmospheric science, disaster mitigation, monitoring of crop and vegetation distribution and animal migration patterns and climate change, to mention a few relies heavily on GNSS for all levels of positioning from high level geodetic operations to simple GIS applications, all of which must be based on the uniform International Terrestrial Reference Frame. Since 2005 the number of permanent GNSS base stations in Africa has increased considerably with an even greater number being planned for installation. About 22 countries in Africa are currently involved in activities that will lead to the realisation of AFREF. Such activities include the establishment of permanent GNSS base stations and the estimation of the relationship between old existing coordinate reference frames. For the successful implementation of this initiative and other programs there is need for continuous capacity building and skills development of relevant professionals in the area of GNSS.

The “UN/ARCSSTE-E Training Course – “Global Navigation Satellite Systems and Location Based Services for Surveying/Mapping and AFREF implementation in Africa”” will be held from 18 – 23 March, 2012, at the Space Applications Laboratory, National Space Research and Development Agency, Abuja, Nigeria. The Training Course will benefit from and build upon the experiences of the previous courses on GNSS that have been supported by UNOOSA. The Course aims at establishing or strengthening networks among the mapping organizations in the region for the exchange of information in the implementation of AFREF and to further some of the objectives and actions of the New Partnership for Africa’s Development (NEPAD) science and technology platform. It is also expected to further strengthen the foundations for the development of regional expertise in the area of GNSS applications as well as provide ample time for reflections and discussions on policy and institutional issues and create networking opportunities for all participants.

2. Objectives

The objectives of this Course are: (i) to present updates on the status and plans for future developments of GNSS in Africa with particular reference to AFREF (ii) the roles of GPS, GLONASS, Galileo and Compass/Beidou in AFREF implementation; (ii) present GNSS technology and its use in 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 for surveying and mapping..

3. Venue of the Course and Accommodation

The Course will be organized at the Space Applications Laboratory, NASRDA. Participants from other countries will be accommodated at the NASRDA’s Multipurpose Conference Centre, Abuja, Nigeria.

4. Course Contents

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

- Update on global satellite-based navigation systems in operation and under development (GPS, GLONASS, GALILEO, Compass/Beidou);
- Thematic Presentations include the following:
 - Surveying, mapping and Earth sciences;
 - Agriculture and food security;
 - Transport and communications;
 - 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 with relevant field trips.
- Regional cooperation on the use of GNSS applications

5. Target Participants

The course is being planned for heads of survey and mapping organizations from the following groups: regional, national and local institutions, research and academic institutions, multi-lateral and bilateral development agencies, non-governmental organizations and private industry in Africa. The training

course is aimed at professionals with an appreciable level of responsibility for the planning and provision of value-added services that use navigation satellites.

6. Language of the Course

The lectures of the course will be offered in English. 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 the English language.

7. 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 Abuja, Nigeria and/or the room and board expenses for the duration of the Course.

8. 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 to the African Regional Center for Space Science and Technology Education in English director@arcsstee.org; (arcsstee@oauife.edu.ng) to arrive not later than 31 January, 2012. 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 or Embassies/Missions in Nigeria. For more information, visit www.arcsstee.org .

9. 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.

10.Point of contact

For information regarding the agenda and programme of the Course, please contact Dr. Joseph Akinyede, Executive Director ARCSSTE-E at the following e-mail address: (arcsstee@oauife.edu.ng or director@arcsstee.org) or Phone +234 802 326 8330. Selected participants who will receive financial assistance will be provided with a point of contact regarding air travel and subsistence arrangements.