



Update of Education and Training Activities on GNSS in China and Views of ICG Information Center

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- **Introduction**
- **Summer School on GNSS frontier technology 2012**
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1 Introduction

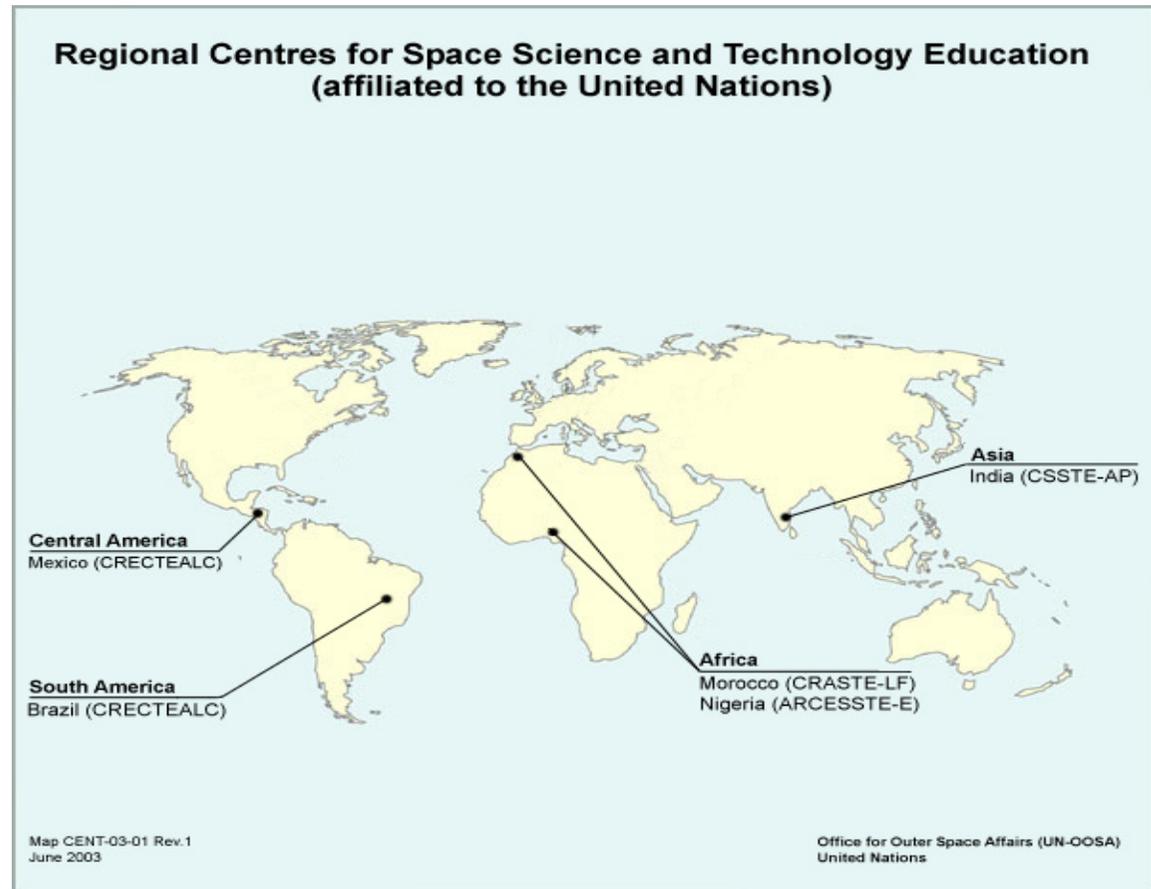
In the year of 1968, United Nations (UN) held the first conference on the exploration and peaceful uses of outer space. In the year of 1971, United Nations Outer Space Council presented **Programme on Space Applications**.

In the 1982 and 1999 respectively, at the second and third conference on the exploration and **peaceful uses** of outer space, UN expanded the task areas on space applications.

China has shown active avocations in response to the Program launched by UN and proposed to set up an Asia-Pacific Space Cooperation Organization (APSCO), developed education and training program in space technology applications from 2001.



1 Introduction



Update of UN Regional Centers in 2012

What's new of Education and Training Activities in GNSS in China ?

2 Summer School on GNSS frontier technology 2012

It is recognized that there is a significant shortage of well-educated and highly-skilled professionals in GNSS and related fields in the Asia-Pacific region.

The objective of the one-week program is to provide a comprehensive overview on selected areas of GNSS theory, hardware, software and applications. The program is open to postgraduates, PhD students, and early career professionals



2 Summer School on GNSS frontier technology 2012

8 renowned experts were invited to give lectures on several selected topics, covering receiver design, ground-based and space-based augmentation, user precise positioning and integrity algorithms, and processing of multiple GNSS and multi-frequency data.

Date: 25-31 August, 2012 **Venue:** Beihang University

Participants : 60+



3 MATSA 2012 on GNSS

In October, 2004, **Master degree program in Space Technology and Applications(MASTA)** was authorized by the Minister of Education, China. **It's the first degree program for international students in GNSS field instructed in English in China.**

MASTA Program Outlook

Year	Directions	Number	Country	Sponsors	Partners
2006	RS and GIS	14 + 4	7+1	Space Agency, APSMCS	Space Agency
2008	RS and GIS	11	4	CSC	
2010	RS and GIS	11+1	5+1	CSC Special Program	APSCO
2011	SACOM	16	9	CSC Special Program	APSCO
2012	GNSS	20	7	CSC / BeiDou Scholarship	APSCO/CNSO

3 MATSA 2012 on GNSS

COURSE	HOURS	CREDITS
Fundamental Courses		
Space segment and track spacecraft system overview	48	3
GNSS Timing spatial Reference System and maintainment	16	1
GNSS principle	32	2
Science and Techincal Course		
navigation signal Simulation and test Technologies	32	2
GNSS receiver principles and design	32	2
GNSS/INS intergration navigation principle and technologies	32	2
GNSS principle experiment	18	1
Application Courses		
GNSS new technologies and applications	12	1
GNSS vehicle navigation applications technologies	16	1
GNSS aviation navigation applications technologies	16	1
high precision positioning and its applications	10	
GNSS applications in timing	6	

4 BeiDou International Communication and Training Center

Inaugurated on August 24, 2012, Beihang University



4 BeiDou International Communication and Training Center

Role: it is one of the professional branches of CSNO, and is a nonprofit international educational institution.

Tasks: **T**o organize the education and training projects in GNSS fields according to the plan and arrangement of CSNO;
To develop various kinds of programs for long-term / short-term trainings and degree education and to train the talents in GNSS for all over the world;
To establish a exchange and cooperation platform in GNSS .

Construction mode

•CSNO authorized



•Industry/ Intuitions Participated



APSCO
ASIA-PACIFIC SPACE COOPERATION ORGANIZATION



合众思壮
UniStrong



北斗星通
BDStar Navigation



联星 | OLinkStar

•University located



Implement:

Mutual benefits, 互利

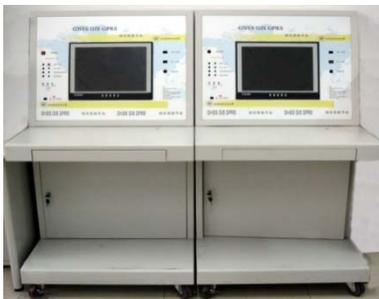
All-win, 共赢

Sustainable Development 可持续



北京航空航天大学
BEIHANG UNIVERSITY

Current Facility at Beihang



RS

GIS

GNSS

"3S"

**Integrated,
network sharing**



Distant Education/Learning Model Classroom



北京航空航天大学
BEIHANG UNIVERSITY

Education Affairs

Education and Training Programs

- (1) Master degree program on GNSS
- (2) Summer school on GNSS
- (3) Senior training program for management staff
- (4) Senior training program for professionals
- (5) Fundamental program on GNSS
- (6) Practical program on GNSS
- (7) Distance learning classes on GNSS
- (8) Seminars on GNSS

With various level for beginner and advancer

**Design/ Organize the development of GNSS
Curriculum, Teaching Materials, Courseware**

Education Affairs

- Teaching staff of the Center can be acquired by international recruitment. According to teaching requirements, the Center can invite the professors, researchers and professionals from domestic or oversea universities, research institutions and relative enterprises as part-time lecturers.
- Students are selected from the domestic or oversea countries depending on the specific needs.

5 International Center for GNSS Science Technology and Education

The United Nations International Meeting on the Applications of GNSS that was held on 12-16 December 2011 in Vienna recommended the establishment of international centres for GNSS science, technology and education in already existing higher educational institutions. Such international centres shall offer and promote science, engineering and education of the application of GNSS for peaceful uses for the benefit of member States.

5 International Center for GNSS Science Technology and Education

1. The United Nations should lead, with the active support of China and relevant scientific organizations, an international effort to establish an **International Centre for GNSS Science, Technology and Education in Beihang University** (<http://www.buaa.edu.cn>), Beijing, China.
2. This Centre should grow into a network of national and regional centers, focusing on space weather, around the world – all dedicated to advancement of GNSS research and education.
3. The Centre would provide Capacity Building and technical guidance to nations that wish to engage in space weather science and education. Capacity Building consists of three main components:
 - Laboratories on GNSS.
 - Distant Learning/Video Conference System/environment.
 - Education/training on GNSS technology and application.

5 International Center for GNSS Science Technology and Education

Research and education is the domain of advanced research institutions and universities. The Centre, recommended in this “Vienna GNSS Resolution” must be part of such an advanced research institution or university. Moreover, a proven record of capacity building is an essential prerequisite for this Centre.

4. The Centre is an institution with a proven record in organizing international activities. These activities include GNSS schools, GNSS workshops, GNSS Seminars, and observation campaigns, installation of instruments in different regions of the world, training of instrument host staff and students, and international outreach programmes. The Centre must possess experience in promoting and supporting international programmes such as ISWI.

5. The Centre would cooperate with the UN-affiliated Regional Centres for Space Science and Technology Education, located in India, Mexico/Brazil, Morocco, and Nigeria, Jordan (<http://www.unoosa.org/oosa/en/SAP/centres/index.html>), and other centres of excellence in space science and technology education.

Actions of ICG information Centre

Action C1: Establish the ICG information portal drawing on contributions from Members, Associate Members and Observers of the Committee. This will include a calendar of GNSS-related events.

Action C2: Identify undergraduate and graduate courses on GNSS to be included on the ICG information portal.

Action C3: Consider the possibility of disseminating a list of relevant textbooks on GNSS in English and other languages through the ICG information portal. Consideration will also be given to developing a glossary of terms and definitions.

Action C4: Consider the use of the Regional Centres for Space Science and Technology Education, affiliated to the United Nations, to promote GNSS use and applications.

Action C5: Identify international conferences where Members, Associate Members and Observers will make presentations on the existence and work of the ICG. A list of such events will be maintained on the ICG information portal.

Action C6: Develop a proposal for further mechanisms to promote the applications of GNSS.“

New Action was added that more education and training activities on GNSS in accompany with the development of technology and users demand in ICG 6



Proposal :

*International Center for GNSS Science
Technology and Education can be
regarded as ICG information Center*



**Thanks
for Your Attention!**