



Status Report on BeiDou International Exchange and Training Center

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The UN Regional Centre (RCSSTEAP) in China

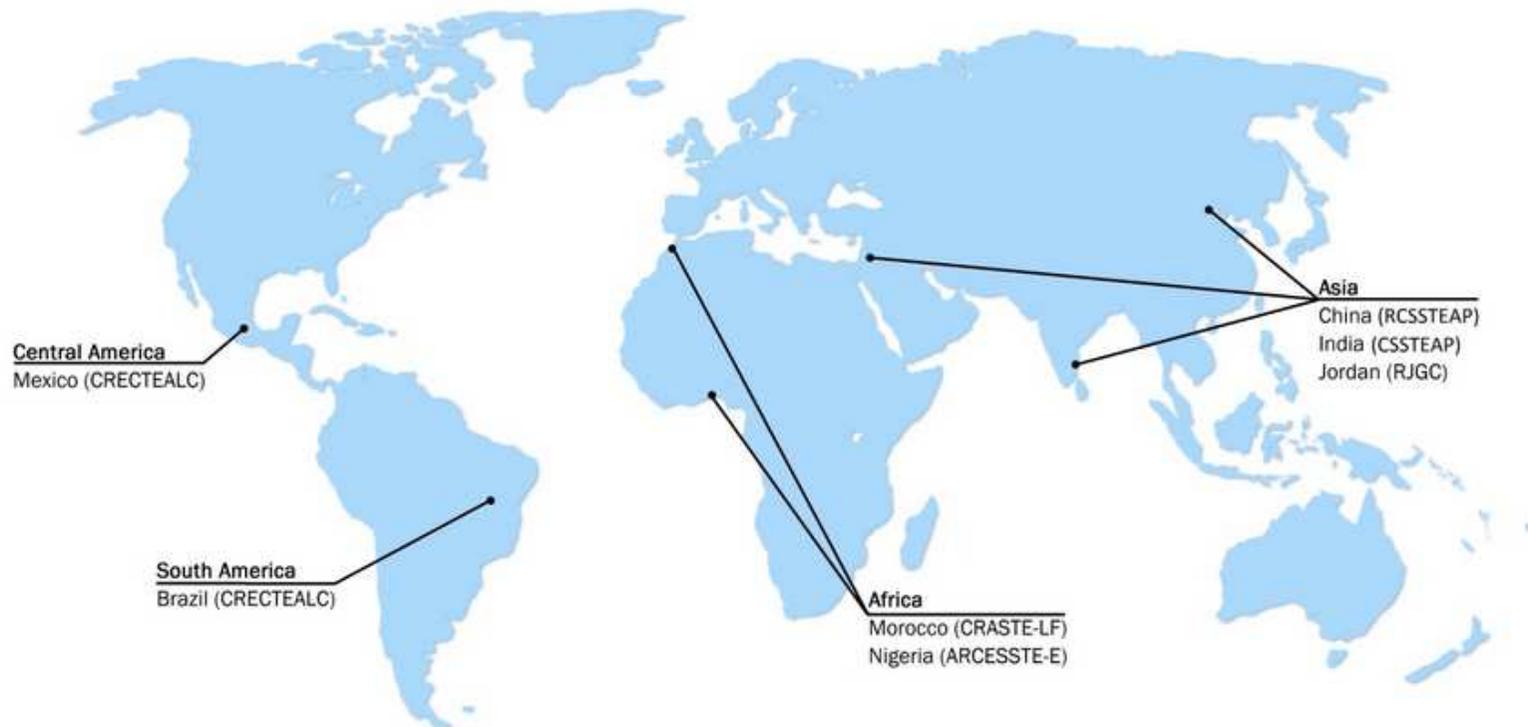
Deputy Director, School of Electronic Information and Engineering, Beihang University

Dec, 2015



LOCATION OF THE CENTRES

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



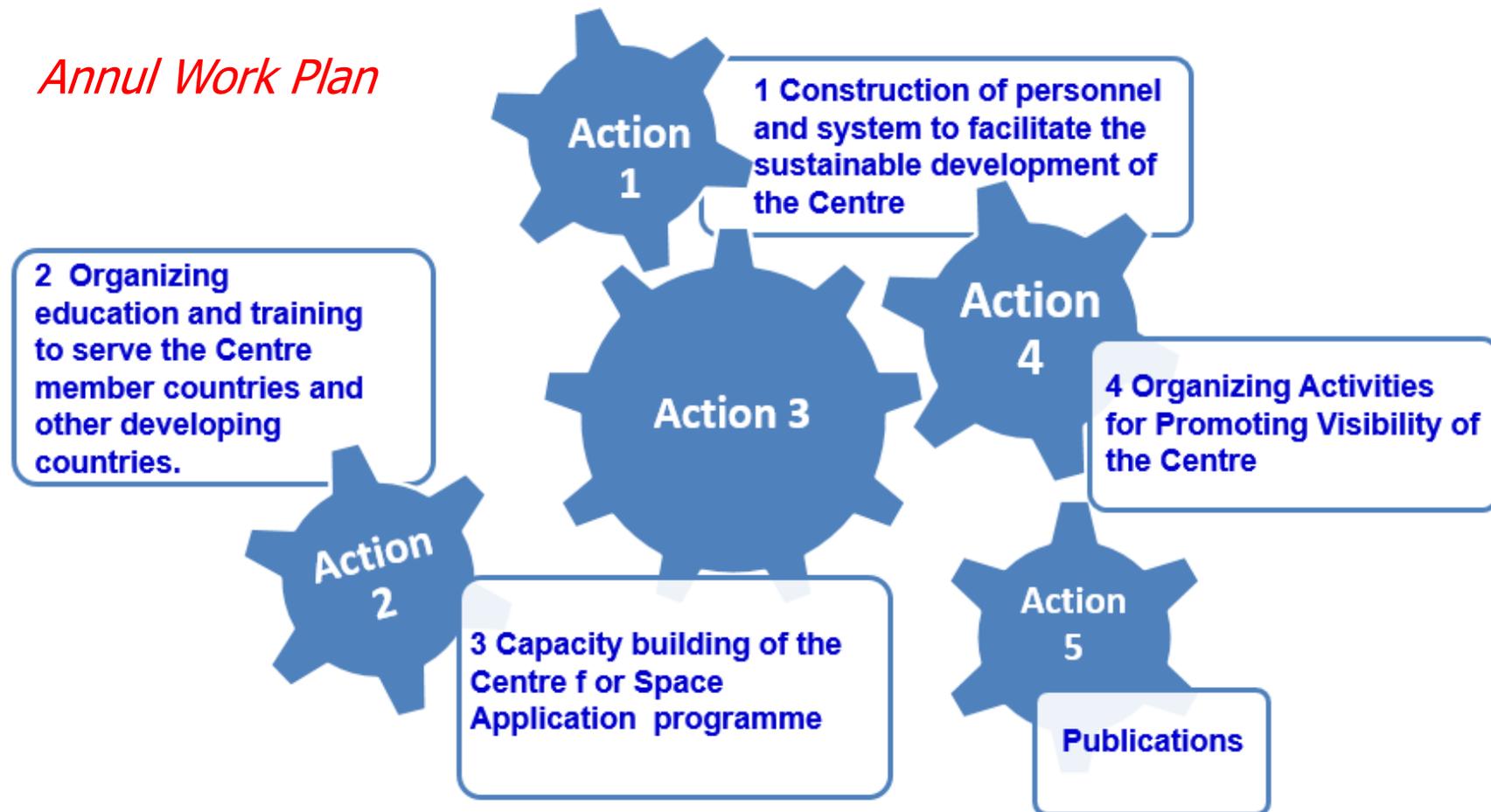
New UN Regional Centre / ICG Information Centre



Inaugurated on November 17, 2014, Beihang University



Annul Work Plan



Education and training

Three Master/ Ph.D Degree Program 2015

Remote Sensing and GIS **G**NSS **S**mall Satellite Technology

Enrollment

17 Recommended by RCSSTEAP

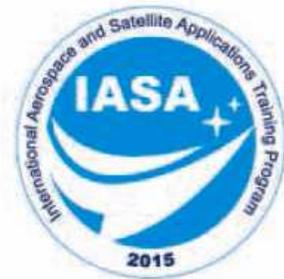
24 Recommended by APSCO

1 Recommended by Partner of RCSSTEAP

All courses are offered in English and
registration has finished in Sept. 2015

Education and training

Three Short Training Program 2015



International Aerospace and Satellite Applications (IASA) Training Program (2015)

- **Satellite Navigation Technology and Applications (April 19-29)**
 - Remote Sensing and GIS technology and Applications (September 14-22)
 - Space Law and Policy workshop (September 17-25)
- 6 days lectures
 - 1.5 day technical visits
 - 0.5 day participants' presentation
 - 1 day lab work
 - 1 day free

http://rcssteap.buaa.edu.cn

The screenshot shows the homepage of the Regional Centre for Space Science and Technology Education in Asia and the Pacific (China), affiliated with the United Nations. The header includes the RGSSTEAP logo, the center's name in Chinese and English, and navigation links for 'Set home', 'Chinese', and 'Login'. A main navigation bar contains links for 'Home', 'Members', 'News&Notice', 'Programs', 'Faculty', 'Facilities', 'Resources', and 'About Us'. The 'News' section features a list of recent news items with dates, and the 'Notice' section lists upcoming events. A sidebar on the right offers links for 'Newsletter', 'Online Course', 'Application', and 'Download'. Below these sections is a 'Gallery' of event photos and a 'Selected Video' section.

Header: RGSSTEAP 联合国附属空间科学与技术教育亚太区域中心(中国) Regional Centre for Space Science and Technology Education in Asia and the Pacific(China) (Affiliated to the United Nations) Set home | Chinese | Login

Navigation: Home Members News&Notice Programs Faculty Facilities Resources About Us

News: More>>

- International Training on Earth Observ... [2015-09-29]
- Students Participated in The Internati... [2015-09-15]
- The Centre Held the First Painting Ex... [2015-09-15]
- Satisfactory Conclusion of the Enroll... [2015-09-15]
- Representative of the Centre participa... [2015-09-15]
- The Opening Ceremony of IASA [2015-09-15]

Notice: More>>

- Thesis Defense [2015-09-15]
- Midterm Assessment [2015-09-15]
- Thesis Proposal [2015-09-15]
- Pilot Project [2015-09-15]
- Professional visits and Academic Lec... [2015-09-15]
- Remote education Video Conference... [2015-02-06]

Services: Newsletter, Online Course, Application, Download

Gallery: More>>

Selected Video: more>>

1 Overview

2 Education and Training

3 Courseware and Tools

4 Conclusion and Recommendation



1 Overview



Inaugurated on August 24, 2012, Beihang University

1 Overview

Construction mode

- CSNO Sponsored/Supported



- Industry/Institutions Participated



- Built upon University



Implement:

***Mutual benefits,
Sustainable Development***

- 1** Overview
- 2** Education and Training
- 3** Courseware and Tools
- 4** Conclusion and Recommendation

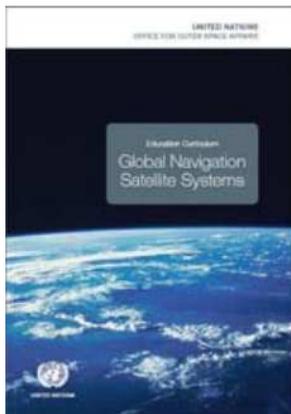


2.1 GNSS Degree Program

Training Procedures of Master's Program

1st stage: Course Study in China (9 months) (Leading to Course Completion Certificate of BUAA)	
Module I: 2 months for fundamental courses	Module II: 4 months for major courses
Module III: 3 months for pilot project (practice)	
2nd stage: Thesis Research (6-12 months) (Leading to Master's Degree in Engineering of China)	
I. Advanced Project	II. Thesis preparation and Defense
III. Graduation and Granting Master's Degree of China	

2.2 GNSS Courses



Reference

Core Course	Class Hrs
GNSS Reference System	18
Principle of Global Navigation Satellite Systems	32
GNSS Navigation Signal	18
GNSS Receiver Principles and Design	32
GNSS/INS Integration Navigation	32
Global Satellite Navigation System Applications	18
Satellite Navigation Data Processing	32
GNSS Experiment	18
GNSS New Technologies	18

2.3 Capacity Building



BeiDou Satellite Navigation System
Exhibition Hall (Located at Beihang
Aerospace Museum)

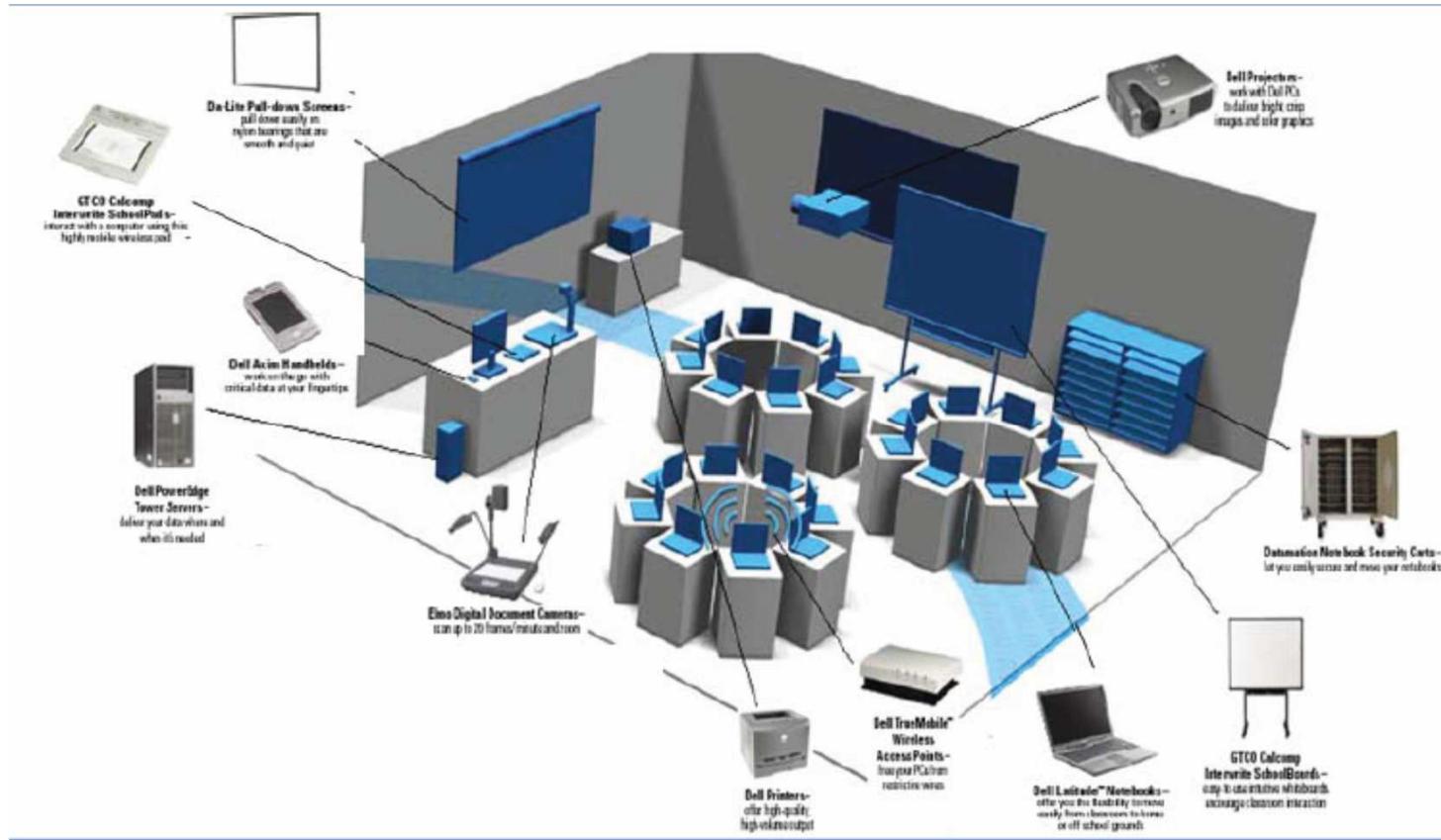


GNSS Smart Classroom



Experiment equipment

2.3 Capacity Building



2.3 Capacity Building

During discussion and expr., students will improve their

- Knowledge Basis
- Thinking Ability and Brain Storm
- Communication Capability
- Scientific Spirit



VS



2.3 Capacity Building

From **PASSIVE** to **ACTIVE** study



2.3 Capacity Building

GNSS Experiment



GNSS
Signal
Relay to
Classroom



1 Overview

2 Education and Training

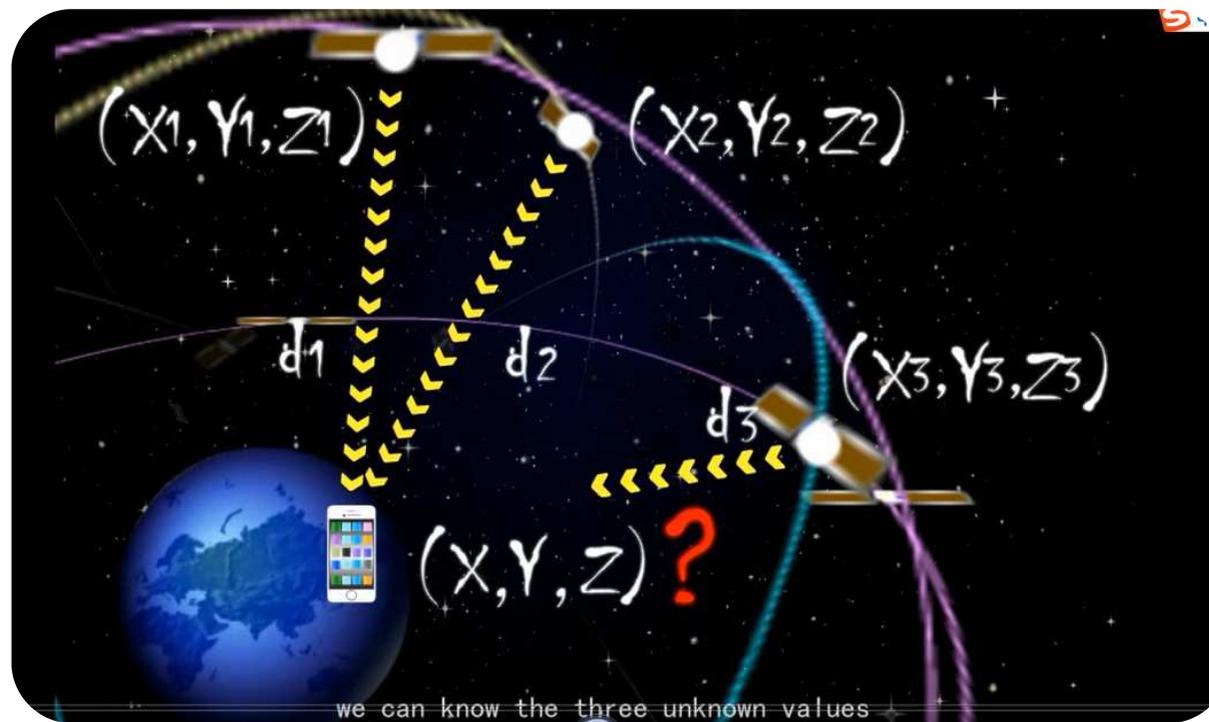
3 Courseware and Tools

4 Conclusion and Recommendation



3.1 Principle Courseware

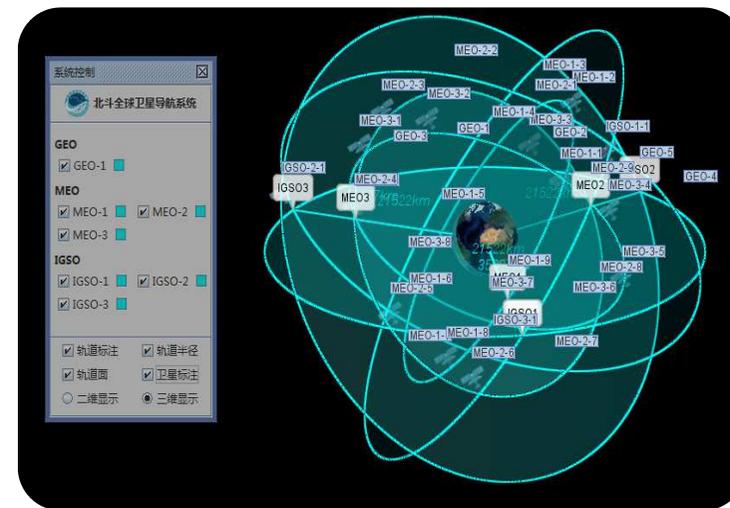
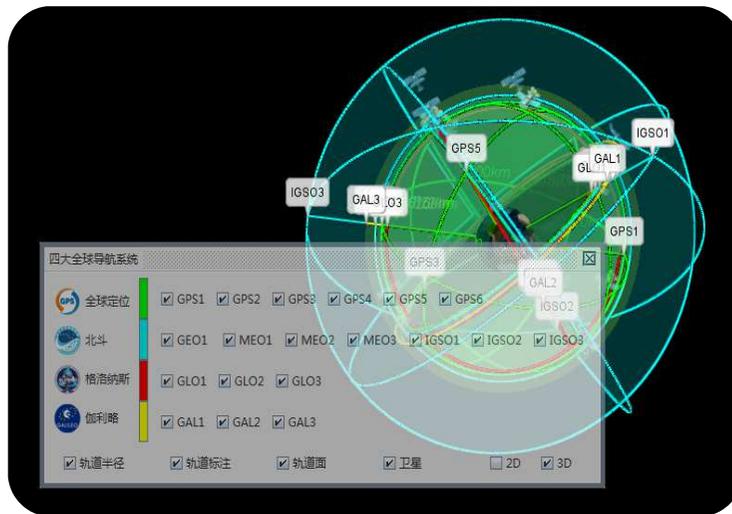
Courseware: GNSS principle



3.2 Visualization Tools

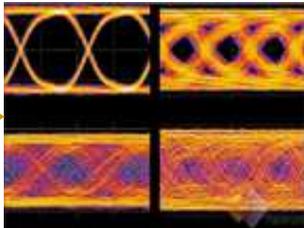
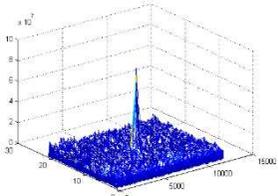
GNSS constellation/orbit visualization,
Link to ICG information Portal

<http://bdietc.buaa.edu.cn/sat>



3.3 Signal Processing Tools

Signal Processing for GNSS



Antenna

Signal Process

Signal Analysis

Application

- Antenna Gain
- Antenna Pattern
- Standing Wave Ratio
- Anti-Jamming

- Signal Acquisition
- Signal Tracking
- Signal Decoding
- Filter Algorithm

- Time Domain
- Frequency Domain
- Eye Diagram
- Consistency Analysis

- GNSS Application
- GNSS IC Chip
- GNSS Product

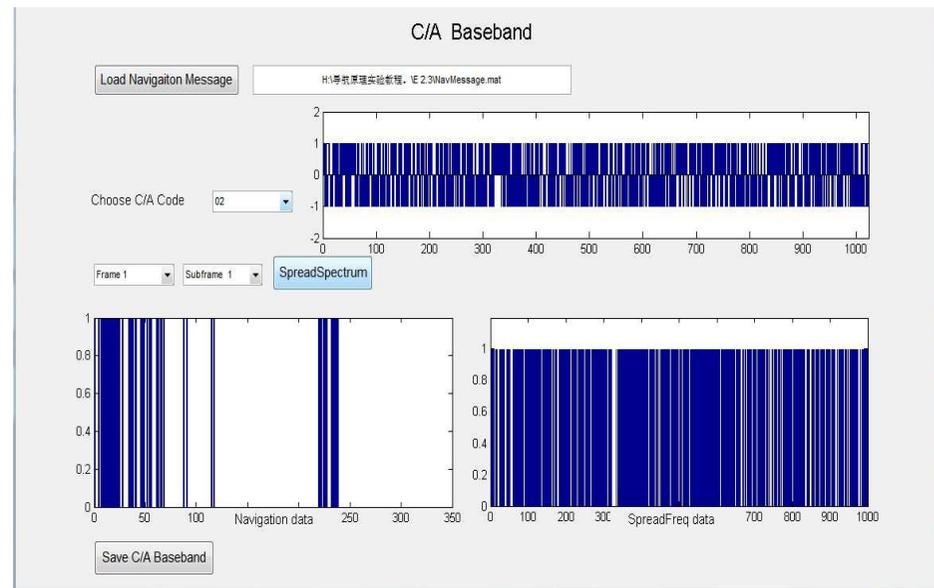
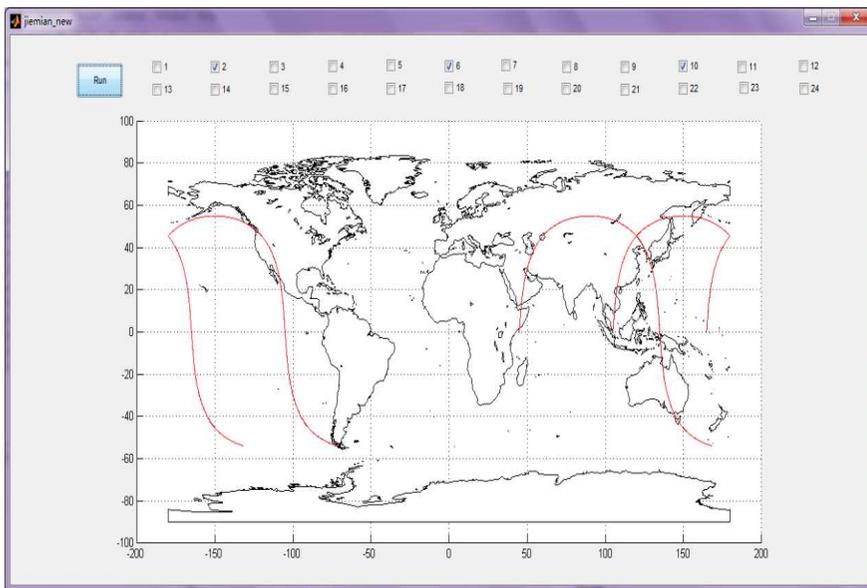
3.3 Signal Processing Tools

Software Receiver for GNSS



3.3 Signal Processing Tools

Satellite Orbit and Signal Modulation



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-



4.1 Education/Training Program in 2016

GNSS Degree Program in 2016:

GNSS, Remote Sensing and GIS, Space Law and Policy

Training Program in 2016:

- GNSS technology and applications
- Micro Satellite technology and applications
- Remote Sensing and GIS applications

<http://bdietc.buaa.edu.cn> and <http://rcssteap.buaa.edu.cn>

4.2 Conclusion and Recommendations

More cooperation in GNSS Education (e.g. textbooks/teaching materials, faculty/students exchange) among ICG member states and UN Regional Centres is needed to satisfy the increasing demands in the use of space technology especially for developing countries.

New ICT technologies (e.g. online education/MOOCs) should pay much more attention nowadays, as it has been changing the way of education and training and also it can reduce education cost and benefit much more people.



Flying with the wings of art

北京航空航天大学
2015.06.15-2015.06.18
中国代表团
CHINA DELEGATION

Thank you for your attention

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Regional Centre for Space Science and Technology Education in Asia and the Pacific(China)
(Affiliated to the United Nations)