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UAE SPACE AGENCY

UNITED NATIONS
Office for Outer Space Affairs

مركز محمد بن راشد للفضاء
MOHAMMED BIN RASHID SPACE CENTRE

Maximizing the Benefits of a UN Regional Centre for Space Science and Technology Education for SDGs

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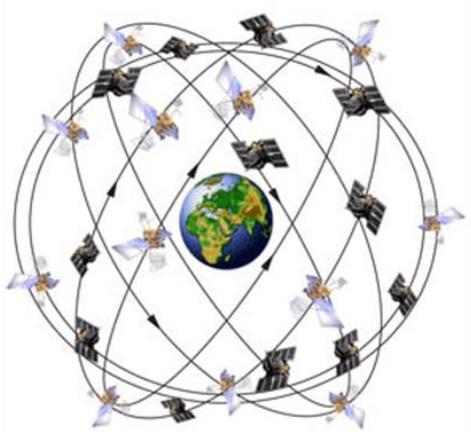


GNSS Constellation

United Nations/United Arab Emirates High Level Forum
"Space as a Driver for Socio-Economic Sustainable Development"
6 – 9 November 2017 Dubai, United Arab Emirates

Presentation Outline

- Sustainable Development & Capacity Building
- UN Capacity Agenda on SST
- ARCSSTE-E Core Activities
  - Post Graduate Diploma (PGD),
  - MTech.,
  - Space Education Outreach Programme (SEOP)
  - Space Research & Development
  - International Collaborations, Workshops, Alumni Conf,
- Alliance of Regional Centres (ARC)
- Achievement So Far
- Challenge to Achieving the SDGs
- Maximising the UN Regional Centres' Benefits
- In Conclusion

Sustainable Development

MDGs (2000-2015)

8 Goals
18 Targets
48 Indicators
189 UN Members
22 Inter. Organ.

WSSD (2000)

.. to Create a World where Decisions and Actions are informed by Coordinated, Comprehensive and Sustained Earth Observations

Rio+20 (2012)

Resolution A/RES/66/288, popularly known as **"The Future We Want"**

SDGs: 2016 – 2030)

"Transforming Our World: the 2030 Agenda for Sustainable Development"
(United Nations Resolution A/RES/70/1 of 25 September 2015)
17 Goals
169 Targets
232 Indicators
193 UN Members
"We don't have Plan B because there is no Planet B" - Ban Ki-moon (2015)

Sustainable Development - 2

SDG Goals & Targets - Humanity and the Planet (The 5Ps)

Goal 17: Partnership

Key to Implementation

- Finance
- **Technology**
- **Capacity Building**
- Trade
- Systemic Issues

2015 – 2030 World Goals

- SDGs [2016 – 2030]
- Sendai Framework for Disaster Risk Reduction [2015 – 2030]
- Paris Agreement on Climate Change [2015 – 2030]

Capacity Building in Space Science and Technology are critical for developing competencies to efficiently respond to societal challenges and addressing the Sustainable Development Goals (SDGs); Sendai Framework; Paris Agreement

- The Planet Earth and its Ecosystems are our "**Common Home**".
- Space is a **"Global Commons"** and thus the advancement of space technology should benefit all Member States - UNOOSA

United Nations Capacity Building Agenda on Space Science & Technology- Establishment of Regional Centres

United Nations General Assembly Resolutions

- **37/90 of 10th December 1982 – UNISPACE '82**

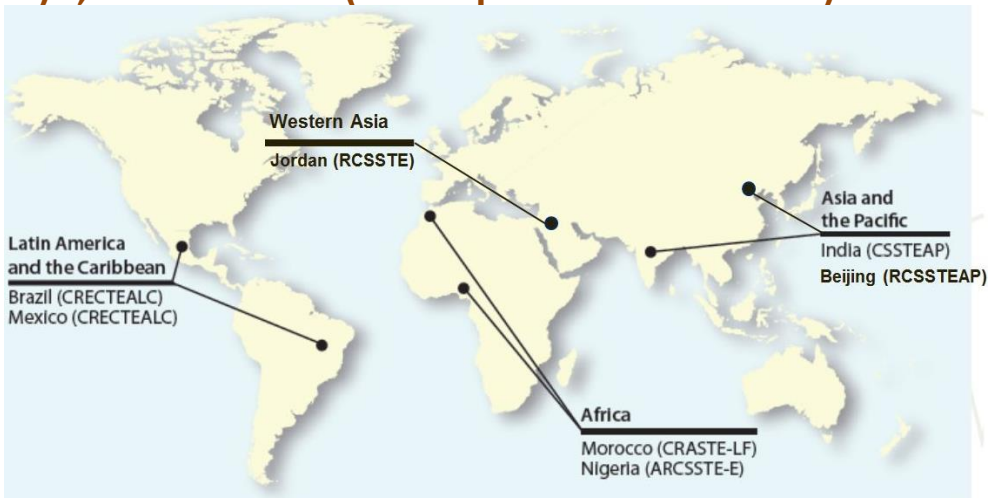
'That the United Nations Office for Outer Space Affairs (UNOOSA), through its Programme on Space Applications should focus its attention, interallia, on building of indigenous capacities for the development and utilization of Space Science and Technology, particularly at the local level'

- **45/72 of 11 December, 1990 – UN-COPUOS**

'That the UN should lead, with the active support of its specialized agencies and other international organisations, an international effort to establish Centres for Space Science and Technology Education at the regional level in existing national/regional educational institutions in the developing countries'

African Centres: ARCSSTE-E (Anglophone - NIGERIA) ; CRASTE-LF – (Francophone – MOROCCO)

- **India** (inaugurated in 1995)
- **Morocco** (inaugurated in 1998)
- **Nigeria** (inaugurated in 1998)
- **Mexico and Brazil** (inaugurated in 2003)
- **Jordan** (inaugurated on 29 May 2012)
- **China** (inaugurated 2014)



African Regional Centre for Space Science & Technplogy Education – English [ARCSSTE-E], NIGERIA

Established 15 Sept. 1998

Core Activities

- **Post Graduate Diploma Programme**
- **Master of Technology [MTech.]**
- **Space Education Outreach Programme**
- **Space Research & Development**
- **International/Regional Collaborations**

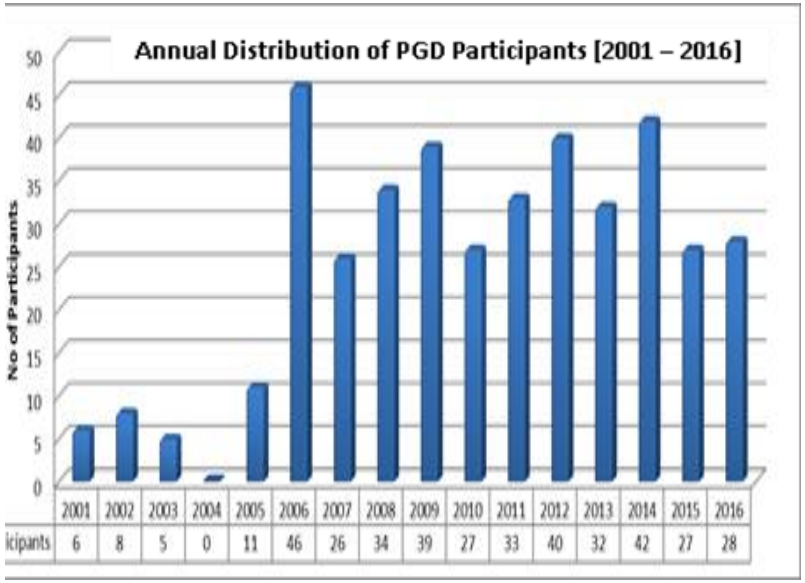
Core Modules

- *Remote Sensing & GIS*
- *Basic Space & Atmospheric Science*
- *Satellite Communications*
- *Satellite Meteorology*
- *Global Navigation Satellite Systems*

Post Graduate Diploma Programme

- **Duration**: 9-month Post-graduate Diploma Programme in five key areas of Space Science and Technology (SST) Education

- **International Participants** are offered full scholarship covering: - Tuition Fee, Accommodation, Medical Services, Travel Ticket, etc.



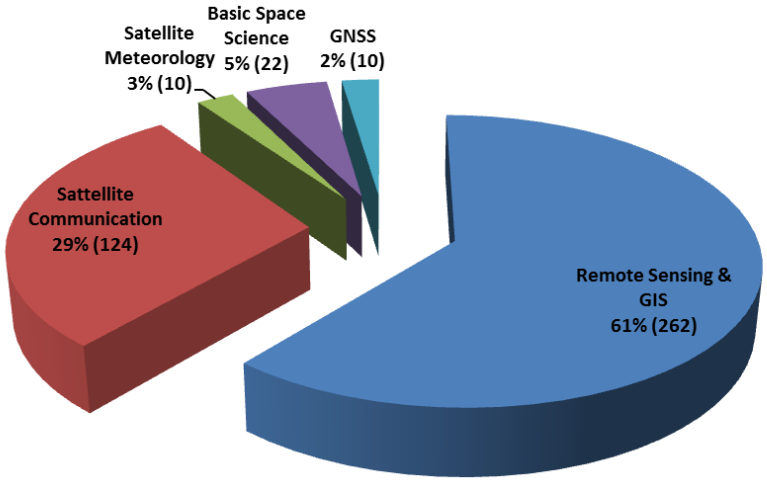
*** 17 of the 24 Countries have participated in the PGD Programme to date**

Botswana	2
Cameroon	33
Congo DRC	1
Ethiopia	4
Gambia	1
Ghana	9
Kenya	15
Liberia	12
Malawi	7
Nigeria	334
Sierra Leone	1
Sudan	15
South Africa	1
Tanzania	5
Uganda	11
Zambia	3
Zimbabwe	7
Total	473

Curricula for all the PGD courses - developed by UN-OOSA

Post Graduate Diploma Programme

Distribution of PGD Participants by Course Options [2001-2016]



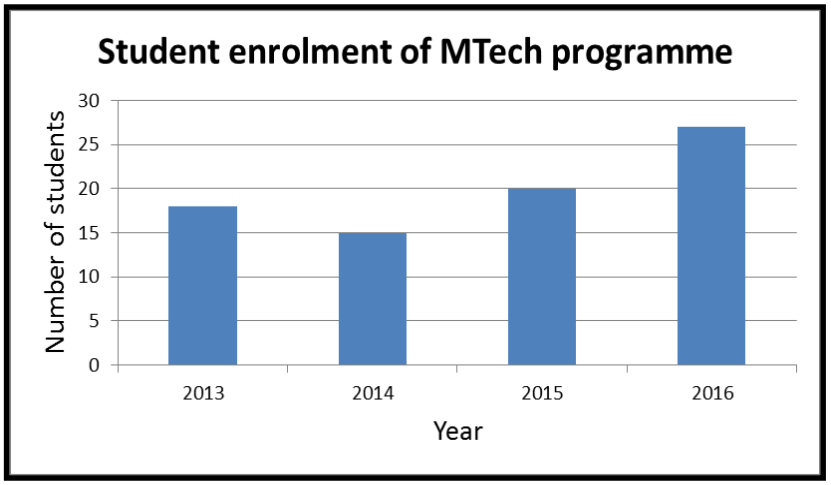
MTech. (Space Science & Technology)

AFRICAN REGIONAL CENTRE FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION - ENGLISH, O A U CAMPUS, ILE - IFE

&

THE FEDERAL UNIVERSITY OF TECHNOLOGY AKURE

- **Duration**: 18-month MTech. (SSTA) in five key areas of Space Science and Technology (SST) Education
- **Collaborating University:** Federal University of Technology, Akure (FUTA)

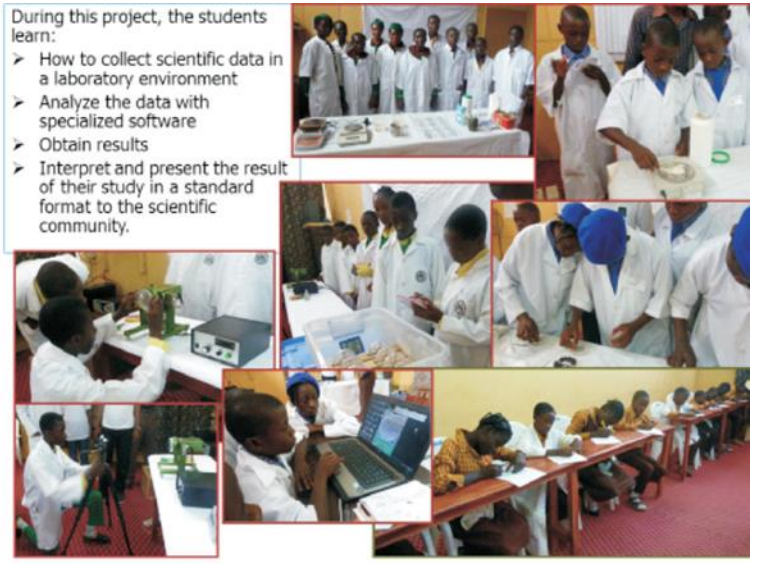


- Space Education Outreach Programme

The Founder/CEO of SLOOH addressing the participants during the 'Twinkle Twinkle Little Star' Workshop - 2015

Zero-Gravity Flight

ARCSSTE-E has developed Curricula for space science education in primary and secondary schools in Nigeria



2017 Space Education Outreach Programme

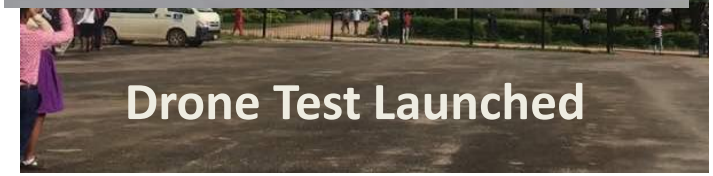
- **Participants** - students and teachers drawn from 32 public and private Secondary Schools in Kwara State.
- 6 students and 2 teachers from
- ARCSSTE-E technical staff carried out presentations in various field of space science and technology.

2017 Space Education Outreach Programme

2017 Space Generation Advisory Council (SGAC)/Centre for Atmospheric Research/ARCSSTE-E Outreach Programme:

'WHY SPACE?' - *Space Exploration: A Step into the New Frontier*

University of Benin, Nigeria; Date:16th of May, 2017



skype

Space Research & Development

Desertification Monitoring System over Sahelian Region of Nigeria

February 2017

- **The establishment of a system of information is vital in order to accurately assess the processes that lead to desertification and droughts, and to build a framework for environmental accounting.**

OBJECTIVES

i. **Continuously measure parameters (Pressure, temperature, humidity, wind - velocity and rain rate);**
ii. **Analyse data obtained and ascertain if desertification is occurring or not;**
iii. **Model possible rate, volume and direction of future encroachments; and generate a hazard map for affected regions.**

International Collaborations

1. **GEO,** Geneva, Switzerland

   - Participating Organisation (PO) status

2. **International Committee on GNSS**, UN-OOSA, Vienna

3. **RCSSTEAP**, China

4. **EUMETSAT on GEONetCast**
   - establishment of

5. **Samara State Aerospace University , Russia**

Planned Collaborations

- **China-Brazil Earth Resources Satellite (CBERS)**
  - Ground Receiving Station (educational)
- **ESRI Educational licensed products** e.g. ArcGIS
- **ESA; Others welcome!**

Alumni Conferences &International Workshops

International Training Workshop on GNSS in collaboration with RCSSTEAP and Beihang University, Beijing, China (August, 2016)

Fig. : Joint International Workshop on GNSS - 2016

Bi-Annual Alumni Conference – an avenue to foster Regional Collaboration

Alliance of Regional Centres (ARC)
(Affiliated to UNOOSA)

Objective

The objective is to promote the development of space technology applications by enhancing exchanges and further maximizing advantages of the UN Regional Centres. It will be a sustainable resource sharing platform and further improve overall capability of all the UN Regional Centres.

ARCSSTE-E's Permanent site

Achievements so far .....

- Trained over 473 participants at the Postgraduate Diploma level
- Trained over 23 participants in the MTech. (SSTA) programme
- Over 5,000 Participants in short training Programmes/Workshops.
- ARCSSTE-E's capacity building program also includes:
  - Integrated space-based research and development
  - Space Education Outreach/Awareness for schools at all levels and
  - Reaching over 10,000 School Children, Students and Teachers and the general public.

- Developed Curricula for Space Science Education in primary and secondary schools in Nigeria
- National & International Collaborations – FUTA, Nigeria, RCSSTEAP, China, Samara National Technical Univ., Russia

Challenges to Achieving SDGs

- Funding
- Sizeable/critical number of highly qualified scientists/technologists, practitioners in Space Science & Technology in the Developing countries.
- Little Awareness of Decision-makers and Managers of SDGs on the role S&T in the Implementation Agenda. Lack of communication – Developers & Users
- Lack of baseline data that will drive process – Data Needs Analysis

Maximizing the UN-Regional Centres for SDGs2030 for consideration in the UNISPACE+50

- **Strengthen the Capability and Status of** the UNOOSA Regional Centres for Space Science and Technology Education **as a major hub for Regional Capacity Building** under the Space2030 Agenda of UNOOSA.
- **Domestication & Ownership** - Involvement of Regional Bodies/Organisations e.g. AUC, ECOWAS, IGAD, AARSE, UNECA, etc. for effective utilisation of the Centre's Space Science and Technology Capacity Building potentials.
  - Improve Funding - Regional Member States contribution
  - Strengthen the existing Agreement
- **Regional Centres as a major node** in the proposed UNOOSA Capacity Building Network (CBN)

Maximizing the UN-Regional Centres for SDGs2030 for consideration in the UNISPACE+50 Contd.

- **Staff Training on Curricular Delivery (Standardisation) -** Internship and Secondment/Exchange in collaboration with other Regional Centres/International Institutions [including Member countries] and Network with UN University
- **Common E-Learning Platform** for delivery of Modules – including incorporation of existing ones (modified to fit the Curricular) with necessary support/agreement with the owners (Member States).
- **Collaboration in research** and support for **teaching facilities** from Space Fairing nations. Linkage to other International **Capacity Building Network**

Maximizing the UN-Regional Centres for SDGs2030 for consideration in the UNISPACE+50 Contd.

- Development of additional Modules for the PGD:
  - Space Health
  - Space Law
  - Space Engineering (under consideration)
- Incubation of best practice from industries and other major players through UNOOSA in the Centres
- Global Access to data, Software for teaching and research purposes and other relevant educational materials to the Centres through UNOOSA
- Future Consideration - Extension of Regional Centres to other regions of the world to ensure coordination of Space Science & Technology partnership in Capacity Building => Alliance of Regional Centres

Maximizing the UN-Regional Centres for SDGs2030 for consideration in the UNISPACE+50 Contd.

- **Finally** UNOOSA proposed SPACE2030 Capacity Building as Thematic Priority no. 7, therefore Member States (especially developing countries) be advised to:
  - Integrate CB (in Space Education) in their SDGs National Implementation Plan. Data needed to Achieve 2030 Goals?
  - Have Technical Point of Contacts for SDGs (Multi sectorial approach)
  - Members through their Space Agency/Centre/Institute:
    - Identified State's 'Space Assets Users' needs – for the realisation of capacity that meet the needs

SDGs should be integrated into Nations' Economic Growth Plan – **Domestication**

In Conclusion

The Planet Earth and its Ecosystems are Our 'Common Home' and we must ensure that no one (Society) is left behind in this endeavour (of achieving SDGs) as there is no Plan B

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Thank you

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