



African Regional Centre for Space Science & Technology Education in English [ARCSSTE-E]



Affiliated to

**UNITED NATIONS
Office for Outer Space Affairs**

Updates on ARCSSTE-E's Activities (1998 - 2017)



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Meeting of the Directors of the Regional Centres for Space Science and Technology Education (Affiliated to the United Nations)

Held on the margins of the 60th Session of the Committee on the Peaceful Uses of Outer Space
Vienna, Austria, 13-14 June 2017
Vienna International Centre, Room C0431



ARCSSTE-E

- Established 15 September 1998



Legend
English Speaking Nations

ARCSSTE-E also serves as NASRDA's Centre for Space Science and Technology Education (CSSTE)



Directors of ARCSSTE-E



Prof. E. E. Balogun
(1998 – 2005)



Dr Ganiy I. Agbaje
(2015 – to date)



Prof. O. O. Jegede
(2005 – 2009)



Prof. Joseph O. Akinyede
(2009 – 2013)



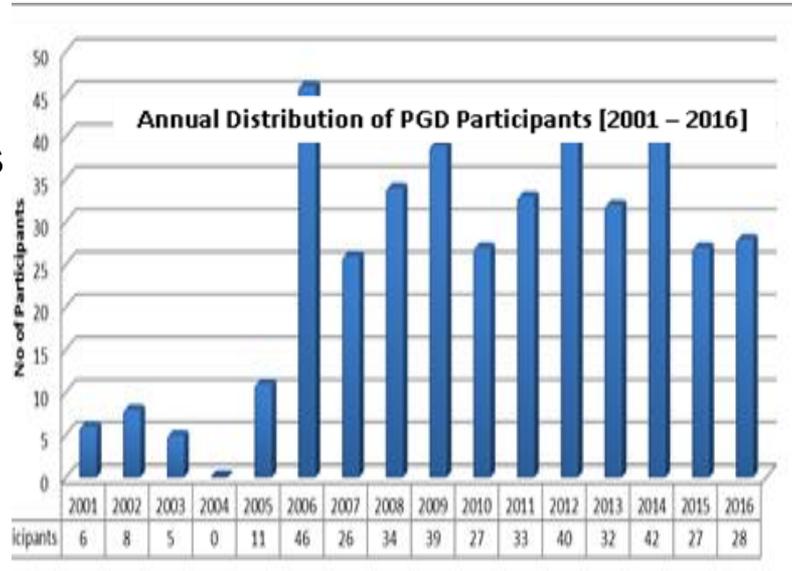
Late Dr. A. O. Fashade
(2013 – 2015)



ARCSSTE-E Core Activities

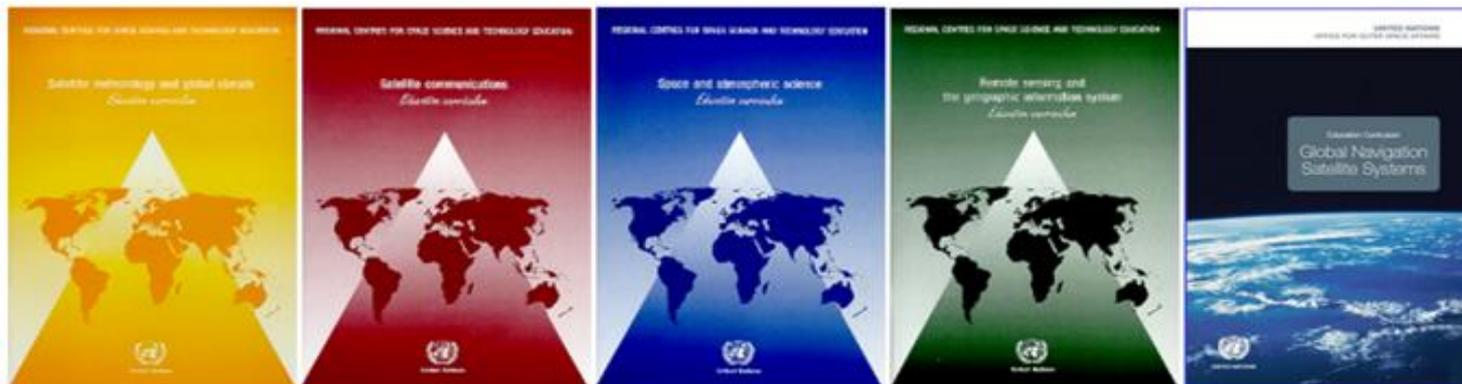
Post Graduate Diploma Programme

- **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**

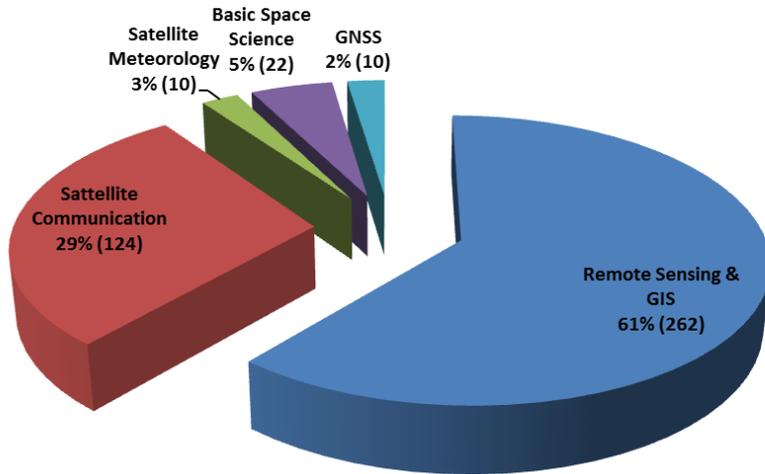
Botswana	2
Cameroon	33
Congo DRC	1
Ethiopia	4
Gambia	1
Ghana	9
Kenya	15
Liberia	12
Malawi	7
Nigeria	334
Sierra Leone	1
Sudan	15
South Africa	1
Tanzania	5
Uganda	11
Zambia	3
Zimbabwe	7
Total	473



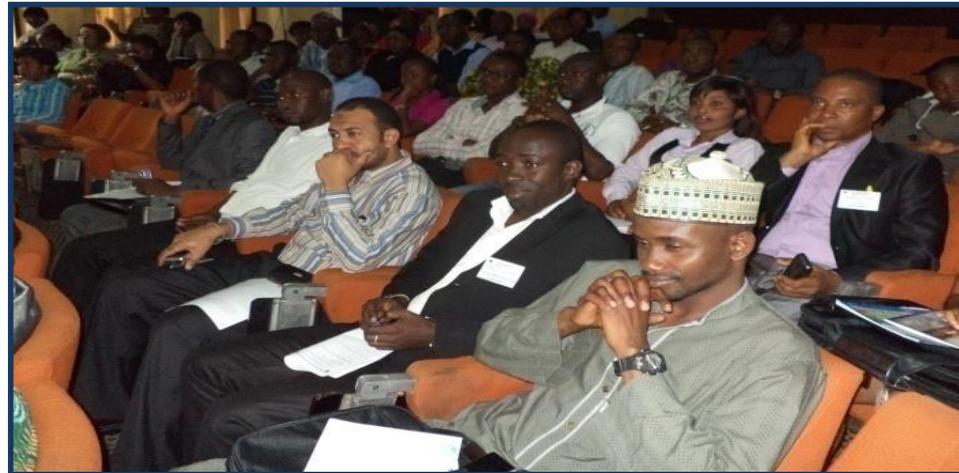


Post Graduate Diploma Programme Contd.

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



- ARCSSTE-E Regional Biennial Alumni Conference





ARCSSTE-E Core Activities II

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)

Commenced: 2013 with 18 Students
2014: 15 Students
2015: 20 Students
2016: 27 Students





ARCSSTE-E Core Activities III

- Space Education Outreach Programme



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

UNITED NATIONS
Office for Outer Space Affairs
**Human Space Technology
Initiative (HSTI)**

**Zero-Gravity Instrument Project
(ZGIP)** promotes space education and
research in microgravity.

<http://www.unoosa.org/oosa/en/sapidx.html>

The United Nations Office for Outer Space Affairs
launched the ZGIP on 1 February 2013, and
distributed the microgravity simulation instruments
to qualified schools, universities, research centres
and institutes



CLINOSTAT: A one-axis clinostat was
selected for distribution because of the
ease of use and potential scientific
benefits.



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

During this project, the students
learn:

- How to collect scientific data in a laboratory environment
- Analyze the data with specialized software
- Obtain results
- Interpret and present the result of their study in a standard format to the scientific community.



ARCSSTE-E received, on a competitive basis, one of
the 20 Clinostats distributed in 2013



-Space Education Outreach Programme



WRO™
World Robot Olympiad

UNITED ARAB EMIRATES 2011 **تحدة**

ROBOTS
For Life Improvement

Premiere Nigerian Robotics Team

Automatic Road Mapping Utility



2017 Space Education Outreach Programme

African Regional Centre for Space Science and Technology Education in English (ARCSSTE-E)
Obafemi Awolowo University Campus, Ile-Ife, Nigeria.
(AFFILIATED TO THE UNITED NATIONS)

in collaboration with
National Space Research and Development Agency
(Federal Ministry of Science and Technology)

cordially welcome you to

ZONAL SPACE EDUCATION WORKSHOP

Theme - **SPACE FOR ALL:
CREATING AWARENESS
AND INSPIRING STUDENTS**

to be declared opened by
Dr. Ogbonnaya Onu
Hon. Minister of Science and Technology

Date: 21st-22nd FEBRUARY, 2017 **Venue:** C & S COLLEGE, SABO-OKE, ILORIN

Chief Host:
Prof. Seidu Onailo Mohammed
Director General/CE NASRDA

Dr. Ganiy I. Agbaje
Director/ICE ARCSSTE-E

Engr. Musa Ayinla Yeketi
Hon. Commissioner of Education and Human
Capital Development, Kwara State.

www.arcsstee.org.ng



- **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

ARCSSTEE's Staff at Launch Site



Over 350 Participants



Astronaut Soyeon Yi



Drone Test Launched



Drone Constructed by Space Club, OAU





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

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





ARCSSTE-E Core Activities IV – Space Research & Development

Grant Proposals

- ARCSSTEE - as Regional Activity Centre (RAC) for the ECOWAS region (REC) to implement the Pan-Africa/European Union program – GMES for Africa. Proposal meetings on-going in line with '2006 Maputo Declaration'. Grant Estimate €36M
- ARCSSTEE on Strategic Partnerships for Higher Education Innovation and Reform (SPHIER) Partnership funding for E- Learning for Space Science and Technology Education in Nigeria. Grant Estimate: £2.6M



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





7th Governing Board Meeting

26th April 2017



Member States in Attendance

- i. Ghana
- ii. South Africa
- iii. South Sudan
- iv. Ethiopia
- v. Egypt
- vi. Liberia
- vii. Uganda
- viii. Cameroon
- ix. Nigeria



GEONetCast Installation - 2017



On-going EUMetcast C-Band installation at ARCSSTE-E Space Museum, OAU, Ile-Ife.

GEONetCast is a global network of Satellite-based data dissemination systems providing environmental data to a world-wide user community

Data: MeteoSat, GOES East & West image data; EUMETSAT & NOAA-NESDIS metrological data; Sea surface temperature and Vegetation Data; etc.

Licence granted & Installation (95% completed)

On Completion of the Earth Station the Centre will be poised to provide real-time world class data to support the Postgraduate programmes and collaborative research.

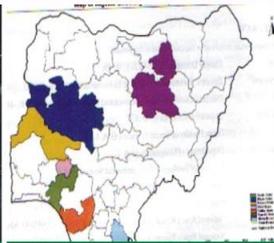
Useage within Centre



Satellite Communication



Satellite Meteorology



Remote Sensing



Infrastructure Deficit



Yellow House

Obafemi Awolowo University
Ile Ife, Osun State, Nigeria.

Space Museum Building





ARCSSTE-E's Permanent site





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



Planned Collaborations

- **China-Brazil Earth Resources Satellite (CBERS)**



- Ground Receiving Station (educational)

- **ESRI Educational licensed products** e.g. ArcGIS



- **Samara State Aerospace University**, Russia



- **Others welcome!**



Challenges

- ⊕ Inadequate funding for improved ICT infrastructure for learning
- ⊕ Funding from Member States has been nil since inception
- ⊕ Establishment of Ground Receiving Station facilities for teaching and research
- ⊕ Signing of the MoU
- ⊕ Infrastructural Facilities
- ⊕ Centre's Diplomatic Status
- ⊕ Regular Annual Governing Board meeting
- ⊕ Member Countries' Institution Point of Contact
- ⊕ Mobilisation Visits to Member Countries
- ⊕ Selection of PGD participants from Member countries through Foreign Affairs and Equivalent Ministry handling Science and Technology Affairs.



Recommendations

- ⊕ Establishment of E-learning facilities in collaboration with other Regional Centres and International Institutions in Member countries;
- ⊕ Staff Internship and Secondment/Exchange in collaboration with other Regional Centres/International Institutions [including Member countries] and Network with UN University
- ⊕ Financial commitment of Member States to the Regional Centres must be rekindled; Permanent Reps in Vienna, & Ambassadors engaged.
- ⊕ Regional Centre's Directors meetings, on the edges of COPOUS meeting
- ⊕ Collaboration in research and support for teaching facilities
- ⊕ Incubation of best practice from industries and other major players through UN_OOSA
- ⊕ Linkages with Regional Organisations e.g. AARSE, UNECA, etc. for effective utilisation of the Centre for Capacity Building



Conclusions

- The applications of SS&T to socio-economic development within the African region are gaining wide acceptance with the emergence of more countries pursuing the development of one form of SS&T programme or the other, depending on the individual country's level of investments.
- There is a clear evidence of the impact of the UN-assisted capacity building programme which has already produced appreciable number of trained personnels as revealed in ARCSSTE-E's programme implementation and its achievements since its inception in November, 1998.
- New strategies for capacity building at the formal and informal levels of education to train a sizeable number of experts to ensure meeting up the SDGs 2030 are evolving in line with advances in technologies.
- Indigenous Skill Acquisition in Space Science & Technology especially is key to the Socio-Economic Sustainable Development of any nation.



*Thank
You*



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Recommendations – General Discussion

- GB Members Contribution
 - Financial (AUC Formula) and in-kind
 - Adequate Personnel- Point of Contact
- Involvement of **Regional Bodies** – ECOWAS, AUC, IGAD, CEMAC, etc.
- Roadshow – on the Centres
- UNOOSA Reps in attendance during GB meetings, Graduation, etc.
- **Linkages** between Regional Centres, UN University Campus
- Available Minimum **infrastructures** for teaching and learning; support for teaching aids and facilities from Members in developed countries, etc.
- **Certificates** – designed to be similar and appropriately signed by UNOOSA Director/Rep
- Attendance of **Permanent Missions** in Vienna at Directors’ meeting
- OOSA to ensure that staff of the Regional Centre **participate in UN-OOSA sponsored workshops and conferences**
- **Access to data** for teaching and research purposes and other relevant educational materials through OOSA



Regional Centres Alliance

Objectives

- To make the Regional Centres more cohesive and united in pursuit of their mandates
- Share experiences and lessons learnt and enable concrete strategies that will be beneficial in their various endeavors in building capacity for their respective regions.
- Building institutional capacity of the Regional Centres and enabling them to keep pace with the fast changing and dynamic technological advancement in training and research, especially in space science and technology applications and other relevant areas.

Strategies

- Staff Exchange, Visiting Lecturers, etc.
- Involvement in Curriculum Review
- Jointly present project proposals to source for grant from donor agencies and regional organization such as ECOWAS, African Union (AU), etc.
- Be provided with state-of-the-art academic facilities for hands-on to enhance teaching, learning and research undertakings



Regional Centres Alliance

Strategies Contd.

- It is expedient for UNOOSA to maintain **high standard of delivery** of all its educational programmes
- UN **Joint Research proposal focused on Regional Issues** for implementation as contribution by Centres
- **Linkages** between Regional Centres, UN University Campuses
- Regional Centres must be **developed and equipped** with adequate facilities essential to sustained growth
- **Certificates** – designed to be similar and appropriately signed by UNOOSA Director/Rep
 - Type and quality of certificate being awarded to participants and the need to ensure its authentication by relevant authorities.
- **Regular Annual Directors' meeting** – rotation by Centres location