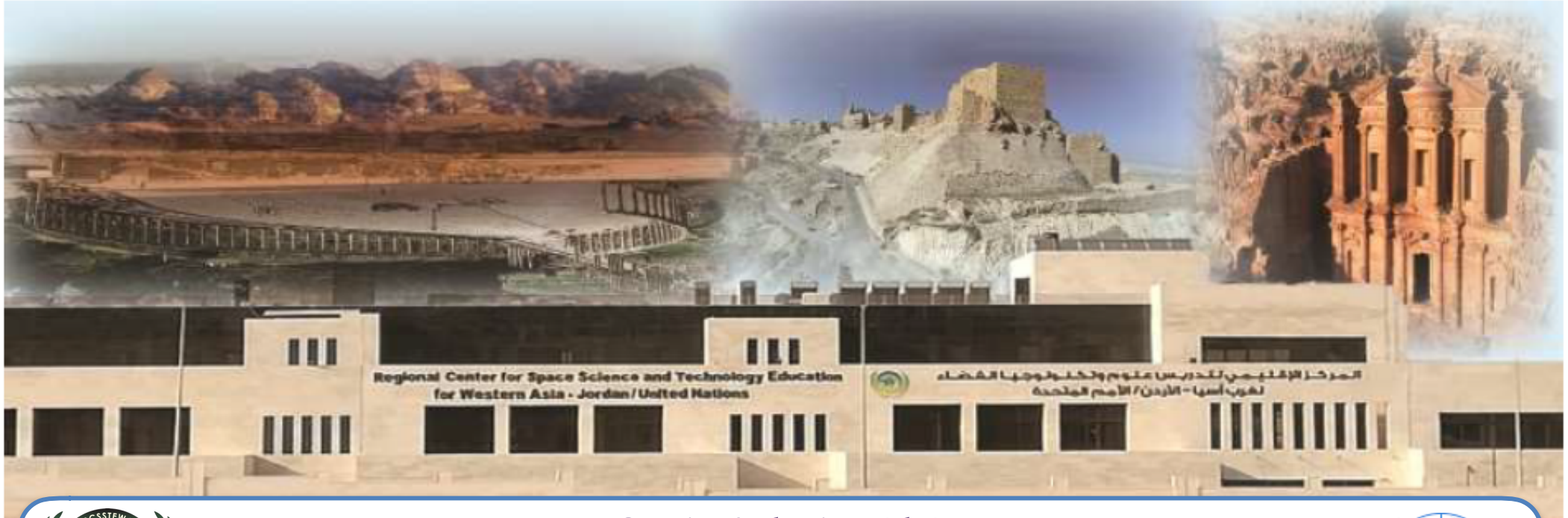


# Positioning the UNOOSA Regional Centres for Global Partnership in Space Exploration and Innovation



Ganiy Agbaje, PhD

Executive Director, ARCSSTE-E

United Nations/Jordan Workshop

“Global Partnership in Space Exploration and Innovation”

Amman, Jordan, 24 - 28 March 2019



ARCSSTE-E

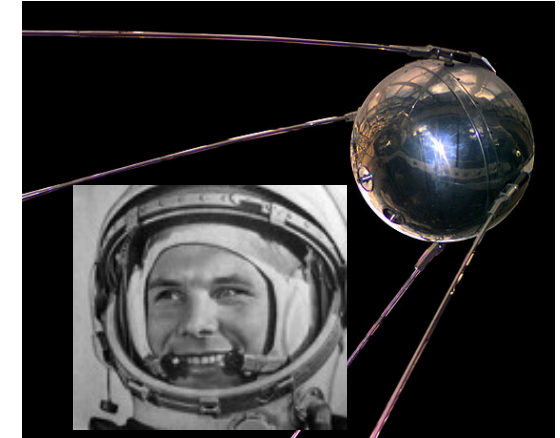
African Regional Centre for Space Science and Technology Education in English

Obafemi Awolowo University, Ile-Ife, Nigeria

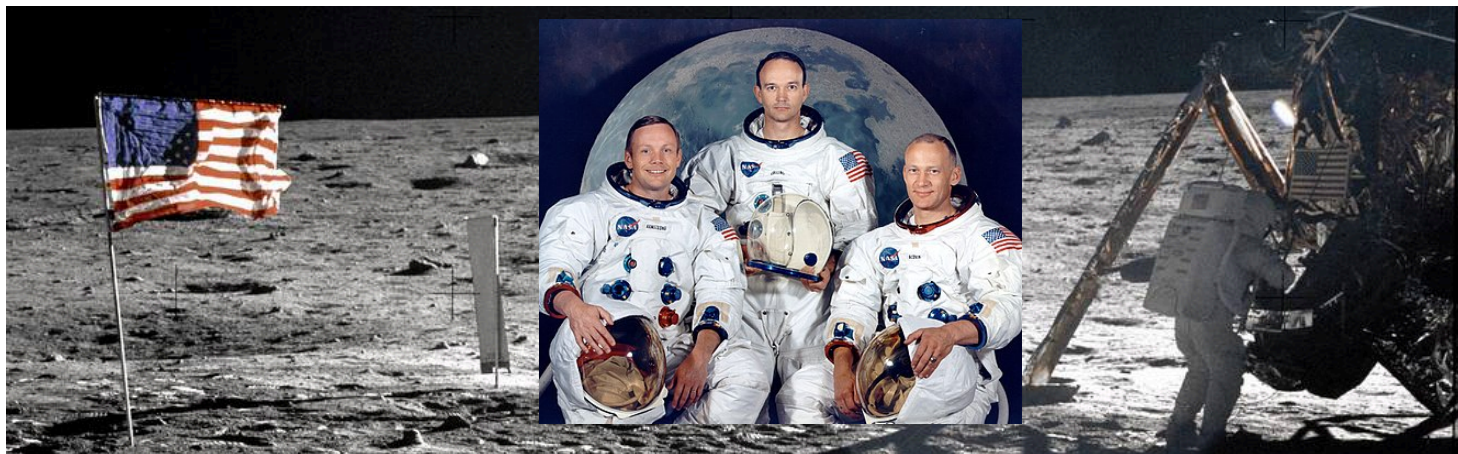
# Space Exploration & Innovation

## One Giant Leap for Mankind

- **Discovery and exploration of celestial structures in outer space**
  - Astronomers - telescopes
  - Physical exploration
    - Unmanned Robotic space probes and
    - Human spaceflight
- **Rationales**
  - Advancing scientific research \*\*\*
  - National prestige
  - Uniting different nations. \*\*\*
  - Ensuring the future survival of humanity, and \*\*\*
  - Developing military and strategic advantages against other countries



**Soviet Union's Sputnik 1;  
4 October 1957**

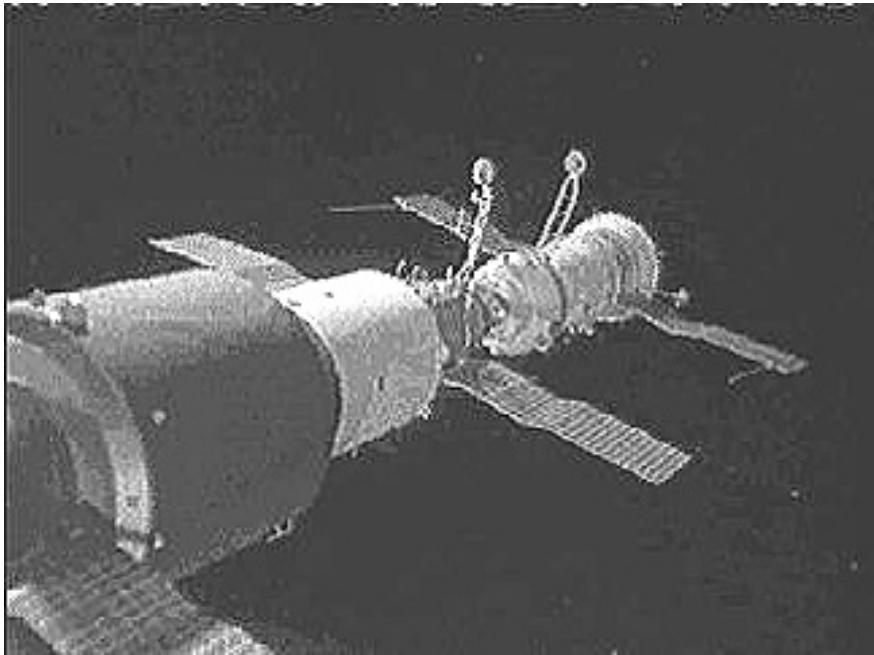


**American Apollo 11 mission on 20 July 1969**





# From Space Race to Space Cooperation



1st Space Station - Salyut-1 (1971)

Source: Wikipedia



International Space Station (ISS)  
-1998+

Innovation within a global context-  
numerous primary and secondary  
partnerships of countries across the  
globe

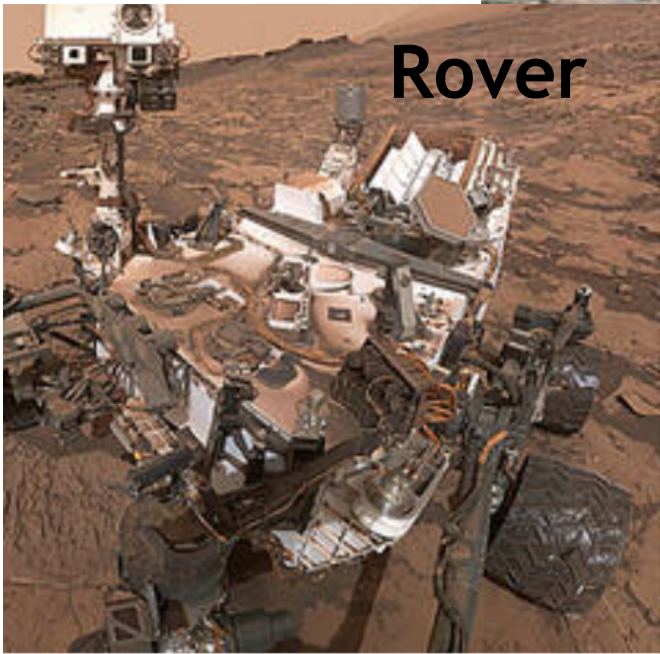


U.S. & Russian astronauts to board Soyuz -FG to ISS  
(March 2019)

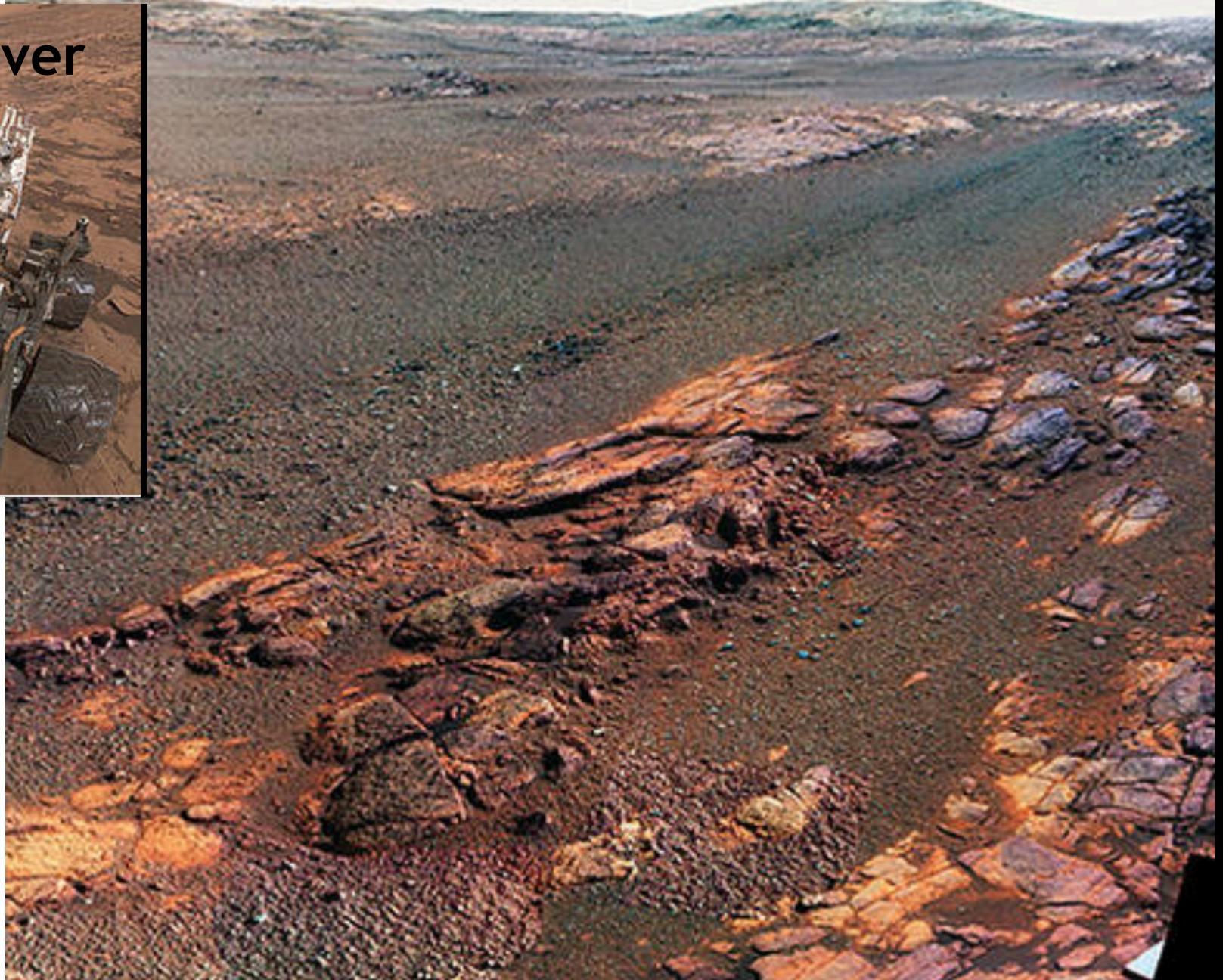




# Exploring Mars - 'The Red Planet'



Source: NASA



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# NanoSatellites Revolution - Making Access to Space Affordable

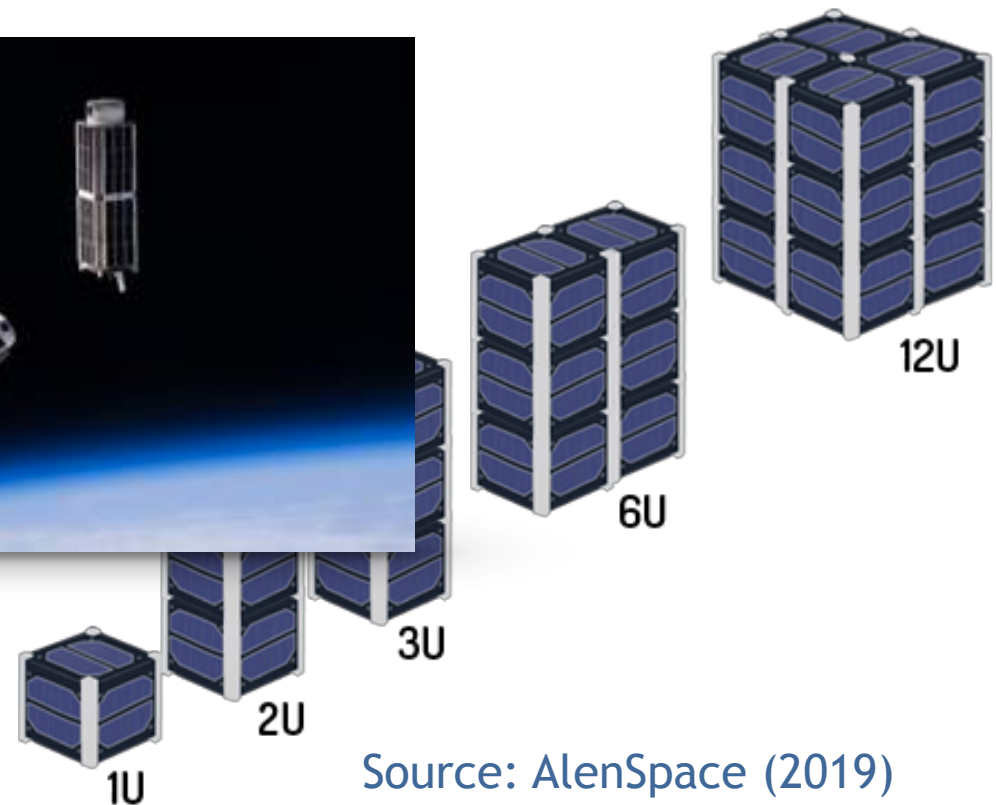
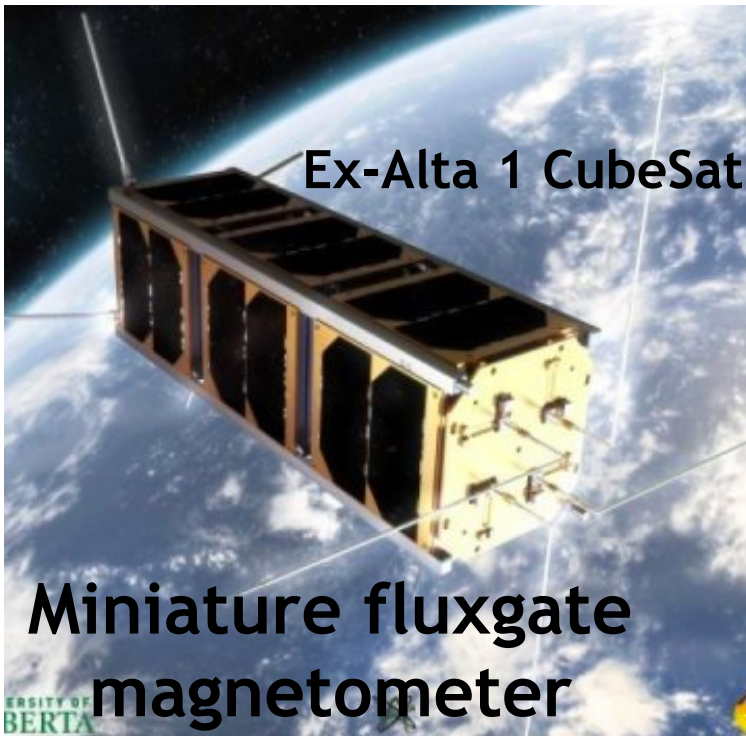
**NanoSatellites:** CubeSats, PocketQubes, TubeSats, SunCubes, Picosatellites,

- Affordable access to Space for University researchers
- Low Cost - commercial electronic parts
- Access to space for developing countries
- Accessible to companies of all types and sizes
- Democratised the Space race



10x10x10 cm  
Dimensions of a CubeSat

1.3 kg  
Mass of a CubeSat



Source: AlenSpace (2019)

# Humanity and the Planet (The 5Ps of Sustainable Development)



- The Space is our Global Commons
- Our Common Challenge:
  - Sustaining the Planet

"People Partnering for Peace and Prosperity on the Planet"

- Albert Inima (2015)





# Current Global Agenda to Sustain the Planet Earth

## Global Goals: 2015 -2030

- Sustainable Development Goals
- Sendai Framework for Disaster Risk Reduction
- Paris Agreement on Climate Change

Space2030

## Solutions

- Highly Qualified Space Scientists and Application developers in National Institutions;
- Space Policy and Space Law Experts

## Keys

- **Capacity Building in SST**
  - To develop Competencies to efficiently respond to societal Challenges
- **SDG Goal 17: Partnership**



# Common Challenges to the Planet Earth



Suleja, NIGERIA, 2016



Geomagnetic Storm  
Source: NOAA

Example of an Aurora Borealis or Northern Lights. Source: U.S. Air Force



Wildfires

Source: ICSMD (2019)





# Common Challenges to the Planet Earth



Tsunami - Rikuzentakata, Japan (2011)

Source: National Geographic (2019)

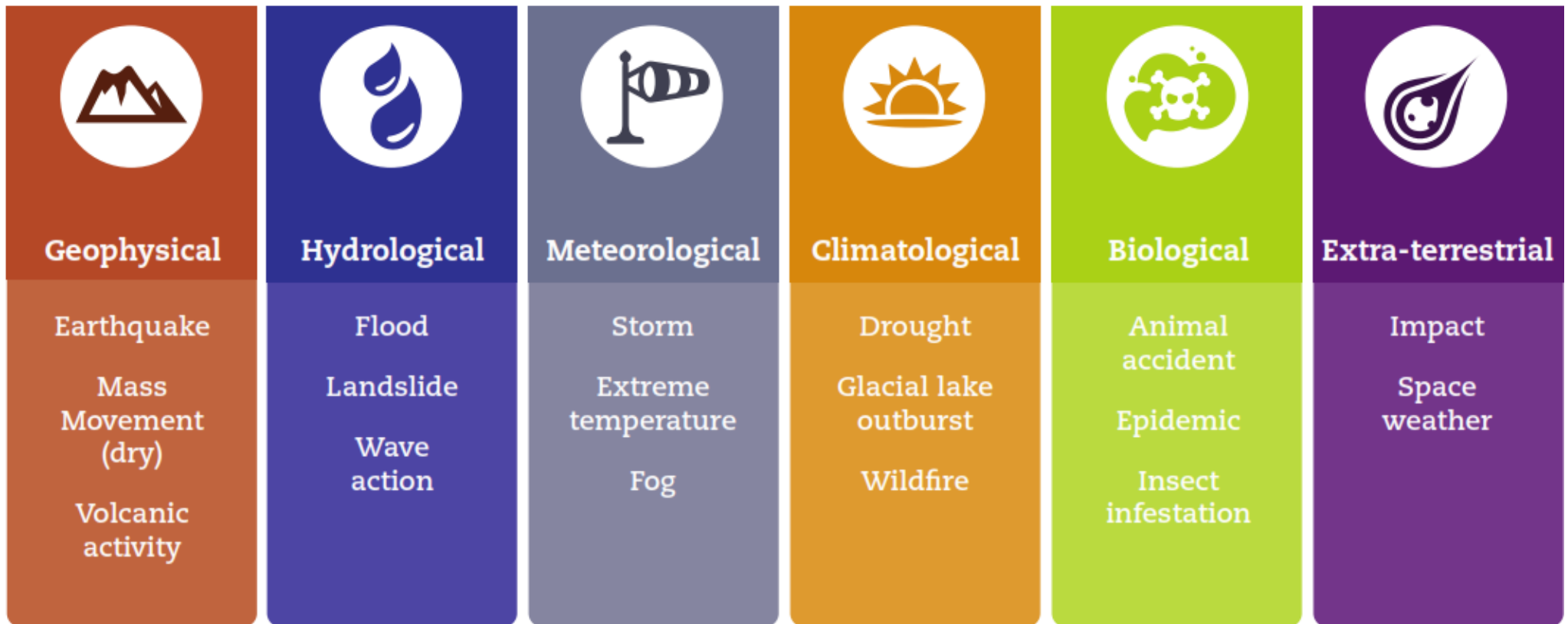


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# Impediments to the Global Agenda Solutions



Natural disaster subgroup classification - CRED (2016)







# Impediments to the Global Agenda Solutions

## Conflicts around the World





# Global Agenda in support of Sustainable Development - Making it Work

## 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, interalia, 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

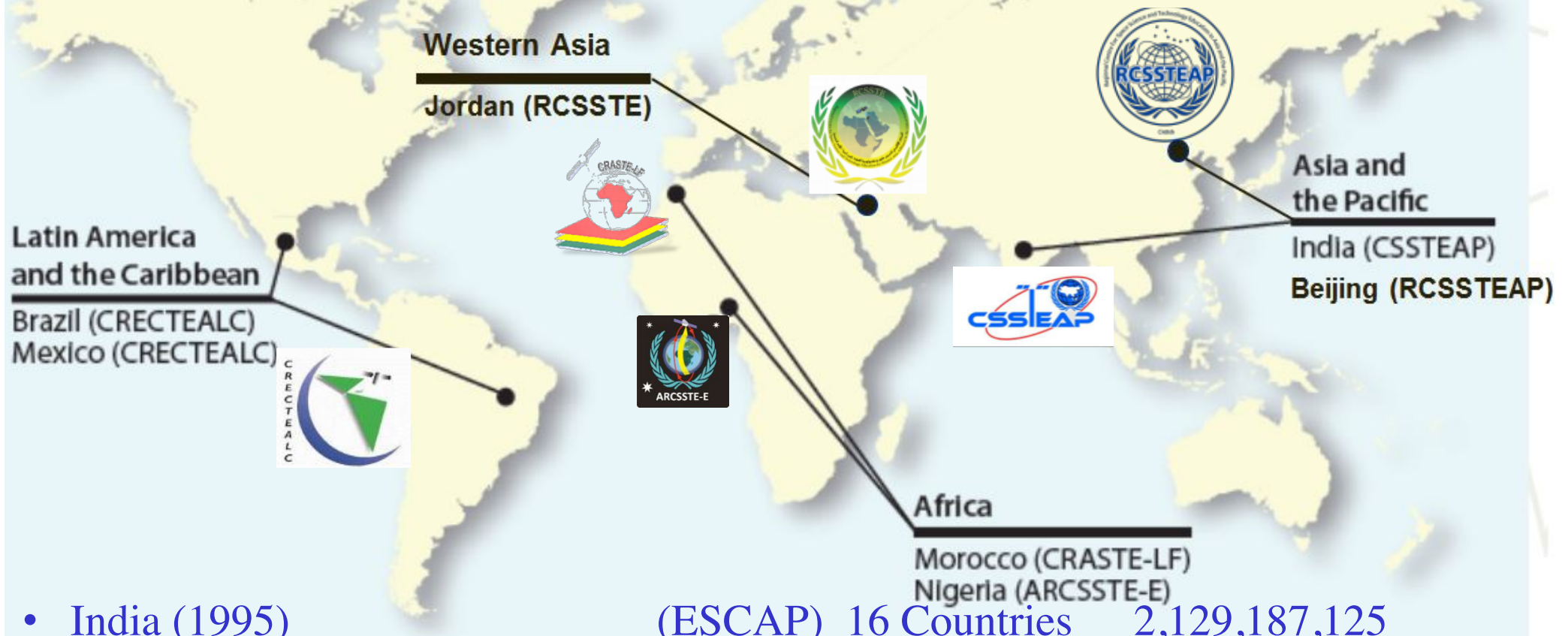
‘That the UN should lead, with the active support of its specialized agencies and other international organisations, an international effort to establish Centres for Space Science and Technology Education at the regional level in existing national/regional educational institutions in the developing countries”

A/RES/50/27, of 6 December 1995 – UN-COPUOS

‘That the Regional Centres for Space Science and Technology Education “be established on the basis of affiliation to the United Nations as early as possible and that such affiliation would provide the centres with the necessary recognition and would strengthen the possibilities of attracting donors and of establishing academic relationships with national and international space-related institutions”



# Regional Centres for Space Science & Technology Education



- India (1995) (ESCAP) 16 Countries 2,129,187,125
- Morocco (1998) (ECA) 13 Countries 251,000,985
- Nigeria (1998) (ECA) 25 Countries 831,790,493
- Mexico and Brazil (2003) (ECLAC) 2 Countries 338,451,554
- Jordan (2012) (ESCWA) 11 Countries 114,565,389
- China (2014) (ESCAP) 10 Countries 2,099,956,572
- **Total Targeted Population** UN-2017 Pop. Est. **5,764,952,118 (76.3%)**



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## Regional Centres - Mission/Mandate

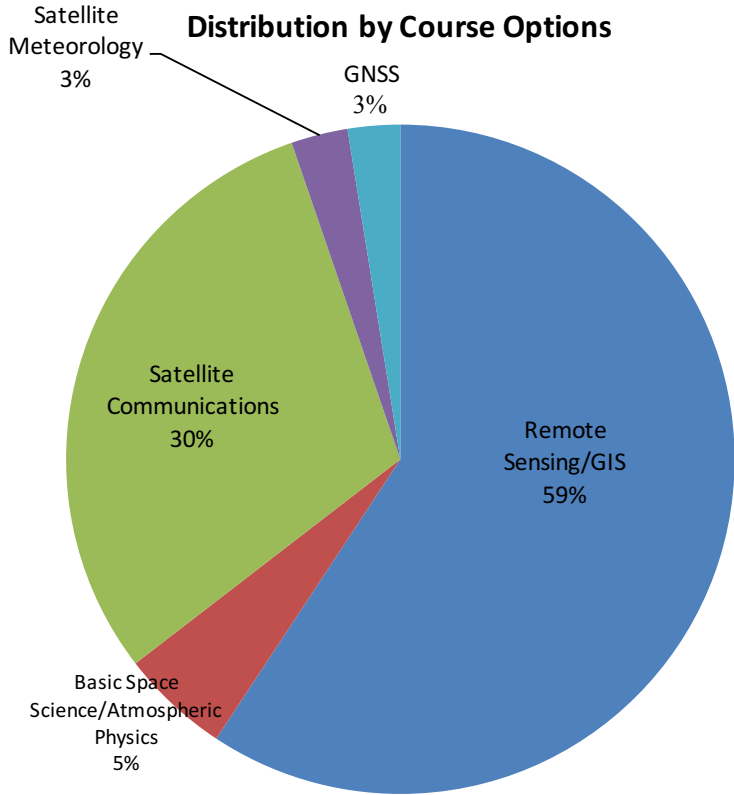
- Build Indigenous Capacities in SST Applications
- Create Awareness, Sensitize and Inspire students, lawmakers & the general public on Space;
- Serve as an Educational, Research and Training institution capable of high attainment in SST;
  - Remote Sensing/GIS
  - Satellite Communication
  - Satellite Meteorology/Global Climate
  - Basic Space and Atmospheric Science
  - Global Navigation Satellite Systems (GNSS)
- Boost the growth and capacities of the participating countries.
- Enhance participating countries knowledge, understanding and skills in SST applications

# Post Graduate Diploma (PGD) Programme



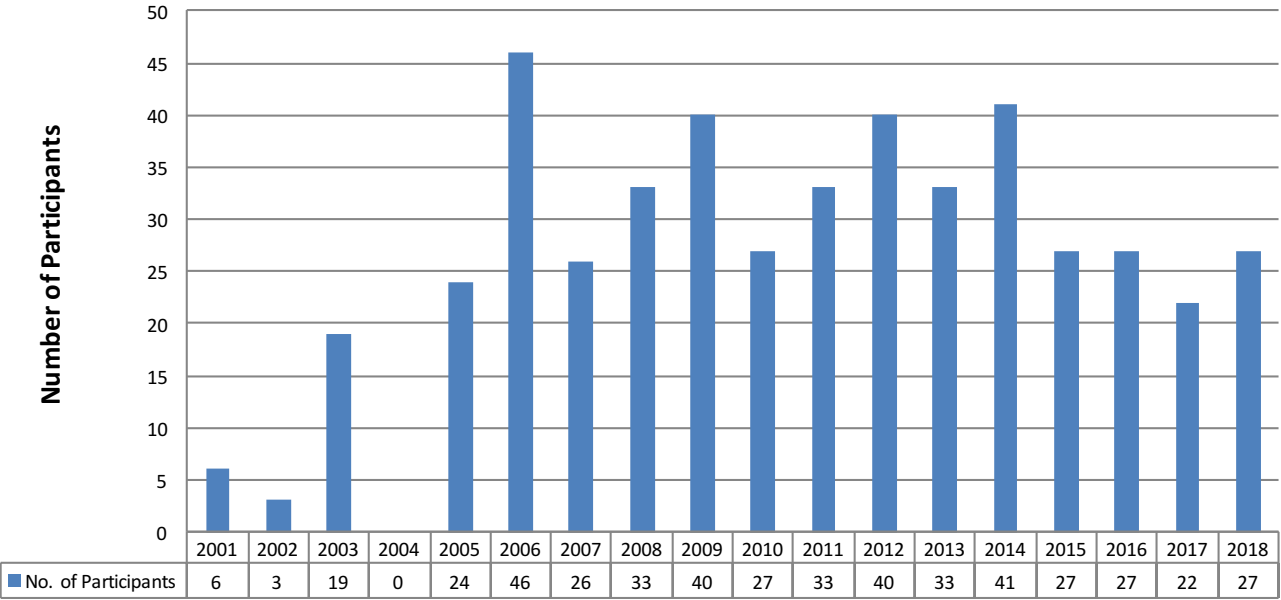
### Curriculum Under Development:

- Satellite Engineering
- Microgravity studies



Total number of graduates: 501

### Annual Distribution (2001-2018)



Year



# PGD 2018 Graduation Ceremony





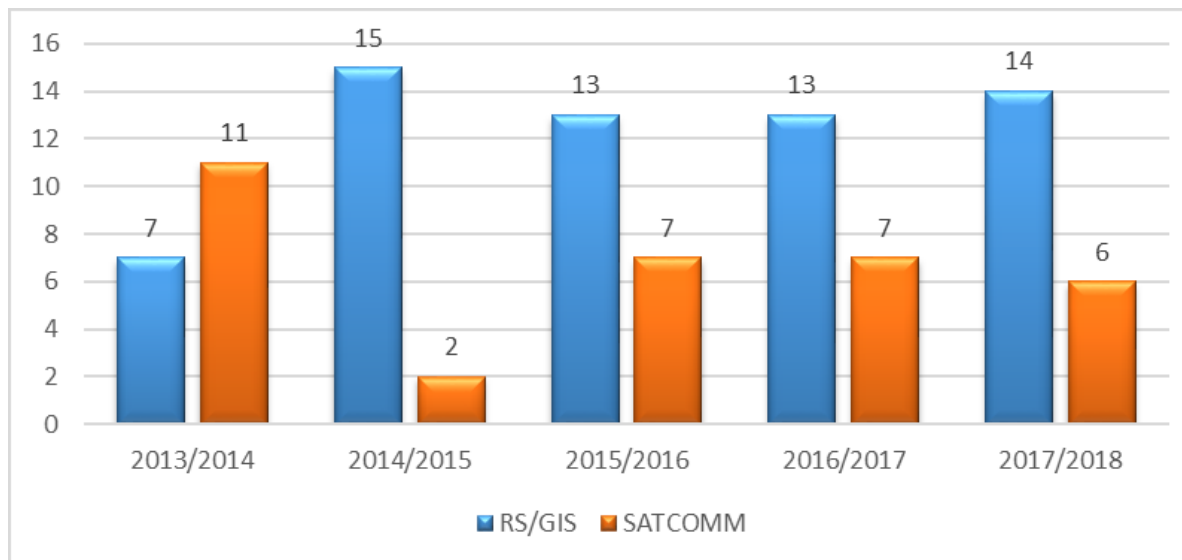
# MTech. Programme



SESSION	COURSE		
	RS/GIS	SAT COMM	TOTAL
2013/2014	7	11	18
2014/2015	15	2	17
2015/2016	13	7	20
2016/2017	13	7	20
2017/2018	14	6	20
		<b>TOTAL</b>	<b>95</b>



: Annual Distribution of M. Tech Participants (2013 – 2018) by enrolment





# Centre's New Facilities

## New State-of-the-Art - Lecture Theatres



**Smart LF Scanner (A0 Scanner)**



**HP Designer Jet T520 (A0 Plotter)**





2017 Grant Won

# Multi-scale Flood Monitoring and Assessment Services for West Africa (MiFMASS)



H.E. Prof. Sarah Anyang Agbor  
Commissioner for Human Resources  
Science and Technology (HRST)

Dr. Mahama Ouedrago  
Ag. Director for Human Resources,  
Science and Technology (HRST)



# International Collaboration



EGNOS in Africa-JPO



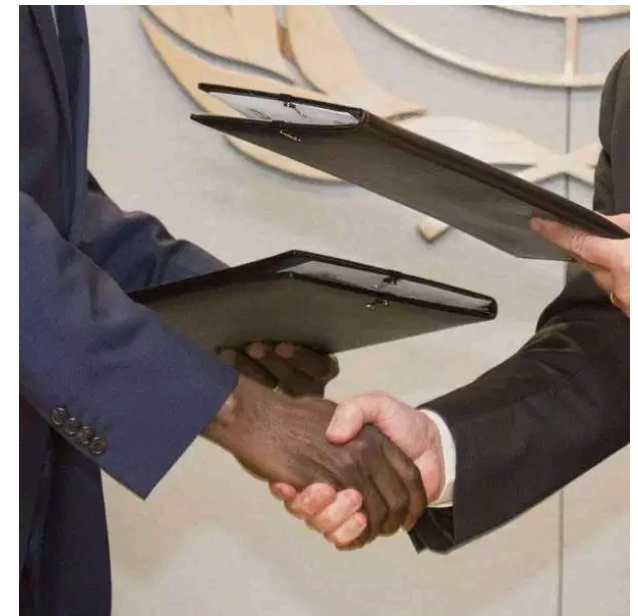
International Committee on  
Global Navigation Satellite Systems





## Goal 17: Partnership Key to Implementation

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



Goal 17 Seeks to to **strengthen global partnerships** to support and achieve the ambitious targets of the 2030 Agenda, **bringing together national governments, the international community, civil society, the private sector and other actors.**

### **Capacity Building:**

17.9 Enhance international support for implementing **effective and targeted capacity-building in developing countries** to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation



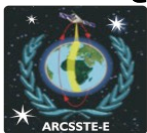


## Technology:

**17.6** Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism

**17.7** Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed

**17.8** Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology





Global  
Partnership  
for Effective Development  
Co-operation



**Global Partnership** - based on the four shared principles of effective development co-operation (Busan Partnership Agreement (S.Korea, 2011):

- Ownership of development priorities by developing countries
- Focus on results
- Inclusive development partnerships
- Transparency and accountability to each other

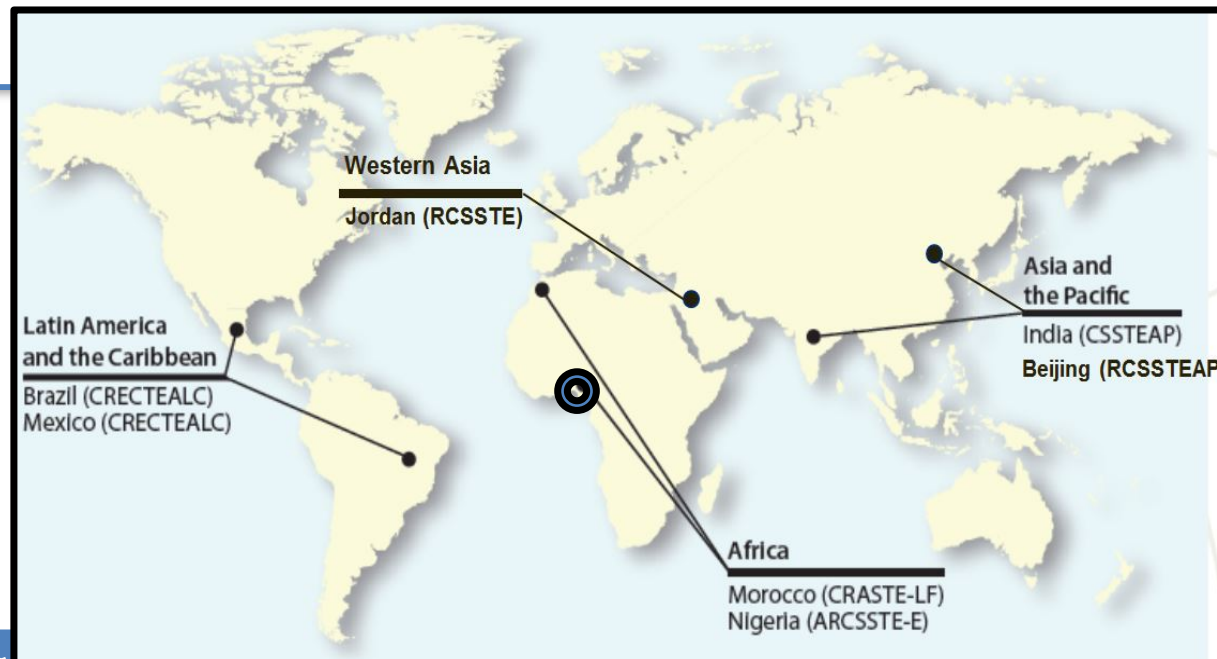
**More than 160 countries and 50+ organisations**



# Positioning the UNOOSA Regional Centres for Global Partnership

Centre	Year	Commission	# Countries	Population
India	(1995)	(ESCAP)	16 Countries	2,129,187,125
Morocco	(1998)	(ECA)	13 Countries	251,000,985
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**Total Targeted Population** UN-2017 Pop. Est. **5,764,952,118 (76.3%)**



# Positioning the UNOOSA Regional Centres for Global Partnership



## The Centres:

- Committed to **academic excellence** (PGD, Masters, PhD)
- Established **academic relationships** with national and international space-related institutions
- **Affiliated to the UN** by virtue of UN Resolution A/RES/50/27, of 6 December 1995.
- Targeted to serve the **Developing Countries** of the world (76% of W.pop)
- Have **'Observer' Status** at UN-COPUOS, therefore
- Potential **reliable partners for building space capacity** in the regions
- Internship and Secondment/Exchange of staff
- **Incubation of best practice** from industries and other major players through UNOOSA in the Centres
- **Common E-Learning Platform** for delivery of Modules



# Positioning the UNOOSA Regional Centres for Global Partnership



## UNOOSA:

- Commend the UN for the foresight in commencing the establishment of the **RCs 24 years ago!**
- To assume **Coordinating Status** for the RCs - M & E
- **Strengthen the Capability and Status of RCs** as major hubs for Regional Capacity Building in Space Science & Technology Education
- **Domestication & Ownership** - Involvement of Regional Bodies/Organisations e.g. AUC, ECOWAS, IGAD, AARSE, UNECA, etc. Need to ‘relaunch’ (Awareness Creation) the RCs with their involvement along with the Member States.
- Regional Centres as a major node in the proposed UNOOSA **Capacity Building Network (CBN)**
- **Global Access to data**, Software for teaching and research purposes

## Conclusion

- ⊕ Indigenous Skill Acquisition, Utilisation and Retention in Space Science & Technology is key to the Socio-Economic Sustainable Development of any nation.
- ⊕ SDGs Goal 17 - Partnership is key to sustain this Planet
- ⊕ There is a clear evidence of the impact of the UNOOSA -assisted capacity building programme - which has already produced appreciable number of trained personnel.
- ⊕ The Regional Centres are potentially reliable partners for building space capacity in the regions







*Thank  
You*

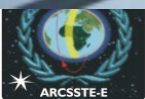


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