



**Office for Outer Space Affairs**  
United Nations Office at Vienna



## **Capacity Building in Space Science and Technology:**

**Regional Centres for Space Science and Technology Education – Affiliated to the United Nations**

**UN/Austria/ESA Symposium on Space Tools and Solutions for Monitoring the Atmosphere and Land Cover**

Graz, Austria  
*9-12 September 2008*

*Levent Canturk*  
*United Nations Office for Outer Space Affairs*





## UN-affiliated Regional Centres for Space Science and Technology Education : Mandate

**The United Nations General Assembly, in its resolution 45/72 of 11 December 1990 endorsed the recommendation of the Committee on the Peaceful Uses of Outer Space that**

***"... the United Nations should lead, with the active support of its specialized agencies and other international organizations, an international effort to establish regional centres for space science and technology education in existing national/regional educational institutions in the developing countries. "***





## UN-affiliated Regional Centres for Space Science and Technology Education : Mandate

**In 1995, the United Nations General Assembly further endorsed the regional centres initiative and in its resolution 50/27 of 6 December 1995, and recommended that**

***"... these centres 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."***





## **UN-affiliated Regional Centres for Space Science and Technology Education: Objective**

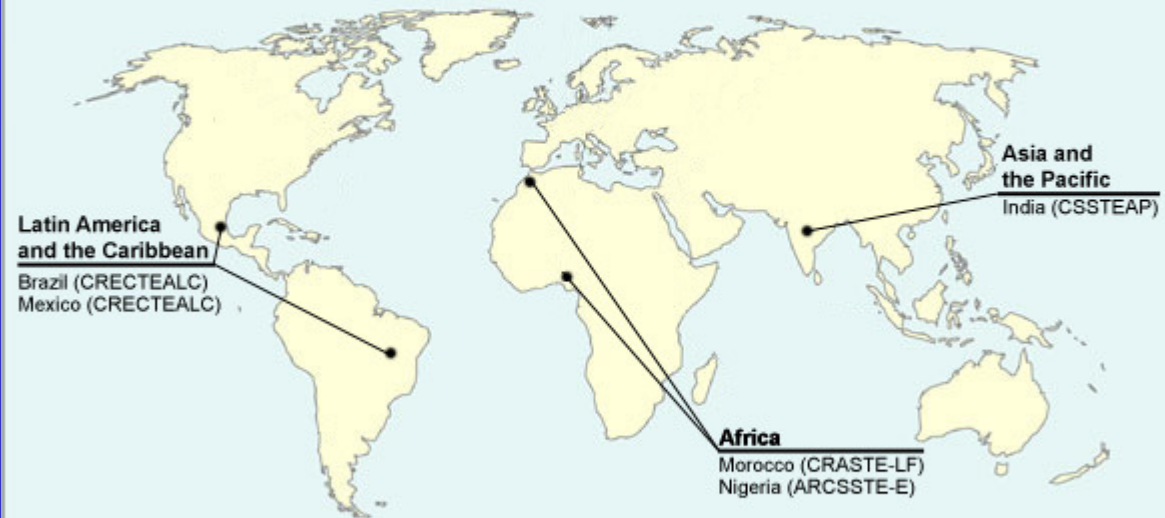
**The goal of the Centres is to develop, through in-depth education, an indigenous capability for research and applications in the core disciplines:**

- Remote Sensing and Geographical Information Systems,**
- Satellite Communications,**
- Satellite Meteorology and Global Climate, and**
- Space and Atmospheric Sciences as well as data management**





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





## UN-affiliated Regional Centres for Space Science and Technology Education : Main Administrative Bodies

***Governing Board*** - is the overall policymaking body of each Centre and consists of member States (within the region where the centre is located) which have agreed, through their endorsement of the centre's agreement, to the goals and objectives of the Centre and are fully committed to work, in cooperation with the member States of the region, to ensure the success of the Centre.

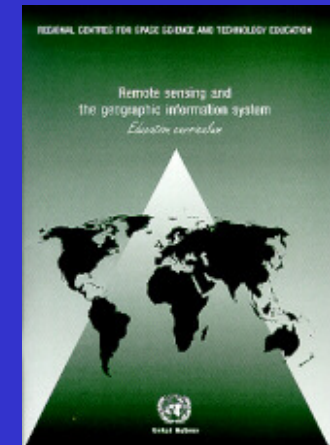
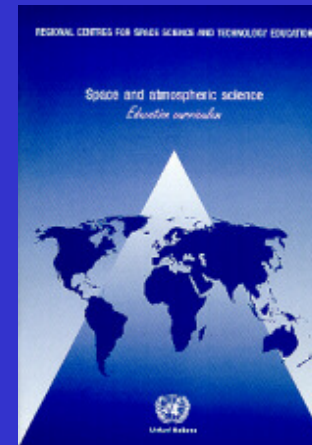
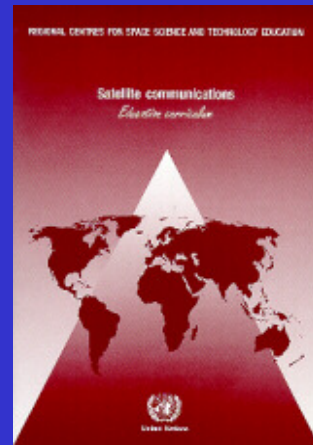
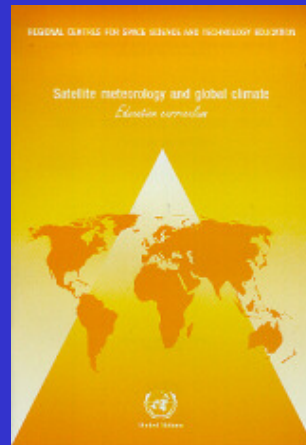
***Advisory Committee*** - functions in an advisory capacity to the Governing Board and the Centre Director in scientific, technological and educational issues. The members of the AC should be prominent individuals in government, academic and scientific communities and private industry and they would be nominated and voted for by the GB for a mandate determined also by the GB.





## UN-affiliated Regional Centres for Space Science and Technology Education : Education curricula

Postgraduate courses provided by the Centres are based on education curricula developed through UN expert meetings, with the support of prominent educators, in 1989, 1995, and 2001 for each topic of the core disciplines





## UN-affiliated Regional Centres for Space Science and Technology Education : General Assembly resolution

**In 2005, the UN GA, in its resolution 60/99**

*“Notes with satisfaction that, ..., the African regional centres ... , in the French language and in the English language, located in Morocco and Nigeria, respectively, as well as the regional centre ... in Asia and the Pacific and the regional centre ... for Latin America and the Caribbean, entered into an affiliation agreement with the Office ... of the Secretariat and have continued their education Programmes in 2005; “*

*“Agrees that the regional centres referred to in [the] paragraph Above should continue to report to the Committee on their activities on an annual basis;*

*Notes with satisfaction that the centre ... in Asia and the Pacific celebrated its tenth anniversary in 2005.”*







## UN-affiliated Regional Centres for Space Science and Technology Education : Centre in Asia and the Pacific region

- 👉 Ten countries signed the Agreement for the establishment of the Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP) during a meeting held on 1 November 1995 at New Delhi.
- 👉 The Government of India has signed a host country agreement with the centre in March 1998. The centre has access to the facilities/infrastructure and expertise of the Indian Institute of Remote Sensing (IIRS), Space Applications Centre (SAC), Physical Research Laboratory (PRL).
- 👉 The affiliation agreement of the Centre to the United Nations (UN) was signed in 17 May 1996.

- 👉 Presently, fifteen countries have signed the Agreement:  
India, Democratic People's Republic of Korea, Indonesia, Kazakhstan, Kyrgyzstan Republic, Malaysia, Mongolia, Myanmar, Nepal, Republic of Korea, Sri Lanka, Thailand, Uzbekistan, Nauru, and Philippines.





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## UN-affiliated Regional Centres for Space Science and Technology Education : CSSTEAP

### CSSTEAP : Headquarters and Campuses



**CSSTEAP Hqs,  
Dehradun**



**IIRS, Dehradun**



**SAC, Bopal Campus  
Ahmedabad**

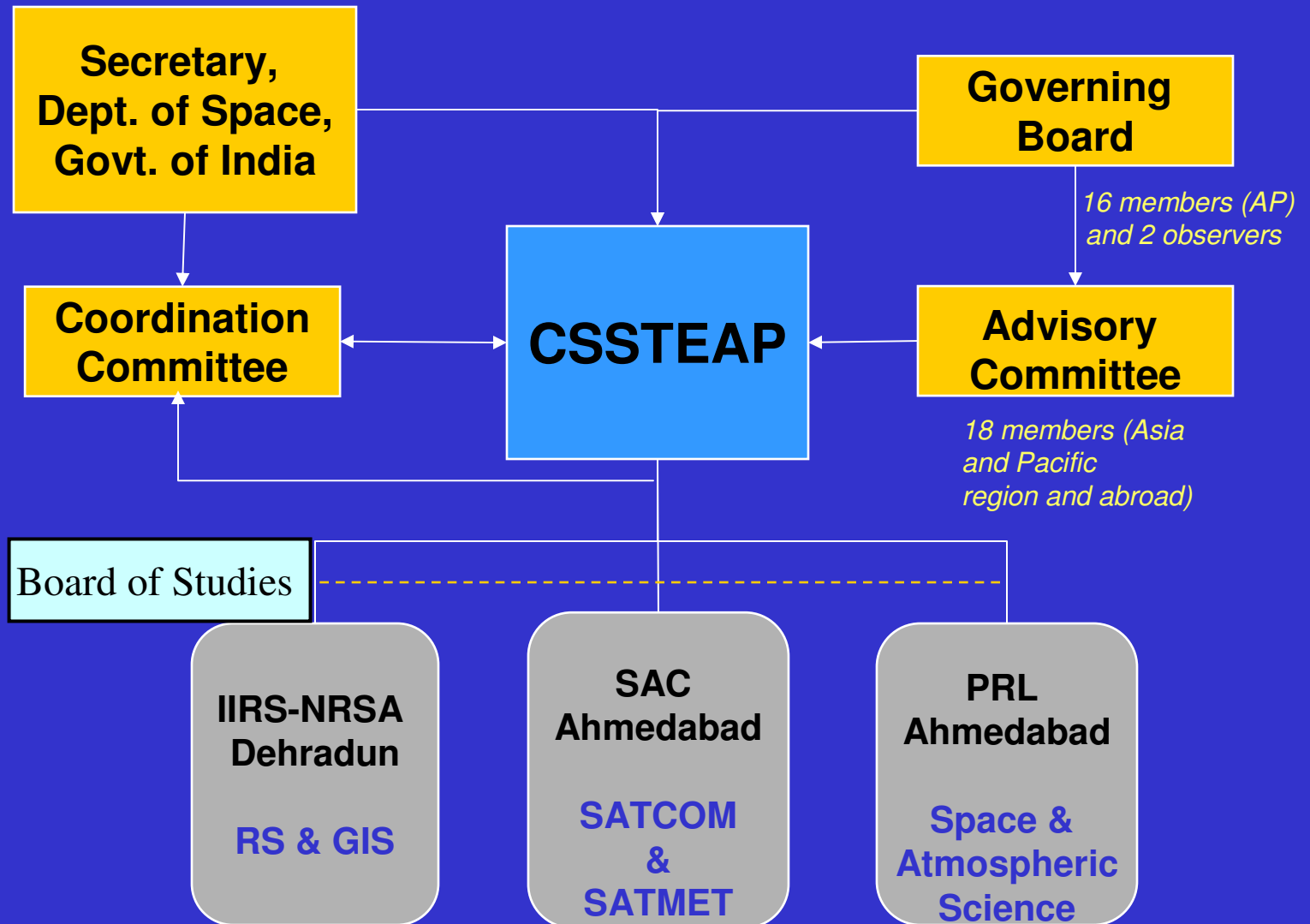


**PRL, Ahmedabad**





## UN-affiliated Regional Centres for Space Science and Technology Education : CSSTEAP Organizational Chart





## UN-affiliated Regional Centres for Space Science and Technology Education : CSSTEAP Postgraduate program structure

9-month course  
at IIRS in  
RS/GIS

9-month course  
at SAC in  
SATCOM

9-month course  
at SAC in  
SATMET

9-month course  
at PRL in Space  
Science

Award of PG diploma  
by CSSTEAP

1 year follow-up project in  
home country

CSSTEAP 1 year  
fellowship in India

*By merit, since  
2004, at IIRS*

**Award of Masters (M.Tech) degree by Andhra University**





## **UN-affiliated Regional Centres for Space Science and Technology Education : CSSTEAP Course record**

- ◆ **The Centre has conducted 28 nine-month Post-graduate courses:**
  - ◆ 12 courses in RS and GIS
  - ◆ 6 courses in SATCOM
  - ◆ 5 courses in SATMET
  - ◆ 5 courses in Space Science
  
- ◆ **These programs have benefited 708 participants from 30 countries in the Asia-Pacific region**
- ◆ **In addition, 26 participants from 16 countries outside Asia-Pacific region have been trained at CSSTEAP**





## UN-affiliated Regional Centres for Space Science and Technology Education : CSSTEAP Course record (continued)

◆ **The Centre has also conducted 18 short-term courses/workshops and awareness programmes that had benefited 265 from the 28 countries in the AP region and 25 from 15 countries outside AP region.**

◆ **From 20 August -14 September 2007 a short course, International Training Course on Application of Space Technology for Disaster Management Support with Emphasis on Flood Risk Management, was being carried out at CSSTEAP.**

◆ **Pilot Projects Completed: 444**

RS & GIS	230
SATCOM	72
SATMET	90
SPACE SCI	52

◆ **M. Tech Awarded by AU: 83**

RS & GIS	46
SATCOM	15
SATMET	12
SPACE SCI	10





## **UN-affiliated Regional Centres for Space Science and Technology Education : CSSTEAP Cooperation**

### **India:**

- ◆ **DOS/ISRO Host Institutions & other institutions**
- ◆ **Andhra University – Recognition of PGD curricula to meet course-work requirement of Mtech**
- ◆ **GOI Organisations for international student travel support**
- ◆ **Academic Linkage with Universities/Institutes for Guest Faculty**

### **International:**

- ◆ **UN Agencies including UNOOSA, UNESCO, UNDP, WMO – fellowships / travel support/ sponsor short courses**
- ◆ **International Centres (ICIMOD, TWAS, GDTA) – Student sponsorship / exchange**
- ◆ **Universities / Institutes: Guest Faculty (US,UK,Europe)**





## UN-affiliated Regional Centres for Space Science and Technology Education : CSSTEAP - Publications

- General Information Brochures
  - CSSTEAP Newsletter – 4 publications/year - 38
  - Announcement Brochures
  - Memoirs - 30
  - 10 Years of CSSTEAP, 1995 –2005
- CSSTEAP homepage: <http://www.cssteap.org/>







## UN-affiliated Regional Centres for Space Science and Technology Education : African Francophone Centre

The Regional African Centre for Space Science and Technology Education in French Language (CASTRE-LF) was created in Rabat, Morocco on 23 October 1998. The affiliation to the UN took place on 26 November 2003.

At present CASTRE-LF has 13 signatory countries from the region: Algeria, Cameroon, Cape Verdi, Central Africa Republic, Democratic Republic of Congo, Gabon, Ivory Cost, Morocco, Mauritania, Niger, Tunisia, Togo, and Senegal.

The Governing Board is represented by 21 members from the states affiliated to the Centre, as well as a representative of the United Nations, as an observer.





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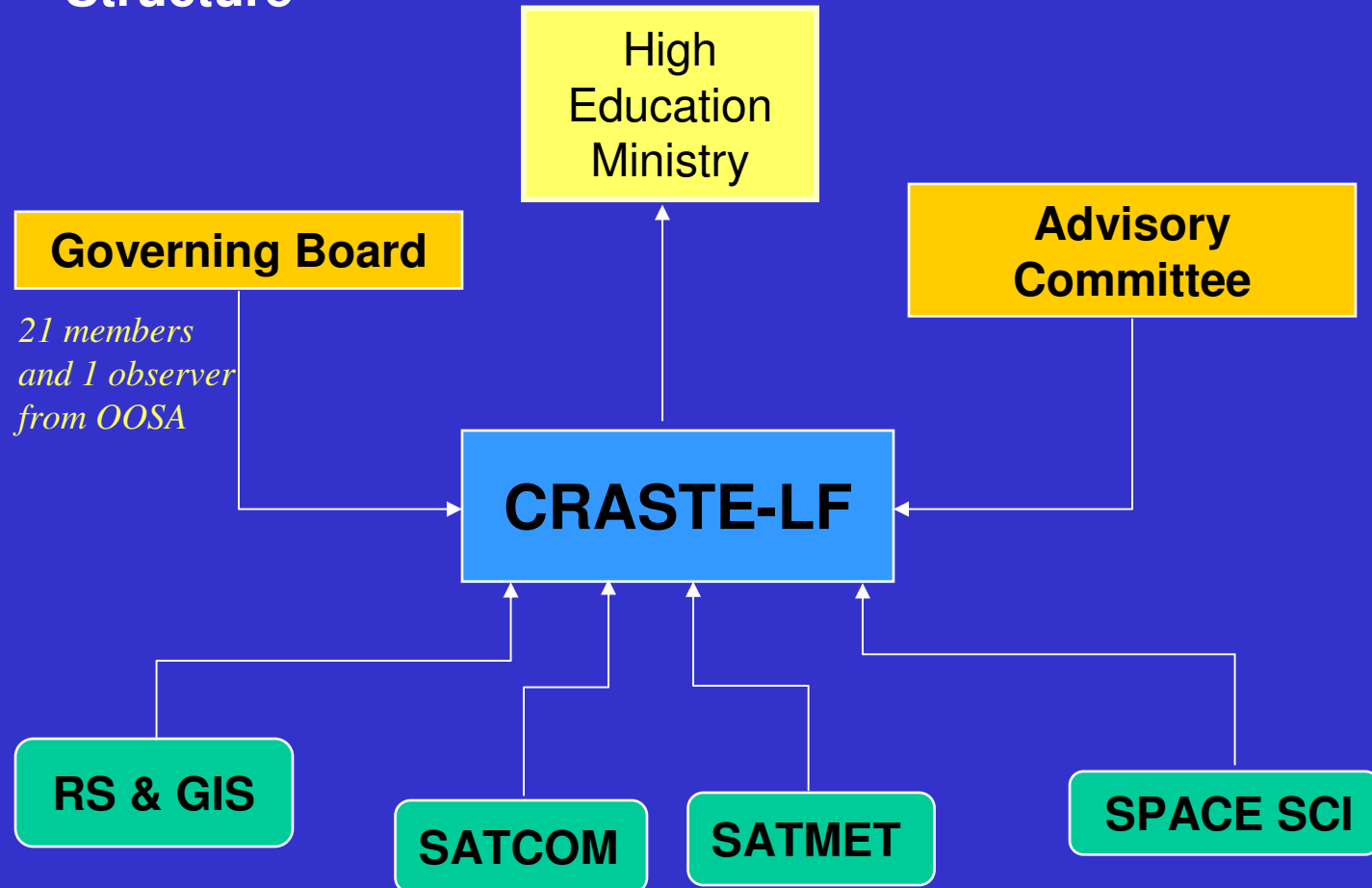
## UN-affiliated Regional Centres for Space Science and Technology Education : CASTRE-LF

- ◆ **CRASTE-LF is located at the L'Ecole Mohammadia D'Ingenieurs in Rabat, Morocco.**





## UN-affiliated Regional Centres for Space Science and Technology Education : CRASTE-LF Organizational Structure





## **UN-affiliated Regional Centres for Space Science and Technology Education : CRASTE-LF Educational Program**

- ◆ **For implementation of training and capacity-building programmes:**
  - ◆ **Network of Competencies and Regional Expertise**
    - ◆ Constitution and consolidation of a regional sphere of training, research and cooperation for the development of the region,
    - ◆ Encourage African officers (employees) by appreciating their knowledge (know-how), assuring their mobility and their involvement in the regional development.
  - ◆ **International Expertise: partnership institutions such as ESA, CNES, and Canadian Space Agency etc.**

**CRASTE-LF homepage:**

**<http://www.unoosa.org/oosa/SAP/centres/morocco/index.html>**



## UN-affiliated Regional Centres for Space Science and Technology Education : CRASTE-LF Course record

- ◆ The Centre has conducted 10 nine-month Post-graduate courses:
  - ◆ 5 courses in RS and GIS
  - ◆ 3 courses in SATCOM
  - ◆ 2 courses in SATMET ( The 3<sup>rd</sup> course is planned for October 2008)
- ◆ The Centre has also conducted 10 workshops (The workshop “Climates changes and the adaptation in Africa – The role of the space technologies” took place in Algeria 22-24 October 2007 UN/ICG)
- ◆ These long-term programmes have benefited 129 participants from 17 countries in the African region
  
- ◆ Completed Pilot Projects:

RS & GIS	85
SATCOM	22
SATMET	19





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## UN-affiliated Regional Centres for Space Science and Technology Education : African Anglophone Centre



♥ The African Regional Centre for Space Science and Technology Education - in English (ARCESSTE-E) was inaugurated in Lagos, Nigeria in 24 November 1998. In 26 November 2003 the Centre became affiliated to the UN.

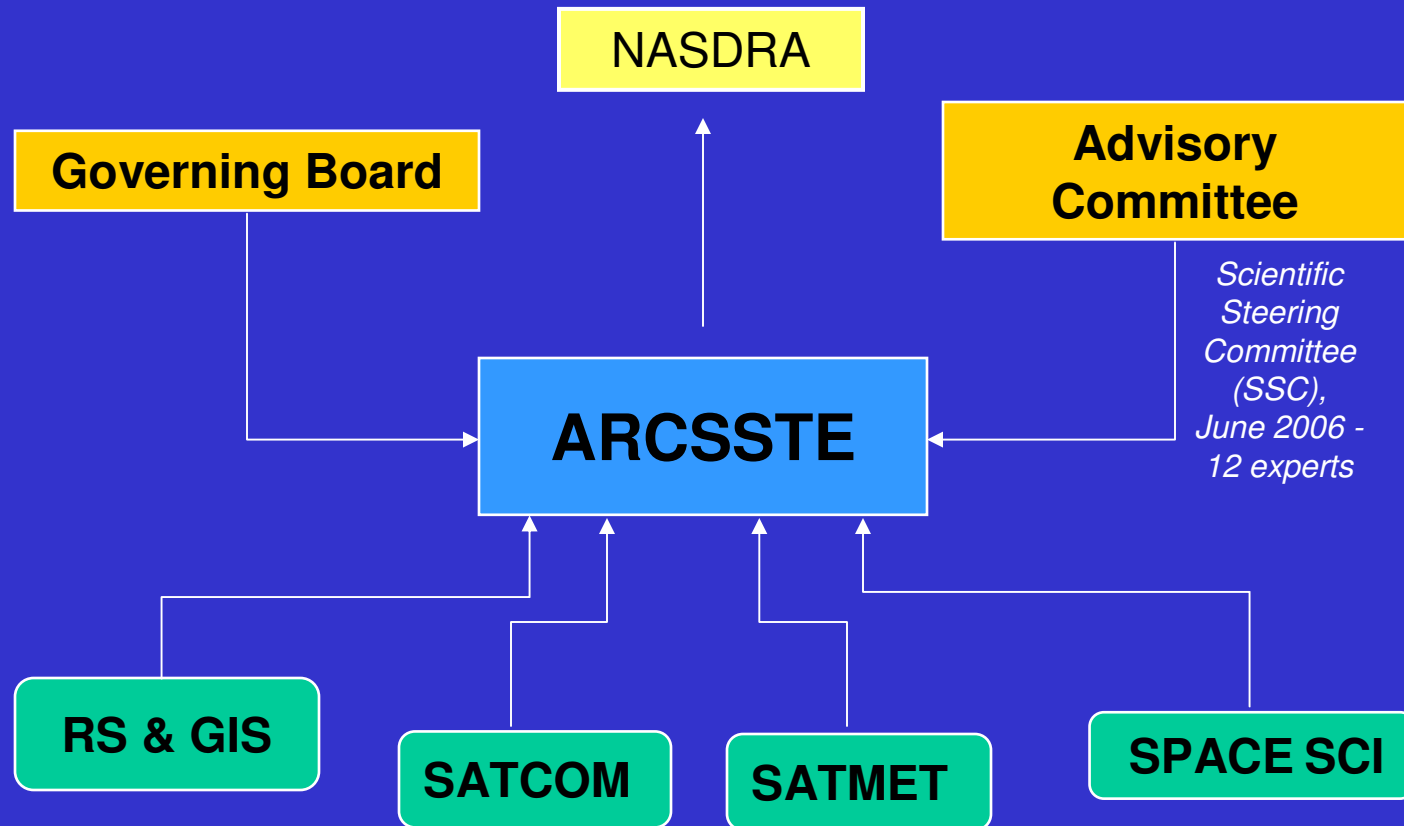
♥ The Agreement for the Centre was signed by the participant countries in the region during a meeting held on 25 and 26 March 1999. At present the following countries are participating in the Centre: Ghana, Liberia, Uganda, Kenya, Ethiopia, Zambia, Tanzania, Sudan, South Africa, Malawi, Zimbabwe, Gambia, Sierra Leone, Cameroon, Botswana, Lesotho, Egypt and Nigeria.

♥ ARCESSTE-E operates under the auspices of the National Space Research and Development Agency (NASRDA). The facilities to the Centre are mainly provided by departments of Obafemi Awolowo University (OAU) and the Regional Centre for Training in Aerospace Surveys (RECTAS). The Centre is wholly funded by the Nigerian Government.





# UN-affiliated Regional Centres for Space Science and Technology Education : ARCSSTE Organizational Chart





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## UN-affiliated Regional Centres for Space Science and Technology Education : ARCSSTE-E



- ◆ **CSSTE-E is located at the Obafemi Awolowo University in Ile-Ife, Nigeria.**



**ARCSSTE-E, OAU CAMPUS, ILE-IFE**







## UN-affiliated Regional Centres for Space Science and Technology Education : Course record (ARCSSTE-E)

- ◆ **The Centre has conducted 11 nine-month Post-graduate courses:**
  - ◆ 4 courses in RS and GIS (since 1999)
  - ◆ 4 courses in SATCOM (since 2000)
  - ◆ 2 courses in SATMET (since 2001)
  - ◆ 1 course in Space Science (since 2005)
- ◆ **These courses have benefited 101 participants from 13 countries in the African region.**
- ◆ **The Centre has also conducted 8 short-term courses/ workshops and seminars.**

<b>Completed Pilot Projects:</b>	<b>RS &amp; GIS</b>	<b>37</b>
	<b>SATCOM</b>	<b>14</b>
	<b>SPACE SCI</b>	<b>4</b>
	<b>SATMET</b>	<b>2</b>





## UN-affiliated Regional Centres for Space Science and Technology Education : Publications (ARCSSTE-E)

### RECENT PUBLICATIONS

1. ARCSSTEE Year 2007 – 2009 Calendar (programme brochure detailing academic and outreach activities of the centre) – published July 2007.
2. ORBIT – a biannual newsletter (May & November)
3. Proceedings of the National Workshop on Space Science Curriculum Development for Schools – published May 2007.
4. Postgraduate Diploma Programme in Remote Sensing/GIS (Supervised Projects – 2006) – published June 2007.

**ARCSSTE-E home page:**

<http://www.arcsstee.org/>





## UN-affiliated Regional Centres for Space Science and Technology Education : Latin America and the Caribbean



- The Regional Centre for Space Science and Technology Education in Latin American and the Caribbean (CRECTEALC) was created on 19 March 1997.
- In September 2002 the Agreement of Headquarters was signed by CRECTEALC with the Government of Brazil.
- In October 2002 the Operational Agreement signed by CRECTEALC with the Government of Mexico.
- In 11 June 2003 the CENTRE became affiliated to the United Nations.
- CRECTEALC has two campuses located in Brazil and Mexico.

- The campus in Brazil benefits from the facilities made available to it by the National Institute for Space Research (INPE) a renowned research institution in the country.
- Similar high quality facilities are found at the campus in Mexico which is supported by the National Institute of Optical and Electronic Astrophysics (INOEA).





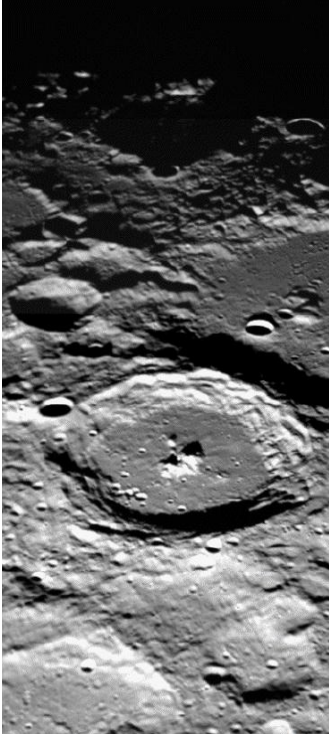
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## UN-affiliated Regional Centres for Space Science and Technology Education : CRECTEALC

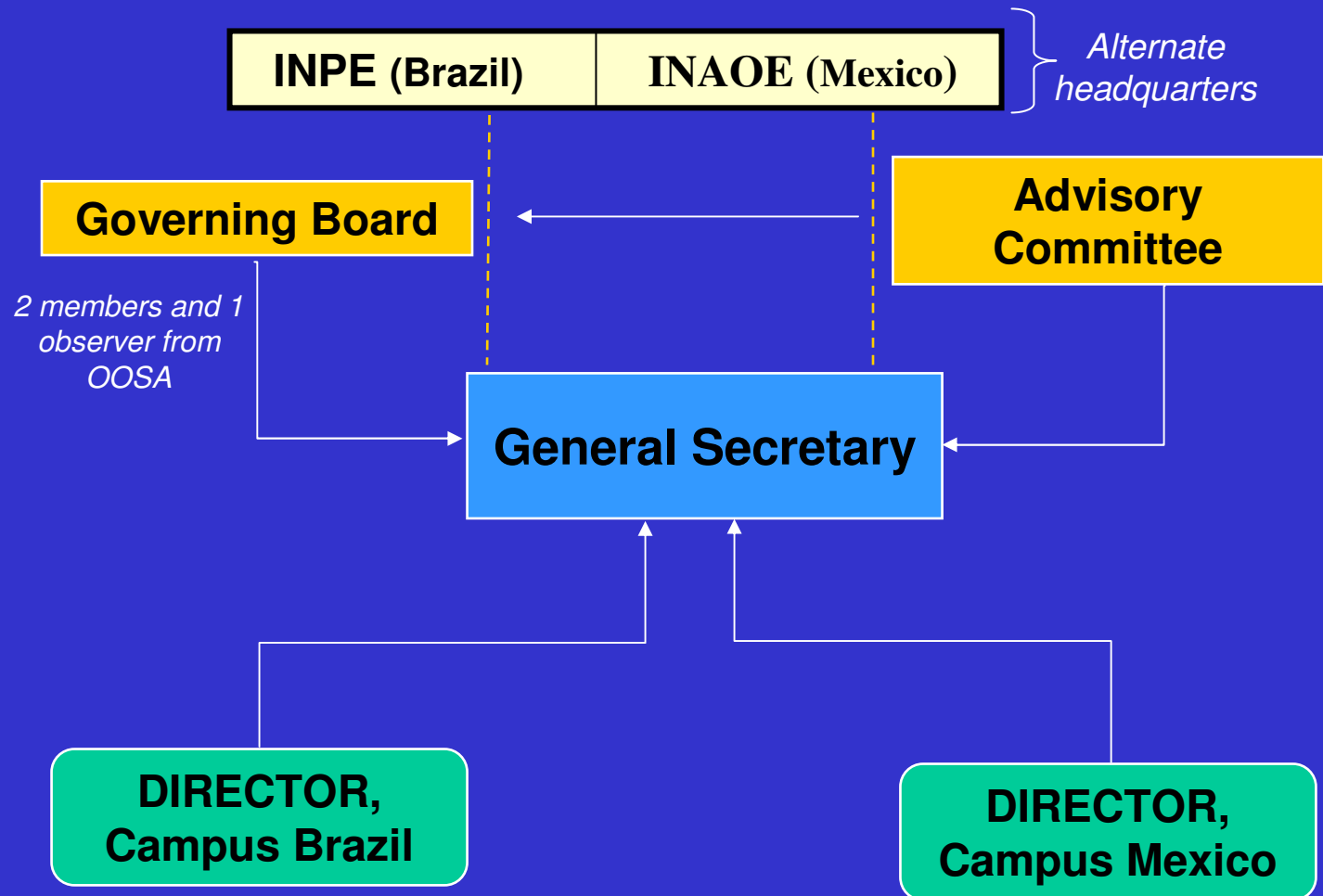


- ◆ **The General Secretariat of CRECTEALC is located in São José dos Campos, São Paulo and the Brazil campus in Santa Maria, Rio Grande do Sul. Both are hosted by the National Institute of Space Research (INPE).**





## UN-affiliated Regional Centres for Space Science and Technology Education : CRECTEALC Organizational Chart





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## **UN-affiliated Regional Centres for Space Science and Technology Education : Support**

- ◆ **Foreign Relations Ministry of Brazil – MRE**
- ◆ **Foreign Relations Secretary of Mexico – SRE**
- ◆ **Brazilian Space Agency – AEB**
- ◆ **National Institute for Space Research – INPE/MCT**
- ◆ **National Institute of Astrophysics, Optics and Electronics – INAOE**
- ◆ **National Council for Science and Technology – CONACYT**
- ◆ **National Council for Scientific and Technological Development – CNPq/MCT**
- ◆ **University of the United Nations – UNU**
- ◆ **United Nations Office of Outer Space Affairs – UN OOSA**
- ◆ **Organization of the American States – OAS**
- ◆ **National Meteorological Service (SMN)**





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## **UN-affiliated Regional Centres for Space Science and Technology Education : CRECTEALC – Campus Brazil RS & GIS courses**

- ◆ **CRECTEALC (Campus Brazil) has conducted 5 nine- month Post-graduate courses in RS & GIS.**
- ◆ **These courses have benefited 44 participants from 12 countries in the region.**
- ◆ **The CRECTEALC (Campus Brazil) has also promoted 5 workshops on RS & GIS.**
- ◆ **In 11-13 September 2007, the Centre promoted a seminar entitled: Geo-technologies for prevention and mitigation of natural disasters for the south region of Brazil and Mercosur (UN-SPIDER)**

**Completed Pilot Projects: RS & GIS 44**

CRECTEALC – Campus Brazil homepage:

**<http://www.inpe.br/unidades/cep/atividadescep/crectevalc>**





## **UN-affiliated Regional Centres for Space Science and Technology Education : CRECTEALC – Campus Mexico Educational Program and Publications**

- ◆ **The CRECTEALC (Campus Mexico) already provided 3 nine-months Post-graduate courses in RS & GIS and 1 course in Satellite Communications.**

These courses have benefited 24 participants from 5 countries in the region

Completed Pilot Projects: RS & GIS 7

Since March/2006 the campus Mexico of CRECTEALC publishes each quarter an Information Newsletter (Boletín Informativo) on the activities of the Centre in Mexico.

CRECTEALC – Campus Mexico homepage:

<http://www.crectealc.org>







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**THANK YOU**

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