



# ❖ CSSTE-AP Newsletter ❖

Quarterly Newsletter of Centre for Space Science and Technology Education in Asia and the Pacific (affiliated to UN)

Volume 2 Issue 4

December, 1999

## From the Chairman's Desk ...

**Dr. K. Kasturirangan**

*Chairman, CSSTE-AP GB/Secretary, Department of Space, India*



Space technology, with its already proven ability to transform the life style on this planet, by providing food and economic security through sustainable integrated development, communications and optimal management of natural resources, holds the best promise for improving the quality of life of even remote rural population in the least developed countries on earth. Space technology is an enabling technology and benefits from space accrue to individuals and to society and the impact is best felt when society is able to improve the quality of life of its people. The individual benefits from space, specifically in communications and broadcasting, are so direct that tangible spin-offs can be immediately developed as a service. The societal benefits from space, specifically from earth observation and global change, are more indirect and the measure is intangible. It is an appropriate mix of these benefits - one leading to the services sector and the other spawning a national development programme that spells success. Towards this, education holds the key to future space technology development and its applications and thus space education needs to become an essential element in this competitive world. Several countries have recognized the lack of adequate number of specialists for implementation of space programmes. Many countries are yet to possess the critical mass of space scientists, technologists and engineers to embark upon comprehensive national space programmes. Establishing a wide network of education and a sustained human resources development must be the imperative for the 21st century - with a view to build capacities with far reaching impacts on the space utilisation amongst various countries. ***This is the vision that we need to develop for the centre.***

I am very happy that the CSSTE-AP has completed 13 courses and about 226 students from 33 countries have benefited from the programme of the Centre. Through the educational activities, it is envisaged to establish a human network that will in its own way contribute to furthering the goals of the Centre. We need to target a network of about 1000 students in the next 7-8 years - ***This should be the main agenda of the centre.*** The Centre should strive to achieve this not only through the educational courses but also through short term training programmes, research programmes and quality improvement programmes. I also visualise that the network will have a cascading effect - wherein each student will be able to further influence programmes in his own country or impart the knowledge he has gained in the Centre to others in his own country. To that extent, the students coming to the Centre are our Ambassadors and have a major role to play in achieving the goals of the Centre. The seed for the UN Regional Space Centres was planted almost 10 years back by the United Nations. Today this Centre in the Asia Pacific region is bearing fruit. ***The centre is a collective effort*** - of its Governing Board members, the countries in the Asia Pacific region, the United Nations system, the host country and a large number of individuals and experts associated with the Centre. The Centre has immensely benefited from the support and cooperation of its dynamic Governing Board - specifically in technical, administrative and institutional matters and also the expert technical advice on the centre's activities from the Advisory Committee. The countries in the Asia Pacific region have responded positively to promote the objectives of the Centre by sending students, faculty and experts. The support of the host country - in terms of facilities, faculty and resources has helped the Centre to establish itself as a vibrant institution over the past 4 years. It is my vision that the Centre will grow from strength to strength in the coming years and will emerge as the flagship of space technology education in the region and also chart the way for other Centres to follow. The Centre must contribute in this endeavour by increasing the capabilities of countries to partake in this high technology area. The Centre needs to now take the next step to further its growth to make it into a model institution of higher learning and research in this region.

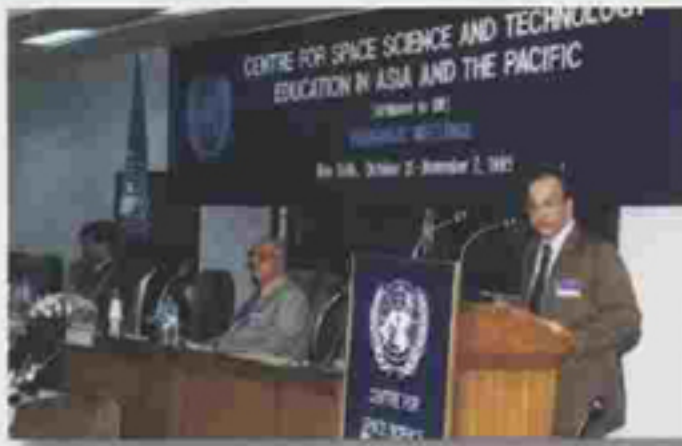
Wishing the Centre all success for its march into the New Millennium.

*Education holds the key to future space technology development and its applications and thus space education needs to become an essential element in this competitive world.*

25th Anniversary



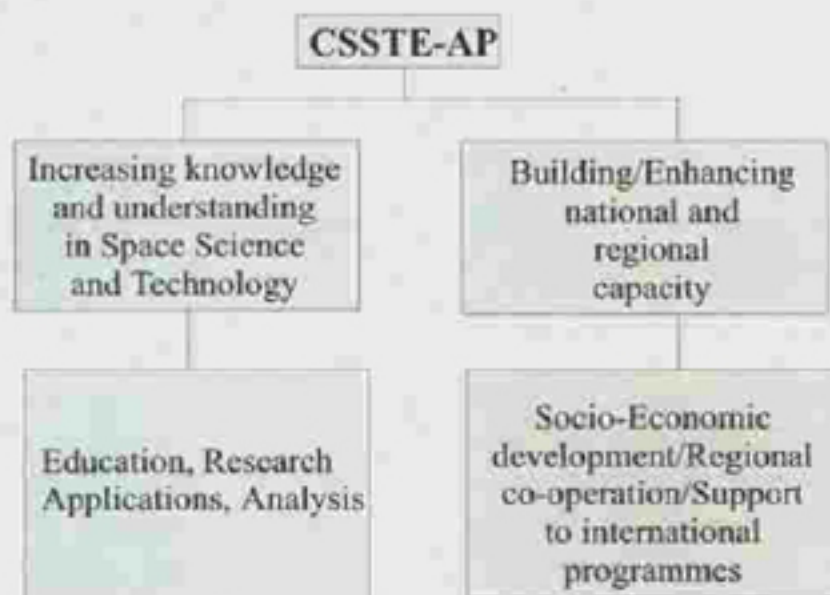
## Background of CSSTE-AP



In response to the UN General Assembly Resolution (45/72 of 11th December, 1990) endorsing the recommendations of UNISPACE-82 the United Nations Office for Outer Space Affairs (UN-OOSA) prepared a project document (A/AC.105/534) envisaging the establishment of Centres for Space Science & Technology Education in the developing countries. The objective of the Centres is to enhance the capabilities of the member states in different areas of space science & technology that can advance their social and economic development. The first of such centres, named as Centre for Space Science & Technology Education in Asia & the Pacific (CSSTE-AP) was established in India in November, 1995.

Government of India has made available appropriate facility and expertise to the Centre through the Indian Institute of Remote Sensing (IIRS), Space Application Centre (SAC) & Physical Research Laboratory (PRL). The Centre is an education and research institution that is capable of high attainments in the development and transmission of knowledge in the fields of space science & technology. The initial emphasis of the Centre shall be to concentrate on in-depth education, research and applications programmes, linkages to the global programmes/databases, execution of pilot projects, continuing education and awareness and appraisal programmes. The Centre offers Post Graduate level courses in the fields of (a) Remote Sensing and Geographic Information System, (b) Satellite Communications, (c) Satellite Meteorology and Global Climate, (d) Space Sciences. A set of standard curricula developed by the United Nations is adapted for the educational programmes. The Centre is affiliated to the United Nations and its education programmes are recognised by Andhra University, India.

### Goals of the Centre



### Rationale of educational programmes



### Educational Programmes of the centre

1996 April to December	First Post Graduate Course in Remote Sensing and GIS
1997 January	Workshop on Distance Education and Training via Satellite
1997 January to September	First Post Graduate Course in Satellite Communications
1997 October to 1998 June	Second Post Graduate Course in Remote Sensing and GIS
1998 March to November	First Post Graduate Course in Satellite Meteorology & Global Climate
1998 March	International Workshop on emerging trends in Satellite Meteorology
1998 June to March	First Post Graduate Course in Space & Atmospheric Science
1998 October to 1999 June	Third Post Graduate Course in Remote Sensing and GIS
1999 January to February	Short course on Digital Signal Processing
1999 July to 2000 March	Second Post Graduate Course in Satellite Communications
1999 August to September	Short course in Digital Image Processing for Environmental Management
1999 October to 2000 June	Fourth Post Graduate Course in Remote Sensing and GIS
1999 November/ December	Two Short Courses on Forest Canopy Density Mapping.



## The Associated Centres

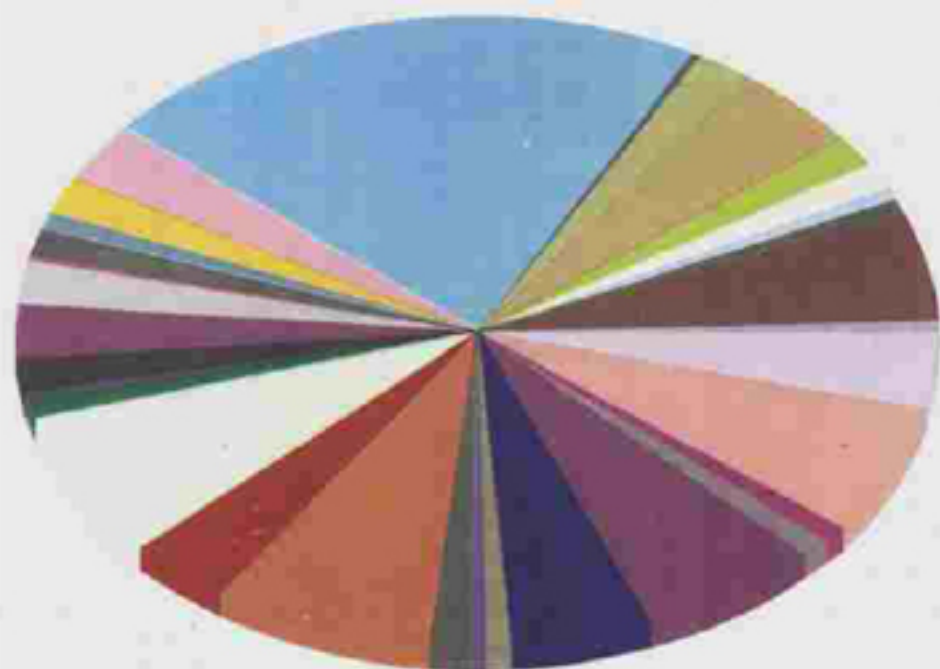
The three principal centres associated with CSSTE-AP are Indian Institute of Remote Sensing (IIRS), Dehra Dun, Space Applications Centre (SAC), Ahmedabad and Physical Research Laboratory (PRL), Ahmedabad. IIRS is a premier institution for training having turned out more than 4,000 personnel from India and abroad. The CSSTE-AP is headquartered in its campus and all the Remote Sensing and GIS related activities are conducted here. SAC is specialised in applications of space technology and conducts Satellite Meteorology and Satellite Communications programmes of CSSTE-AP. PRL is the nodal centre for Space Sciences and is the host for CSSTE-AP's space science programme.



## Role of capacity building

One of the founding objectives of the Centre that gained grounds ever since UNISPACE II proclaimed the need for capacity building and self sustenance in the developing countries, has been the appropriate human resource development. It is known that the space technology and science are useful tools for resource development, environmental protection, communication, global prediction of weather & climate and forward planning to obtain preparedness for future. But all these require meticulous human resource development. Before the advent of CSSTE-AP, the countries of Asia Pacific region did not have an equally in expensive but empathetic mechanism in the world as provided by the Centre, to meet their aspirations of capacity building for spacefaring. But in a span of little more than 4 years, the Centre has successfully penetrated 33 countries and trained 226 participants through a variety of educational programmes. A schematic summary is presented below.

■ AZERBAIJAN(1)	■ MADAGASCAR(1)
■ BANGLADESH(13)	■ MALAYSIA(4)
■ BHUTAN(2)	■ MALDIVES(1)
■ BOLIVIA(1)	■ MAURITIUS(2)
■ CAMBODIA(3)	■ MONGOLIA(17)
■ CHINA(4)	■ MYANMAR(8)
■ DPR KOREA(10)	■ NEPAL(18)
■ FUJ(4)	■ NIGERIA(3)
■ GHANA(1)	■ PAKISTAN(1)
■ INDIA(49)	■ PAPUA NEW GUINEA(2)
■ INDONESIA(7)	■ PHILIPPINES(11)
■ IRAN(4)	■ SRI LANKA(15)
■ JAPAN(2)	■ SYRIA(2)
■ KAZAKHSTAN(3)	■ THAILAND(2)
■ KOREA(1)	■ UZBEKISTAN(15)
■ KYRGHYZSTAN(5)	■ VIETNAM(9)
■ LAO PDR(5)	





GOVERNING BOARD OF CSSTE-AP (as on Dec. 99)

- Dr. K. Kasturirangan,  
Chairman  
**India**
- Dr. Chose Tae Song,  
**DPR Korea**
- Prof. H. Harijono  
Djojodihardjo,  
**Indonesia**
- Dr. Y.K. Akynzhnov,  
**Kazakhstan**
- Mr. Tynmbek Ormonbekov,  
**Kyrgyzstan**
- Mr. Dunstan Melling Undau,  
**Malaysia**
- Mr. Regsuren Bat-Erdene,  
**Mongolia**
- Mr. Kartar Singh Bhalla  
**Nauru**
- Mr. Dipendra Bista,  
**Nepal**
- Dr. Moon Shin Haeng,  
**Republic of Korea**
- Prof. Sam Karunaratne,  
**Sri Lanka**
- Dr. Kamol Muminov,  
**Uzbekistan**
- Mr. Jose P Del Rosario Jr.  
**Philippines**
- Dr. Mazlan Othman,  
**United Nations**



*The Centre came into existence on November 1st, 1995 along with the formation of Governing Board. The GB in 1995 consisted of 10 members including UN and has gradually expanded to 15 members now. It meets regularly to review the policy and progress of the centre.*

*CSSTE-AP welcomes Dr. Mazlan Othman, Director, UN-OOSA as member of Governing Board. It also bids farewell to Dr. N. Jasentuliyana, former Director, UN-OOSA & Dr. A. Abiodun, UN-OOSA whose contributions to the GB have been invaluable.*

**Functional Domain of CSSTE-AP**



The principles of Governance of CSSTE-AP were conceived in 1995 with its formation. The Governing Board is the highest policy making body responsible for the evolution and activities of the Centre. The host country support to the Centre is coordinated by a committee of the Department of Space. Besides, an international advisory committee has been constituted to provide technical guidance to the activities, especially to educational and training programmes. The programmes are realised with the help and co-operation from three institutions belonging to the Department of Space, Govt. of India, namely Indian Institute of Remote Sensing (IIRS), Space Applications Centre (SAC) and Physical Research Laboratory (PRL). The educational programmes have adopted a set of syllabus coordinated by UN-OOSA. While the United Nations has provided affiliation to the Centre, Andhra University, India has provided academic recognition.



## First Post Graduate Course in Remote Sensing & GIS



The first PG course in Remote Sensing and GIS commenced on April 1, 1996 at the Indian Institute of Remote Sensing and was completed on December 20, 1996. It was attended by 25 participants from 14 countries. It is an impressive reflection on the record and reputation of the Centre that 14 countries of the region decided to depute their scientists to the very first course offered by CSSTE-AP. Candidates had diverse background covering almost all disciplines of earth and natural sciences. The very fact that such a large number of disciplines were chosen to be represented in the first course infers that the remote sensing application technology has come of age and that the host country

and its expertise enjoyed the confidence of the neighbours in the region. Nevertheless, for the Centre it was a testing time wherein the principles behind the formation of this international initiative were being subjected to the acid test of credibility. The only right method of validating any educational programme is to find out how its alumni are faring in their home countries in the profession that they are readied for. By that measure, it is pertinent to note that most of them have excelled in what they are doing, and to cite a few examples, a Mongolian student took part in Joint Mongolian-German expedition to measure biomass, an Indian student took up principal investigatorship for a watershed prioritization, a Nepalese student was engaged in preparing bio-physical databases of various regions and an Uzbek student worked for water resource management and agricultural production in central Asian republic.

### Participating Countries in the First RS & GIS Course

Bangladesh  
China  
DPR Korea  
India  
Kyrgyzstan  
Mongolia  
Myanmar  
Nepal  
Pakistan  
Philippines  
Sri Lanka  
Thailand  
Uzbekistan  
Vietnam

### Recognition from Andhra University

Post Graduate Course in Remote Sensing and GIS is the first educational programme conceived and conducted by the Centre. All the other educational programmes are also patterned on the same mode with a requirement of 9 months in the Centre and further 12 months at the country of the participant. This has been reviewed and accepted by Andhra University in India and all the eligible candidates are considered for the award of Master's degree by the University. The recognition offered by the University is, in a way, a joint exercise of ensuring academic excellence since the agreement between the University and the Centre deals with selection of course participants, conduct of academic programme, conduct of examinations, appointment of examiners and announcement of results. With this agreement, the Centre's educational programmes are unique in structure and scope in that they involve state of the art facilities, working scientists as faculty, an optimum mixture of training with education and academic sanctity by way of University recognition. Further, the educational programmes are being recognized around the world adding the dimension of individual professional progress to the philosophy of capacity building. The centre has also taken up the case of getting national academic recognition for its educational courses in the different Asia Pacific countries in order to provide the benefit of academic progression for the course participants in their home countries.



## First Post Graduate Course in Satellite Communication



### Participating Countries in the First Satellite Communications Course

DPR Korea	India
Indonesia	Iran
Kyrgyzstan	Nepal
Republic of Korea	Sri Lanka
Uzbekistan	

In recognition of the Department of Communication as a sustaining factor for social change in developing countries, the CSSTE-AP conducted the first post graduate course in Satellite Communications between January 1 and September 30, 1997. 13 participants from 9 countries attended the course. The first part of the 9 months in the Space Applications Centre has structured into 9 modules involving communication systems, broadcasting, earth station technology, network planning, satellite systems and educational applications. Visit to Indian Satellite Communications industrial units and establishments was an integral part of the programme. Besides the course work, the participants were provided with an opportunity to attend an international workshop on 'distance education and training via Satellite', jointly organised by Indian Space Research Organisation and UN-OOSA. A large number of working scientists from Indian Space Organisation, academia, industry and Government establishments taught the course that emphasized more on interactive method of learning.

## Second Post Graduate Course in Remote Sensing & GIS

Conducted between October 1, 1997 and June 30, 1998, the course was attended by 23 participants from 14 countries. The course programme was suitably modified to suit the requirements of topical problems in environment based on the feedback analysis of the first course. The course also attracted participation of international experts in the teaching programme and a marked shift from classroom learning mode to computer based learning and practical training was effected. There was also an optimum mix of field programme, educational tours and tutorials to provide individual attention. Library, laboratories, internet, video lecture and updated lecture notes were available to the participants. Besides, the participants were given an opportunity to attend the international ISPRS symposium on 'Earth observation system for sustainable development' and tutorials on 'Electro-optical sensors for remote sensing and image preprocessing' at the ISRO Headquarters at Bangalore.

### Participating Countries in the Second RS & GIS Course

Bangladesh  
 Bhutan  
 Cambodia  
 India  
 Iran  
 Kyrgyzstan  
 Lao PDR  
 Mongolia  
 Myanmar  
 Nepal  
 Philippines  
 Sri Lanka  
 Uzbekistan  
 Vietnam

### *CSSTE-AP celebrates national days*

The centre celebrates the national day of its course participants. On these occasions, the participant is called upon to give a brief appraisal of the home country and an interactive session with the staff and students of the centre is arranged.

1997



## First Post Graduate Courses in Satellite Meteorology and Space Science

The first CSSTE-AP course in Satellite Meteorology and Global Climate started at Space Applications Centre, Ahmedabad from March 2, 1998. 17 participants from 10 countries attended this 9 months course. The course began with a 4 day workshop dedicated to Prof. V. Suomi, the father of satellite meteorology from March 9-12 on *Emerging Trends in Satellite Meteorology - Technology and Applications*. The workshop was attended by over 80 scientists from India and abroad. The participants, during the tenure of the course, went on a study tour and a short ship cruise on "Sagar Kanya" of Antarctic Study Centre of Govt. of India and got to know about the instruments for marine environment measurements.

The first CSSTE-AP course in Space Science started at the Physical Research Laboratory, (PRL) Ahmedabad from June 1, 1998. 11 participants from 7 countries came for attending the six months course. The students had access to the state of the art IBM personal computers as well as a powerful IBM RS/6000 system with facilities for e-mail and internet. The course was of two semesters of three months each. In the first semester, students studied three major disciplines, viz., (1) Neutral atmosphere, its structure, composition and dynamics, (2) Plasma aspects of the Earth's environment and (3) Astronomy and Astrophysics. The faculty for the space science course was drawn from Indian and foreign institutes of international repute.

### Participating Countries in the First SATMET & Space Science Courses

Bangladesh	Bolivia
India	DPR Korea
Indonesia	India
Iran	Indonesia
Kazakhstan	Mongolia
Mongolia	Sri Lanka
Nepal	Uzbekistan
Philippines	
Sri Lanka	
Uzbekistan	

## Visit of Latin American delegation

Centre for Space Science and Technology Education is also being established in Latin America and the Caribbean. Dr. A. Tania Maria Sausen of National Institute for Space Research, Sao Jos DOS Campos, SP Brazil, who is the focal point for the establishment of this Centre, was on a special mission to CSSTE-AP between 22nd and 26th February, 1998. She visited the training sites of CSSTE-AP at Dehradun and Ahmedabad and discussed the mode of functioning. During her visit, she was shown the facilities established for each educational course and appraised of the various technical activities pursued by the faculty of the Centre.



## Third Post Graduate Course in RS & GIS

The third (1998-99) post graduate course on Remote Sensing and Geographic Information System was conducted at the Indian Institute of Remote Sensing (IIRS), Dehra Dun, the host Institution of CSSTE-AP between October 1998 & June 1999. Twenty one participants from eleven countries of the Asia-Pacific region attended the course. The topics of pilot projects undertaken by the participants during Module III are crop-inventory; agro-ecological zonation; optimal land use planning; soil resource inventory & land evaluation; site suitability analysis for urban development; flood hazard assessment; urban land use/change analysis; urban facility analysis; urban land use mapping; rainfall-run off modelling; forest growing stock assessment; forest land use planning; earthquake hazard assessment; coastal salinity assessment and coastal sediment dynamics.

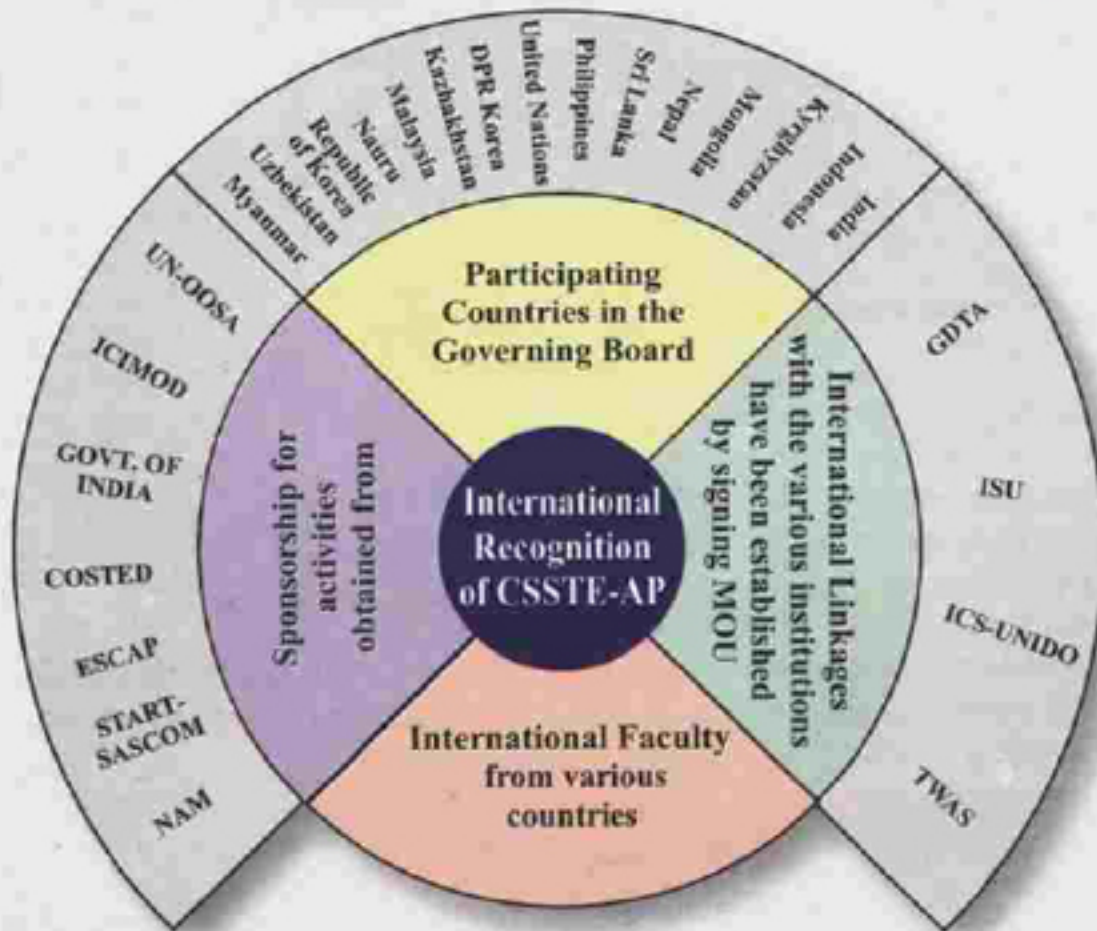
### Participating Countries in the Third RS & GIS Course

Bangladesh  
DPR Korea  
Fiji  
India  
Indonesia  
Mongolia  
Myanmar  
Nepal  
Philippines  
Sri Lanka  
Vietnam





**Emerging International Linkages**



In the true spirit of international co-operation that underlines the very formation of CSSTE-AP, the centre entered into MOU with four European institutions, namely ISU, GDYA, TWAS and ICS-UNIDO in a bid to further its objectives of capacity development in Asia Pacific region. The principle of these linkages is to benefit from and channelise the established facilities in premier centres in the world. Under the scope of MOU is the possibility of conducting various joint activities. Besides, the centre receives sponsorship from many organisations and obtains faculty support from institutions world wide.

1999

**Second PG Course in SATCOM and 4th PG Course in RS & GIS**

The Second Post Graduate Course on Satellite Communications of CSSTE-AP commenced at SAC, Ahmedabad from July 01, 1999. Eighteen students from 8 countries of Asia Pacific region are attending the course. At the beginning of the course, an orientation course of one week duration was organised to make the participants familiar with Social, Cultural, Geographical and Tourism aspects of India. A short workshop of three days of "Communication Skills" was also arranged for the participants. Fourth PG Course on RS & GIS has begun at the Indian Institute of Remote Sensing on October 1, 1999 for 17 participants from 11 countries.

The participants of both the above courses attended the UN-ESCAP workshop on "Space technology for improving quality of life in developing countries: a perspective" for the next millennium" between Nov. 15-17, at New Delhi.

**Participating Countries in the 2nd PG Course in SATCOM and the 4th PG Course in RS & GIS**

Bangladesh	Bangladesh
DPR Korea	Bhutan
India	India
Kyrgyzstan	Kyrgyzstan
Mongolia	Lao PDR
Nepal	Mongolia
Philippines	Myanmar
Sri Lanka	Nepal
	Philippines
	Sri Lanka
	Vietnam

**Formation of Advisory Committee**

An international advisory committee was formulated by the Governing Board to provide the Centre with technical advice. The committee met at New Delhi for the first time during early July 1999 and endorsed the educational strategies adopted by the Centre. The committee is headed by Prof. H. Harijono Djojodihardjo, Chairman of LAPAN, Indonesia.

**CSSTE-AP in UNISPACE-III**

During the deliberations of the UNISPACE III Conference (July 1999), meetings were held and presentations were made to chart the course for future measures to continue furthering the regional Centres. In a meeting between representatives of the Centres in Asia (Prof. B.L. Deekshatulu, India), Africa (Prof. Balogun, Nigeria; Prof. Touzani, Morocco) and Latin America and the Caribbean (Dr. Sausen, Brazil), the opinion was emphasized, that as a follow-up of the Conference, closer and lively cooperation between the regional Centres should be established. The Director of CSSTE-AP made wide ranging presentations during various sessions and drew international attention towards the progress of the Centre.



Technical Achievements by way of Research Projects

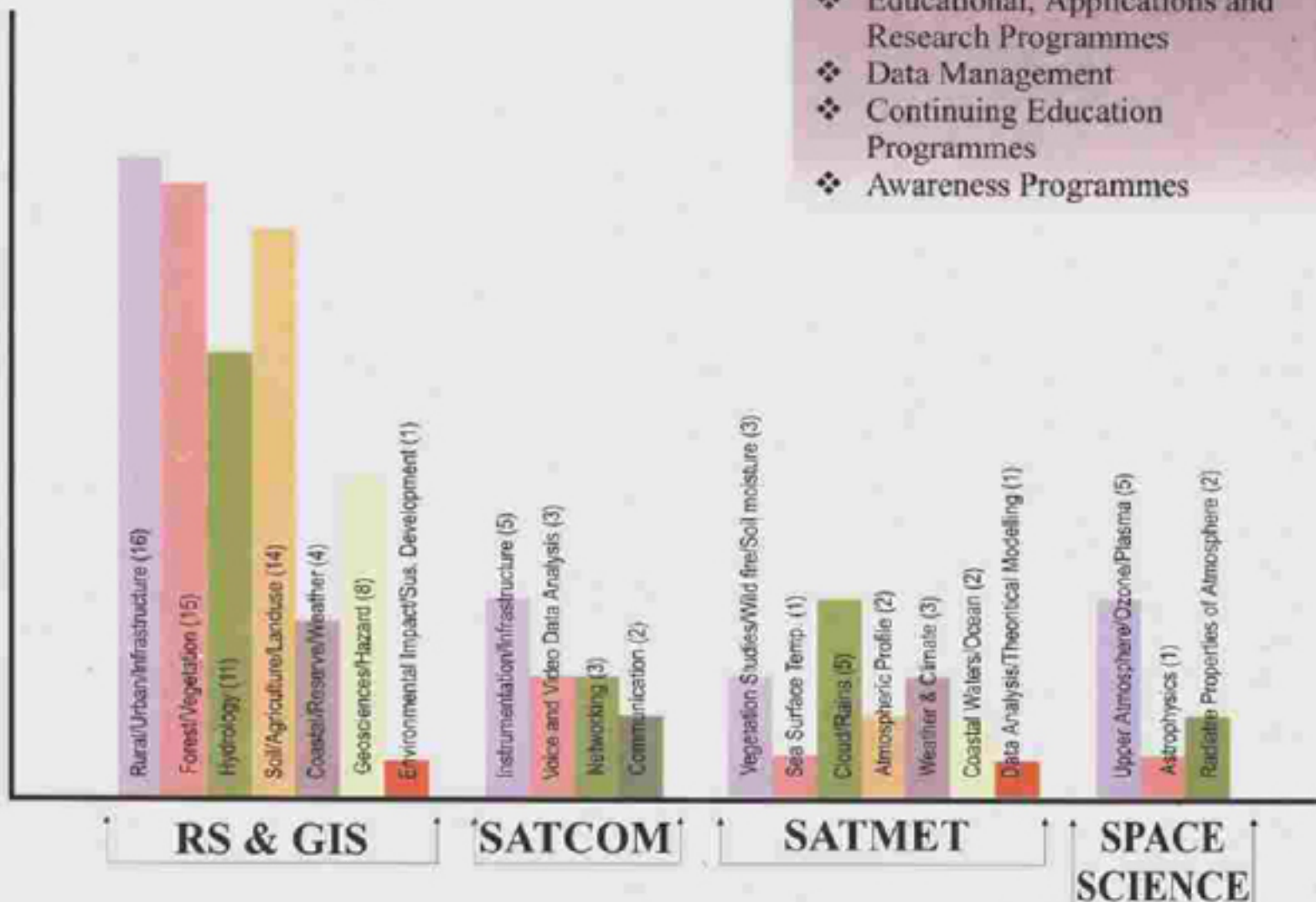
Centre's research projects are driven by the philosophy of social application and technical excellence. The modular structure of the educational courses offer ample opportunities for the participants to evolve and carry out research projects three months at the centre and a year in the home country. Guidance by experienced scientists at the centre as well as in home country is provided to the course participants in a unique mode of inter institutional cooperation. As seen in the schematic sketch, below the research projects represent the current problems of topical interest to Asia Pacific countries. The remote sensing & GIS projects vary over a wide range of topics such as environment, hazards, resource and infrastructure development. Amongst the 69 projects completed so far, human settlement, vegetation and agriculture have dominated the attention. Amongst the 13 satellite communication projects, infrastructure development has garnered most efforts. The very fact that monsoons influence the life and prosperity of the Asia Pacific populace is abundantly clear in the pouring of attention towards the study of rain, cloud, weather and vegetation amongst the 17 projects of satellite meteorology. Finally, the space science students have concentrated more on upper atmosphere and ozone owing to current interest and concern on the human activities in 20th century.



Millennium Issue

Future areas for development

- ❖ Educational, Applications and Research Programmes
- ❖ Data Management
- ❖ Continuing Education Programmes
- ❖ Awareness Programmes



Distribution of projects across the various educational programmes of the centre



World view



## UN OOSA

The knowledge which the Centre will provide should be the cornerstone to strengthen national institutions, both for participants returning to universities to incorporate remote sensing into the educational programmes of their areas of specialization as well as for participants who will return to implement development programmes.

*N. Jasentuliyana, 1996*

## UN COPUOS

This Centre will provide the people of this region an opportunity to expand their knowledge and understanding of space technology through in-depth research, long-term education and applications programmes.

*Peters Hohenfellner, 1996*

## UNESCO

UNESCO strongly supports the aims of the Centre to develop skills and transfer knowledge in space science and technology with a view to enhancing regional, social and economic development and sustainable management of natural resources. These efforts correspond to Agenda 21 of the United Nations Conference on Environment and Development which emphasises the need for continued scientific research and knowledge to improve national capacity in confronting global problems.

*Federico Mayor, 1996*

## WMO

Since remote sensing technology is continuously breaking new grounds, it is absolutely vital to develop and promote regional and international co-operation to match the rapid development. In this regard, WMO will continue to explore and encourage fruitful cooperation with centers like this one which have common objectives in capacity building, particularly in developing countries, so as to contribute more effectively to national development.

*G.O.P. Obasi, 1996*

## UN ESCAP

The basic approach taken by ESCAP in the promotion of technology applications has been to encourage technical cooperation among developing countries (TCDC). Such an approach has proven highly effective and successful. We, therefore, share the view that greater regional cooperation on space and technology education in the region is highly beneficial and should be further strengthened.

*Adrianus Mooy, 1996*

## LAPAN, Indonesia

The Centre shall greatly contribute to evolving the space science and technology in advance ensuring that all countries in this region are able to reap the benefits of space technology and its applications for their national development. It is our belief that host country member countries of the Centre, other countries and multilateral agencies will closely cooperate and support the function of the Centre.

*H. Wiryosumarto, 1996*

## Nauru

It will be an historic occasion marking the beginning of much-needed joint venture in the field of Space Science and Technology amongst the countries of Asia and the Pacific. Such a unique get-together of scholars from various countries in common pursuit of excellence in education is sure to usher in an era of closer network.

*K.S. Bhalla, 1996*



I am sure, the Centre will evolve into a model institution of higher learning that the Asia and the Pacific and the rest of the world will be proud of.

*K. Kasturirangan, 1996*

Centre will play an important role in the dissemination of knowledge in the vital field of space science and technology in the development of the countries of the region.

*Dipendra Bista, 1998*

The Centre provides unique opportunities for nominees from various countries of Asia and Pacific to study the newest aspects of space science and technology in short term.

*Kamol Muminov, 1998*

The knowledge and expertise which you have acquired from this course will be very valuable in strengthening the capabilities of your respective institutions in meeting the challenges of development for the next millennium. I hope that you would take the lead in networking and sharing information with other specialists in the region, so that collectively, we could respond more effectively to the environmental issues confronting the whole Asia-Pacific region.

*Jose P. Del. Rosario, Jr., 1998*

The CSSTE-AP has certainly enhanced the knowledge and ability of those trained at the Centre thereby contributing towards the fruition of national programmes related to Space Applications.

*S. Karunaratne, 1999*

I deeply hope that all graduates will fruitfully use and successfully implement their knowledge received during this course in diverse fields of endeavour such as discovering the Mother Earth, to explore the natural resources, the prognostication of weather changes, to prematurely define the natural disasters and to search and work out the new ways to combat them.

*R. Bat-Erdene, 1999*

The rich experience gained in the successful operation of the Centre in Asia and the Pacific as centre of excellence shall be made available to the Centres in all other regions.

*Hans. J. Haubold, 1999*

I particularly love those students who have dreams to improve themselves, their countries and also the human kind... I hope and believe that all students of CSSTE-AP can develop their full potential...

*Shunji Murai, 1999*

Certainly, I have great confidence that the CSSTE-AP with support of the countries in the region as well as of the countries in other regions and related regional and international bodies, shall continue to progress with great success in all its future efforts.

*H. Harijono Djodihardjo, 1999*





**Director speaks**



There are conflicting views about how to approach the new millennium. While the rationalists say that the dawn of new year is just another day, enthusiasts find it to be an occasion of change not just from a year or decade but a century. Although it is imaginative, it is truly a reference like equator and in a relative world - it could be used as a pivot between past and future. That is how I see it and wish to hold out a vision for the centre in the sea-saw of time. In other words, millennium year for me is a determined reference between past and future and an accepted opportunity to promulgate change.

Looking back at the past, I see that the centre has cruised faster than any of us could imagine at the beginning of the story in 1982 at UNISPACE II or 1995 at the formation ceremony at New Delhi. Infrastructural and financial support from host country, guidance from the Governing Board, support of Advisory Committee, efforts of scientists and teachers and the patience of families left behind for long by students and every enthusiast have all given this four year old centre an enormous momentum. I often feel that the millennium is just an excuse to bring in novelty which in itself is never new to the centre.

But surely, there are unfinished tasks that are slated and we ought to embark upon. Educational programmes have been set in motion and will take only a little effort for the centre in future to manage or maintain them. So, the upcoming dawn of excitement could be a time to engage ourselves in strengthening the research programmes, increasing linkages, data bank generation, spreading awareness and most importantly - seeking the effective societal distributories of space science and technology. This could only happen if more and more international organisations and major NGOs of the world explore the platform of CSSTE-AP and join our endeavour of capacity building to benefit the common man.

Thus, new millennium at CSSTE-AP should be a playtime for young minds with a rational vision. I take this opportunity to wish you all peace and prosperity in the new era.

**Prof. B. L. Deekshatulu**

**Co-sponsoring training programme**



The centre co-sponsored with IIRS, Japan Overseas Forestry Consultancy Association (JOFCA), and International Tropical Timber Organisation (ITTO) a short training programme on Forest Canopy Density Mapping during Nov./ Dec. 1999. In two batches, 23 participants from 12 countries attended the course.

**CSSTE-AP Day Celebrated**

The centre celebrated the CSSTE-AP Day on 1st November, 1999 in commemoration of its formation four years ago. Guests of honour of the occasion were Vice Chancellor, Andhra University, Director, National Remote Sensing Agency, India and Scientific Secretary, COSTED(ICSU). A scientific seminar was also conducted on the occasion entitled "Relevance of Space Sciences & Technology for Development in Asia and the Pacific."



- Programmes for Year 2000**
- 9 months PG course in Satellite Meteorology and Global Climate from July 1, 2000 at Ahmedabad.
  - 9 months PG course in Space and Atmospheric Sciences from August 1, 2000 at Ahmedabad.
  - Short course on Satellite Communications Applications for Development, July 17-21, 2000 sponsored by Centre for Science and Technology of the Non-Aligned and other developing countries at Ahmedabad.
  - International Workshop on Land use, Land Cover changes in coastal areas, April 3-5, 2000 sponsored by ICS-UNIDO in collaboration with CSSTE-AP, COSTED, TERI and IIRS at Dehra Dun.

**CSSTE-AP (Affiliated to UN)**  
**IIRS Campus, 4, Kalidas Road,**  
**Dehradun - 248 001, INDIA**  
**Phone : +91-135-740737, 740787,**  
**Fax : +91-135-740785**  
**email : cssteap@del2.vsnl.net.in**



CSSTE-AP welcomes the views and opinions of the readers of the newsletter. Short communications on space science and technology education which may be relevant to Asia Pacific region are also welcome. Views expressed in the articles of the newsletter are those of the authors and do not necessarily reflect the official views of the

*The Centre looks forward to and invites the international organisations to interact and collaborate with it in addressing The objectives of capacity building in the region.*