❖ CSSTEAP Newsletter ❖

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

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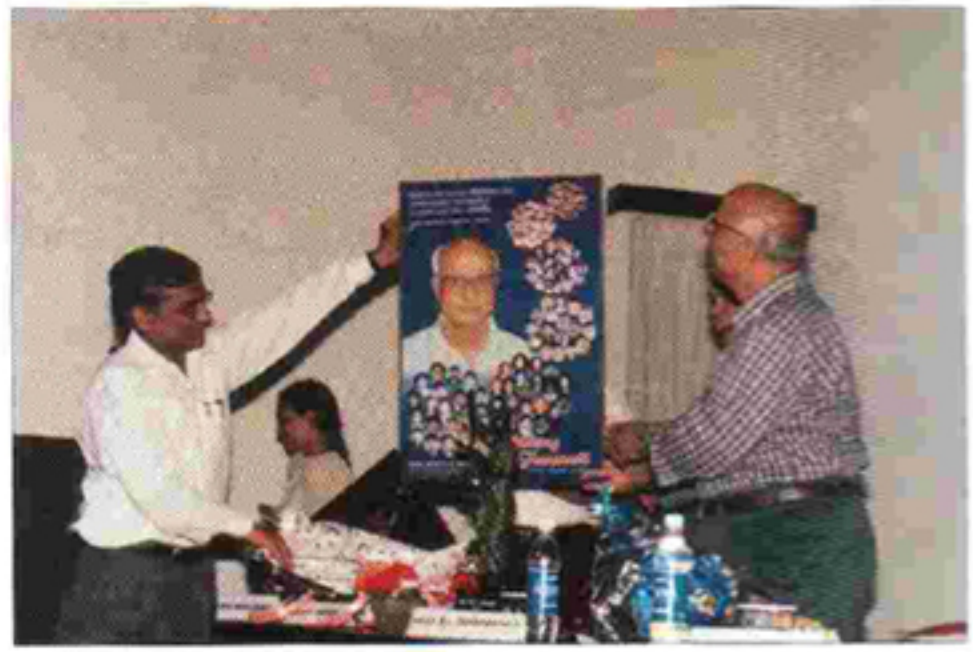
Farewell to Prof. B.L. Deekshatulu, Former Director, CSSTEAP

Prof. B. L. Deekshatulu was given farewell in April, 2002 by IIRS, SAC and PRL on the completion of his term at CSSTEAP. Prof. Deekshatulu had been director of CSSTEAP since its inception on November 1, 1995. He gave shape to the vision of United Nations resolution recommending establishment of such regional centers throughout the world, with a view to enhance local capability for accelerated socio-economic development of the nations in the world. The farewell function at IIRS on April 24, 2002 was attended by Sh. V. Sundaramaiah, Scientific Secretary ISRO; Prof. Dr. Karl Harmsen, Current Director, CSSTEAP; Dr. A.K.S. Gopalan, Director, SAC; Dr. R.R. Navalgund, Director NRSA; Dr. P.S.Roy, Dean, IIRS and member of CSSTEAP Governing Board and scientists and staff of IIRS and RRSSC-D.



Prof. B.L. Deekshatulu receving a memento from Dr. P. S. Roy, Dean, IIRS

Similar farewell function was also organised at SAC, Ahmedabad on April 30, 2002. Several senior scientists from SAC and other dignities attended the function. Prominent among those participated in the program were Mr. Pawan Chopra, Secretary Dept. of Information and Broadcasting; Director CSSTEAP, Director SAC; Mr. A.R. Dasgupta, Dy. Director, SITAA/SAC; Mr. C. Lal, Course Director, SATCOM.

All the speakers on these occasions recalled and appreciated Prof. Deekshtulu's immense contribution in buildingup the CSSTEAP and bringing it up to the present mature state. They also mentioned it was all because of his untiring spirit, guidance and capability to extract best from his colleagues.

Prof. Dr. Karl Harmsen receiving maze of CSSTEAP from Prof. B. L. Deekshatulu

In his parting speech, Dr. Deekshatulu expressed his views with anecdotes on how a person besides being formally educated, can learn a lot by

induction, observation and working with eminent personalities. He had the good fortune of working, while at the Indian Institute of Science, Bangalore during the 60's and 70's, with Prof. Satish Dhawan and Prof. Ramachandra Rao. Later while at NRSA, he has been under the overall guidance of Prof. S.Dhawan, Prof U.R.Rao and Dr. K. Kasturirangan. The encouragement and support and the manner in which planning, execution and decisions were made on a variety of matters provided enough wisdom, intellect and ability to foresee future course of action.

He also said that while CSSTEAP has made good progress in the past six and half years, we should not rest on our laurels, but endeavor to progress further by networking with many institutions of international repute. While CSSTEAP catered to quite a number of Asia-Pacific countries, there are still many countries, especially Oceanic, which have not established linkages.

In order to represent the true international character of CSSTEAP, funding for it should come from many donor international organizations and member countries. Till today, Government of India, (the host country) has been kind enough to support all the needs of CSSTEAP, which mainly contributed to the progress.

Last but not the least he advised every participant of CSSTEAP to be involved and contribute for the progress and welfare of CSSTEAP.

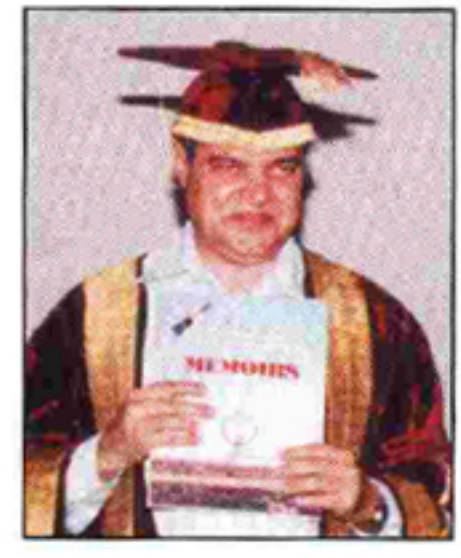
He thanked all the institutions of ISRO / DOS for the wholehearted support provided to CSSTEAP all these years.

Farewell function at IIRS, Dehradun

Prof. B.L. Deekshatulu recieving a memento from Dr. A.K.S Gopalan, Director, SAC

Valedictory address of Third SATCOM Course at SAC, Ahmedabad (30th April, 2002)

Shri Pawan Chopra,
Secretary, Ministry of Information & Broadcasting, Govt. of India



Prof. Deekshatulu, Dr. Karl Harmsen, Course Director Shri C. Lal, Scholars from different countries, other distinguished personalities, I feel very honoured to be among all of you and also a little diffident to address this gathering of such distinguished Scientists and Engineers when I myself have no such qualifications. Perhaps the Centre for Space Science & Technology Education in Asia and the Pacific has decided to invite me to this valedictory function which concludes the Third Post-graduate Course on SATCOM because I represent the Government in the broadcasting sector -- one of the major users of SATCOM technology. Therefore, I would like to say something from the point of view of a SATCOM user and in particular the broadcasting sector which is a prime area of concern for me in the Ministry of Information & Broadcasting.

When Television first appeared in India in 1959 it appeared to be the

answer for effective communications between remote areas from a single point broadcaster to a multi point audience. However, the technology had its own limitations and this meant that a large country like India could only be covered by having chains of various types of terrestrial transmitters. It also meant that we would be limited to at the most 4 or 5 channels which could be transmitted in the terrestrial mode.

These two limitations changed the whole character of Doordarshan and AIR. The Government of India was keen on achieving maximum coverage of the population in different areas of the country. This has resulted in one of the largest broadcasting terrestrial organisations in the world. Doordarshan has 136 High Power Transmitters, 769 Low Power Transmitters and 307 Very Low Power Transmitters. The effective number of Doordarshan terrestrial channels available, however, remained only 3.

In order to cater to the regional aspirations and the need for broadcasting in different regional languages, broadcast time of the channels had to be divided into national channel and the so-called regional channels which generally functioned from State capitals where local studios have been built. It also meant that Doordarshan and AIR which hitherto had a majority of the people working on the programme and production side became primarily engineering organisations with 80% of the staff being engineers who are either installing more transmitters or involved in the upkeep and maintenance of the existing centres.

Then came satellite transmission and cable TV which enabled Doordarshan to have 21 channels, including 11 regional channels. The regional channels could now transmit their programmes for 24 hours at least on a theoretical basis even if there was time sharing on the national terrestrial channels. There was also the explosion in private broadcasting and the total number of channels available over Cable TV in most large cities was of the order of 100. This change resulted in a complete revolution in the nature of the broadcasting industry, including for those responsible for production of content.

However, the problem of covering the whole of the population still remains. The terrestrial reach of Doordarshan is theoretically such as to cover 88% of the population of the country but with good signal quality being available for only about 70% of the population. However, the reach of cable and satellite channels, both public and private, was confined to only 35 million homes in the cities and towns, and only 6% of the rural area households was covered. This has meant that the majority of rural viewers are denied the benefit of the broadcasting revolution in terms of truly diverse programmes which has been made possible through cable and satellite TV.

It has not been possible for cable TV to penetrate rural areas because the economics does not work out in low population density settlements. Also the paying capacity of the rural people would be much less than in cities and towns. We have also to consider the plight of 30% population living in remote areas who do not even have access to good quality terrestrial signals.

Although ISRO had started experimental direct-to-home broadcasting in rural areas as a part of development communication, starting with the Jhabua project, the Government first looked at the developed country business models while considering the possibility of direct-to-home transmission via satellite. The decision on allowing direct-to-home TV broadcasting by private operators was taken in the year 2000, subject to certain conditions, keeping in view the fact that direct-to-home in the west was in the nature of a natural monopoly. However, it was soon realised that this direct-to-home model may not be quite suitable for the general populace as the cost would be too high for the common people even in the cities and certainly it would not be able to compete with the much cheaper cable TV services. Thus the western type business model was likely to be restricted to an elite few who are capable of affording value added services at many times the cost of cable TV services. Therefore, the possibility of rural coverage would also be lower in a poor country like India.

On the other hand, a study got conducted by Doordarshan by a Technical Committee under the Chairmanship of Shri Indersen, had revealed that the cost of covering the remaining population of 12% who get signals and 30% who are deprived of quality coverage would be as much as the cost incurred (Rs.4000 crores) already in covering the population of 70%/88% if the existing terrestrial technology was used, as the cost would mount in the remote mountainous areas and island regions. A cheaper way, therefore, had to be found.

It was then that the Government turned its attention to the valuable experiences being offered by the ISRO's development communication projects and the idea was mooted that we should provide 100% coverage by direct-to-home TV using Ku-Band technology through simple set-top boxes only in the nature of digital to analogue converters so that all free-to-air channels can be received by them. There would be no subscriber management system or value added services to start with. This simplification along with mass production and some subsidy for remote areas will make these set-top boxes and Ku-Band dishes affordable for a large number of people all over India. This has now been adopted as a strategy for expansion of TV services in the 10th Plan beginning this year. It is expected that 100% coverage will be achieved at a much much lower cost both in financial and manpower terms. That is the wonder of SATCOM technology for me. We have, therefore, requested ISRO to make available to us sufficient number of Ku-Band transponders of sufficient power for broadcasting purposes.

India has a complex society which necessitates the existence of different types of technology to cater to different sections of the society. There will be some people who want not only to receive the broadcasts by direct-to-home services but may want to utilise the technology for inter activity, using Internet and other services. Therefore, around the planned basic service we will have to build various tiers of value added services depending on the different customers we wish to reach. This will have to be done in close coordination with the Ministry of Communications which is responsible for Telecommunications, Internet and other aspects of Information Technology.

There are many interesting side effects and possibilities we envisage from using the new technology. Let me give you a few examples. Our public service broadcaster is asked to give a part of its commercial time for broadcasting Parliamentary proceedings. There is consistent demand from the Legislatures of the various States to have their proceedings broadcast in the same manner. This can never be possible with the limited terrestrial capacity. Cable and satellite will also leave out a large part of the rural populace. However, uplinking additional channels in Ku-Band at a relatively low cost makes this demand of the State Legislatures a distinct possibility.

Even more important, the idea has often been mooted that the public service broadcaster would give time at a nominal cost to candidates for elections for their political campaign. This is a difficult proposition in the present terrestrial mode but the relatively low cost of additional channels through Ku-Band can make this possible.

However, politics apart, I think the most important consequence will be on distance education. Presently Indira Gandhi National Open University telecasts its courses, but the reception quality over cable is relatively poor since it is a non-commercial channel and its availability in rural areas where it is needed most is the least. The new technology will enable IGNOU to communicate with many many more students directly or through community viewing sets in schools and panchayats at an affordable cost. IGNOU can now have multiple channels for different types of courses leading to a quantum jump in the ability of our educational institutions to deliver continuing education.

Now all of you can see why when there is no malfunctioning in any of your satellites and some of them are coming to the end of their designed life we get worried. We have to be dependent on these transponders for our communication needs. I remember the days as a teenager when we had to wait hours for any trunk calls to get through and needed friends in the telephone exchange to ensure that calls did not fail. Today one can put through a call in a minute to any part of the world and in a very good voice quality.

Gentlemen, I can go on and on but you know far more better of the satellite communication process and the new developments that may be coming. I was only trying to point out the social possibilities which the scientists and engineers may not have imagined when they were working on some of these projects whether in the field of communication or meteorology or remote sensing. I wish all of you success and hope that you will pay a pivotal role when you go back to your countries in using the knowledge gained during your stay in this institute for furthering the development of the people in your country.

The Meetings of Governing Board and Advisory Committee

The fourth meeting of Advisory Committeee (AC) and seventh meeting of Governing Board (GB) were held on April 23, 2002 and April 25, 2002, respectively at Indian Institute of Remote Sensing (IIRS), Dehra Dun.

AC meeting in progress

The AC meeting was chaired by Mr. Victor Kotelnikov of the United Nations OOSA, Vienna. The committee took a review on Centre's academic activities since last one year. Various issues like curriculum of educational courses; implementation of Board of Studies (BOS) recommendations; preparation of a panel of international faculty; proposal to initiate research activities at the centre etc., were discussed. The AC appreciated the effort of the centre for effectively organizing educational activities of the current year. The AC also noted the committed efforts of the centre, in particular its Director, and the host institutions/organizations viz. IIRS, SAC and PRL, that made the centre reach high level. The AC endorsed the courses, programmes and the future technical activities of the centre.

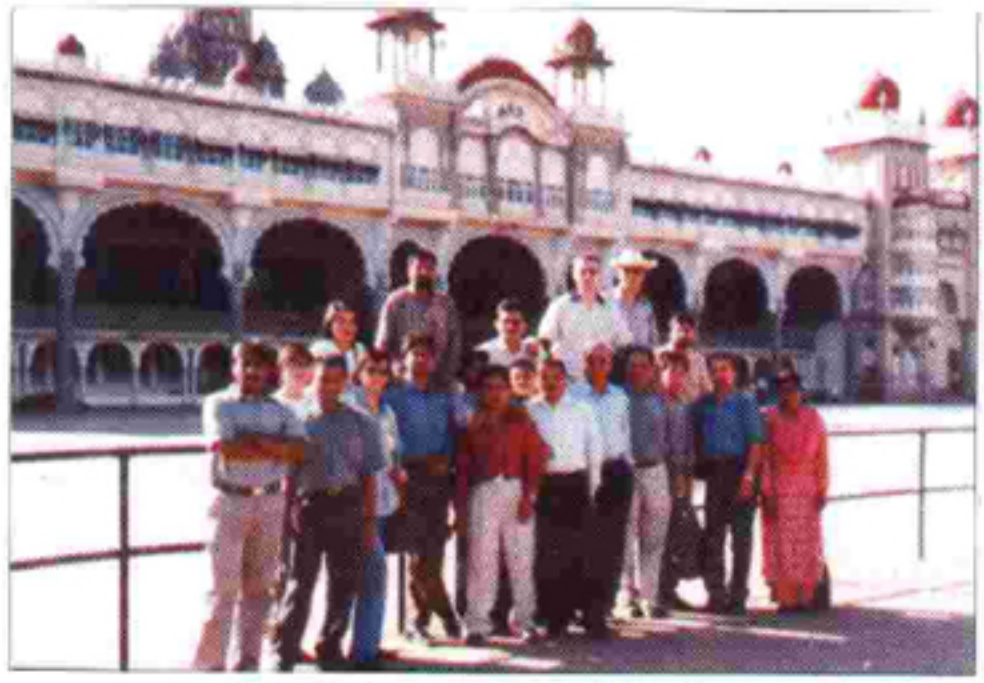
The GB meeting was chaired by Dr. K Kasturirangan, Chairman Governing Board CSSTEAP and Chairman, ISRO (Indian Space Research Organization), Govt. of India. Members/representatives from various countries of Asia-Pacific region viz. Mr. Kartar Singh Bhalla (Nauru); H.E. Mr. Jose P Del Rosario (Philippines); Mr. Ibragimov (Uzbekistan); Mr. Dhananjay Jha (Nepal); Dr. Chose Song Gu (DPR Korea); Mr. Toto M Kadri (Indonesia); Dr. Shin H Moon (Republic of Korea); Mr. U Soe Hlaing (Myanmar) and Mr. Victor Kotelnikov of UN-OOSA; Director, CSSTEAP and others higher official of various centres of Department of Space, Government of India, attended the meeting. The GB members endorsed the appointment of Dr. Karl Harmsen, internationally reputed scientist and ex Rector of ITC, The Netherlands as new director of CSSTEAP effective from April 25, 2002. Several issues like expanding the membership of the centre, proposal for initiating research programmes by the centre; CSSTEAP-ITC co-operation agreement; review of action items of sixth GB meeting; impact of centre's activity in the region etc., were discussed.

GB meeting in progress

The chairman, mentioned that the host country and its organization were committed to the centre and would continue to provide all support-financial, technical and logistics. UN-OOSA representative Dr. Victor Kotelnikov, in his remarks congratulated the centre for the excellent progress made and expressed satisfaction with educational programmes of the centre. He also mentioned the UN is extremely satisfied with the way the Asia-Pacific Centre has shaped and is progressing on its path of growth and success. The GB members expressed extreme satisfaction on the functioning of the centre and they also extended whole hearted support to the future activities of the centre.

Sixth RS & GIS Course

The Sixth Post Graduate Course on Remote Sensing and Geographic Information System (RS & GIS) which started on October 1, 2001 is in progress at Indian Institute of Remote Sensing (IIRS), Dehra Dun. 20 participants form 13 countries of Asia Pacific region are attending the course. The course is now in Module III and is ending on June 30, 2002, with a valedictory function. Module III which started from April, 2002, is basically designed for carrying out pilot project work by the course participants. The objective of this module is to make the course participants independent and capable to carry out research on their own towards accomplishment of natural resources inventory and management. The topics of the pilot projects were chosen by the course participants based on their area of interest, interest of sponsor organizations of the participants, expertise available at IIRS etc. The broad topics of the pilot projects undertaken by the course participant during this module are crop inventory, Land evaluation for landuse planning, Agro-ecological characterization for regional agricultural landuse planning; Retrieval of agrometeorological parameters using satellite data for crop growth monitoring; Mineral exploration; Mining impact study; Ground Water prospective zonation; Identification of suitable sites for new urban growth centre; Solid waste management and disposal; Municipal Information System for revenue assessment; Urban sprawl; Forest Inventory with respect to species and density; Forest ecology; Forest growing stock assessment; Coastal zone and coastal habitat assessment and monitoring.



Course Participants at Mysore Palace, Mysore

Third SATCOM Course

The Third Post Graduate Course on Satellite Communications (SATCOM) which started at Space Applications Centre, ISRO, Ahmedabad on August 01, 2001 has ended on April 30, 2002. This course was attended by 14 participants from 8 countries including India.

SATCOM Course was divided into 9 technical modules. These modules covered the topics like Communication Systems, Earth Station Technology, Broadcasting using Communication Satellites, Network Planning, Management & Operational issues of Satellite Communication Systems; Specialized Applications & Future. Trends; Operational Communication Satellite Systems: Digital Signal Processing & Satellite

Valedictory function at SAC, Ahmedabad

Communication for Development, Education & Training.

Faculty for the course constituted experts in relevant fields drawn from Space Applications Centre, other ISRO Centres & various organizations/universities from India & Abroad. In all, the faculty consisted of 104 specialists. 40 percent of the total time was devoted to the theoretical classes & remaining 60 percent time was devoted to the practicals, Pilot Projects & visits to different facilities.

Examinations were held at periodic intervals to evaluate the participants. Oral examinations were also held for different modules. Tutorials were held regularly and assignments given for different modules to assess the problem solving capabilities.

The topics of one year projects were identified after several sessions of discussions with participants. The field of interest of the participants, the needs of the sponsoring agencies and the facilities available in countries of participants for supporting the project work were taken into account while deciding about the projects. Viva voce examinations for the projects were held first at SAC. Later on, the presentation on Pilot Projects were made during participants visit to Andhra University (April 20- 28,2002).

All the participants had successfully completed the Phase I i.e. 9 months course. The Post Graduate Diploma/Certificates were awarded to all the 14 successful participants by Shri Pawan Chopra, Secretary, I&B, Government of India who was Chief Guest at the Valedictory Function of Third Post Graduate Course on Satellite Communications held on April 30, 2002. Prof. B.L. Deekshatulu was the Guest of Honour on this occasion.

Short Term Course on Satellite Meteorology

A two-week CSSTEAP short course on "Emerging Trends in Satellite Meteorological Applications with Special Emphasis on Microwave Remote Sensing" was conducted during May 6-17, 2002 at Space Applications Centre, Ahmedabad, India. Seventeen participants from 10 Countries from Asia and the Pacific region attended the course. The course was inaugurated by Dr. George Joseph, Distinguished Professor, ISRO. In his inaugural speech Dr. George Joseph described the evolution of meteorological observations. The nuance of microwave observations was emphasized. Dr. S K Srivastava, Additional Director General of Meteorology, India Meteorological Department, New Delhi delivered the keynote address. Dr. Srivastava described the key role played by satellite observations in the improvement of operational weather forecasting. Dr. Srivastava also described the Indian Meteorological Programme. The course consisted of eighteen lectures delivered by eminent scientists. These lectures were grouped in five categories :

(a) Satellite System & Remote Sensing
(b) Geophysical Parameter Retrievals
(c) Meteorological Applications
(d) Climatological Applications
(e) Applications in Agriculture & Disaster Mitigation

Inaugural function of the course at SAC, Ahmedabad

Basic lectures covering details of Microwave remote sensing, radiative transfer, passive and active radiometry, marine atmospheric parameter retrievals etc were covered in great details.

The valedictory function of the course was held on May 17, 2002. The valedictory address was given by Prof. R Narasimha, Member, Space Commission. He highlighted the future joint ISRO-CNES Megha Tropique Mission, to be launched in 2005. He gave the details of various sensors and measurements to be available using Microwave radiometer, earth radiation budget sensor and temperature and humidity profiler. He welcomed the participants to be part of this mission and encouraged them to use the data to address important issues in their region.

New Director of CSSTEAP

Prof. Dr. Karl Harmsen is the new Director of CSSTEAP as of 25 April 2002. Before joining CSSTEAP, he was Rector (Dean) of the International Institute for Geoinformation Science and Earth Observation (ITC) in Enschede, The Netherlands, where he also holds a Chair in Environmental Systems Analysis. Prof. Harmsen hails from the Netherlands and graduated from Wageningen University. He specialized in soil physical chemistry and his PhD thesis was on the behaviour of heavy metals in soil.

Based on an Agreement between the Indian Space Research Organisation (ISRO) in Bangalore, India, and ITC, he is seconded by ITC to CSSTEAP. In addition to being Director of the UN Centre, he will also represent ITC in India and liaise with relevant institutions and government agencies.

Prof. Harmsen has extensive international experience. He is also not new to India, as he was Director of the Resource Management Programme of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in Patancheru near Hyderabad, India. In addition to that, he was Executive Director for West and Central Africa of ICRISAT, based in Niamey, Niger, and he worked with The International Fertilizer Development Center (IFDC) in Muscle Shoals, Alabama, USA, and with the International Center for Agricultural Research in the Dry Areas (ICARDA) in Aleppo, Syria.

Prof. Harmsen has experience in agriculture, natural resource management and environmental sciences, including aspects of systems analysis and mathematical modeling of processes occurring in these systems. While in ICRISAT, Niger, and ITC, The Netherlands, he dealt with spatial aspects of natural resource management, agro-ecology and environmental sciences, as well as with remote sensing applications relevant to these subject areas.

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Course in Progress

- Sixth 9 months Post Graduate course in Remote Sensing and GIS (RS & GIS) at IIRS, Dehra Dun from October 01, 2001. 20 participants from 13 countries are attending.

Forthcoming Courses

- Third 9 months Post Graduate course in Satellite Meteorology & Global Climate at SAC, Ahmedabad from August 1, 2002
- Third 9 months Post Graduate course in Space and Atmospheric Science at PRL, Ahmedabad from August 1, 2002.
- International short course on Geoinformatics for Disaster Management at IIRS, Dehradun from August 12 to September 6, 2002.
- Seventh 9 months Post Graduate Course in RS & GIS at IIRS, Dehra Dun from October 1, 2002.

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CSSTEAP 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 Centre.