The fifth SATMET course of CSSTEAP commenced on the August 1, 2006 at the New SAC Campus, Bopal, of Space Applications Centre (SAC), Ahmedabad. The participants were welcomed by Dr. R.R. Navalgund, Director, SAC; Mr. S.K. Sharma, Programme Coordinator, CSSTEAP; Dr. K.L. Majumdar, Deputy Director, RESIPA/SAC; Dr. V.K. Agarwal, Group Director, Meteorology & Oceanography Group; Dr. B.M. Rao, Course Director, SATMET - V and the Faculty Members of the SATMET - V course.

Total eighteen participants from 11 countries of Asia-Pacific countries namely Bangladesh (2), India (4), Indonesia (1), Kazakhstan (2), Kyrgyzstan (2), Mongolia (1), Myanmar (1), Tajikistan (1), Thailand (2), Uzbekistan (1), Vietnam (1) are attending the SATMET-V course.

Navalgund welcomed the guests and emphasized the need for accurate weather predictions and the increased dependence on the space technology in the mitigation of natural disasters. Dr. V.K. Dadhwal, Director-Incharge, CSSTEAP gave a brief introduction to CSSTEAP, its activities and its achievements. Prof. Chopra, in his inaugural address lauded the role of CSSTEAP in capacity building in the Asia-Pacific region. He also appreciated the role of Meteorologists in harnessing space technology in the improvement of quality of life. Dr. B.M. Rao, Course Director presented the details of the different modules and
other activities planned during the course. Senior scientists of Space Applications Centre, participants of the fifth Space Science Course of CSSTEAP, Scientific Secretary, ISRO and faculty members attended the function.

The orientation course for the participants commenced from August 2, 2006 wherein the participants are given a brief introduction to the geographical perspective, social customs, and the festivals of India and Gujarat in particular. They are introduced to Basics in Mathematics, Statistics and Computer Programming including Meteorology and Oceanography Group's Computer systems. The course is structured into three modules, each of three months duration.

The Module-1 dealing with the Basics in Meteorology, Climatology and Physical Oceanography, Basics in Satellite Remote Sensing Radiative Transfer, Orbits and Instrumentation and Image Interpretation is in progress. The module-1 consists of ten practicals (afternoon sessions, each of 1 week duration) dealing with the operational meteorological satellite data handling and applications. The main workhorse for these is the INSAT-VHRR and NOAA AVHRR data sets. The broad themes include Cloud characteristics, weekly rainfall estimation using 3-hourly IR data, Cloud Motion Vectors using ½ hourly triplet INSAT data and Tropical cyclone intensity estimation using INSAT image data. Familiarization with ERDAS, GRADS and other visualization packages is also a part of this module.

The Participants made Country presentations highlighting Weather and Climate of their region. They also led the weekly weather discussions highlighting the main weather events with the help of Satellite imageries, Surface and upper-air charts and model forecasts etc. The operational meteorological web sites were effectively used for this purpose. The active southwest monsoon conditions over Gujarat, in particular, during the entire month of August gave a good feel of heavy monsoon spells to the participants. The record number of monsoon depressions causing above normal rainfall over Gujarat and Ahmedabad in 2006 made the weather discussions very educative and informative.

The Module-1 will conclude by October 31, 2006. The core faculty consists of senior scientists of SAC, besides, well known experts from Indian Meteorological Department, National Institute
The fifth PG Course in Space and Atmospheric Science of CSSTEAP started on August 1, 2006. The course is being conducted by, Physical Research Laboratory (PRL), Ahmedabad, which has been designated as the host institution. This year, thirteen participants from 7 countries of Asia Pacific region namely India (3), Laos PDR (1), Mongolia (3), Myanmar (1), Philippines (1), Uzbekistan (1) and Vietnam (3) have joined the course. The participants have been accommodated in a well furnished International Hostel at CSSTEAP Bopal Campus of Space Applications Centre and from this course onwards, the classes are also being conducted in the “Space Science Area” earmarked in the same campus for this course.

During the last one and a half months, lectures have been held as per schedule, class tests have been conducted and a few practicals have also been completed. Dr. B.V. Krishnamoorthy, Ex-Director, Space Physics Laboratory, Prof. Shyam Lal, Chairman of the Space and Atmospheric Science Division, PRL, Dr. R. K. Sharma from VSSC Trivandrum and Prof. K.N. Iyer form Saurashtra University, Rajkot have been among the distinguished faculty invited to deliver the lectures. Subjects covered include Atmospheric Science and Ionospheric Physics as well as Space Technology and Instrumentation. From 5th course onwards, the syllabus has been organized in 9 papers, spread in two semesters and a pilot project equivalent to one paper, as per pattern followed by constituent colleges of Andhra University for M. Tech degree. This has been proposed by Board of Studies in the past and approved by the Advisory Committee of CSSTEAP, which is being implemented now onwards. Five papers are covered in Semester I. There would be semester break from September 22, 2006 to October 8, 2006, during which the participants would be taken for an educational tour.
An international short course of 4 week duration on RS & GIS application in Urban studies was conducted at Indian Institute of Remote Sensing (IIRS), Dehradun for CSSTEAP during August 16 to September 15, 2006. Owing to the importance of planning towards sustainable development of urban areas and RS & GIS helping planners in speedier preparation of plans and in decision making, this year's theme was based on urban studies. The application includes urban land use planning, preparation of base maps, urban sprawl mapping, plan implementation monitoring, facility & utility information system, urban environmental studies, site suitability analysis etc. Total twelve participants from eight countries namely India (1), Indonesia (3), Iran (1), Kazakhstan (1), Maldives (1), Myanmar (2), Nepal (1), Thailand (2) participated in the course.

Six participants were sponsored by TCS of Colombo plan of Ministry of Finance, Govt. of India, five from CSSTEAP and one participant was funded by own department. The course was formally inaugurated on August 18, 2006 by Dr. Subir Kumar Saha, Director, School of Planning & Architecture, New Delhi. The course was of 4 weeks duration. During the first week, topics of remote sensing technology consisting of fundamentals of Photogrammetry, stereophotogrammetry, visual image interpretation, fundamentals of remote sensing, platforms & sensors, digital image processing & image Classification techniques were covered by faculty of Photogrammetry & Remote Sensing division.

The second week was devoted to geo-information science consisting of GIS technology overview,
hardware and software requirements of GIS, conceptual modeling of spatial and non-spatial data, digitizing, editing and structuring of map data, spatial data analysis and network analysis, DEM fundamentals and application of GPS were covered. Third and Fourth week dealt with the application of Geoinformation science in urban studies. The broad contents covered during these two weeks were land use/land cover mapping, urban sprawl studies, environmental monitoring of vegetation, temperature, high resolution satellite data in urban region, human health & environmental analysis, monitoring development plan implementation, transport route planning, urban information system, site suitability analysis, Image fusion for digital change detection.

The practical were conducted by demonstration and also the participants got hands on experience on working with GIS & remote sensing data. In addition to faculty from IIRS, Dehradun, several eminent Guest faculties from various reputed national organizations viz. School of Planning & Architecture, New Delhi, Delhi Development Authority, New Delhi and Defence Electronic Application Laboratory (DEAL), Dehradun were invited to deliver lectures on specific topics on the theme of the course.

BACKGROUND OF CSSTEAP

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 and 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 (CSSTEAP) was established in India in November 1995.

Department of Space, Government of India has made available appropriate facilities and expertise to the Centre through the Indian Institute of Remote Sensing (IIRS) Dehradun, Space
Applications Centre (SAC) & Physical Research Laboratory (PRL) Ahmedabad. The Centre is an education and training institution that is capable of high attainments in the development and transfer of knowledge in the fields of space science & technology. The emphasis of the Centre is on in-depth education, training and application programmes, linkage to global programmes / databases; execution of pilot projects, continuing education and awareness and appraisal programmes. The Centre offers Post Graduate level and short courses in the fields of (a) Remote Sensing and Geographic Information System, (b) Satellite Communications and GPS, (c) Satellite Meteorology and Global Climate, (d) Space and Atmospheric Sciences. A set of standard curricula developed by the United Nations is adapted for the

**Ongoing Courses**

- Fifth 9 month Post Graduate course in Satellite Meteorology & Global Climate at SAC, Ahmedabad from August 1, 2006.
- Fifth 9 month Post Graduate course in Space & Atmospheric Sciences at PRL, Ahmedabad from August 1, 2006.

**Forthcoming Courses**

- Eleventh 9 month Post Graduate course in RS & GIS at IIRS, Dehradun from October 1, 2006.
- Sixth 9 month Post Graduate course in Satellite

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CSSTEAP welcomes the views and opinions of the readers of Newsletter. Short communications on space science and technology education which may be relevant to Asia Pacific Region are also