

CSSTEAP Newsletter

July, 2012



Centre for Space Science & Technology Education in Asia and the Pacific (CSSTEAP) (Affiliated to the United Nations)

..... on a mission of capacity building, under the initiative of the United Nations, for Asia and the Pacific Region in Space Science and Technology, through Excellence in Education, Training, and Research.



RADAR IMAGING SATELLITE (RISAT-1)

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RISAT Sensor (source : www.isro.gov.in)

India earned laurels by launching its first indigenous all-weather microwave remote sensing satellite named Radar Imaging Satellite (RISAT-1) by PSLV-C19 from Satish Dhawan Space Centre, Sriharikota on April 26, 2012. It was the heaviest satellite ever lifted by PSLV with a total payload mass of 1,858 kg. This was the third flight of the high-end version (PSLV-XL) with six extended strap-on motors, each carrying 12 tonnes of solid propellant. The two earlier flights of PSLV-XL

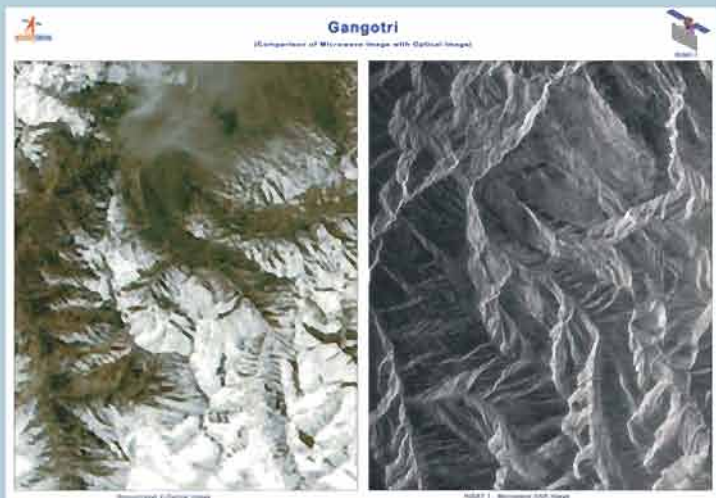


RISAT-1 FRS 1 RH 29 JUNE 2012 RES : 4.5M

were used to launch Chandrayaan-1 and GSAT-12 Communication Satellite. It has Active Microwave Remote Sensor and has capability of cloud penetration and day-night imaging. It will provide data in all-weather conditions and facilitate data availability during cloudy days also. The unique characteristics of C-band (5.35 GHz) Synthetic Aperture Radar enables applications in agriculture, particularly paddy monitoring in kharif season and management of natural disasters like flood and cyclone. It will provide impetus with larger bio-window for mapping and mapping natural resources in areas with clouds, e.g. north-eastern region, South-Western Ghats

The Salient Features of RISAT-1 are:

Orbit	: Circular Polar Sun-synchronous
Orbit Altitude	: 536 km
Orbital Inclination	: 97.552°
Orbit Period	: 95.49 min
Number of Orbits per day	: 14
Local time of equator crossing	: 6:00 am/6:00 pm
Repetivity	: 25 days
Lift-off Mass	: 1858 kg
Attitude and Orbit Control	: 3-axis body stabilized using Reaction Wheels, Magnetic Torquers, and Hydrazine Thrusters
Power	: Solar Array generating 2200 W and One 70 AH Ni-H ₂ battery
Nominal Mission Life	: 5 years



Images taken by RISAT (source : www.isro.gov.in)

PSLV-C19 Vehicle- Lift-off Mass: 321 tonne, Height:44.5m

	STAGE-1	STAGE-2	STAGE-3	STAGE-4
Nomenclature	Core Stage (PS1) + 6 strap-on Motors	PS2	PS3	PS4
Propellant	Solid (HTPB Based)	Liquid (UH25+N ₂ O ₂)	Solid (HTPB Based)	Liquid (MMH+MON-3)
Mass (tonne)	138.0 (Core), 6 x 12.0 (Strap-on)	41.7	7.6	2.5
Max Thrust (KN)	4819 (Core), 6 x 716 (Strap-on)	804	240	7.3x2
Burn Time (sec)	101.5 (Core), 49.5 (Strap-on)	149	112.1	523
Stage Dia (m)	2.6 (Core), 1.0 (Strap-on)	2.8	2.0	2.8
Stage length (m)	20 (Core), 14.7 (Strap-on)	12.8	3.6	2.6

HTPB: Hydroxy Terminated Poly Butadiene

UH 25: Unsymmetrical di-methyl Hydrazine + Hydrazine hydrate

MMH: Mono Methyl Hydrazine

MON: Mixed Oxides of Nitrogen

Adopted from www.isro.gov.in

SIXTEENTH POST GRADUATE COURSE IN REMOTE SENSING & GIS

The 16th Post Graduate Course on "Remote Sensing and Geographic Information System (RS&GIS)" of CSSTEAP was conducted at Indian Institute of Remote Sensing (IIRS), Dehradun, during July 1, 2011 to March 31, 2012. Total 22 participants from 12 countries of Asia-Pacific Region viz., two each from India, Kazakhstan, Kyrgyzstan, Mongolia; Myanmar; Philippines, Thailand, Tajikistan and Vietnam and one each from Nepal; Sri Lanka, Uzbekistan were benefitted from the course.

Semester-I (4-months) consisted of basics remote sensing, geographic information system, global positioning system, image processing, recent trends in RS & GIS technology and environmental analysis, monitoring and management. The major components of course syllabus was covered by the faculty of IIRS and additional guest lectures by national and international faculty on specialized topics were also arranged for the academic benefit of the course participants. The guest speakers were from various Indian Organizations/ Institutes/ Universities such as Dr. Ajit Tyagi, Director General, IMD, New Delhi, Dr. K.S. Rajan, IIIT, Hyderabad, Mr. A. Dutta NTRO, New Delhi, Dr. P.K. Thapaliyal, SAC, Ahmedabad; Dr. R.S. Dwivedi, Ex-NRSC, Hyderabad, Prof. D. Khare, WRDM, IIT Roorkee, Dr. Subimal Ghosh, IIT Bombay; Dr. S.K. Jain, NIH, Roorkee; Dr. P.A. Francis, INCOIS, Hyderabad; Dr. J.P. George, NCMRWF, Noida and Dr. Rajshekhhar Reddy, NRSC, Hyderabad, Dr. D. Mandal, CSWCRTI, Dehradun. Former Director, CSSTEAP Dr. B.L. Deekshatulu delivered specialized lectures on advanced and recent trends in digital image processing. International guest faculty from abroad namely, Prof. Atul K. Jain, University of Illinois, USA on Land use/land cover and climate change and Mr. Giasuddin Ahmed Choudhury, Bangladesh, delivered lectures on GIS database, preparedness, planning and management in Bangladesh. In Semester-II the participants chose electives and underwent training on application of the RS and GIS.

The technical and educational visits were organized. During these visits the course participants explored rich Indian heritage and cultural diversity. The participants visited Andhra University, Visakhapatnam and National Remote Sensing Centre (NRSC), Hyderabad on educational visit. These are important RS and GIS application centers in the country and form a vital component of course curriculum. At NRSC they were demonstrated real-time data reception of MODIS and AWIFS at data receiving Ground Station facility in Shadnagar



Course participants during ground truth collection in the field



Students carrying out analysis of satellite data

and for most of them it was rare and enthralling experience. Several special lectures on Land use and Land cover dynamics, Coastal Zone Management, Forest fire, Agriculture productivity, etc. were arranged at NRSC, Hyderabad. The participants also attended specialized lectures on application of RS & GIS on Coastal studies, Oceanographic applications, Tsunami, Weather forecasting and digital image processing. Field visits in and around Visakhapatnam were also conducted for the understanding coastal and marine landscapes. In order to provide a wider exposure in the field of Geoinformatics Technology & Applications, eight participants were given opportunity to attend ISPRS Workshop on Earth Observation for Terrestrial Ecosystems and ISRS National Symposium on "Empowering Rural India through Space Technology" held in Bhopal from 8 to 11 November 2011. One of the participants Ms. Rushanka Amrutkar presented a research paper in ISRS.

Each participant is required to work on a 3 month pilot project which is oriented to be applied on real case study. The broad topics of the pilot projects undertaken by the course participants during project module were:

- Land quality assessment for conservation planning in watershed;
- Soil erosion and sediment yield estimation using RS and GIS A case study in TONS watershed;
- LULC and soil database creation at cadastral level for land use planning;
- Biophysical parameter estimation using Microwave Remote Sensing (Forest);
- Determining the density of urban environment using PolSAR data;
- Analysis of optical and microwave RS to extract indices for land degradation aspects/studies;
- Irrigation water requirement estimation in Rice-Wheat cropping system using satellite data;
- Web-based decision support tool for flood plain information system using high resolution data;
- Telecom GIS site suitability for mobile towers on hilly areas;
- Integrated approach of topographical feature extraction using high resolution optical and InSAR images;
- 3-D visualization and customized information system for part of Hanoi city, Vietnam with open access and Arc Explorer;
- Impact of Rainfall Variability and LULC Change Induced Sediment and Nutrient Flux to Coastal Productivity using RS-GIS;



RS & GIS Course participants at IMD Centre, Visakhapatnam



Course participants at Taj Mahal, Agra

- Remote Sensing Applications in Coral Reef Mapping, Assessment and Monitoring;
- Relationship of Carbon Dioxide Flux to Coastal Primary Productivity;
- Determination of Spectral Properties of Aerosols and Black Carbon using Ground Measurements and Satellite Data over Sub-Himalayan Region;
- Snowmelt runoff modeling;
- Identification of suitable site for water harvesting structure;
- Hydrological Modeling with special emphasis to groundwater;
- Site Suitability for hydro power projects;
- Assessment of runoff and soil erosion for watershed conservation planning;
- Urbanization effect for watershed hydrology;
- Performance evaluation of irrigation command

Additional training programs were also organized. All the participants attended workshop on 'Open source Geo-spatial tools' from April 2-4, 2012 at IIRS. Nine course participants of the ongoing PG course also got an opportunity to attend Short course on 'Application on Space Technology for Disaster Risk Reduction' during April 9 - May 4, 2012.

The valedictory of 16th RS & GIS course was organized on March 30, 2012. Dr. Y.S. Rajan, Honorary Distinguished Professor, ISRO was the Chief Guest of the function. On the occasion, Memoirs comprising of messages from GB, AC members, eminent persons, course report and pilot project abstracts of students was released by the Chief Guest. Dr. Y.S. Rajan delivered the valedictory address and distributed the certificates to all the participants. All the course participants successfully completed the course. To witness the function, Mr. Robert O. Ferer Jr, First Secretary, Embassy of Philippines was present on the occasion.

Nine participants passed out with Distinction, six in First class and seven passed out as Pass. Three meritorious participants, Mr. Aldwin Almo from Philippines Ms. Rushanka Amrutkar from India and Mr. Bikash Kumar Karna from Nepal were awarded Merit Certificates for 1st, 2nd and 3rd positions respectively. CSSTEAP Excellence medals along-with certificates were awarded by the Chief Guest.

CSSTEAP Excellence Awards

- Mr. Aldwin Almo from Philippines - Gold Medal
- Ms. Rushanka Amrutkar from India - Silver Medal
- Mr. Bikash Kumar Karna from Nepal - Bronze Medal



Prof. Y.S. Rajan Distinguished Professor, ISRO distributing diploma certificates to the participants



Course participants with dignitaries during valedictory function

On the social front, the participants had glimpses of Indian festivities by their active participation in various festivals such as Dussehra, Holi, Diwali, Id-ul-Fitr, Christmas etc.

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EIGHTH POSTGRADUATE COURSE IN SATELLITE COMMUNICATIONS

The 8th Post Graduate course on Satellite Communications was conducted at Space Applications Centre (SAC) during August 1, 2011 to April 30, 2012. A total of 19 participants from 10 countries of Asia-Pacific region viz., three each from Mongolia and Nepal and one each from Algeria, Bangladesh, Bhutan, India, Kazakhstan, Myanmar, Sri Lanka and Uzbekistan attended the course.

The programme was organized in two Semesters covering different aspects of Satellite Communications and a pilot project. Faculty was drawn mainly from well-known academic institutions in India and experienced retired ISRO Scientists. Lectures were also delivered by scientists/engineers working at different ISRO Centres, experts from Indian satellite communications industries and Communications and Broadcasting experts of Govt. of India. Seminars on topics related to societal applications were conducted which improved the participants awareness of various societal problems and also improved their presentation skills.

Detailed lecture notes and reading materials were distributed to the participants. Library, Laboratories and Earth Station facilities of SAC facilities were provided. Technical visits to Satish Dhawan Space Centre (ISRO) Sriharikota; ISRO Satellite Centre (ISRO) Bengaluru; Indian Deep Space Network Centre (ISRO) Bengaluru; Liquid Propulsion Systems Centre (ISRO) - Bengaluru; Master Control Facility (ISRO) Hassan; Delhi Earth Station/SAC (ISRO) New Delhi; Abdul Nazir Sab State Institute of Rural Development (Govt. of Karnataka)-Mysore; National Atmospheric Research Laboratory (DOS) Gadanki; Radio Astronomy Centre (TIFR) - Ooty; Network Operation Control Centre (NOCC, DOT) New Delhi; All India Radio and Door Darshan Kendra Studio New Delhi; CSSTEAP Headquarters Dehradun proved very useful.



SATCOM- 8 Course participants attending lectures



Dr. P.P. Kale, Former Director, SAC interacting with the course participants

As part of the 9-months PG course each student is required to work on a pilot project. This pilot project is oriented towards the twelve months project work at participant's own country after PG diploma. The topics for the pilot project were identified after several sessions of discussions with the participants. Major topics of pilot projects identified by the participants were:

- Wavelet based strep track system,
- Short term rain attenuation prediction algorithm and study of mitigation techniques,
- Low cost Studio design for tele-education system ,
- Design and analyses of Advanced Encryptions standard (AES) variant,
- Design of combined Deferential Deduction Scheme for GMSK,
- Simulate and Design of Adaptive Uplink Power Control and Bandwidth Management for satellite communication system,
- Adaptive Antenna Array with Beam Forming for Communication to Dynamic (Mobile) Platforms,
- Study and design of satellite communication network,
- Fleet tracking system through satellite for multi beam operation,
- VSAT Network to connect a GSM Mobile Service,
- Design and simulation of Multi beam antenna for Satellite communication,
- Analysis and design of Dynamics of TCP Over DVB-RCS, Simulation on carrier in carrier communication, Study and Design of Disaster Warning System ,
- Study and implementation of network management for communication systems,
- Study of 3GPP LTE standard for mobile broad-band network

The valedictory was organized on April 30, 2012. Dr. T.K. Alex, Director ISAC was the Chief Guest of the function. He distributed the PG Diploma certificates to all the seventeen participants and also delivered valedictory address. The Chief Guest in his address mentioned about how the communication technology plays an important role in the development of society in all major fields like education, disaster management, healthcare etc. He advised the students to be the ambassadors for promoting CSSTEAP activities so that more and more people get benefit out of it.

Twelve of them passed with Distinction, three were placed in First class and two passed out as Pass. The first three Rank holders received CSSTEAP Excellence medals and



Dignitaries releasing lecture notes



Dr. TK Alex distributing diploma certificates to the course participants

certificates from Chief Guest, Director, SAC and Director CSSTEAP. On this occasion Director CSSTEAP released the CD containing the syllabus and the course materials and Memoirs of the course was released by the Director, SAC.

CSSTEAP Excellence Awards

Mr. Rabindra Manandhar from Nepal-Gold Medal

Mr. Hrishikesh V. Atre from India - Silver Medal

Mr. Sameer Vasant Kulkarni from India - Bronze Medal

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INTERNATIONAL TRAINING COURSE APPLICATION OF SPACE TECHNOLOGY FOR DISASTER RISK REDUCTION

Disasters cause huge amount of losses in terms infrastructure, human-life, wildlife, natural resources, etc. Therefore, in last two decades international initiatives for Disaster risk reduction (DRR) are being taken with an overall aim to reduce disaster risks and losses. The disaster losses can be prevented or at least reduced considerably if reliable and timely information about the natural resources, terrain, environment and socio-economics is available. Space technologies have unambiguously demonstrated their capability in providing vital information and services required not only in the response phase of the disaster risk management cycle but also in mitigation, preparedness and early warning stages. However, to access and use the space technology-based information, services and solutions for DRR, there is an urgent need to build human capacity, especially in developing countries. With this in view, an International Training Course on "Application of Space Technology for Disaster Risk Reduction" was conceptualized and conducted within the framework of education & training programmes of the Centre for Space Science & Technology Education in Asia and the Pacific (CSSTEAP).

The overall objective of this international training course was to strengthen the capacity of participants in understanding how space-based information, services and solutions can be used to reduce disaster risks and losses. The course was of



Dr. TK Alex, Chief Guest addressing the students



Course participants with dignitaries during valedictory function

4-weeks duration and started on 9th April 2012 and ended on 4th May 2012. The course was organised jointly with Indian Institute of Remote Sensing (IIRS), a constituent unit of Indian Space Research Organisation (ISRO), Dehradun (India); United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER), Beijing (China); United Nations Economic and Social Commission for Asia and the Pacific (UN-ESCAP), Bangkok (Thailand); United Nations University DRM Centre for Spatial Analysis and Disaster Risk Management of the ITC (University of Twente), Enschede (The Netherlands). IIRS was the host institute for the short courses.

The course was attended by 27 participants representing 17 countries in the Asia-Pacific region. They include: one each from Lao PDR, Mongolia, Myanmar, Nepal, Solomon Islands, Thailand, Tuvalu, Afghanistan; two each Bangladesh, India, Kazakhstan, Kyrgyzstan, Philippines, Tajikistan, Uzbekistan, Vietnam and three from Sri Lanka.

The course was inaugurated on April 9, 2012. The Chief Guest of the function was Dr. Nagesh Kumar, Chief Economist of the Economic and Social Commission for Asia and the Pacific (ESCAP) and Director of its Sub-regional Office for South and South-West Asia, based in New Delhi. Other officials Dr. Shirish Ravan, Head of Office, UN-SPIDER (UN-OOSA), Beijing, and Dr. Sanjay K. Srivastava, Regional Advisor, UN-ESCAP, Bangkok, were also present during the inaugural function.

During the course the participants were exposed to relevant space-based geoinformation (remote sensing, geographic information system, and satellite positioning systems) and communication technologies and their synergy with modeling techniques that could be used in different phases of DRR for different types of natural hazards.

The faculty for the course was drawn from many leading organisations from India and abroad. These organisations, apart from different ISRO centres (IIRS, NRSC, SAC and ISRO Headquarters), include: UN-ESCAP, Bangkok (Thailand); UN-SPIDER, Beijing (China); UNU-DRM Centre for Spatial Analysis and Disaster Risk Management of the University of Twente, Faculty of Geo-Information Science and Earth Observation (ITC), Enschede (The Netherlands); UNDP, Bangkok (Thailand); International Water Management Institute (IWMI), Colombo (Sri Lanka); International Centre for Integrated Mountain Development (ICIMOD), Kathmandu (Nepal);



Director, CSSTEAP meeting with officials from UN-ESCAP & UN-SPIDER at Dehradun



Release of lecture notes volume during the inaugural function of the course

Japan Aerospace Exploration Agency (JAXA), Tokyo (Japan); Indian National Centre for Ocean Information Services (INCOIS), Hyderabad (India); Indian Institute of Science (IISc), Bangalore; and Wild Life Institute of India (WII), Dehradun.

The valedictory was organized on May 3, 2012 and Dr. D.P. Rao, Ex-Director, NRSC, Hyderabad, was the Chief Guest.

Dr. Rao distributed certificates to the successful participants and delivered the valedictory address. The valedictory function was also attended by Mr. Timothy Loh and Mr. Youshik Kim of UN-ESCAP, Bangkok.

A workshop was organised on 5th May 2012 at IIRS, Dehradun to discuss the strengths and gaps existing in different countries for DRR and the way forward to strengthen the collaboration among the countries and also with UN and other international agencies. The workshop was chaired by Dr. P.S.Roy, Director CSSTEAP / IIRS. Mr. Timothy Loh and Mr. Youshik Kim from UN-ESCAP also participated in the workshop. The technical session included the presentations by the course participants (representing Afghanistan, Bangladesh, Myanmar, Nepal, Philippines, Sri Lanka, Tuvalu and Central Asian countries) who briefed about their country profile including different initiatives taken towards disaster risk reduction. Mr. Timothy Loh also made a presentation on the roles and activities of UN-ESCAP in disaster risk reduction. It was observed that while considerable efforts have been made by each and every country in the last decade, however, access to and/ or usage of space technology to its full potential and non-availability of national/ regional databases still remain the major issues to deal with natural disasters.

A consensus emerged that a mechanism or common platform should be created in the region to share the minimum data at reasonable resolution (including satellite data) during the disasters. Further, a mechanism for creating and sharing multi-layer GIS databases needs to be developed/ strengthened in most of the countries. It was also agreed to give high priority to the use of space-based information & services in support of disaster risk reduction and should be disseminated through capacity building. CSSTEAP may take a lead in developing internet based learning material for wider dissemination of the existing knowledge.

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CSSTEAP, UN-SPIDER & UN-ESCAP sponsored course on Disaster Risk Reduction at Dehradun



Chief Guest awarding certificates to the DRR course participants

TRAINING WORKSHOP ON OPEN SOURCE GEOSPATIAL TOOLS

GIS software are very expensive and one finds difficult to spend huge sum of money to meet the organizational requirement. Open Source GIS are becoming popular and meet the requirement to a large extent. In view of this a three day training workshop was conducted at CSSTEAP in collaboration with Indian Institute of Remote Sensing (IIRS) and Open Source Geospatial Foundation of India during April 2-4, 2012 to highlight the power of Open Source Tools in the field of Remote Sensing (RS) and Geographic Information System (GIS) under the guidance of Dr. P.S. Roy, Director, IIRS and Director, CSSTEAP and President OSGEO Foundation of India.

The workshop was attended by a total of 31 participants which included 20 of 16th RS& GIS Post Graduate diploma students of CSSTEAP, 2 IIRS scientists and 8 external participants (2 participants from Survey of India, 1 each from ICFRE and Wildlife Institute of India, Govt. P.G. College, Chamba, Sir Parashurambhau College, Pune and Dr. Kalmadi Shamarao Junior College, Pune).

The workshop was inaugurated on April 2, 2012. The workshop covered various Open Source GIS tools. 8 Expert Faculty and six IIRS faculty conducted the training sessions on Open Source Implementation, GRASS, Open Jump, ILWIS, Open Street Maps, Postgre/PostGIS, Open GeoSuite, GeoExplorer, GeoEditor, Styler, GeoWebCache, Geoserver - Open layers, WebServices and Geonetwork. The expert faculty involved were Dr. T.V. Ramachandra, Associate Professor, Indian Institute of Science, Bangalore, Dr. S. Narendra Prasad, former Senior Principal Scientist, Salim Ali Centre for Ornithology & Natural History, Hyderabad, Dr. V. Ravi Kumar, Retd. Director, GSI, Dr. K.S. Rajan, Associate Professor, Lab for Spatial Informatics, International Institute for Information Technology, Gachibowli, Hyderabad, Dr. P. Ramachandra, International Institute for Information Technology, Gachibowli, Hyderabad, Dr. Harish Karnataka, Scientist SE, National Remote Sensing Centre, Balanagar, Hyderabad, Mr. Uttam Kumar, Post Doc Fellow, Indian Institute of Science, Bangalore, Dr. H.S. Rai, Dean, Testing and Consultancy, Guru Nanak Dev Engineering College, Ludhiana, Punjab.

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Course participants of DRR short course with dignitaries during valedictory function



Course participants of the workshop on Open Source Geospatial tools

CSSTEAP ALUMNI MEET

CSSTEAP established in 1995 has till date trained 1130 participants from 33 countries of Asia & the Pacific region. Myanmar is one of the Governing Board members of CSSTEAP. Myanmar deposes regularly participants in different courses of CSSTEAP in last 16 years. A very good number of alumni exist in Myanmar. The alumni meet brings together students of different courses from the same country on common platform and facilitate the centre to know about their achievements and how the Centre helped them in grooming their professional research career and also their suggestions.

Based on the recommendations of CSSTEAP Governing Board to obtain more concrete feedback from the alumni of CSSTEAP, it was considered to organize alumni meets in the South-East Asia Pacific countries. CSSTEAP has so far organized successfully five meet in Nepal (October, 2010), Bangladesh (June 2011), Sri Lanka (October 2011), Bhutan (November 2011) and Myanmar (March, 2012). The objective of the meet is the reunion of alumni and the Centre and to know experiences about their achievements and how the Centre helped them in grooming their professional research career.

Alumni Meet at Nay Pyi Taw, Myanmar

On invitation from UN-SPIDER, Beijing, Director, CSSTEAP visited Myanmar to participate as a member of the International Team of Technical Advisory Mission (TAM) experts during 19-23, March, 2012. Besides the senior officials of UN-SPIDER, UN-ESCAP and UNOCHA, other senior officials from various Organizations of Myanmar participated in the TAM viz., DRR Working Group, Fire Service Department, Myanmar Disaster Preparedness Agency, Ministry of Social Welfare, Relief & Resettlement, Relief & Resettlement Department, Department of Meteorology and Hydrology, Myanmar Survey Department, Ministry of Science & Technology, Mandalay Technical University, Remote Sensing Department and Myanmar-India Friendship Centre.

As a part of TAM, the Workshop on Application of Space Technology for Disaster Risk Reduction was organized on March 22, 2012 at Nay Pyi Taw. The workshop was attended by more than 50 participants from Myanmar. The welcome



UN-SPIDER Technical Advisory Mission

address was given by Joint Secretary, Myanmar Disaster Preparedness Agency, DG-RRD, keynote presentations by Dr. Shirish Ravan, UN-SPIDER and Dr. Benda Jones, USGS. The workshop had two sessions and Director, CSSTEAP was the Co-Chair of one of the sessions

The purpose of the workshop was to assess the present status of applications of space-based technology in disaster management in Myanmar and to give advice on the Framework of Disaster Risk Reduction national facility of Myanmar and suggest areas where space based system can be augmented for different stages of disaster. Dr. PS Roy, Director, CSSTEAP made presentation in the Workshop on the topic 'Space for Disaster Management support in India and Capacity Building', which was well appreciated by the participants.

Director, CSSTEAP also met CSSTEAP Alumni at Nay Pyi Taw, Myanmar on March 22, 2012. More than 45 officials from Myanmar have so far been benefitted by CSSTEAP programmes. Dr. Kyi Htut Win, Director General of Water Resources utilization Department was invited as the Co-Chief Guest in the meeting. Around 20 numbers of alumni and senior officials namely Dr. Shirish Ravan, Head, UN-SPIDER Office, Beijing; H.E. Dr. Ko Ko Oo, Deputy Minister, Ministry of Science & Technology, Myanmar; Mr. Soe Aung, Director General, Department of Relief & Resettlement, Ministry of Social Welfare, Relief and Resettlement, Myanmar participated in the alumni meet.

Recommendations of the alumni meet were:

- The CSSTEAP courses were useful in career development & improving professional aptitude in their organizations.
- To organize one week programme on "Space Technology and Applications in Myanmar for decision makers in Myanmar. Government of Myanmar will provide logistic support.
- Provision of free access to the Indian satellite datasets from ISRO in different resolution in the event of disaster like cyclone, floods, forest fire etc.



CSSTEAP Alumni Meet at Nay Pyi Taw, Myanmar

VISIT OF DIPLOMATS OF EMBASSY OF INDONESIA, NEW DELHI TO CSSTEAP

A team led by H.E Lt. Gen (Retd.) Andi Muhammad Ghalib, Ambassador of the Republic of Indonesia, Mrs. Andi Murniati; Dr. Eng. Son Kuswadi, Education Attache and Dr. Leonard Flex Hutabarat, Counselor (Politic) of Embassy of Indonesia, New Delhi visited CSSTEAP on April 4, 2012. Dr. P. S. Roy, Director CSSTEAP welcomed the diplomats.

They were appraised of the activities of IIRS and CSSTEAP, academic programmes, course participants, and the beneficiaries from Indonesia. The delegation was also apprised off about the educational and research activities of IIRS and the Indonesian participants in particular benefitted from the IIRS courses.

During the discussion, Dr. P.S Roy mentioned about the declining trend in the participation from Indonesia in recent years in CSSTEAP courses. H.E. Andi Muhammad Ghalib mentioned that it may be due to the lack of information/ communication in various universities and institutions about the announcement of CSSTEAP courses. He suggested that Dr. Eng. Son Kuswadi, Education Attache would be the focal point for CSSTEAP henceforth. Mr. Son will facilitate dissemination of information to the various departments in Indonesia.

In order to propagate the information about CSSTEAP, H.E. invited Director, CSSTEAP to visit Indonesia and to hold one-day seminar during Joint Working Group on education workshop in Indonesia in October 2012. This will benefit institutions/universities greatly. H.E also suggested that faculty exchange in the field of space technology and application would be very useful for both the countries.

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



H.E. Ambassador of Indonesia interacting with Director, CSSTEAP

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 Science. 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, Visakhapatnam, India for awarding M.Tech. degree (after completion of one year project).

Educational Programme Coordination of CSSTEAP

RS & GIS PG Course

- Dr. Sarnam Singh - *Programme Coordinator, CSSTEAP and Course Director*
- Dr. Yogesh Kant - *Course Coordinator*

SATCOM PG Course

- Dr. A.S. Durai - *Course Director*
- Mr. P. Satyanarayan - *Course Coordinator*

SATMET PG Course

- Dr. B. Simon - *Course Director*
- Ms. Yogini V Vanikar - *Course Coordinator*

Space & Atmospheric Science PG Course

- Dr. R.N. Misra - *Course Director*
- Dr. Hari Om Vats - *Course Coordinator*



CSSTEAP Hqs. at Dehradun

Forthcoming symposia/workshops in area of Space Science & Technology

S.No	Theme	Duration	Location	Web address
1.	The 7 th Conference on Sustainable Development of Energy, Water and Environment Systems	July 1-6, 2012	Ohrid, Macedonia	http://www.ohrid2012.sdcwes.org/
2.	1 st International Conference on Environmental and Economic Impact on Sustainable Development	July 2-4, 2012	Hampshire, United Kingdom	http://www.wessex.ac.uk/12-conferences/environmental-impact-2012.html
3.	Robotics Asia 2012	July 10-12, 2012	Kuala Lumpur, Malaysia	http://www.roboticsasia.org
4.	Fourth International Conference on Climate Change: Impacts and Responses	July 12-13, 2012	Washington, United States of America	http://on-climate.com/conference-2012/
5.	39 th COSPAR Scientific Assembly	July 14-22, 2012	Mysore, India	http://www.cospar2012india.org/Default.aspx
6.	8 th International Conference on Urban Climate	August 6-10, 2012	Dublin, Ireland	http://www.icuc8.org/
7.	Biodiversity Asia 2012	August 7-10, 2012	Bengaluru, India	http://www.scbasia2012.org
8.	International Conference on Advances in Computer and Information Technology - ACIT 2012	August 11-12, 2012	Kuala Lumpur, Malaysia	http://theired.org/acit/
9.	International Conference on Future Trends in Automation and Robotics - FTAR 2012	August 11-12, 2012	Kuala Lumpur, Malaysia	http://theired.org/ftar
10.	International Conference on Advances in Mobile Networks and Communication - MNC 2012	August 11-12, 2012	Kuala Lumpur, Malaysia	http://theired.org/mnc
11.	XXII Congress of the International Society for Photogrammetry and Remote Sensing	August 24-September 1, 2012	Melbourne, Australia	http://www.un-spider.org/events
12.	3 rd Conference "Earth Observations for Sustainable Development and Security" GEO-UA 2012	September 3-7, 2012	Evpatoria, Ukraine	http://www.un-spider.org/events
13.	International Symposium on Robotics and Intelligent Sensors (IRIS2012)	September 4-6, 2012	Kuching, Malaysia	http://www.iris2012.org/
14.	3 rd International Academic Consortium for Sustainable Cities (IACSC) Symposium	September 8, 2012	Bangkok, Thailand	http://www.iacsc2012.org/
15.	International Scientific Conference on Integrated Approaches for Volcanic Risk Management 2012	September 11-12, 2012	Stuttgart, Germany	http://www.un-spider.org/events
16.	4 th Regional Conference on Natural Resources in the Tropics	September 11-12, 2012	Kuching, Malaysia	http://www.frst.unimas.my/natural-resources-in-the-tropics-ntrop4.html
17.	6 th Coastal Altimetry Workshop	September 20, 2012	Riva del Garda, Italy	http://congrexprojects.com/altimetry
18.	Symposium on "20 Years of Progress in Radar Altimetry"	September 24-29, 2012	Venice, Italy	http://www.un-spider.org/events
19.	Simulation for European Space Programmes (SESP)	September 25, 2012	ESA/ESTEC, Noordwijk, The Netherlands	http://congrexprojects.com/12c09/

S.No	Theme	Duration	Location	Web address
20.	1 st Regional Conference on Agrobiodiversity Conservation and Sustainable Utilization 2012 (RAC-1)	September 25-27, 2012	Langkawi, Kedah, Malaysia	http://rac1.mardi.gov.my
21.	63 rd International Astronautical Congress (IAC)	October 1-5, 2012	Naples, Italy	http://www.un-spider.org/events
22.	The IET International Conference on Wireless Communications and Applications (ICWCA 2012)	October 8-10, 2012	Kuala Lumpur, Malaysia	http://www.wsn-asia.com/ICWCA2012
23.	International Conference on Geoinformation and Communication 4 Disaster Management (GeoICT4DM)	October 10-11, 2012	Mississauga, Canada	http://www.un-spider.org/events
24.	Workshop on Satcom User Terminal Antennas	October 3, 2012	ESA/ESTEC, Noordwijk, The Netherlands	http://congrexprojects.com/12C15a
25.	UN/Ecuador Workshop on the International Space Weather Initiative (ISWI)	October 8-12, 2012	Quito, Ecuador	http://www.oosa.unvienna.org/oosa/en/SAP/act2012/iswi/index.html
26.	United Nations/Japan Nano-Satellite Symposium	October 10-13, 2012	Nagoya, Japan	http://www.un-spider.org/events
27.	8 th ESA Round Table on Micro and Nano Technologies for Space Applications	October 15, 2012 The Netherlands	ESA/ESTEC, Noordwijk, The Netherlands	http://www.congrexprojects.com/12c11/
28.	8 th International Conference on Marine Technology	October 20-22, 2012	Kuala Terengganu, Malaysia	http://martec.umt.edu.my/
29.	2 nd International conferences of Water Resources	November 5-9, 2012	Langkawi, Malaysia	http://seminar.utmspace.utm.my/icwr2012/
30.	Ka-band Earth Observation Radar Missions, KEO'12	November 8, 2012	Noordwijk, The Netherlands	http://www.congrexprojects.com/12m31/introduction
31.	UN/Chile Workshop on Space Technology Applications for Socio-Economic Benefits	November 12-16, 2012	Santiago, Chile	http://www.oosa.unvienna.org/oosa/SAP/sched/index.html
32.	5 th International Congress of Environmental Research	November 20-24, 2012	Kuala Lumpur, Malaysia	http://www.icer12.jerad.org
33.	33 rd Asian Conference on Remote Sensing	November 26-30, 2012	Pattaya, Thailand	http://acrs2012.gistda.or.th/
34.	2 nd International Conference on Climate Change & Social Issues 2012	November 28-29, 2012	Kuala Lumpur, Malaysia	http://www.globalclimate.info
35.	United Nations International Expert Meeting on Crowdsourcing Mapping for Disaster Risk Management and Emergency Response	December 3-5, 2012	Vienna, Austria	http://www.un-spider.org/events
36.	6 th ESA Workshop on Satellite Navigation Technologies - NAVITEC	December 5, 2012	Noordwijk, The Netherlands	http://www.congrexprojects.com/12c13/introduction
37.	National symposium on Space Technology for food & environmental security	December 5-7, 2012	New Delhi, India	http://www.isrs2012delhi.org/
38.	Conference on Indian Aerosols Science & technology IASTA-2012	December 11-13, 2012	Mumbai, India	http://www.iasta.org.in
39.	8 th International Conference on Geo-information for Disaster Management	December 13-15, 2012	Enschede, The Netherlands	http://www.un-spider.org/events

Ongoing Courses

- Short course on 'Navigation and Satellite Positioning System' at SAC, Ahmedabad during June 18-July 13, 2012.

Future Courses

- Seventeenth Post Graduate course in Remote Sensing & Geographic Information Science at IIRS, Dehradun from July 1, 2012 to March 31, 2013.
- Eighth Post Graduate Course in Satellite Meteorology & Global Climate at SAC, Ahmedabad from August 1, 2012 to April 30, 2013
- Eighth Post Graduate Course in Space and Atmospheric Science at PRL, Ahmedabad from August 1, 2012 to April 30, 2013.
- International short course on 'Small Satellite Missions' at IIRS Dehradun and ISAC, Bengaluru during October 29-November 9, 2012.

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