

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



Capacity Building in Application of Space Technology and the Geographic Information Systems for Disaster Risk Reduction and Sustainable Development 2012-2017

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www.cssteap.org

Content

About CSSTEAP

- Organizational Structure
- Academics
- Achievements

About Host Institutions Research Activities and Supports to CSSTEAP

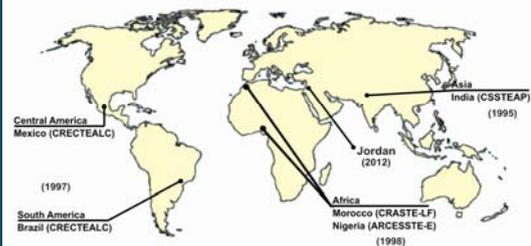
▪ On December 1, 1990 UN General Assembly endorsed the recommendation of UN Committee on Peaceful Uses of Outer Space (UNCOPUOS) that

“... effort to establish Regional Centres for Space Science and Technology Education in existing national/ regional educational institutions in the developing countries”

- Capacity Building is the first step towards this.
- First Regional Centre for Space Science and Technology Education in the World at IIRS Campus in Dehradun, India
- Centre has access to infrastructure and expertise necessary to organize and conduct the various academic activities through ISRO/Department of Space.

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

Regional Centres for Space Science and Technology Education
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CSSTEAP

... objective is to strengthen the existing national/ regional educational and resource management institutions in the developing countries in the field of space science and technology to enhance the societal benefits.

Goals of the Centre

- ❑ Increasing knowledge and understanding in Space Science & Technology in

developing skills and knowledge of university educators and research, and application scientists through rigorous theory, applications, field exercises and pilot projects in those aspects of space science and technology

- ❑ Building/Enhancing national and regional capacity
- ❑ Socio-economic development, regional cooperation, support to international programmes

Linkages and MoUs

India

ISRO Host Institution - Core funding, facilities, equipment, institutional support, student fellowship and international travel

Organizations/ Institutions - Guest faculty

International

UN Agencies (UN-OOSA, UN-ESCAP, and UN-SPIDER, IWMI, ICIMOD)

- International travel for selected students

Universities / Institutes - Guest faculty (Australia, Japan, USA, UK, Europe and other Asia-Pacific countries)

Academic Cooperation

- > Andhra University, India (1998)
- > ITC, University of Twente, The Netherlands (2002 & 2008)
- > TWAS-UNESCO, Trieste, Italy (2006 & renewed in 2011)
- > University of Illinois, Urbana-Champaign campus, Urbana, USA (2011)
- > The International Space University, Strasbourg, France (1998)
- > International Centre for Science & High Technology (UNIDO), Trieste, Italy (1998)
- > International Centre for Integrated Mountain Development (ICIMOD) under process

CSSTEAP



CSSTEAP GB
Meets every Year



CSSTEAP Hqrs., Dehradun



CSSTEAP AC
Meets once in three years

Centre Campuses, Host Institutes and Courses



Indian Institute of Remote Sensing, Dehradun
RS & GIS
Disaster Risk Reduction
Small Satellite Missions



Space Applications Centre, Ahmedabad
SATCOM, SATMET
& NAVSAT

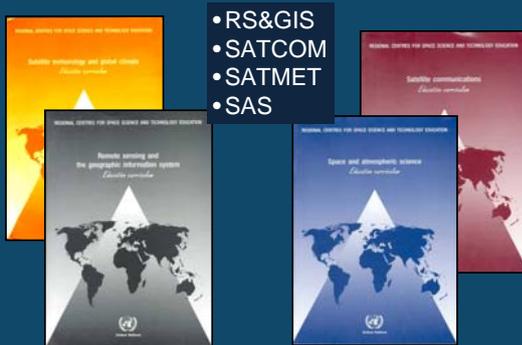


Physical Research Laboratory, Ahmedabad
Space & Atmospheric
Science



ISRO Satellite Centre, Bengaluru
Small Satellite
Missions

Common Course Curricula under the aegis of UN-OOSA at different Centre's for P.G. Courses



- RS&GIS
- SATCOM
- SATMET
- SAS

Publications



Reading Material
CD/DVD

Lecture Notes
Book

Announcement Brochures,
Memoirs, Newsletter

Admission Process and Facilities

- Course announcement brochures (6-9 months in advance)
- Announced on Centre's Website
- Brochures distribution and E-mail to GB and AC Members, UN Agencies, Alumni, Ministries, Department, Universities, Libraries, etc. of AP Region
- Nomination of applicants through GB Member or Organization/Institution through Indian Embassy or Embassy in India
- Screening of the applications by Committee
- Selected participants offered tickets to and fro international travel, monthly fellowship, book allowance, project allowance, DAS during field visits, etc.
- Single occupancy fully furnished rooms with kitchenette facility

Educational Programme Structure

Remote Sensing & GIS (RS & GIS) Every Year

Satellite Communication (SATCOM) Alternate Year (OY*)

Satellite Meteorology & Global Climate (SATMET) Alternate Year (EY)**

Space and Atmospheric Sciences (SAS) Alternate Year (EY)**

Oy* = Odd years
EY** = Even years

- Completion of nine month course curriculum

- Award of PG Diploma by CSSTEAP

- One year follow up project in home country for academic requirement of M.Tech.

- Submission and evaluation of M. Tech. thesis by internal & external experts.

- Award of M. Tech. degree by Andhra University

- CSSTEAP offering 1 Yr Fellowship in India to meritorious students for M.Tech Research



Short Training Programmes

RS&GIS Theme Based 4 weeks (IIRS, Dehradun) UNSPIDER & UNESCAP	Satellite Navigation & Positioning 4 weeks (SAC, Ahmedabad)	Small Satellite Missions 15 days (IIRS, Dehradun/ ISAC, Bengaluru)	Open Source Geospatial Tools 4 days (IIRS, Dehradun)
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4 days to 4 weeks duration

For middle level managers & professionals having 5-10 years experience in relevant field

Core Faculty from ISRO/DOS (IIRS, SAC, PRL, ISAC, NRSC) and other National and International subject experts

Short courses conducted on Disaster Risk Management

S.N.	Course Title	Year
1.	International Short Course on Geoinformatics for Disaster Management	2002
2.	International Short Course on Geoinformatics for Disaster Management	2004
3.	International Training Course on Application of Space Technology for Disaster Management Support with Emphasis on Flood Risk Management	2007
4.	International Training Course on Application of Space Technology for Disaster Management Support with Emphasis on Drought Monitoring, Desertification & Crop Yield Prediction	2008

Short courses conducted on Disaster Risk Management contd...

5.	International Training Course on Application of Space Technology for Disaster Management Support with emphasis on Geological Risk Mitigation	2010
6.	Special Course on High Resolution Aerospace Image Analysis For Geo-Hazard Assessment	2010
7.	UNESCAP Sponsored Short Training Course on Remote Sensing and GIS Applications for Coastal Hazard Mitigation and Sustainable Development for Pacific Countries	2011
8.	International Training Course on Application of Space Technology for Disaster Risk Reduction	2012
9.	Flood Risk Mapping, Modelling and Assessment using Space Technology with UNSPIDER/UNESCAP/IWMI	2013
10.	Sub-regional training on development of Geo-referenced Information Systems for Disaster Risk Management	2013

Special Programmes with UN Agencies

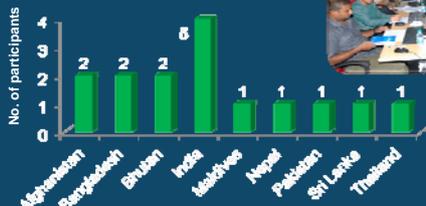
Flood Risk Mapping, Modelling and Assessment using Space Technology from July 22-26, 2013



- 19 participants from 11 countries
- Organized by: IIRS & CSSTEAP, UNESCAP, UNOOSA/UNSPIDER and IWMI
- Funded by UN-ESCAP, UN-OOSA/UN-SPIDER, & IWMI

Special Programmes with UN Agencies

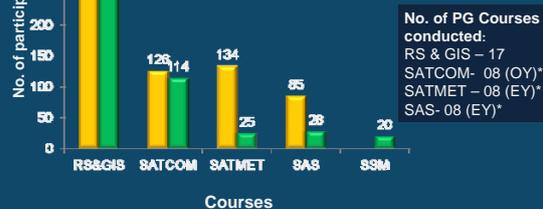
Short course on 'Sub-regional training on development of Geo-referenced Information Systems for Disaster Risk Management' from August 26-29, 2013



- 16 participants from 09 countries
- Organized by: IIRS, CSSTEAP and UN-ESCAP, Dehradun
- Funded by UN-ESCAP

Beneficiaries

- 1260 from 34 countries of AP region and 29 participants from 18 countries outside AP region.
- 683 and 606 participants from PG and Short courses, respectively

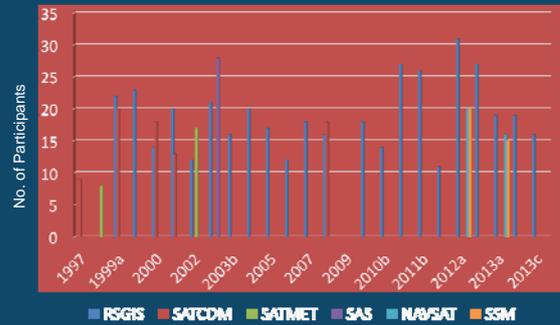


No. of PG Courses conducted:
RS & GIS - 17
SATCOM - 08 (OY)*
SATMET - 08 (EY)*
SAS - 08 (EY)*

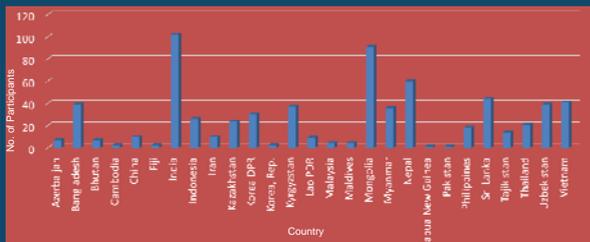
Achievements (PG Courses)



Achievements (Short term courses)

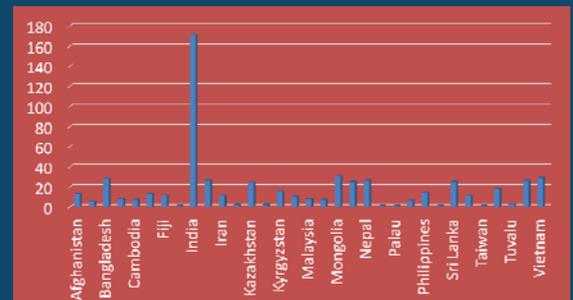


Country-wise Student Enrolment for P.G. Courses



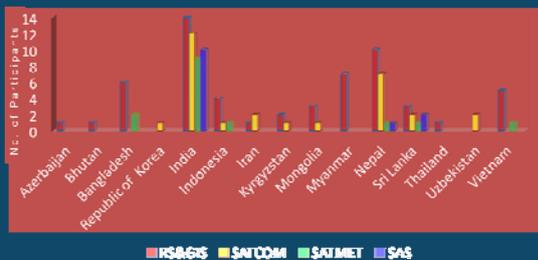
	RS & GIS	SATCOM	SATMET	SAS	Total
Total Participants	338	125	134	84	681
Total Countries	24	19	22	14	27

Country-wise Participants for Short Courses



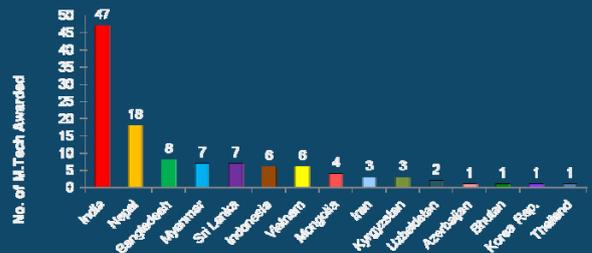
	RS & GIS	SATCOM	SATMET	SAS	SSM	Total
Total Participants	402	106	25	26	20	579
Total Countries	30	24	10	4	11	33

Country-wise award of M. Tech Degree



	RS & GIS	SATCOM	SATMET	SAS	Total
Total Participants	58	29	15	13	115
Total Countries	13	09	06	03	15

- M. Tech. degree Awarded – 115 from 15 countries by Andhra University, Visakhapatnam, India
- Five M. Tech. fellowships, two from India and one from Bangladesh have been awarded in 2013.



Asia Pacific and Beneficiary Countries

I EAST ASIA	III SOUTH ASIA	V PACIFIC
1. China	19. Afghanistan	35. Australia
2. Hong Kong	20. Bangladesh	36. Comm. Of the N. Mariana
3. Japan	21. Bhutan	37. Cook Islands
4. Korea, DPR	22. India	38. Fed. States of Micronesia
5. Rep. of Korea	23. Islamic Rep. of Iran	39. Fiji
6. Macau	24. Maldives	40. French Polynesia
7. Mongolia	25. Nepal	41. Guam
8. Taiwan Province of China	26. Pakistan	42. Kiribati
	27. Sri Lanka	43. Marshall Islands
		44. Nauru
		45. New Caledonia
		46. New Zealand
		47. Niue
		48. Papua New Guinea
		49. Rep. of Palau
		50. Samoa
		51. American Samoa
		52. Solomon Islands
		53. Tonga
		54. Tuvalu
		55. Vanuatu



GOVERNING BOARD

- Representative from Member Countries
- UN-OOSA & ITC are Observers

ADVISORY COMMITTEE

- Chaired by UN-OOSA
- Subject matter experts of Satellite Communication, Satellite Meteorology & Global Climate, Space & Atmospheric Science, Remote sensing and GIS.

***** = GB Member Countries
 *** = Non-GB Member Countries
 *** = So far no Participation

Stakeholders in Asia Pacific Region

Research Activities

- Provides guidance and satellite data for pursuing M. Tech.
- CSSTEAP awards Merit fellowship for pursuing M. Tech. in India
- Facilitates Ph.D. research work to its alumni
- Encourage course participants to participate National and International Symposia

Students' Research Areas

RS & GIS

- Advance RS & data analysis:** High resolution, microwave, Hyper-spectral, LIDAR and Planetary science mission data analysis & processing
- Natural Disaster Monitoring and Management:** Landslide risk analysis, Soil erosion modeling & nutrient loss, Forest fire risk zonation, Flood modeling, etc.
- Modeling Earth processes:** LULC change prediction, Crop & forest productivity, Ecological Niche, Hydrological & hydro dynamic, Debris flow, Ground water modelling, etc.
- Advance GIS:** 3D GIS, Spatial Data Quality and Uncertainty, Geoweb, Location Based Services and Spatial Data Infrastructure, Network analysis, etc.

Research Activities

Students' Research Areas (cont....)

SAS

- Oceanography, Atmospheric Science, Solar physics and Astronomy** SST, aerosols, ozone, ionospheric irregularities, solar wind, solar radiation, comets, Novae and Glonular clusters

SATCOM

- Communication Techniques:** Modulation and Coding, Communication link design, Satellite data network.
- Earth Station Technologies:** Terminal development, Receiver technologies,
- Signal Processing:** Compression techniques,
- Antenna Systems:** Design mechanism and realization techniques

SATMET

- Meteorology:** Extra Tropical, Weather Systems, Tropical Weather Systems, Monsoon,
- Image processing and interpretation:**
- Advanced concepts in Satellite meteorology:** Geophysical parameter retrieval, Application of satellite derived parameters, Satellite data assimilation in NWP,
- Global Climate Environment:** Short term climate variability, long term climate change,

Activities Planned for 2014

- 19th PG course in 'RS & GIS' at IIRS Dehradun (July 1, 2014 – March 31, 2015).
- 9th PG course in 'Satellite Meteorology and Global Climate' at SAC Ahmedabad (August 1, 2014 - April 30, 2015).
- 9th PG course in 'Space and Atmospheric Sciences' at PRL Ahmedabad (August 1, 2014 - April 30, 2015).
- Short course on 'Microwave Remote Sensing and Applications' at IIRS Dehradun (May 05- 30, 2014).
- Short Course on 'Navigation & Satellite Positioning System' at SAC, Ahmedabad (June-July 2014).
- Short Course on 'Small Satellite Missions' by ISAC, Bengaluru and IIRS, Dehradun (October-November, 2014) at Dehradun

Proposed training courses to be organized by UN-ESCAP and CSSTEAP, and others ... in 2014

- Effective use of satellite imagery for flood monitoring and Early Warning (1-2 weeks duration)
- Drought monitoring and Early Warning for arid and semi-arid countries (1-2 weeks duration)
- Interpretation of High Resolution and SAR data for Disaster Monitoring (2-4 weeks duration)
- GIS applications and use of free open source software (1 week duration)

CSSTEAP Alumni Meets



Kathmandu, Nepal
October 6, 2010



Dhaka, Bangladesh
June 23, 2011



Colombo, Sri Lanka
October 21, 2011



Thimpu, Bhutan
November 15, 2011



Nay Pyi Taw, Myanmar
March 22, 2012

CSSTEAP website hosts a discussion forum for its alumni to offer suggestions and comments for improving the quality of education and future requirement at the Centre as well as in Asia Pacific Countries.

About Host Institutions: IIRS

- **Training and education programmes:**
 - Master's Programme : M. Tech./M. Sc.
 - Post Graduate Courses
 - Certificate
 - Specialized Courses – On demand
- **Research programmes**
 - All major fields of resource management and disaster mgmt
- **Outreach programmes – Distant Education programme through EDUSAT**, 84 universities spread across the country have also benefited through EDUSAT
- Regularly organizing M. Sc. degree in Hazard Risk and Disaster Management

Training and Education

- Main objective is in Capacity Building at all levels (working/execution level to Decision Makers)
- M. Tech. in RS & GIS - 24 months in 8 disciplines)
- M.Sc. (Geoinformatics) – 18 months duration
- M.Sc. and P.G. Diploma (Natural Hazard and Disaster Risk Management): 18 Months
- Theme specific on-demand Courses

- Trained more than 8884 from 91 countries mainly from the Asia, Africa and South America.
- Research is one of the most important agenda of the institute and several significant research project, user projects at local, national and international level have been accomplished.

SAARC Disaster Management Centre, Delhi
UN Office on Drugs and Crime, Afghanistan
PA Managers from Bangladesh
GISTDA, Thailand
International Organization of Migration, Sudan

Capacity building in Agricultural Crop Mapping and Crop yield estimation using Microwave and Optical Satellite Data with Geo-Informatics and Space Technology Development Agency (GISTDA), Thailand

**SATELLITE-BASED DISTANCE EDUCATION
- IIRS OUTREACH INITIATIVE**

**Contribution to WGCapD of CEOS
(Capacity Building and Data Democracy)**

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_6108

