

# Capacity Building in Disaster Risk Reduction through Synergistic Approach



Estd: 1966

**Indian Institute of Remote  
Sensing (IIRS)**

**Indian Space Research  
Organisation (ISRO)**

[www.iirs.gov.org](http://www.iirs.gov.org)



Estd: 1995

**Centre for Space Science and  
Technology Education in Asia  
and the Pacific (CSSTEAP)**

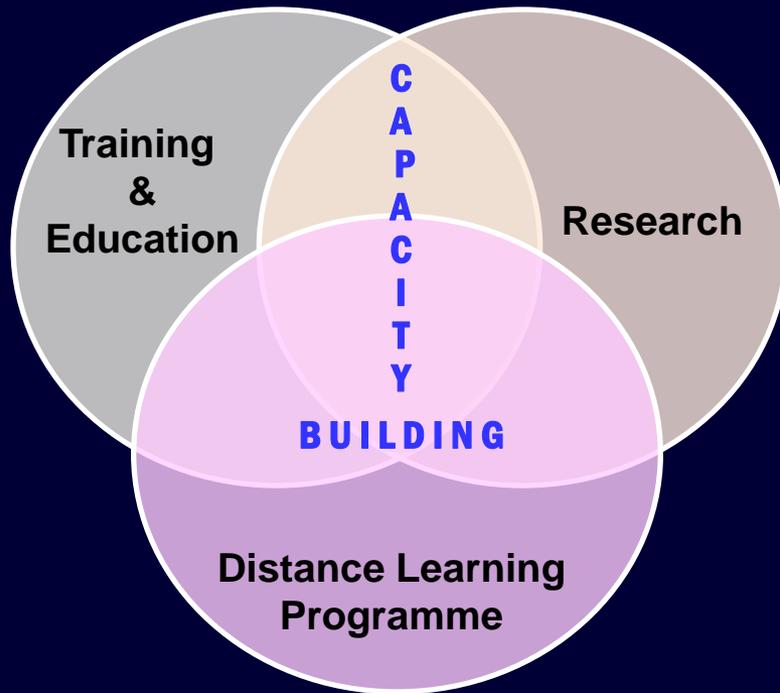
*(Affiliated to the United Nations)*

[www.cssteap.org](http://www.cssteap.org)

A. Senthil Kumar and Sarnam Singh

IIRS and CSSTEAP

# IIRS: Mandate



**Transfer technology through Capacity Building & Research in the field of RS & GIS technology and applications**

*.....for ensuring efficient utilization of Earth Observation (EO) Systems and ISRO's forthcoming initiatives in the areas of Natural Resource Survey, Earth and Atmospheric Sciences and Disaster Management.*

- **Build capacity through education & training programmes at PG level;**
- **Host and conduct education & training programmes offered by CSSTEAP, affiliated to the United Nations;**
- **Participate in research programmes of ISRO/DOS and promote and undertake applied research in diverse thematic areas**

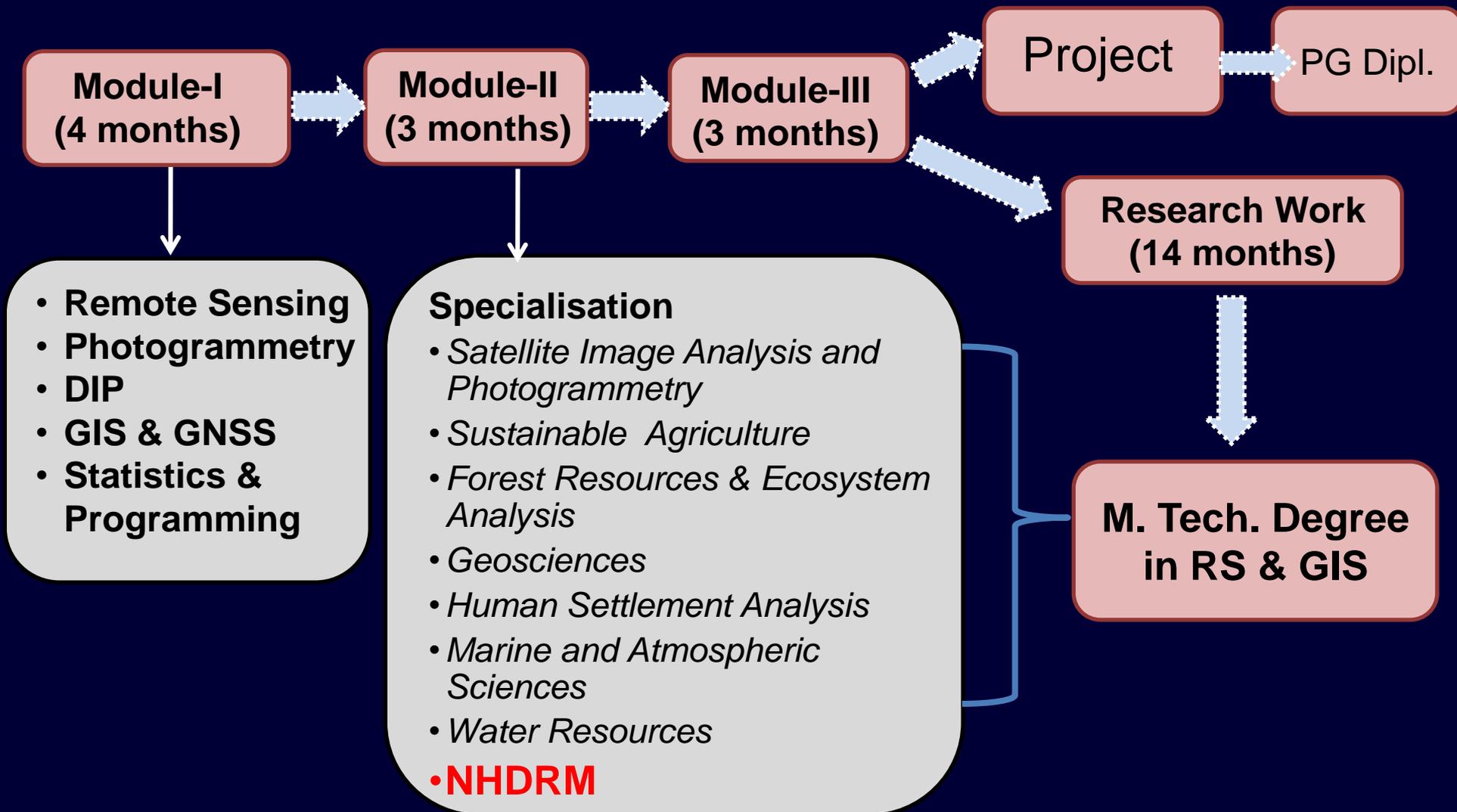
# Capacity Building: Training and Education Programmes

S N	Programmes	Duration
1.	<ul style="list-style-type: none"> <li>Postgraduate Diploma in Remote Sensing &amp; GIS (8 disciplines)</li> <li>Natural Hazards and Disaster Risk Management (NHDRM)</li> </ul>	10 months
2.	Postgraduate Diploma In Geo-information Science & Earth Observation (with ITC, Netherlands - <i>Specializations in Geoinformatics</i> )	10 months
3.	International Programme – Certificate Course In Remote Sensing and Geoinformatics ( <i>Sponsored under ITEC/SCAAP by MEA, Govt. of India</i> )	8 weeks
4.	Certificate Course In Remote Sensing (Remote Sensing & Image Analysis (Indian User participants))	8 weeks
5.	NNRMS-ISRO Sponsored Certificate Course In Remote Sensing & GIS For University Faculty ( <i>sponsored by Govt. of India</i> )	8 weeks
6.	Awareness Programme – An Overview for Decision Makers	1 week
7.	Tailor-made On-demand Courses	1 - 8 weeks

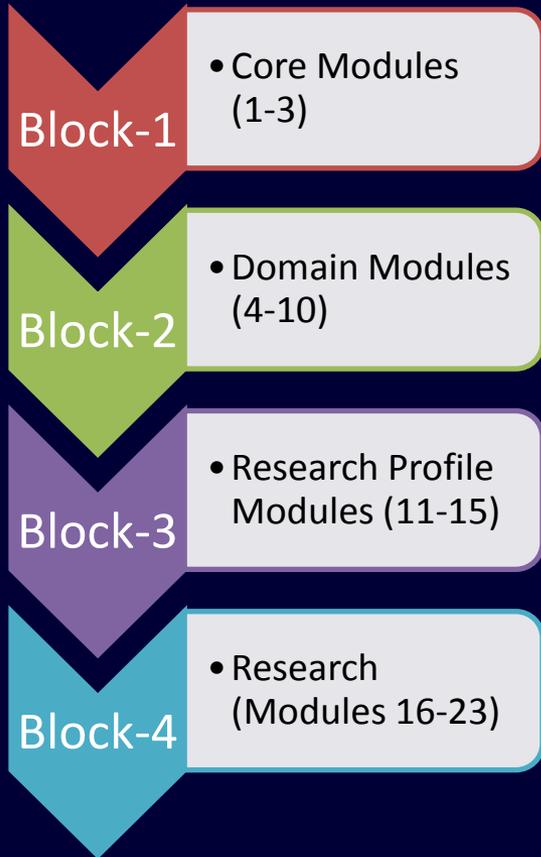
1.	<b>M .Tech. in Remote Sensing &amp; GIS</b> – 8 specializations	24 months
2.	<b>M. Sc. in Geo-information Science &amp; Earth Observation</b> (with ITC, Netherlands) <i>Specialization in Geoinformatics</i>	18 months

# Postgraduate Diploma and Master Degree

## Remote Sensing & GIS in Natural Resources Management



# M.Sc. in Geo-information Science & Earth Observation (Specialisation – Geoinformatics)



Module	Duration	Module Topic
1	3 Weeks	Geographic Information Science
2	3 Weeks	Earth Observation
3	3 Weeks	System Earth
4	3 Weeks	Databases, Mathematics & Programming
5	3 Weeks	Principles of Spatial Data Quality
6	3 Weeks	Spatial Data Modelling & Processing
7	3 Weeks	Base Data Acquisition
8	3 Weeks	Image Processing
9	3 Weeks	Web GIS & Programming
10	3 Weeks	Visualisation & Dissemination of Geospatial Data
11	3 Weeks	Research Skills
12	3 Weeks	Advanced modules, advanced group project, and finalisation and defence of research proposal by M.Sc. students
13	3 Weeks	
14	3 Weeks	
15	3 Weeks	
16-23	6 months	M.Sc. research and thesis defence

Programming Skills



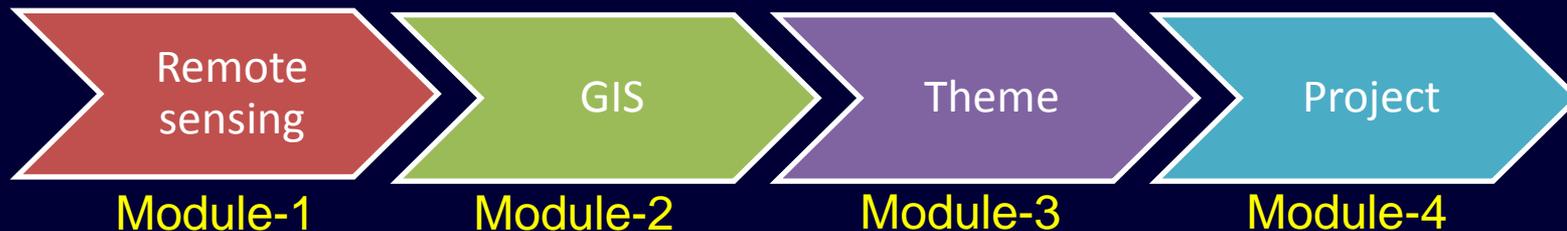
**Note:**

Module 1 to 10 are common for both M.Sc. and PG Diploma.  
 PG Diploma students carry out project work during Module 11 to 14.  
 Module 11 to 16 are offered at ITC for M.Sc. students.

# Certificate Course for University Faculty

- 8 Weeks courses conducted every year during May-June in following 8 themes:

- *GIS Technology & Advances*
- *Cartography and Mapping*
- *Water Resources*
- *Forestry/ Ecology/ Wildlife/ Environ. Sciences*
- *Urban & Regional Studies*
- *Geosciences*
- *Soils & Landuse Planning*
- *Coastal & Ocean Sciences*



# International Programme MEA – ITEC/SCAAP Sponsored Courses

- Initiated in 2001 to share Indian development experience in Geospatial technologies to International community
- **Two courses** are conducted annually:
  - Remote Sensing with emphasis on Digital Image Processing
  - Short course on Geoinformatics
- **Target Group:** Middle level resource managers and professionals from Government, Universities, Research Institutions
- **468 participants from 79 countries** are benefitted from this program



# Special/ Customised Courses

- Customised courses for various **User/ Stakeholder departments**, viz. Ministry of Environment & Forests/ Water Resources/ Home Affairs/ Railway and other Central & State Govt. departments
- Geospatial Technology for **Smart City Planning**
- UAV Remote Sensing & Applications
- **ISPRS Summer School** (Open Source GIS, Online sharing of data, algorithm & models, Research & teaching methodology for Master & PhD students)
- Basic course for **Higher Secondary School Teachers**
- .....



# Map the Neighborhood in Uttarakhand (MANU)

- **Development of appropriate tools for field data collection through crowdsourcing and integration with Bhuvan geoportal.**
- **Capacity Building** for field data collection by students from the local region.
- **Geospatial analysis** of field data for understanding the major controls and patterns of damage.

**Area covered:** Alaknanda, Mandakini, Bhagirathi, Yamuna, Ganga, Pinder and Kali river valleys

**End use:** Inputs towards formulating guidelines for restoration & developmental activities

## Primary Mode of Field Data Collection



## Field Data Collection Proforma through Mobile App

- **Damage to buildings and infrastructure**
  - 1a. Damage to Buildings
  - 1b. Damage to Infrastructure
    - 1b1. Roads
    - 1b2. Bridges and Culverts
    - 1b3. Other Infrastructure
- **Landslides**
- **River Bank Erosion**
- **Damage to Land-cover and Natural Resources**
- **Points of Interest**

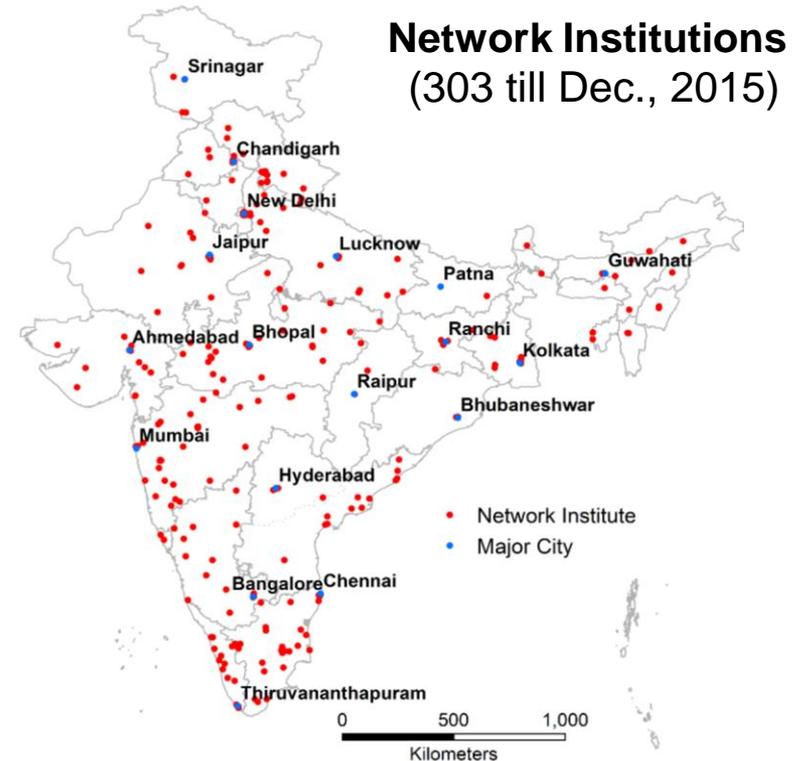
**Teams:** IIRS, NRSC, SOI, DST, WIHG, HNB Garhwal Univ, Kumaun Univ.  
150 students were trained

# DLP: Internet / Satellite based Live & Interactive Courses (<http://iirs.gov.in/EduSat-News>)

- **Twelve Weeks** Certificate Course on 'Basics of Remote Sensing, GIS and Global-Navigation Satellite System' (Aug-Nov)
- **Four Weeks** Specialized course on different themes (Feb-March)
- **No course Fee**
- About **25,000** participants benefited

The screenshot shows the A-VIEW virtual classroom interface. The main content area displays a presentation slide titled "Geospatial : a mega technology". The slide content includes:

- Geotechnology** (Nanotechnology) and **Biotechnology** (Biotechnology)
- Definition: **Geotechnology** is one of the three "mega technologies" for the 21st century and promises to forever change how we conceptualize, utilize and visualize spatial information in scientific research, commercial applications and general usage.
- Diagram: A central box labeled "Geographic Information Systems" is connected to "Global Positioning System" and "Remote Sensing". Below it, "GPS / GIS / RS (Spatial Triad)" is shown.
- Left side: **Where is What** - Mapping involves precise placement (delineation) of physical features (Geopical). Includes "Descriptive Mapping".
- Right side: **Why and So What** - Analysis involves investigation of spatial relationships (thematic). Includes "Prescriptive Modeling".
- Source: Joseph K Berry



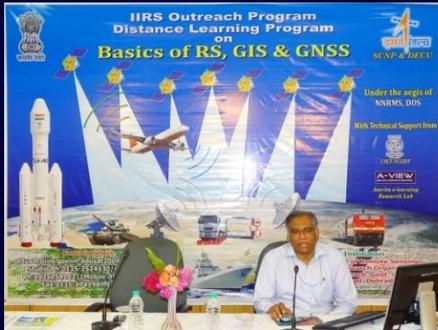
## Target Groups

- Central/ State Universities
- Research Institutions
- Central/ State Govt. organisations
- Individuals

# DLP: Internet / Satellite based Live & Interactive Courses (http://iirs.gov.in/Edusat-News)



IIRS studio-end



<https://www.youtube.com/channel/edusat2004>

Feedback Session



Receiving-end classroom

National Award by Govt. of India



राष्ट्रीय उत्कृष्टता प्रशिक्षण पुरस्कार, 2015

भारतीय सुदूर संवेदन संस्थान, भारतीय अंतरिक्ष अनुसंधान संगठन,

देहरादून, (उत्तराखण्ड)

को

“दूरदराज के इलाकों तक पहुंचना - एडुसेट कार्यक्रम”

में

श्रेष्ठ कार्य प्रणाली संबंधी उनकी अभिनव पहल के लिए प्रदान किया जा रहा है।

**National Award for Excellence in Training for the Year 2015**

presented to

Indian Institute of Remote Sensing,  
Indian Space Research Organization,

Department of Space, Dehradun, Uttarakhand  
For the Innovative Initiative

“Reach the Unreached - EDUSAT Program”

*Sanjay Kothari*

संजय कोटारी

सचिव, कर्मिक और प्रशिक्षण विभाग

Sanjay Kothari

Secretary, Department of Personnel and Training

नई दिल्ली  
दिनांक: 11 अप्रैल, 2015

New Delhi  
Date: 11 April, 2015

# DLP: Internet Based e-Learning Courses (<http://elearning.iirs.gov.in/>)

- Self-paced, any-time/any-where learning
- **Four months** Comprehensive Certificate Course on 'Remote Sensing and Geo-information Science'
- **One month** fundamental Certificate Courses on (1) Remote Sensing; (2) GIS; (3) Digital Image Processing; and (4) Photogrammetry
- **Registration – Free and Open to All**



The screenshot shows the homepage of the Indian Institute of Remote Sensing (IIRS) e-learning program. The header includes the IIRS logo, the text 'INDIAN INSTITUTE OF REMOTE SENSING Indian Space Research Organisation Department of Space, Government of India', and the date 'Tuesday, March 10, 2015'. The main navigation menu includes 'Home', 'Programme Overview', 'Course Delivery', and 'Contact'. A large banner at the top reads 'On mission for transferring technology through capacity building & research'. Below the banner, there are sections for 'Members Login' with a form for username and password, 'Latest Updates' with a link to a certificate programme, 'Latest Events' with a photo of two men, and 'About the Course' with a welcome message and a 'Read more' link. There are also links for 'Chairman's Message' and 'Director's Message'. At the bottom, there are 'Important Links' and contact information for IIRS.

## Topics

Image Statistics

Basic Remote Sensing

Photogrammetry and Cartography

Digital Image Processing

Geographical Information System

Global Navigation Satellite System

Customization of Geospatial Tools

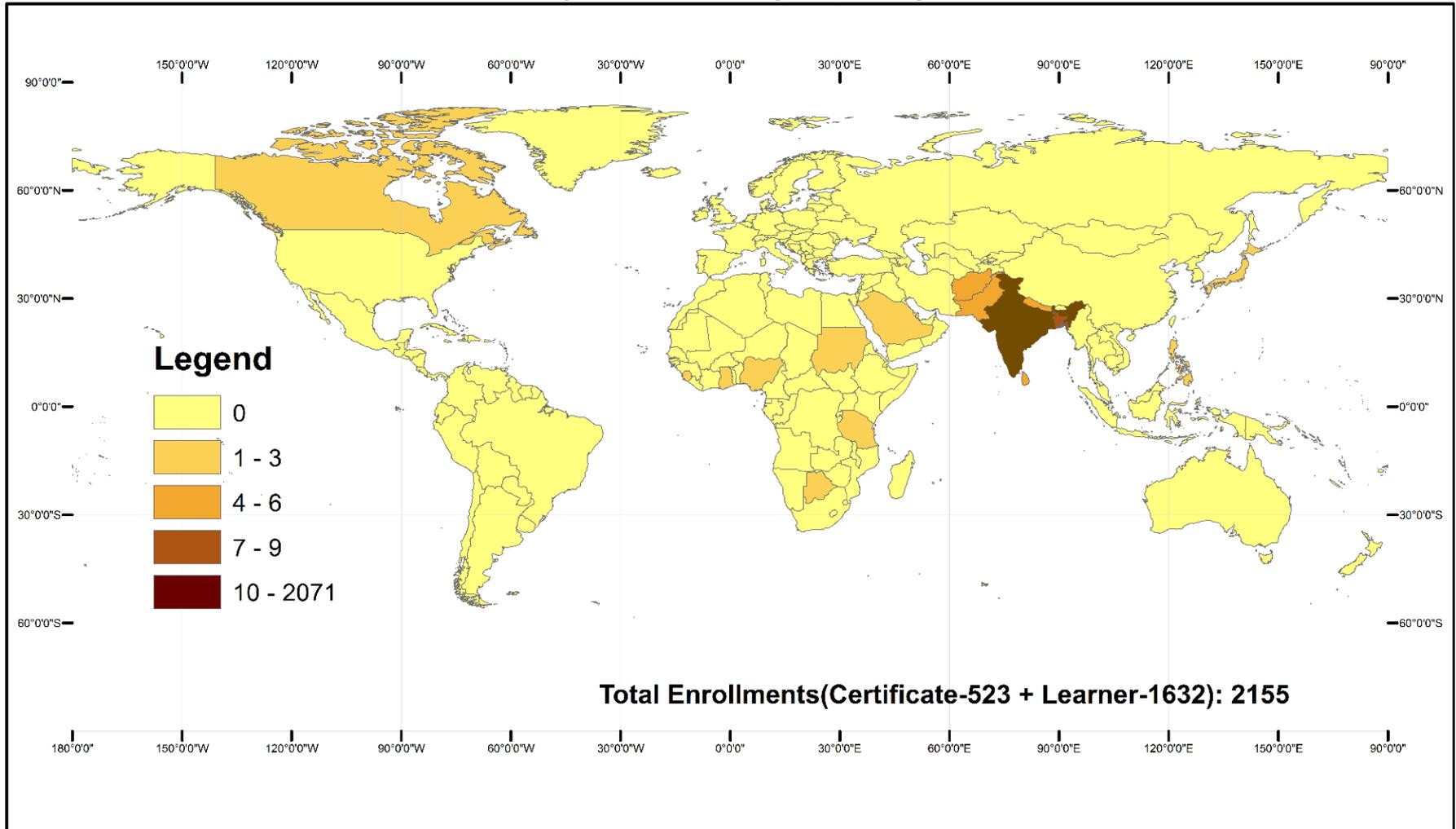
Applications of Geospatial Technologies



The screenshot shows the interface of the IIRS e-learning program. The header includes the IIRS logo, the text 'INDIAN INSTITUTE OF REMOTE SENSING Indian Space Research Organisation Department of Space, Government of India', and the date 'Tuesday, March 10, 2015'. The main navigation menu includes 'Home', 'Programme Overview', 'Course Delivery', and 'Contact'. A large banner at the top reads 'On mission for transferring technology through capacity building & research'. Below the banner, there are sections for 'Members Login' with a form for username and password, 'Latest Updates' with a link to a certificate programme, 'Latest Events' with a photo of two men, and 'About the Course' with a welcome message and a 'Read more' link. There are also links for 'Chairman's Message' and 'Director's Message'. At the bottom, there are 'Important Links' and contact information for IIRS.

# DLP: Internet Based e-Learning Courses (<http://elearning.iirs.gov.in/>)

**GLOBAL DISTRIBUTION OF IIRS E-LEARNING ENROLLMENTS  
(As on February 12, 2016)**



# Contribution to WGCapD of CEOS

**As a Vice Chair, Director IIRS is responsible for**

- Jointly Organizing monthly telecom with Chair of WGCapD
- Participating the monthly telecon to assess the current status and future directions

**IIRS has coordinated the Webinar series on disaster risk management**

- 8 Topics were covered
- 96 students from all 6 continents
- Teachers from Major space agencies including IIRS/ISRO

**IIRS has also contributed in E-learning programme by delivering lectures**

- Fundamental of Remote Sensing
- Flood disaster mapping, monitoring and modeling

**Organized 3<sup>rd</sup> WGCapD annual meeting at Dehradun**

- April 23-25, 2015
- Venue: IIRS, Dehradun
- ISRO/NASA/USGS/SEO/SANSA and other space agencies participated.

# Research Facilities

## Satellite Data Archives & Instrumentation Facility

- Map & Image Library (archives of Satellite Data, Topographical Maps, Aerial Photographs, Thematic maps, etc.)
- Ground-truth equipments  
(Spectroradiometer, Geodetic & hand-held GPS, Total Station, Photogrammetric Cameras, GPR, Soil, water & vegetation parameters measurement instruments)

## In-house Labs

- DIP, Photogrammetry & GIS Labs
- Soil & Water Analysis Laboratory





## Instruments

- GNSS Receivers
- Resistivity Meter
- Laser Distance Meter
- High end GPS devices
- Vibrating wire type Piezometer
- Ground Penetrating Radar (GPR)
- Spectro-radiometer (ASD & FTIR)
- Single Point Borehole Extensometer
- Total Precession System (Total station)
- Direct Shear Test Electronic Equipment



*Direct Shear Test Instrument*



*FTIR*



*Total Station*

## Hardware/Software

High end work stations and desktops  
 ILWIS, ERDAS Imagine, ArcGIS, ENVI,  
 SARSCAPE, SPSS, Bernese, Gamit,  
 Pivot etc.



*Spectro-radiometer*



*CORS Station*

## Field Instrumentation

- Continuous Operating Reference System (CORS) – 4
- Automated Weather Station (AWS) - 15
- Broadband Based Seismograph & Strong Motion Accelograph



*GPR*



*Resistivity Meter*

# Centre for Space Science and Technology Education in Asia and the Pacific

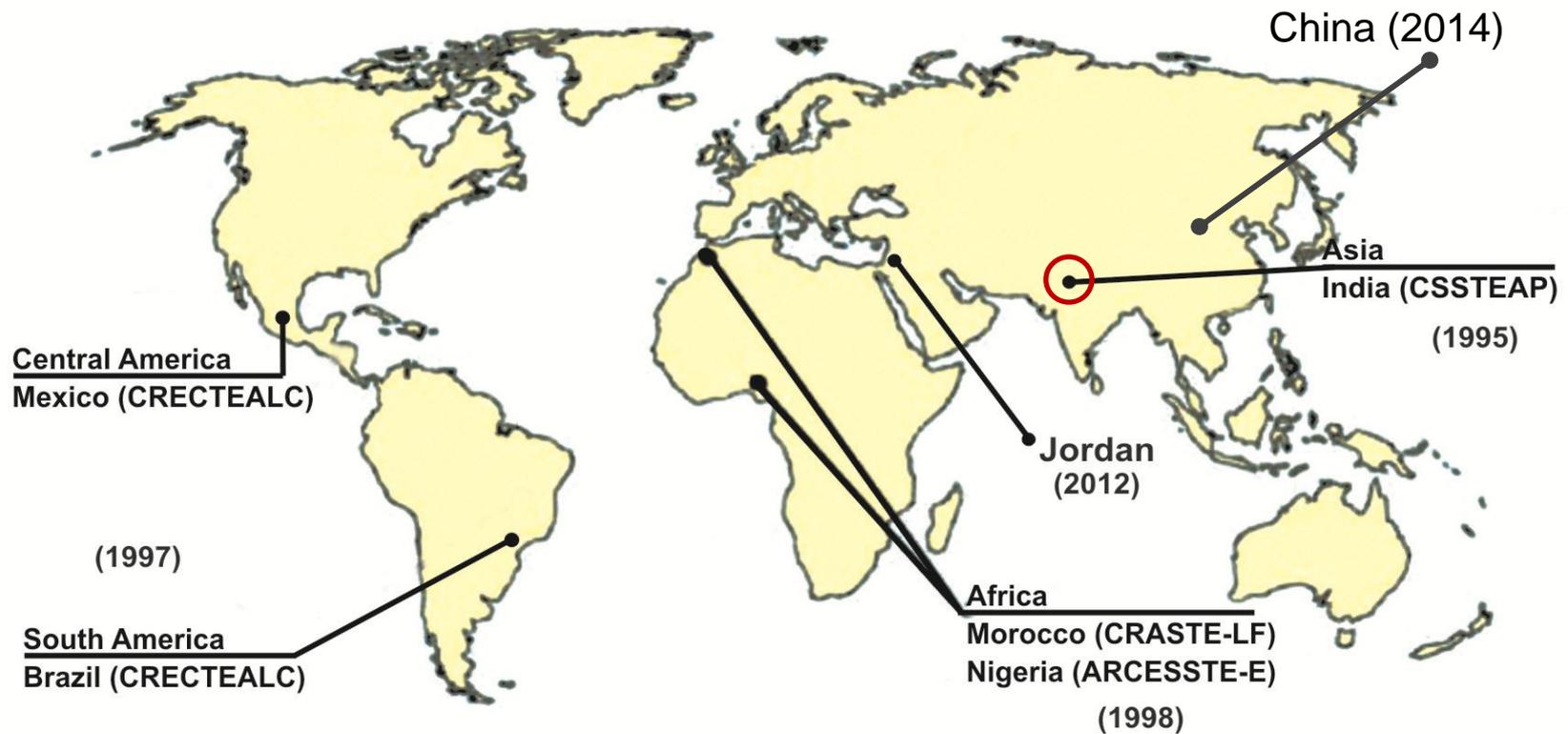


# Establishment of First Regional Centre

- Realizing the importance of Space technology the UN General Assembly endorsed the recommendation of UN Committee on Peaceful Uses of Outer Space (UNCOPUOS) on Dec 1, 1990 and it said that
  - “ ... effort to establish Regional Centres for Space Science and Technology Education in existing national/ regional educational institutions in the developing countries” be made
- To achieve this Capacity Building is the first step.
- UNOOSA established 1<sup>st</sup> Regional Centre as CSSTEAP in Dehradun, India in 1995
- Policies are guided by 16 Governing Board members from Asia Pacific and UNOOSA and Twente University (ITC), The Netherlands as observers

# Six Regional Centres for Space Science and Technology Education in the World

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



# Asia Pacific and Beneficiary Countries

## I EAST ASIA

1. China
2. Hong Kong (ROC)
3. Japan
4. **Korea, DPR**
5. **Rep. of Korea**
6. Macao (ROC)
7. **Mongolia**
8. Taiwan (ROC)

## II SOUTH-EAST ASIA

9. Brunei
10. Cambodia
11. **Indonesia**
12. Lao PDR
13. **Malaysia**
14. **Myanmar**
15. **Philippines**
16. Singapore
17. **Thailand**
18. Vietnam

## III SOUTH ASIA

19. Afghanistan
20. Bangladesh
21. Bhutan
22. **India**
23. **Islamic Rep. of Iran**
24. Maldives
25. **Nepal**
26. Pakistan
27. **Sri Lanka**

## IV CENTRAL ASIA

28. Armenia
29. Azerbaijan
30. **Kazakhstan**
31. **Kyrgyzstan**
32. Tajikistan
33. Turkmenistan
34. **Uzbekistan**

## V PACIFIC

35. Australia
36. Comm. Of the N. Marianas
37. Cook Islands
38. Fed. States of Micronesia
39. **Fiji**
40. French Polynesia
41. Guam
42. Kiribati
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 Remote sensing and GIS, Satellite Communication, Satellite Meteorology & Global Climate, Space & Atmospheric Science and Global Navigation Satellite Systems,.

= GB Member Countries

\*\*\* = Non- GB Member Countries

**Beneficiary Countries**

# Stakeholders in Asia Pacific Region



**CSSTEAP GB-2014**  
Meets once every Year



**CSSTEAP**  
**Hqrs., Dehradun**



**CSSTEAP AC-2015**  
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,  
GNSS & NAVSAT



**Physical Research Laboratory, Ahmedabad**

Space & Atmospheric Sciences



**ISRO Satellite Centre, Bengaluru**

Small Satellite Missions

- **Indian Institute of Remote Sensing**: 50 years of experience in capacity building in EO application and 30 years in Geoinformatics.
- **Space Applications Centre**: 1972 Unique Centre with synergy of technology development and design of EO sensors/payloads, Communication, Meteorological and Navigation satellites and applications, Weather Forecasting
- **Physical Research Laboratory**: 1947 - theoretical and experimental Space and Atmospheric Sciences research (deep space)
- **ISRO Satellite Centre**: Ultra modern design, development, fabrication and testing facilities for communication, remote sensing, navigation and space science satellites –built 75 state-of-the-art satellites
- **National Remote Sensing Centre**: 1974, National Disaster Support Centre, EO data acquisition, dissemination, operationalization, capacity building, etc.

## Agriculture and Soils

- Crop yield forecasting
- Agriculture Drought
- Microwave RS data applications in crop

## Geosciences and Geohazards

- Landslide hazard modeling
- Land subsidence/ ground deformation assessment using SAR data
- Geodynamics and seismicity of Western Himalaya

## Forestry & Ecology

- Biodiversity Characterisation
- Ecosystem vulnerability assessment
- Forest fire risk modeling

## Marine and Atmospheric Sciences

- Coastal Geomorphology & hazards
- Indian Summer Monsoon Studies – Numerical Weather Prediction Modeling

## Water Resources

- Hydrometeorological/ hydrological parameters retrieval from RS data
- Flood monitoring
- Climatic extremes early warning system in NW Himalaya

## Urban & Regional Studies

- Urban hazard & risk assessment
- 3D city modeling and visualization

## Photogrammetry & Remote Sensing

- Close range Photogrammetry
- SAR/InSAR and PolInSAR data processing

- Terrestrial Laser Scanner

## Geoinformatics

- 3D GIS (geo-visualisation & modeling)
- Crowd Sourcing Apps
- Mobile GIS and location based services

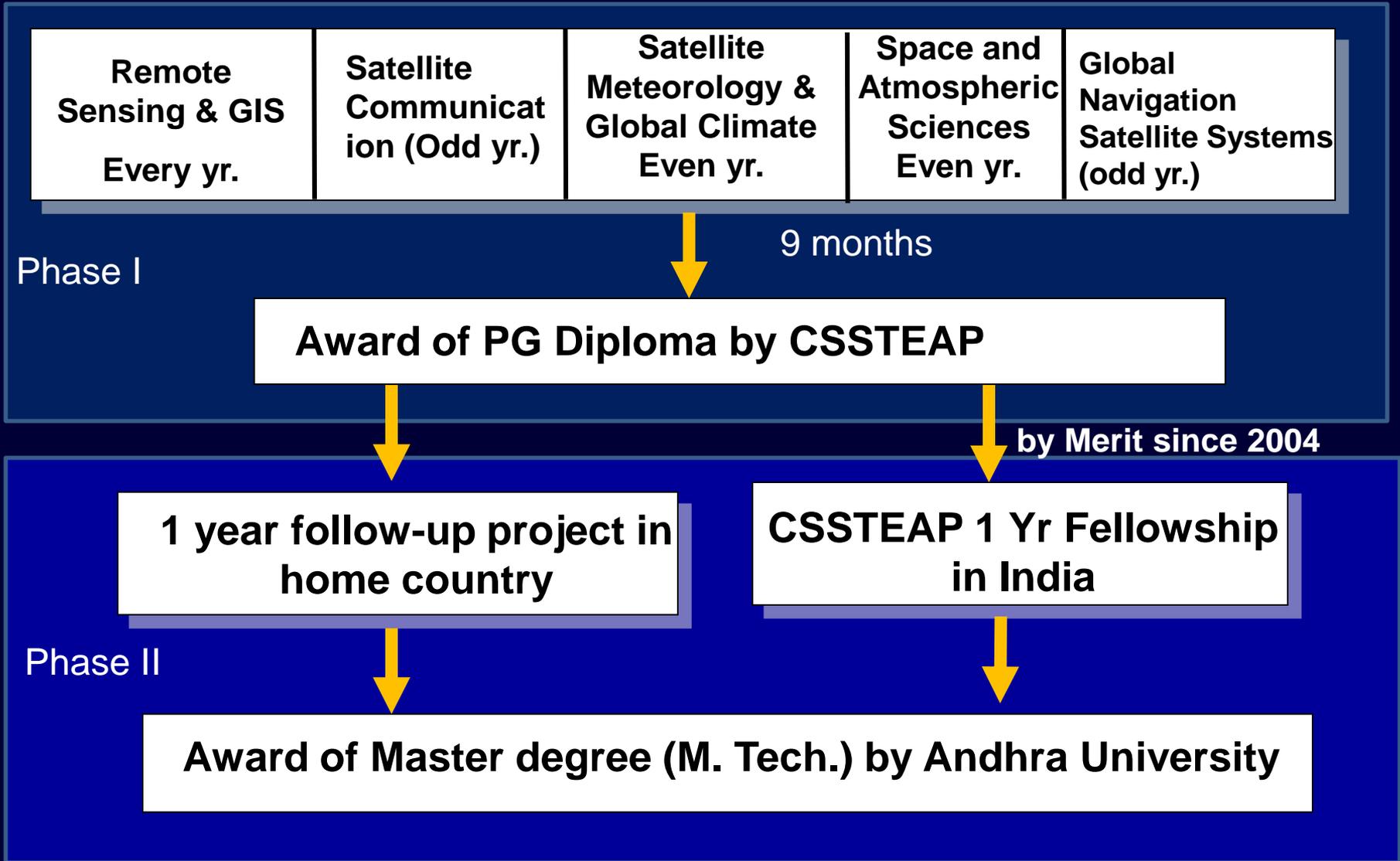
**Advantage:** Participants get to know first hand knowledge from scientists and engineers who are involved in the field of space science and technology development and applications.

- Post Graduate Courses ( 9 months) – 4-5 months advance
- Short Courses ( 4 days to 1 month) – 2-3 months advance
- Masters Degree (9 month Post Graduate Course + One year research in home country)
- Ph. D. - facilitates advance research and analysis

## Funding: Government of India support

- International and domestic to & fro travel for all courses
- UNOOSA - international travel for RS&GIS Courses
- Fellowships to all the participants (long and short courses)
- Master programme fellowships
- Book and Project allowance to all the participants
- Health care, insurance, etc.
- Also UNESCAP, UNDP, ICIMOD, IWMI, SAARC, ITC, etc.

# Training & Educational Programmes – Post Graduate



# Training Programmes – Short Courses

<p><b>RS&amp;GIS Disaster Risk Reduction</b> 4 weeks <b>(IIRS, Dehradun)</b> UNOOSA, UNSPIDER, UNDP &amp; UNESCAP, IWMI, SAARC DMC</p>	<p><b>Satellite Navigation &amp; Positioning Systems (NAVSAT)</b> 4 weeks <b>(SAC, Ahmedabad)</b> converted to 9 month PG Course of GNSS</p>	<p><b>Small Satellite Missions</b> 15 days <b>(IIRS, Dehradun/ ISAC, Bengaluru)</b></p>	<p><b>Space Weather</b> 4 weeks <b>(PRL, Ahmedabad)</b></p>
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**4 days to 4 weeks duration**



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

**Fully funded either by DOS/GoI, UN Agencies or SAARC**

Core Faculty from IIRS, SAC, PRL, ISAC and National and International subject experts

## India

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

**Organizations/ Institutions** - Guest faculty

## International

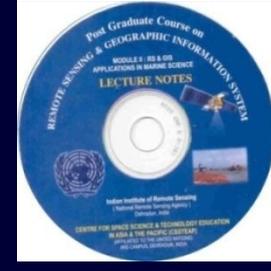
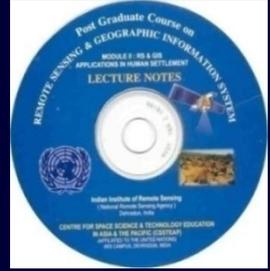
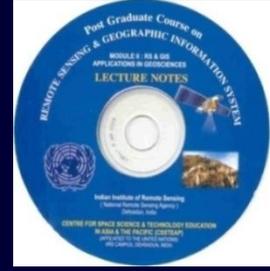
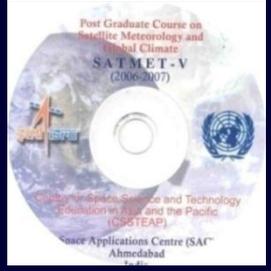
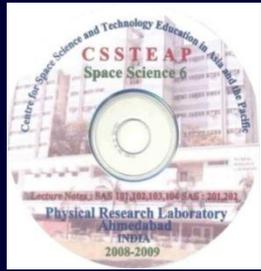
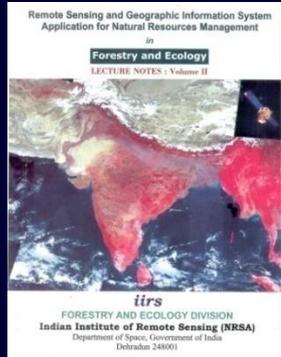
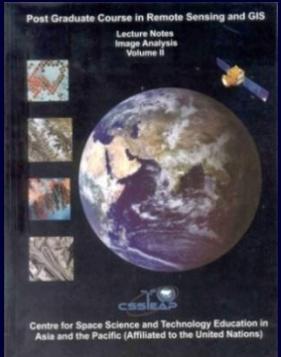
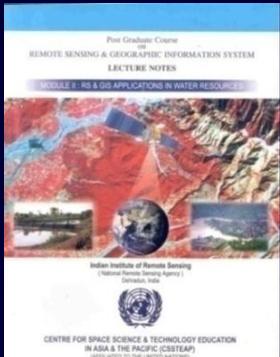
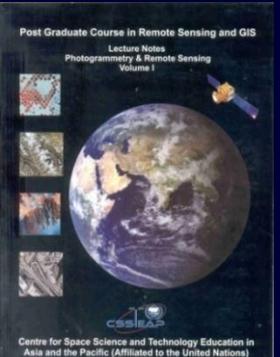
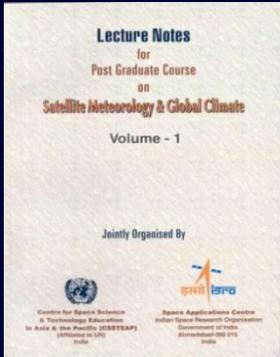
**UN Agencies (UN-OOSA, UN-ESCAP, and UN-SPIDER, UNDP, and other regional institutions IWMI, ICIMOD, SAARC, ASEAN)**

**Universities / Institutes** - International travel for selected students  
- Guest faculty (Australia, Japan, USA, UK, Europe and other Asia-Pacific countries)

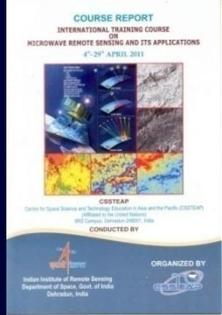
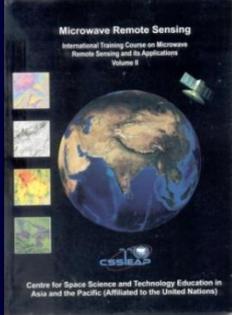
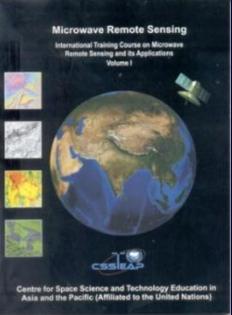
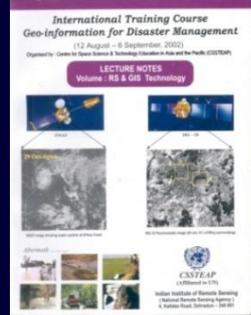
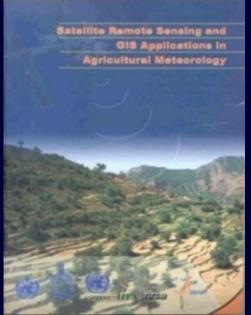
## Academic Cooperation

- Andhra University, India (1998)
- ITC, University of Twente, The Netherlands
- University of Illinois, Urbana-Champaign campus, Urbana, USA

## PG courses



## Short courses



# Publications- Course Announcement & Brochures

## Newsletters, Memoirs and General Information Brochures

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

**CSSTEAP**

**CSSTEAP PERFORMANCE ASSESSMENT AND OUTLOOK FOR THE FUTURE**

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

Indian Institute of Remote Sensing Campus, 4, Kalidasa Road, Dehradun 248001, India  
E-mail: [cssteap@irs.gov.in](mailto:cssteap@irs.gov.in)  
Website: [www.cssteap.org](http://www.cssteap.org)

**10 YEARS OF CSSTEAP 1995 - 2005**

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

Dehradun, India

**CSSTEAP Newsletter** Volume 17, Issue 2

July 2014

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

... the 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.

**PSLV-C23 LAUNCHED ON JUNE 30, 2014**

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PSLV-C23 (PSLV-C23) successfully launched Pannir Earth Observation Satellite (PEOS) and four other payloads from Satish Dhawan Space Centre SHAR, Sriharikota on June 30, 2014. The main payload consisted of the Pannir Earth Observation Satellite (PEOS) weighing 14 kg. It was received by the ground station of Germany.

Inside this issue ...

- PSLV-C23 launched successfully on June 30, 2014.
- PSLV-C23 launches India's second dedicated navigation satellite INSAT-3B.
- Meeting with Directors of Program Centres for Space Science and Technology Education in the ODA, Vienna, Austria during June 10-14, 2014.
- Signature of the Students' Union in Remote Sensing & GIS.
- Webinar on Graduate Diploma course in Remote Sensing & GIS.
- International short course on Microwave Remote Sensing (MRS) and its Application.
- Third International Training course on Navigation and Satellite Positioning Systems (NAVSPS).
- State-of-the-Art on the Space Applications of GPS.
- Local activities of participants of CSSTEAP alumni.
- Performing Activities.

Centre for Space Science and Technology Education in Asia and the Pacific

**ANNOUNCES**

TENTH POST GRADUATE COURSE in SATELLITE COMMUNICATIONS

ACADEMIC YEAR 2015 - 2016

Conducted at

Space Applications Centre Indian Space Research Organisation 813015 Pondicherry

CSSTEAP

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

4, Kalidasa Road, Dehradun 248001, India  
Tel: +91 513 263 1895, Dehradun 248001, India  
[www.irs.gov.in](http://www.irs.gov.in)

**Short Course on Geospatial Technologies for Coastal and Marine Disaster Management and Climate Change**

Course Duration 4<sup>th</sup>-31<sup>st</sup> May 2015

Conducted at Indian Institute of Remote Sensing Indian Space Research Organisation Dept. of Space, Govt. of India Dehradun - 248001, U.K. [www.irs.gov.in](http://www.irs.gov.in)

Jointly organized by

United Nations Economic & Social Commission for Asia and the Pacific The United Nations Building Rajadamra Road Bangkok 10261, Thailand

Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP) (Affiliated to the United Nations) IRIS Campus, Dehradun, India Website: [www.cssteap.org](http://www.cssteap.org)

Centre for Space Science and Technology Education in Asia and the Pacific

**ANNOUNCES**

FIRST POST GRADUATE COURSE in GLOBAL NAVIGATION SATELLITE SYSTEMS

ACADEMIC YEAR 2015 - 2016

Conducted at

Space Applications Centre Indian Space Research Organisation Ahmedabad, India [www.sac.gov.in](http://www.sac.gov.in)

Centre for Space Science and Technology Education in Asia and the Pacific (Affiliated to the United Nations) IRIS Campus, Dehradun, India Website: [www.cssteap.org](http://www.cssteap.org)

**ANNOUNCEMENT BROCHURE**

4<sup>th</sup> INTERNATIONAL TRAINING COURSE ON SMALL SATELLITE MISSIONS

November 16 to 27, 2015

Conducted by

IRIS Satellite Centre (ISAC) The Institute of Space and Astronautical Sciences (ISAS) National Institute of Remote Sensing (NIRS) Indian Institute of Space Science and Technology (IISST) Government of India, Dehradun, India

Co-sponsored by

Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP) (Affiliated to the United Nations) IRIS Campus, Dehradun, India Website: [www.cssteap.org](http://www.cssteap.org)

# Achievements

**Total: 1524 (49 AP countries\*)**

- 769 from PG courses
- 755 from short courses

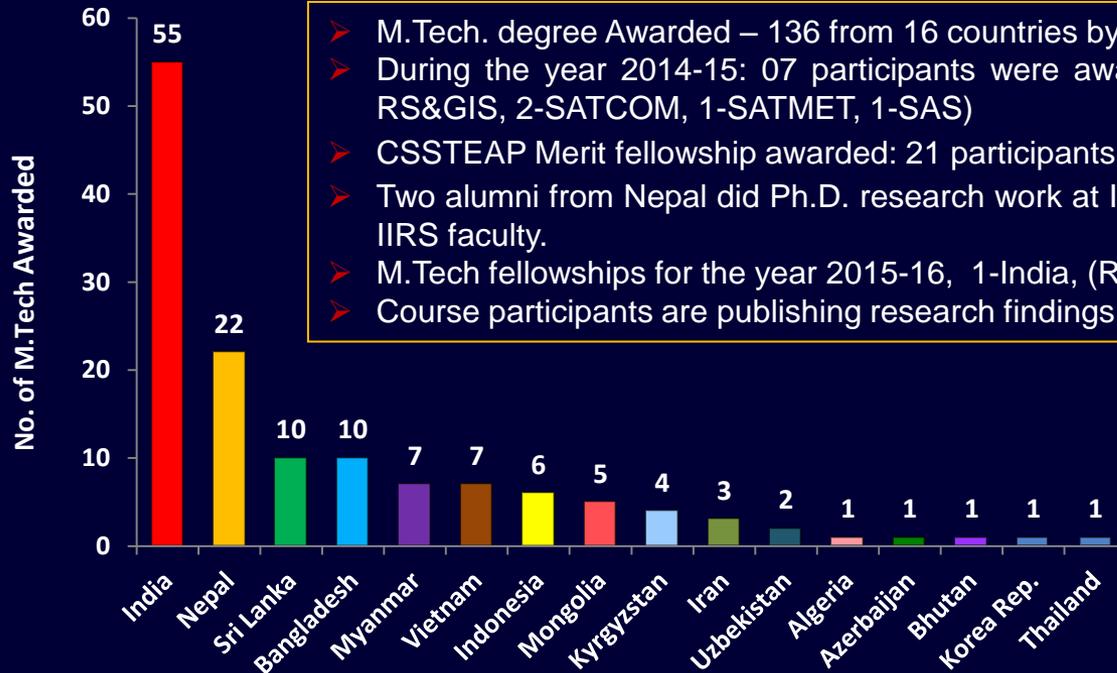
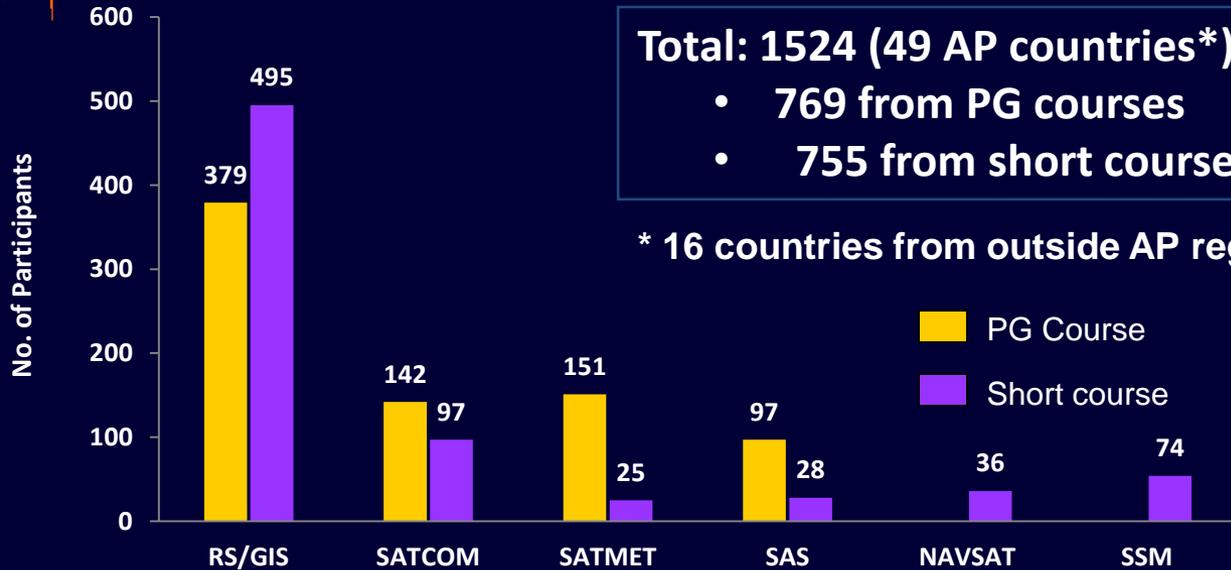
\* 16 countries from outside AP region

**PG Courses conducted:**

- RS & GIS – 19 (Every year)
- SATCOM – 09 (OY)
- SATMET – 09 (EY)
- SAS – 09 (EY)

**Short Courses conducted:**

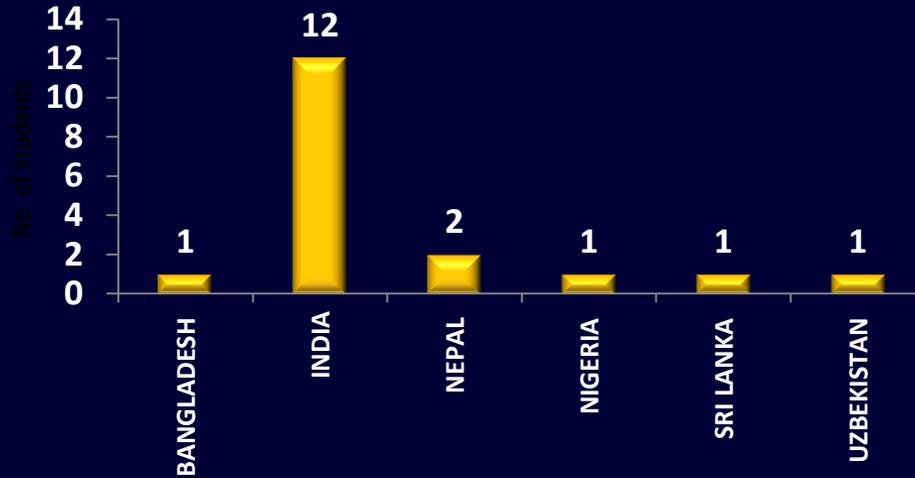
- RS & GIS – 26
- SATCOM – 05
- SATMET – 02
- SAS – 01
- NAVSAT – 03
- SSM – 04



- M.Tech. degree Awarded – 136 from 16 countries by Andhra University, Visakhapatnam, India
- During the year 2014-15: 07 participants were awarded M.Tech degree from Andhra University (3-RS&GIS, 2-SATCOM, 1-SATMET, 1-SAS)
- CSSTEAP Merit fellowship awarded: 21 participants (RS&GIS) & 02 Participants (SAS) since 2004.
- Two alumni from Nepal did Ph.D. research work at IIRS, Dehradun under guidance and supervision of IIRS faculty.
- M.Tech fellowships for the year 2015-16, 1-India, (RS/GIS) & 3-India (SAS) have been awarded.
- Course participants are publishing research findings in Journals & National/Intl. symposia.

Course	M.Tech. Awarded
RS & GIS	66
SATCOM	35
SATMET	17
SAS	18

- High Resolution Aerospace Image Analysis for Geo-hazard Assessment: Jan 25 - Feb 12, 2010
- 18 participants from 6 countries

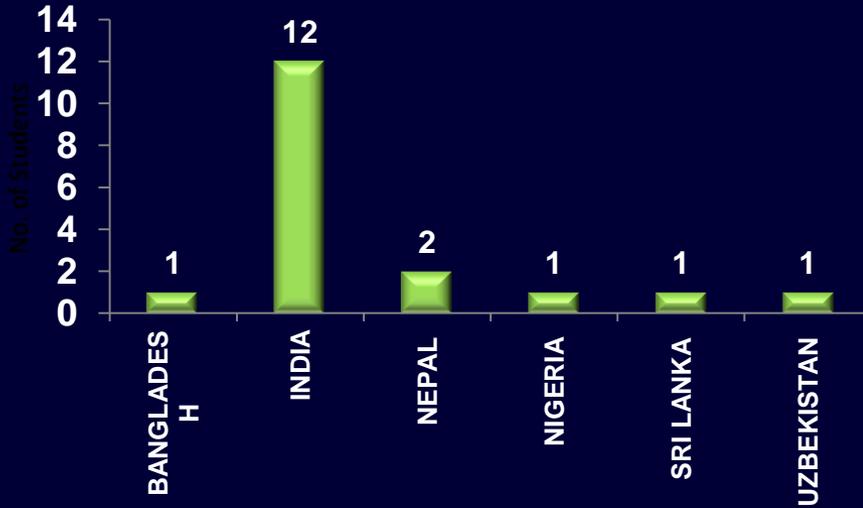


- Application of Space Technology for Disaster Management: April 12 – May 7, 2010
- 14 participants from 10 countries

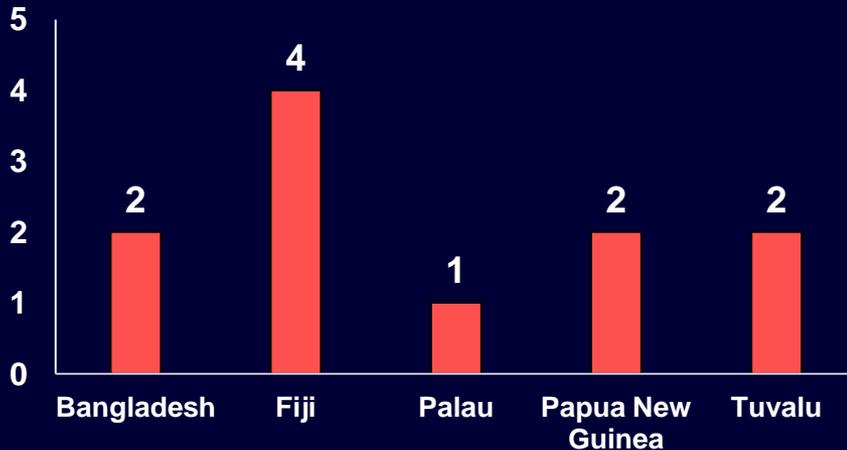


# Capacity Building Regular Short Courses

- Workshop on Open Source Geospatial Tools: 12 -14 January, 2011
- 18 participants from 6 countries



- RS&GIS Applications for Coastal Hazards Mitigation & Sustainable Development for Pacific countries: 5-16 December, 2011
- 11 participants from 5 countries



# Capacity Building Regular Short Courses

- Microwave Remote Sensing & its Applications: 04 – 29 April, 2011
- 26 Participants from 16 countries



- Workshop on Open Source Geospatial Tools: April 2-4, 2012
- 31 participants from 12 countries

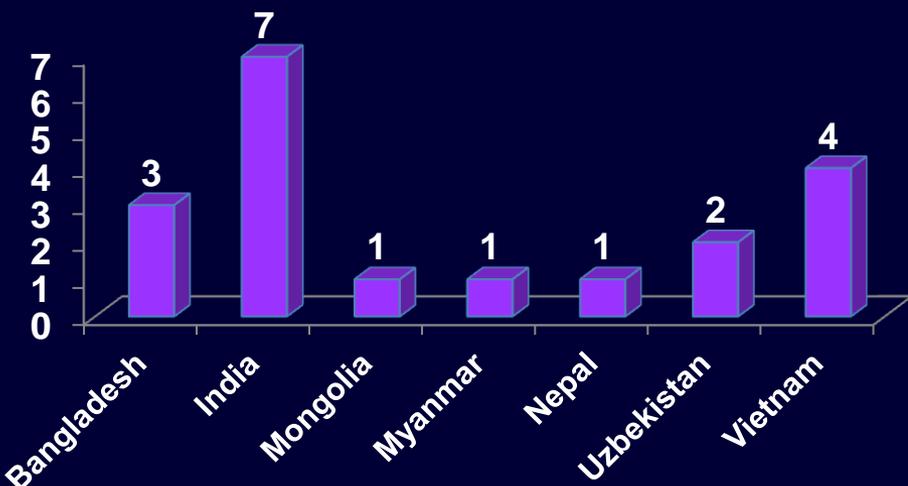


## Regular Courses

- Application of Space Technology for Disaster Risk Reduction April 9 – May 4, 2012
- 27 participants from 17 countries
- With UNOOSA/UNSIIPDER, UNESCAP



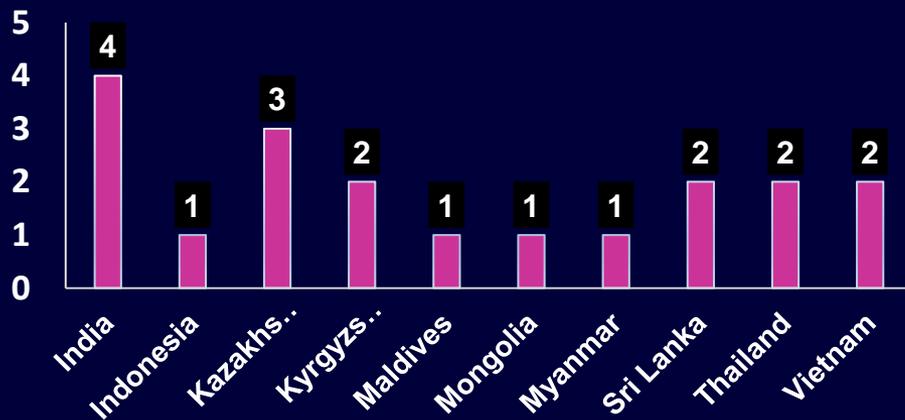
- Short course on Hyperspectral Remote Sensing: June 3-28, 2013
- 19 Participants from 07 countries



Short course on Microwave Remote Sensing (SAR) & its Applications: May 5 –30, 2014  
 20 participants from 7 countries



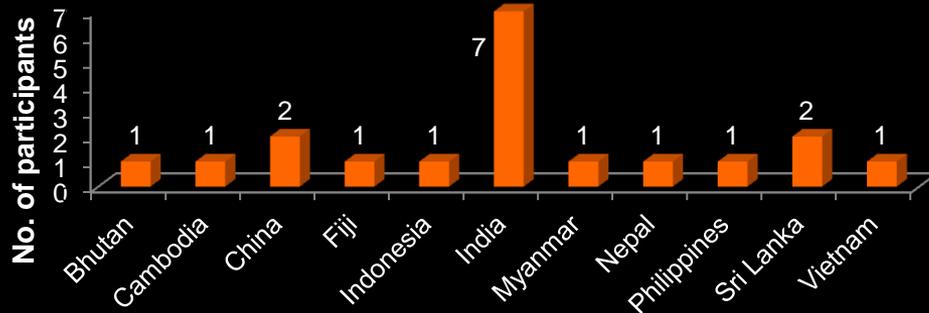
- Geospatial Technologies for Coastal & Marine Disaster Management & Climate Change: May 4-31, 2015 jointly with UNESCAP
- 19 participants from 10 countries



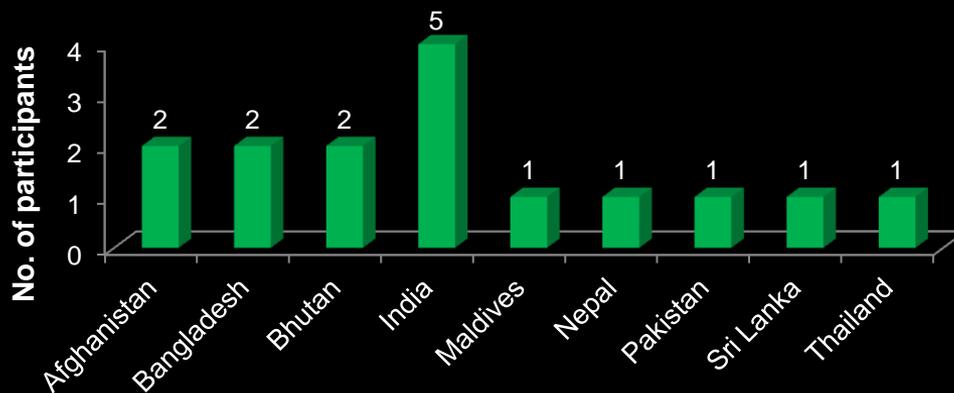
# Special Short Courses on DRR

## Special Programmes with UN Agencies

- Flood Risk Mapping & Modeling and Assessment using Space Technology: July 22-26, 2013 (Hyogo Framework)
- 19 participants from 11 countries
- Funded by UNOOSA/UNSIPIER, UNESCAP and IWMI



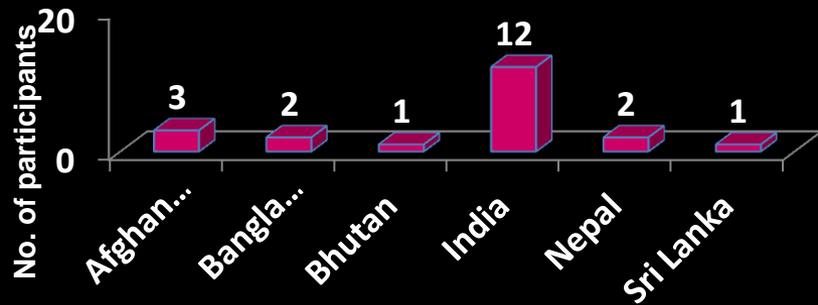
- Sub-regional training on development of Geo-referenced Information Systems for Disaster Risk Management: 26-29, August 2013
- 16 participants from 9 countries
- Funded by UNESCAP



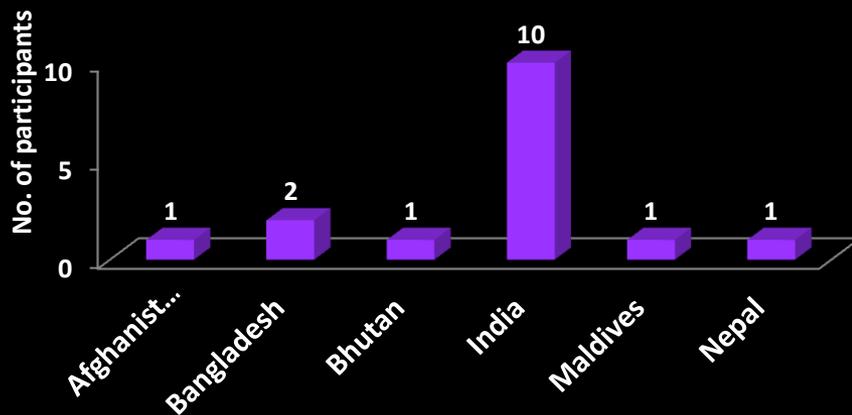
# Special Short Courses on DRR

## Special Programmes with UN Agencies

- SAARC Regional Training Programme on GIS & RS Technology in Disaster Risk & Emergency Management in South Asia: July 14-15, 2014
- 21 participants from 6 countries
- Funded by SAARC Disaster Management Centre



- Expert Group Meeting & Specialized Training on Disaster Rapid Impact Assessment using Space-Based Information for SAARC Countries: Dec. 1-4, 2014
- 16 participants from 6 countries
- Funded by UN-ESCAP



# Special Short Courses on DRR

## Special Programmes with UN Agencies

- Short course on **'Earth Observation for Disaster Response, Recovery and Preparedness'** for Bhutanese Officials: April 13-17, 2015
- 19 Participants from Bhutan
- Organized by UNDP, CSSTEAP, and UNSPIDER at IIRS, ISRO, Dehradun
- Funded by UNDP Bhutan



# Short Courses Conducted on DRR

S.N.	Course	Year	Participants	Countries
1.	International short course on <b>Geoinformatics for Disaster Management</b>	2002	12	9
2.	International short course on <b>Geoinformatics for Disaster Management</b>	2004	20	14
3.	International Training Course on Application of Space Technology for Disaster Management Support with Emphasis on <b>Flood Risk Management</b>	2007	18	12
4.	International Training Course on Application of Space Technology for Disaster Management Support with Emphasis on <b>Drought Monitoring, Desertification</b> & Crop Yield Prediction	2008	16	9
5	International Training Course on Application of Space Technology For Disaster Management Support with emphasis on <b>Geological Risk Mitigation</b>	2010	14	10

S.N.	Course	Year	Participants	Country
6	Special Course on High Resolution Aerospace Image Analysis For <b>Geo-Hazard Assessment</b>	2010	18	6
7	Short Training Course on Remote Sensing and GIS Applications for <b>Coastal Hazard Mitigation and Sustainable Development for Pacific Countries (UNESCAP)</b>	2011	11	5
8	International Training Course on Application of Space Technology for <b>Disaster Risk Reduction (UNESCAP, UNSPIDER)</b>	2012	27	17
9	Development of <b>Geo-referenced Information System for Disaster Risk Management (UNESCAP)</b>	2013	16	9
10	Expert Group Meeting & Specialized Training on <b>Disaster Rapid Impact Assessment using Space-Based Information (UNESCAP)</b>	2014	16	6
11	SAARC Regional Training Programme on GIS & RS Technology in <b>Disaster Risk &amp; Emergency Management in South Asia (SAARC)</b>	2015	21	6
12	International Training Programme on Earth Observation for Disaster Response and Recovery Preparedness for <b>Bhutanese</b> Officials (UNDP, Bhutan, UNSPIDER)	2015	19	1

# CSSTEAP Programmes 2016

## 9 months: Post Graduate Diploma

	Programmes	Starting Date	Frequency
1	RS &GIS	July 1, 2016	Every year
2	SATMET	August 1, 2016	Every even year
3	SAS	August 1, 2016	Every even year
4	SATCOM	August 1, 2017	Every odd year
5	SAS	August 1, 2017	Every odd year

**Admissions open**

# Short Programmes

2- weeks to 1 month

	Programmes	Starting Date	
1	RS&GIS: Advances in Forestry & Ecology	23.5.2016	21.6.2016
2	Navigation Satellite Positioning System (NAVSAT)	Oct-Nov.	Every year
3	Small Satellite Mission (SSM)		
4	Numerical Weather Prediction Modelling	18.4.2016	17.4.2016
5	Space Weather	9.5.2016	8.6.2016
6	Disaster damage and loss assessment using satellite data including natural heritage and cultural sites with UNESCO C2C	July- August, 2016	July- August, 2016
7	Capacity building of SAARC satellite users on satellite communications and core applications	Nov.-Dec. 2016	Nov.-Dec. 2016

Admissions open

# Government of India Support to CSSTEAP

- Welcomes fully or partially self-sponsored candidates
- Centre provides to and fro international travel to all participants (also UNOOSA, UNESCAP, UNSPIDER, etc.)
- Fellowship to all the participants
- Book and Project allowance to all the participants
- Access to all the facilities, library, recreation, Gym, etc.etc.
- International hostel (AC accommodation, kitchenette facility for cooking, Internet, etc.)
- Individual computer to all (computer and open source RS&GIS software)

# Government of India Support to IIRS

MEA, Govt. of India under Indian Technical & Economic Programme (ITEC/SCAAP) provides financial support since 1954.

SCAPP (Special Commonwealth Assistance for Africa Programme), 161 countries in Asia & the Pacific, Africa, Latin America & the Caribbean and East & Central Europe

- Digital Image Processing
- Geoinformatics
- Geo-informatics for disaster risk reduction (2/4 weeks)
- ASEAN : Government of India will be funding Capacity Building activities for Long and Short-Term Programmes in synchronous with CSSTEAP programmes

# International Cooperation



RCSSTEAP and Beihang University 2016

Hon. Minister, Government of Bangladesh 2015



Australian Consul General visit 2016



# Educational activities in and out-side the campuses



An ISO 9001-2008 Institute



IRS MAIN BUILDING  
RRSSC HUBAG  
CSITE - AP  
GEORFORMATICS  
AUDITORIUM  
HOSTEL

***THANK YOU***

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