CENTRE FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION IN ASIA AND THE PACIFIC

(Affiliated to the United Nations).

Background document for
28th meeting of the Governing Board

Date: December 12, 2023

ISRO Hqrs., Bengaluru

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

Indian Institute of Remote Sensing Campus
4, Kalidas Road, Dehradun-248001, India

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Agenda – 3

Endorsement on the appointment of Dr. Raghavendra Pratap Singh as Director, CSSTEAP

Background:

- The Center for Space Science and Technology Education in Asia and the Pacific (CSSTEAP) was established in India on November 1, 1995 under an agreement signed initially by 10 member countries of the region. As of today 18 member countries have signed the agreement.
- As per the Article IV.5 of the agreement, the Governing Board will appoint the Director and the Deputy Director of the Centre for which each member of the Governing Board nominates its candidates.
- As per the Article VI (1, 2 & 3) of the agreement, the center shall be headed by the Director, who would guide overall programme of the centre. He/She will be assisted by a Deputy Director in the day-to-day administration of the centre. The Director and Deputy Director will be stationed in India. The Director and the Deputy Director shall be appointed for a period of three years and may be re-appointed if the governing board decides so for an additional period of two years. The Director and the Deputy Director shall be from different countries.
- Since the establishment of the Centre, Prof. B.L. Deekshatulu, Dr. V.K. Dadhwal, Dr. George Joseph, Dr. P.S. Roy, Dr. Y.V.N. Krishnamurthy, Dr. A. Senthil Kumar and Dr. Prakash Chauhan from India and Prof. Karl Harmsen from the Netherlands have served as Director of CSSTEAP.

Appointment of the last Director

- Dr. Prakash Chauhan, the then Director, IIRS was appointed as Director, CSSTEAP with the due approval of the Governing Board during the 24th GB meeting held on December 02, 2019 at Bengaluru. As per this, he was appointed the Director of CSSTEAP with effect from 1st April 2020 after the term of Dr. Senthil Kumar ended on 31st March 2020. Dr. Chauhan was appointed as Director, NRSC on March 2022 and he continued as Director CSSTEAP till October 2023 when Chairman, CSSTEAP GB and Secy. DOS appointed the current Director IIRS, Dr R.P. Singh on October 06, 2023 with additional responsibility of Director CSSTEAP.

Current Proposal:

- To endorse the appointment of present Director IIRS, Dr R.P. Singh with additional responsibility as Director CSSTEAP, the proposal is put for approval of the Governing Board.
- Dr. R.P. Singh (Born on 10 December 1967) is currently Director of Indian Institute of Remote Sensing, ISRO at Dehradun w.e.f April, 2022. Dr R.P. Singh has been in the grade of Scientist/Engineer – G since July 2019.

- ❖ Dr R.P. Singh received M.Sc. degree in Physics from IIT, Delhi and Ph.D. degree from Banaras Hindu University, Varanasi. He started his career at Space Applications Centre, ISRO, Ahmedabad in 1991 and has made outstanding contribution in the area of Earth and Planetary (Mars) observations and their scientific applications. Prior to Joining Indian Institute of Remote Sensing (IIRS) Dehradun, he was Group Director at Space Applications Centre, Ahmedabad.
- ❖ He was member of Indian Mars Mission study team and led a team of scientists for scientific analysis of data from Mars Orbiter Mission as Principal Investigator of Thermal Infrared Imaging Spectrometer instrument. His major contributions in field of Earth Observations are related with sensor system studies and retrieval of geophysical parameters. He has worked towards development of techniques for crop monitoring, detection of greenhouse gases, ecological studies and hydrological applications.
- ❖ He is associate fellow of Gujarat Science Academy (GSA) and Chief Editor, Journal of Geomatics of India Society of Geomatics. He is recipient of prestigious Prof. P. R. Pisharoty Memorial Award 2005 of Indian Society of Remote Sensing.

D. Profile of Dr. R.P. Singh

- Professional Contributions and Positions held – Annexure
- Biodata of Dr. R.P. Singh – Annexure
- List of publications – Annexure

The proposal is placed before the governing board for approval.

Agenda – 7

Confirmation of minutes of previous GB meeting

The 27th GB meeting of the CSSTEAP was held on December 14, 2022 at DOS office, New Delhi. The minutes of the meeting were circulated to all GB members on March 21, 2023. The suggestions received from GB members are incorporated. The final version of the 27th GB minutes is enclosed as **Annexure 2.**

The GB may kindly approve the minutes.

Agenda – 8

Action Taken Report of 27th Meeting of CSSTEAP Governing Board

Action No.	Related Para No.	Action	*Action taken*
27/1	27.20	To explore possibility of adding Space Policy and Law in CSSTEAP Courses	*Action Completed: To this effect, an online meeting was held on May 25, 2023 to discuss the proposed online course on Space Law to be organized by CSSTEAP. Minutes sent to all members on 29.5.23.* *A short online course conducted during Dec. 4-8, 2023*
27/2	27.30.1	To carry out joint training programmes with BRIN	*To this effect, an online meeting was held on May 03, 2023 to discuss the matter. Minutes were sent to BRIN on 4.7.23 and request to initiate at their end.* *The proposed training programme is tentatively planned in first quarter of 2024.*
27/3	27.30.2	To explore the availability of expertise available in ISRO and other institutions in India and UN organizations for introduction of space economy and management in the syllabus as elective paper in the CSSTEAP Courses in 2023	*Online discussions were held with ITC, UT and the proposal will be inducted in next Board of Studies meeting in 2024*
27/4	27.40	To incorporate the additional expenditure for Honorarium and internship in RE 2023	*Matter discussed in Coordination Committee Meeting and part payment has been made.*
27/5	27.41	To organise short course on data acquisition and data processing of EO Satellites at NRSC, Hyderabad	*Two weeks course in DA and DP conducted successfully at NRSC in August & October months 2023*
27/6	27.43	To organize more online courses in 2023	*9 Online courses conducted in 2023. Details in Director's presentation*
27/7	27.49	To increase the living allowance of the CSSTEAP participants from January 2023	*Action completed: Living allowance increased from Jan 2023.*
27/8	27.52	To identify new auditors for 2023	*Action completed: Auditors identified*
27/9	27.53	To explore possibility of contribution from GB	*A request sent by Director, CSSTEAP to all GB members on May 3, 2023 for contribution in*

Action No.	Related Para No.	Action	*Action taken*
		member countries through various grants and sponsorship	*form of funds as well as sponsoring the travel or stay of the candidates nominated by them.*
27/10	27.54	To explore participation of private sector in CSSTEAP courses	*In the year 2023, a few participants have been selected for PG as well as short courses.*
27/11	26.48	To further follow up on the collaboration with GISTDA	*Action Completed: An MoU signed between CSSTEAP and GISTDA on August 3, 2022. There has been preliminary discussion with GISTDA regarding organizing online course on DRR during the first quarter of 2024 for the regions of Asia and the Pacific.*
27/12	26.49	To update the Advisory Committee and involve other organization in the region for joint capacity building in geospatial technology	*Action Completed: AC committee has been reconstituted where DG and CEO, ACCIMT, Sri Lanka, has been included along with other members*

Agenda – 9

Activities of CSSTEAP for 2023 and Future Plans

Activities of CSSTEAP

CSSTEAP has been actively conducting Post Graduate and Short Courses in various disciplines for the last 28 years. Presently Centre is conducting Post Graduate and short courses in the five disciplines, i.e. Remote Sensing and Geographic Information System (RS& GIS), Satellite Communications (SATCOM), Satellite Meteorology and Global Climate (SATMET), Space and Atmospheric Science (SAS) and Global Navigation Satellite System (GNSS). Till date the Centre has conducted 68 PG courses 27 in RS & GIS, 13 in SATCOM, 12 in SATMET, 12 in SAS and 04 in GNSS. The Centre has also conducted several short coursesand workshops in past 28 years. These programmes have benefitted around 3515 participants from a total of 38 countries in the Asia-Pacific region. In addition to this, 68 participants from 25 countries* outside Asia-Pacific regions have also been benefitted. PG Courses have benefitted 1093 participants (Figure 1a) while Short Courses have benefitted 2422 participants (Figure 1b).

Country-wise Output of PG and Short Courses

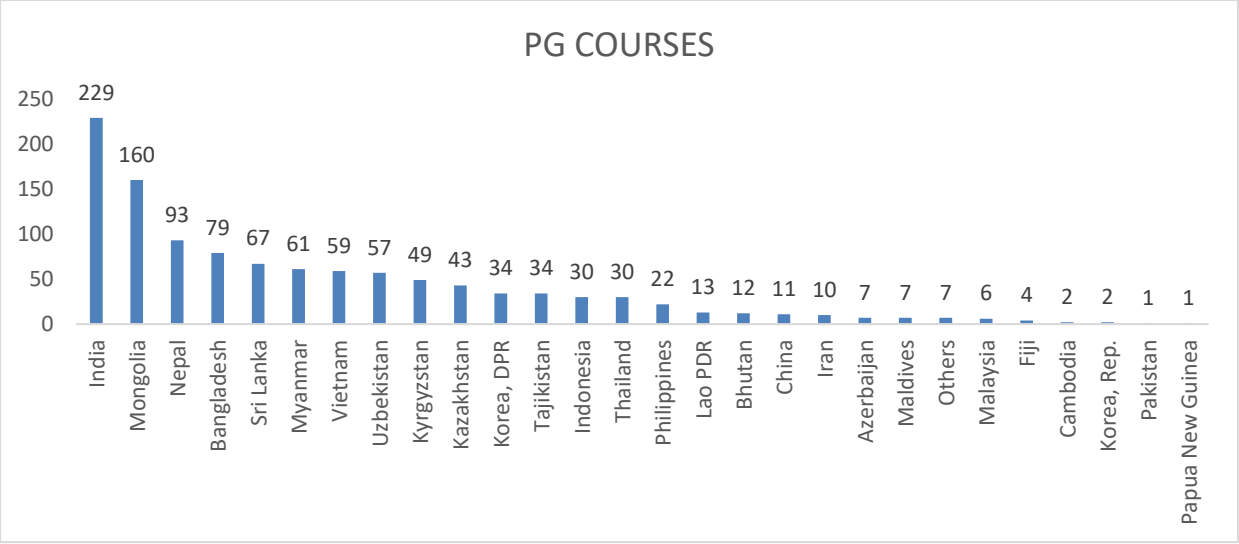

Figure 1a: Country-wise output of CSSTEAP academic programmes of PG

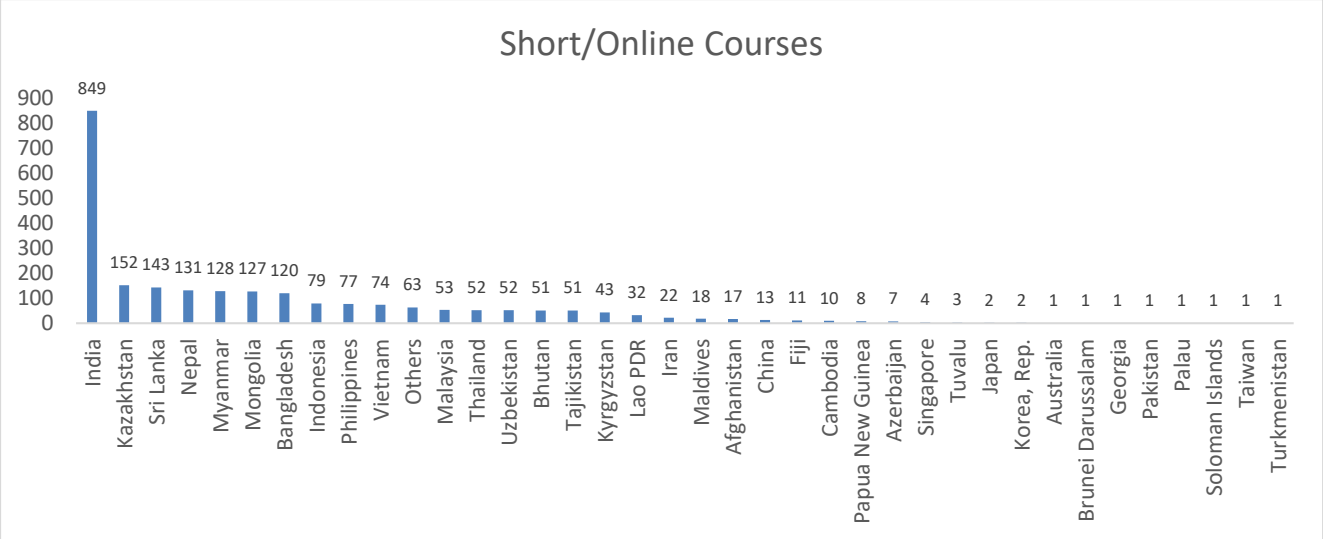

Figure 1b: Country-wise output of CSSTEAP academic programmes of Short/Online Courses

***Others include countries outside Asia-Pacific Region:** Algeria, Bahrain, Bolivia, Botswana, Colombia, England, Egypt, Ethiopia, Ghana, Iraq, Kenya, Madagascar, Mauritius, Mexico, Nigeria, Qatar, Romania, Rwanda, Saudi Arabia, South Africa, Syria, UAE, Yemen, and Zambia.

Academic Activities of Centre

(i) Completed Courses (2023)

During year 2023, the center has conducted 03 post graduate diploma course and 09 online courses and 04 offline short courses, workshops, Special courses, webinar. The details of the courses conductedare mentioned below:

<u>Online Courses (2023)</u>

- Online Short Training course on “Planetary Science “during May 15 -19, 2023. (46 Participants from 7 countries)
- Online Short Training course on “Solar Physics “during May 22-26, 2023. (73 Participants from 11 countries)
- Online Short Training Course on “Use of Space Technology for Weather and Climate Studies” during May 22 to June 02, 2023. (34 participants from 11 countries).
- Online short course on “Open-Source GIS Technology and Geoweb Services” during September 04-15, 2023. (32 participants from 05 countries).
- Online Short Training course on “Overview of WebGIS “during December 18 -29, 2023.
- Online Short Training course on “Fuzzy Machine Learning and Deep Learning for

Remote Sensing Data Classification "during December 04-08, 2023. (19 participants from 12 countries)

- ❖ Online Short Training Course on "GNSS: Advanced Technologies and Applications" during November 28 to December 08, 2023. (37 participants from 09 countries).
- ❖ Online short course on "SAR Data Processing and its Applications" during December 04-08, 2023. (25 participants from 07 countries)
- ❖ Online Short Course on Space Law and Policy during 4-8 December 2023. (57 participants from 10 countries*)*

Offline Short Courses -2023

- ❖ Short Training course on "Geospatial Application in Disaster Risk Reduction for Environmental Disaster (Forest Fire, Heat Wave and Atmospheric Pollution)" during July 17 – 28, 2023. (25 Participants from 13 countries)
- ❖ Short Training course on "Remote Sensing Data Acquisition" during August 21-September 01, 2023. (14 Participants from 07 countries)
- ❖ Short Training course on "Remote Sensing Data Processing" during October 09-20, 2023. (16 Participants from 07 countries)
- ❖ Short Training course on "Small Satellite Mission" during December 04-15, 2023. (20 Participants selected from 10 countries)

* Country-wise participation of candidates in Online/offline Courses is given in table below:

Table: Country-wise participation of candidates (Online/offline Short Courses)

Countries	**RS&GIS**				**SAS**		**SATMET**	
	On-line GISGW 2023	**Off-line DRR 2023**	**Off-line RSDA 2023**	**Off-line RSDP 2023**	**On-line Solar P. 2023**	**On-line PS 2023**	**On-line WC 2023**	**SSM 2023**
Azerbaijan					1		1	
Bangladesh		1	1	2	2	3	5	1
Bhutan			2		4	2	2	
Cambodia		2						
Ethiopia					1			
India	8	1		4	49	34	15	1
Indonesia		4	4	3	9			4
Kazakhstan		2	2	2	2	1		2
Kyrgyzstan		3					1	1
Lao PDR			2				1	

Malaysia					2			
Mali							1	
Mongolia				1				1
Myanmar		2			1	2	2	
Nepal	3	3	1					1
Nigeria	2				1	2	1	
Papua New Guinea		2						
Philippines					1	2	2	3
Sri Lanka	18	1	2	3			3	2
Tajikistan		1		1				
Uzbekistan		2						
Vietnam	1							4
Total	**32**	**25**	**14**	**16**	**73**	**46**	**34**	**20**

Ongoing PG Courses

- 27th Post Graduate course in RS & GIS at IIRS, Dehradun from September 01, 2023 to May 31, 2024. (18 Participants from 10 Countries)
- 13th Post Graduation Course in Satellite Meteorology at SAC, Ahmedabad from September 01, 2023 to May 31, 2024. (08 participants from 04 countries)
- 13th Post Graduate Course in Space in Atmospheric Science at PRL, Ahmedabad from September 01, 2023 to May 31, 2024. (11 participants from 04 countries)

M. Tech. degree awarded/Fellowships

- Till date 195 participants from 17 countries have been awarded M. Tech. Degree in the 5 disciplines (85 participants in RS & GIS; 54 in SATCOM; 23 in SATMET; 27 participants in SAS and 06 in GNSS).
- During the year 2023, 06 participants (03 in SATCOM, 01 in SATMET and 02 in GNSS) who had finished their PG diploma were awarded M.Tech. degree.

(a) Host Country Support

The host country is providing all necessary support and facilities to the Centre.

(b) Financial Support from Other Sources

In addition to the financial support from Department of Space, Govt. of India thefollowing support has been received

- During the year 2023, UNESCAP has provided travel grant to 5 participants of 27th RS& GIS course.

(c) Proposed Courses of CSSTEAP in 2024

The Center will be conducting the different courses in the different centers of the ISRO i.e. IIRS, PRL, SAC, URSC and NRSC.

Planned PG Courses

- 28th RS & GIS PG Course at IIRS, Dehradun, during August 01, 2024 to April 30, 2025.
- 14th Satellite Communications PG Course at SAC, Ahmedabad, during August 01, 2024 to April 30, 2025.
- 05th Graduate Course in Global Navigation Satellite System at SAC, Ahmedabad from August 01, 2024 to April 30, 2025.

Short/ in-campus - Proposed Courses

- Offline short course on DRR- “Use of Interferometric SAR in Landslide and Land subsidence” during June-July 2024
- Short Course on "Space Weather"
- Short Course on "Weather Forecasting using Numerical Weather Prediction Models"
- Short course on “Small Satellite Mission” during December 2024.
- A New Short Course on either "Satellite Oceanography" or "Satellite Remote Sensing for Vegetation Dynamics" during Feb/March 2024
- A Short Course on “Remote Sensing Data Acquisition" July, 2024
- A Short Course on "Remote Sensing Data Processing" October, 2024

Short/ Online - Proposed Courses

- Online Short Course on Forest Carbon Dynamics Assessment using Earth Observation Data during April- May, 2024.
- Online Short Course on Fuzzy Machine Learning and Deep Learning for Remote Sensing Data Classification
- Online Short Course on "Earth's Atmosphere and Climate Change"
- Online Short Course on "Planetary Science"
- Online Short Course on "Solar Physics"
- Online course on "Use of Space Technology for Weather and Climate Studies" during Nov. 2024.

Organizing Alumni Meet in Nepal:

Dr. S. P. Aggarwal, Director, North Eastern Space Applications Centre and former programme coordinator, CSSTEAP visited Nepal during October 5-9, 2023 to attend "2nd International Mountain Summit & 2nd International River Congress. During his visit, it was proposed that an alumni meet of CSSTEAP students may be organized.

The CSSTEAP alumni meet was organized on October 7, 2023 at Pokhara. The meeting was attended by 8 participants from 1999 Batch to 2019 Batch. During the meeting, Dr. S.P. Aggarwal has briefed the alumni about the capacity building opportunities available at CSSTEAP. He has also briefed about the 2 new courses introduced at NRSC, Hyderabad. At the end, a feedback was taken from the alumni. In the feedback, the following points were highlighted:

- The course attended by them at CSSTEAP helped them in their career growth.
- There should be more interaction between CSSTEAP and alumni.
- Weather satellite data can be shared during disaster through CSSTEAP if possible.
- A refresher course should be organized for alumni. However, initially, a webinar can be organized.

Meeting of Coordination Committee:

Coordination Committee meeting was held on November 20, 2023 through virtual mode. The main outcomes of the meeting were as follows:

- Proposal for PhD after PGD course with IIT Roorkee for select candidates across all the CSSTEAP campuses.
- Introduction of new Courses at NRSC, Hyderabad and its impact on expenditure.
- Requirement of one manpower on contract on annual basis for supporting activities of CSSTEAP IIRS, Dehradun.
- Requirement for New Class rooms for CSSTEAP at Bopal Guest House at SAC.
- Civil works and infrastructure upgradation at SAC Bopal Campus for CSSTEAP courses.
- Upgradation of computers RAM of CSSTEAP Lab at IIRS and SAC, Dehradun for CSSTEAP Courses.
- Decision on the type of medal (Silver) to rank holders of PGD courses of CSSTEAP.
- Uniformity in the passing out function across all the CSSTEAP centers
- MOU with National Space Science & Technology Center (NSSTC) similar to the MOU with GISTDA.
- Providing honorarium for Course Director, at PRL for the entire year

Detailed minutes of Coordination Committee minutes are attached in Annexure 3

UN/Austria Post Symposium Tutorial

As part of UN/Austria Symposium 2023 on the theme of "Space for Climate Action" at Graz Austria in Hybrid mode, CSSTEAP has partnered with UNOOSA, and the Indian Space Research Organisation (ISRO), to provide a Massively Open Online Course (MOOC) on “Earth observation for Climate Action”. This MOOC has been widely appreciated and has been lauded by UNOOSA for providing a tool to raise awareness of the use of EO technologies and remote sensing for climate change studies and estimation of climate change impacts and space based data available for the same. The MOOC on Earth Observation for climate Action was initially available for one month, however due to the high demand from international participants, this was extended further for one more month. Around 2476 candidates from 64 countries has successfully completed the course.

Agenda – 10

Ratification of GB decision to Revised Budget of 2023

Formal approval of budget of CSSTEAP for 2023:

The 27th Governing Board meeting of CSSTEAP was held on December 14, 2022, where under one of the agenda items, the Budget Estimates for 2023 were presented to the members for approval. The Budget Estimate for 2023 was discussed and approved for INR 38.445 million subject to the revision by evaluating the expenditure pattern and savings in 2022 budget.

The RE: 2023 is prepared based on the actual expenditure incurred as on 31.10.2023 and the proposed expenditure on activities in the remaining part of the year 2023. The courses constituted long term courses as well as short courses which carried out in campus. Apart from that significant number of courses were held in online mode The RE: 2023 for RS & GIS, SATCOM, SATMET, SAS, GNSS, short-term courses, Research Program and CSSTEAP Office is arrived at INR 35.083 million, which represents a decrease of INR 3.362 million with respect to BE: 2023.

The GB may formally ratify the Revised Budget for 2023 as indicated in Annexure-5.

Revised Estimates 2023 (January to December)

Background of the Centre

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 (UNOOSA) prepared a project document (A/AC.105/534) envisaging the establishment of Centres for Space Science and Technology Education in the developing countries. The objective of the Centres is to enhance the capabilities of the member states in different areas of space science and technology that can advance their social and economic development. The first of such centres, named as Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP) was established in India on November 1, 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), Space Applications Centre (SAC), Physical Research Laboratory (PRL) and UR Rao Satellite Centre (URSC). The Centre is an educational and research institution that already demonstrated high attainment in the development and transmission of knowledgein the fields of space science and technology. The initial emphasis of the Centre has been on in-depth education, research and application programmes, continuing education, awarenessand appraisal programmes. The Centre offers Post Graduate level courses in the fields of (a) Remote Sensing and Geographic Information System, (b) Satellite Communications, (c) Global Navigation Satellite Systems, (d) Satellite Meteorology and Global Climate and (e) Space and Atmospheric Sciences. The Centre also

conducts short-term regular course on Small Satellite Missions and theme-specific courses/workshop in various disciplines and also Navigation and Satellite Positioning System from time to time. A set of standard curricula developed by the Centre and endorsed by the United Nations is followed for the Post Graduate educational programmes. The Centre is affiliated to the United Nations and itslong term educational programmes are recognized by Andhra University, India for award of M. Tech degree.

Role of the Centre

The Centre aims to be a nodal organization in the region responsible for comprehensive capacity building. Guiding principles of the Centre are as follows: -

- Developing indigenous capability at the local level: capacity building in the regionthrough appropriate technology.
- Provision of technical advisory services in the region;
- Provision of information in space science and technology;
- Developing long-term fellowship programmes; Organization of technology transfer programmes;
- Promotion of greater co-operation in space science and technology between developed and amongst developing countries;
- Collaborating with UN and other international agencies in Capacity building in Asia Pacific Region.

Towards this, the Centre engages itself in educational and training programmes, application activities, research, data management, extension activities and awareness programmes.

Management of the Programmes and Host Country Contribution

The Department of Space, Government of India has provided comprehensive facilities to the Centre in terms of institutional support, expert teaching staff, buildings, laboratories and financial support. This has made it possible for the Centre to conduct its educational programmes in an efficient and state-of-the art mode. The Centre conducts its activities in one of the host institutions of Department of Space and enjoys access to all its physical and intellectual facilities. All the educational programmes are conducted in English medium requiring the participants to have proficiency in the language. The candidates aspiring to have admission must have a Master's degree in science or Bachelor's degree in engineering with 5 years' experience in relevant discipline. The courses are conducted with the use of modern teaching methods and the participants are taken to various national facilities on study tours.

Post Graduate Courses

Five Post Graduate Courses of 9-month each are organized. RS&GIS course is organized every year, whereas Satellite Communication and Global Navigation Satellite System is organized every odd year and Satellite Meteorology and Global Climate and Space and

Atmospheric Sciences are organized every even year. List of programmes and host institutions are given in Table 1.

Table 1: List of PG and Short Courses conducted at host institutes

	Educational Programme	**Host Institutional Facility**
1.	Post Graduate Programme in Remote Sensingand Geographic Information System (1st Phase of 9 Months at the Centre followed by 2nd Phase of1 Year at the Home Country)	Indian Institute of Remote Sensing (IIRS), Dehradun
2.	Post Graduate Programme in Satellite Communication (1st Phase of 9 Months at the Centre followed by 2nd Phase of 1 Year at the Home Country)	Space Applications Centre (SAC), Ahmedabad
3.	Post Graduate rogramme in Global Navigation Satellite Systems (1st Phase of 9 Months at the Centre followed by 2nd Phase of 1 Year at the Home Country)	Space Applications Centre (SAC), Ahmedabad
4.	Post Graduate Programme in SatelliteMeteorology and Global Climate (1st Phase of 9 Months at the Centre followed by 2nd Phase of 1 Year at the Home Country)	Space Applications Centre (SAC), Ahmedabad
5.	Post Graduate Programme in Space and Atmospheric Sciences (1st Phase of 9 Months at the Centre followed by 2nd Phase of 1 Year at theHome Country)	Physical Research Laboratory (PRL), Ahmedabad
6.	Short course on Application of Remote Sensing and GIS applications in specific themes	Indian Institute of Remote Sensing(IIRS), Dehradun
7.	Short Course on Remote Sensing data acquisition and data processing	National Remote Sensing Center (NRSC), Hyderabad
8.	Short course on Global Navigation Satellite System	Space Application Center (SAC), Ahmedabad
9.	Short Course on Small Satellite Missions	Indian Institute of Remote Sensing (IIRS), Dehradun and UR Rao Satellite Centre (URSC), Bengaluru
10.	On request Short term courses and workshops in the above disciplines	At above Institutions in collaborative mode

Besides providing infrastructure and manpower support to the programmes of CSSTEAP, the host country has also been providing financial support for educational courses to the tune of around 34 million INR per year.

Short Courses

In addition to PG Courses, CSSTEAP conducts Short term courses & workshops in specific areas of RS & GIS (theme specific), SATCOM, SATMET, SAS, GNSS and Small Satellite Missions. In RS & GIS disciplines every year Short Courses on specific themes are organized. Till date 50 Short

Courses in RS & GIS on specific themes of applications in Natural Resources and Environmental Management, Disaster Management, Biodiversity Management Sustainable Agriculture, Urban Studies, Agriculture Meteorology, Flood Risk Management, application to drought, High resolution aerospace Imagery for Environmental Management, Open Source Geo-spatial tools, Microwave Remote Sensing, Disaster Risk Reduction and Rapid Response, Hyperspectral Remote Sensing, SAR Remote Sensing, Flood Risk mapping, modeling and assessment using space technology and Geo-referenced disaster risk management information systems, Lidar and UAV remote sensing and its application have been conducted. Under SATCOM, 08 Short Courses have been conducted on Distance Education via Satellite, Digital Signal Processing, Satellite Communication for Development, Space Science & Technology for social scientists, Satellite Navigation and Location based Services and Navigation and Satellite Positioning System.

In SATMET, 8 Short Courses / Workshops has been conducted on emerging trends in Satellite Meteorology, Meteorological Application on MW Remote Sensing and Weather Forecasting using Numerical Weather Prediction Model. Under Space Science Stream 8 short course / workshop on data processing from Chandra & YMM Newton Space Mission and spaceweather are conducted. In GNSS 02 short course of NAVSAT was conducted and 12 short courses have been conducted in Small Satellite Missions (SSM).

Source of Funds to CSSTEAP

So far most of the funding for the running of the courses and the Centre has been provided by the Government of India. Besides this, Department of Space/ISRO has made available its facilities for the conduct of the programmes of CSSTEAP. UNOOSA, UN-ESCAP continue to provide limited funds for international travel support for a few participants of PG and Short Courses.

Research

The successful completion of the 9-month PG-Phase of the programme leads to the award of a Post Graduate diploma by the Centre. For the students who successfully finish their PG course and are interested in continuing for a Master of Technology (M. Tech.) degree, the Centre offers the opportunity to do so, in collaboration with Andhra University (AU) in Visakhapatnam, India. To this end, the student has to complete a 1-year research project in an application of space science or technology. This project has to be approved by CSSTEAP and AU, and the research is supervised by designated academic staff of CSSTEAP, AU and the institution where the research is carried out. In most cases the 1-year project is carried out at the home institution of the student concerned. Since 2004 onwards every year selected meritorious PG students are being given fellowships to complete their M.Tech. thesis work at CSSTEAP host institutions. Till date 194 participants from 17 countries have been awarded M. Tech. Degree in the 5 disciplines (85 participants in RS&GIS; 54 in SATCOM; 22 in SATMET; 27 participants in Space Science and 07 in GNSS).

Achievements:

So far, 67 PG courses including ongoing PGD courses and 87 short/online courses and including one webinar have been conducted. More than 3500 participants have benefitted from the programmes of CSSTEAP. Course-wise out-put of students for PG and Short Courses is given in Table 2.

Table 2: List of CSSTEAP Course participants of various PG & Short Courses participated during the year 1996 to 2023.

Year	No. of Course Participants inPG Courses					No. of Course Participantsin Short Courses							Total
	RS&GIS	SAT-COM	GNSS	SAT-MET	SAS	RS&GIS	SAT-COM	SAT-MET	SAS	GNSS	SSM	Special Courses	
1996	25												**25**
1997	23	13					9						**45**
1998	21			17	10			8					**56**
1999	17	18				45	20						**100**
2000	19			21	9	14	18						**81**
2001	20	14				20	13						**67**
2002	23			19	11	12		17					**82**
2003	21	15				37			28				**101**
2004	20			15	9	20							**64**
2005	19	12				17							**48**
2006	22			18	13	12							**65**
2007	18	20				18							**56**
2008	15			16	7	16	18						**72**
2009	17	17											**34**
2010	15			14	12	32							**73**
2011	22	17				64							**103**
2012	21			14	14	58	20				20		**147**
2013	20	16				54	16				15		**121**
2014	21			17	12	57	19				19		**145**
2015	23	16	9			38					20		**106**
2016	19	0	0	13	12	67			13		37		**161**
2017	22	21	12	0	0	42		25			40	44	**206**
2018	24	0	0	13	13	36					46		**132**
2019	22	16	14			202		26	27		28		**335**
2020	0	0	0	0	0	68		63	61		27		**219**
2021	18			6	12	144		43		45	22		**290**
2022	15	14	10			212		24	21		25		**321**
2023						87		34	119		20		**260**
TOTAL	**522**	**209**	**45**	**183**	**134**	**1372**	**133**	**240**	**269**	**45**	**319**	**44**	**3515**

REVISED ESTIMATES 2023 (JANUARY TO DECEMBER)

ACTIVITIES COMPLETED IN 2023

Educational Courses

The nine months PG courses were to be conducted in five different disciplines under the CSSTEAP academic. The Academic courses and short courses which were conducted in 2023 and the courses which will be concluded in 2024 are provided in the following table:

Sl no	Course Name	Course Duration
1.	27th RS & GIS PG Course at IIRS, Dehradun	January to June, 2024 (Course started on September 01,2023)
2.	13th Satellite Meteorology and Global Climate PG Course at SAC,Ahmedabad	January to June, 2024 (Course started on September 01,2023)
3.	13th Space and Atmospheric Science PG Course at SAC, Ahmedabad	January to June, 2024 (Course started on September 01, 2023)
4.	Short Training course on 12th Small Satellite Mission	December 04 -15, 2023
5.	Short Training course on "Geospatial Application in Disaster Risk Reduction for Environmental Disaster (Forest Fire, Heat Wave and Atmospheric Pollution)	July 17– 28, 2023
6.	Short Training course on "Remote Sensing Data Acquisition " and "Data Processing"	August 21-Sept. 01, 2023 October 09-20, 2023.
7.	Online Courses: Training course on "Planetary Science" Short Training course on "Solar Physics" Short Training Course on "Use of Space" Technology for Weather and Climate Studies" Short course on "Open-Source GIS Technology and Geoweb Services". Short Training course on "Overview of WebGIS " Short Training course on "Fuzzy Machine Learning and Deep Learning for Remote Sensing Data Classification " Short Training Course on "GNSS: Advanced Technologies and Applications" short course on "SAR Data Processing and its Applications" Short Course on Space Law and Policy	 May 15 -19, 2023 May 22-26, 2023 May 22 to June 02, 2023 September 04-15, 2023 December 18 -29, 2023 December 11-15, 2023 Nov. 28-Dec. 08, 2023 December 4-8, 2023 December 4-8, 2023

CSSTEAP Office Activities

As the Headquarters of CSSTEAP is located at Dehradun it is the main hub of activities. All the activities related with Director's office like Coordination with Member countries, Host Institutions, Programme coordination, Budget preparation, publication of Newsletters, various official documents & publications, Correspondence withdifferent organizations in Asia and Pacific region, etc. are carried out here.

CSSTEAP is also exploring to conduct off campus course in the countries of Asia and Pacific region. Potential off campus course at Jakarta along with BRIN is being envisaged.

Research and Coordination Activities

Director, CSSTEAP in consultation with the host institutes identifies new research areas and facilitates research work at host institutions in India as well as in their home country.