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

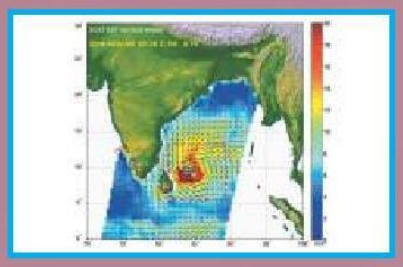
ANNOUNCES

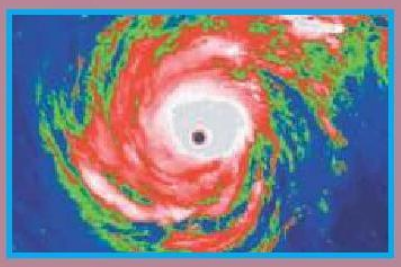
ELEVENTH POST GRADUATE COURSE in SATELLITE METEOROLOGY AND GLOBAL CLIMATE

Conducted at

Space Applications Centre (SAC)
Indian Space Research Organisation (ISRO)
Ahmedabad, India
www.sac.gov.in

ACADEMIC YEAR 2018-2019





Centre for Space Science and Technology Education in Asia and the Pacific (CSSEAP)
(Affiliated to the United Nations)
www.cssteap.org

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INTRODUCTION

The benefits of space technology, both direct and indirect, have introduced new dimensions into the study and understanding of Earth's processes and in improving the quality of life of the people living on it. United Nations has emphasised that all countries should have access to space technology and must share the benefits. An essential pre-requisite to partaking in these opportunities is the building of various indigenous capacities for the development and utilisation of space science and technology. In recognition of such a pre-requisite, a consensus has emerged within the international community; that if effective assimilation and appropriate application of space technology are to succeed in the developing countries, devoted efforts must be made at the local level, for the development of necessary high-level knowledge and expertise in space technology areas. Towards this end, the United Nations General Assembly had called for the establishment of Regional Centres of Space Science and Technology Education in the developing countries.

Under the auspices of the United Nations, through its Office for Outer Space Affairs (UN-OOSA), six regional Centers are established on the basis of regions, that correspond to the United Nations Economic Commissions: Asia and the Pacific (India), Latin America (Brazil), the Caribbean (Mexico), Africa (Morocco and Nigeria) and Western Asia (Jordan). All these Centres are affiliated to the United Nations through UN-OOSA. These Centres use existing facilities and expertise available in education and other research institutions in their respective regions.

ABOUT REGIONAL CENTRE FOR ASIA AND THE PACIFIC REGIONS IN INDIA

The Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP), affiliated to UN, was established in India in November, 1995. The Centre's head quarter is established in Dehradun, India around the infrastructure available at the Indian Institution of Remote Sensing (IIRS), Dehradun, Indian Space Research Organisation (ISRO), Government of India. For fulfilling its programmes, the Centre has arrangements with ISRO which has its campuses at Space Applications Centre, Ahmedabad playing as host institution for programmes related to Satellite Communications and Satellite Meteorology and Global Climate and at Physical Research Laboratory in Ahmedabad for Space and Atmospheric Sciences and at Indian Institute of Remote Sensing (IIRS), Dehradun for Remote Sensing and GIS.

GOALS OF THE CENTRE

The Centre is an education and research institution, capable of high attainments in the development and transmission of knowledge in the fields of space science and technology. The Centre offers best possible education, research and application experience to its participants in all its programmes. The principal goal of the Centre is development of skills and knowledge of university educators, researchers and application scientists, through rigorous theory, research, applications, field exercises and pilot-projects in those aspects of space science and technology that can enhance social and economic development in each country. The programmes aim at development of indigenous capability of participating countries, in designing and implementing space-based research and applications programmes. The Centre will also foster continuing education programmes for its graduates and awareness programmes for policy and decision-makers and the general public.

It should be emphasised that the overall mission of the centres is to assist participating countries in developing and enhancing the knowledge and skills of their citizens in relevant aspects of space science and technology in order that such individuals can effectively contribute to national development programmes.

AFFILIATION TO THE UNITED NATIONS

The Centre has entered into a cooperative agreement with the United Nations which states that the United Nations will cooperate with the Centre by providing expert advice, educational curricula, technical support, necessary documentation and other appropriate

EDUCATIONAL PROGRAMME AND COURSES

The educational programme of the Centre is oriented towards the dissemination of knowledge in relevant aspects of space science and technology. The emphasis of the Centre is to deliberate on education and research of natural resources management along with linkages to the global programmes/databases, pilot studies, continuing education and awareness and appraisal programmes. The curriculum has been developed under the auspices of the UN Office for Outer Space Affairs (UN-OOSA) and the guidelines emerged from the meetings held for Education Curriculum Development for the Centre at Granada, Spain in February/March 1995. These curricula are reviewed periodically by an International Advisory Committee. The activities of the Centre are guided by a Governing Board and Board of Studies.

ACADEMIC ACTIVITIES

The academic activity is divided into two phases. Phase-I is of 9 months duration and executed at the Centre in India. After successful completion of the Phase-I, the participants are encouraged to take up Phase-II research project of one year duration in their home country. Phase-II allows participants to take up research project relevant to their home country or organisation and apply the technologies.

If desired by the candidate, the candidate can submit one year research project to Andhra University, Visakhapatnam, India for Master Degree (M. Tech. Degree). The eligibility criteria of the university will apply. Centre offers one year fellowships to meritorious students which include to and fro one time travel and subsistence allowance, book allowances, etc. The participant needs to come to India to carry out research. The centre encourages participants to work on the subject pertinent to their country.

The Centre offers Post Graduate level courses in the fields of:

(i) Post Graduate Programme: P.G. Courses of nine months duration are organised in the following disciplines:

- Remote Sensing and Geographic Information System (RS and GIS) (at IIRS, Dehradun)
- Satellite Communications (SATCOM) (at SAC, Ahmedabad)
- Global Navigation Satellite System (GNSS) (at SAC, Ahmedabad)
- Satellite Meteorology and Global Climate (SATMET) (at SAC, Ahmedabad)
- Space and Atmospheric Sciences (SAS) (at PRL, Ahmedabad)

Core Modules (Semester I and II) emphasise on the development and enrichment of the basic knowledge and skills of the participants in the technology. This is followed by pilot study, which provides an opportunity to finetune the skills for executing theme-based study.

(ii) Master's Programme: This programme gives an opportunity and continuity in developing higher research skills for those who have completed successfully the nine months P.G. Course. This is subject to qualifying for admission requirements of Andhra University, India. A research project by the scholars is conducted and executed in their respective countries with a view to transfer the technology in his/her organisation. It will also be a test of the methodology and knowledge assimilated during phase-I at the centre.

(iii) Short Courses: Besides P.G. level courses; the centre also conducts short term courses of four weeks duration in specific themes of above subjects regularly. For further details you may please visit our website (www.cssteap.org)

COURSE RECOGNITION BY ANDHRA UNIVERSITY

CSSTEAP has arrangement with Andhra University (Estd. 1926) Vishakhapatnam, India for awarding M. Tech. Degree, subject to the eligibility criteria of the Andhra University. After successfully completing the CSSTEAP, 9 months P.G. Diploma course candidate should complete one year project work successfully for award of Master of Technology Degree (M.Tech. Degree). The terms and conditions of this arrangement are subject to review from time-to-time.

PROGRAMMES CONDUCTED

The Centre has so far conducted 52 post graduate courses in Remote Sensing and Geographic Information System, 10 post graduate courses in Satellite Communication, one PG course in "Global satellite navigation satellite systems, 10 post graduate courses in Satellite Meteorology and Global Climate, and 10 post graduate courses in Space and Atmospheric Sciences. The centre has also conducted several short Courses/Workshops from its inception. These educational programs have benefited 35 countries in the region and about 1835 scholars have been benefited from the programme. 21th RS & GIS PG course at IIRS Dehradun and 11th SATCOM PG, 2nd GNSS PG Course at SAC, Ahmedabad are in progress. In addition to this 30 participants from 19 countries outside Asia-Pacific region have also been benefited. PG Courses have benefited 863 participants while Short Courses have benefited 1002 participants.

ANNOUNCEMENT OF ELEVENTH POST GRADUATE COURSE IN METEOROLOGY AND GLOBAL CLIMATE

Duration : 9 Months – from August 1, 2018 to April 30, 2019

Venue : Space Applications Centre (Bopal Campus)
Indian Space Research Organisation
Department of Space (Govt. of India)
Ambawadi Vistar P.O.
Ahmedabad - 380 015, India

No. of Participants : 20 (Twenty)

Last date for receipt of applications : March 01, 2018

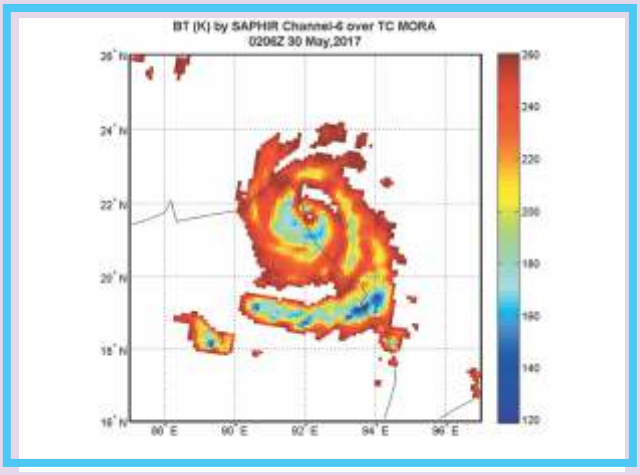
WHO CAN APPLY?

The course is designed towards the professionals and specialists working in the meteorological centres, educational institutes, and involved in active research in weather forecasting & climate. It is strongly expected that the participating scholars will be able to:

- ❖ Serve as catalysts for furthering the skills and knowledge of other professionals in their countries.
- ❖ Contribute to policy making, planning, development and management of Satellite Meteorology and its applications in their countries.
- ❖ Enhance the self reliance of their countries so as to lessen dependence on external experts.

HOW TO APPLY?

Applications are invited from candidates in countries of Asia and the Pacific Region for the 11th P.G. Course in Satellite Meteorology and Global Climate. All the candidates need to be nominated/sponsored (i.e. endorsed) by recognised institutions (e.g. ministries or universities in their respective countries). Nominating/sponsoring institutions/authority should ensure that on return, the scholar will be given opportunity to work in a development oriented activity in the area of newly acquired knowledge and skills. The execution of one year research project work in his/her respective country is the beginning of this process and it is assumed that sponsoring authority will facilitate one year research project in the home country. However, the Centre will provide long distance scientific guidance. Eligible and meritorious students will be offered one year M.Tech. Research Fellow to come to India and do the research.



Please submit the duly filled application form through the CSSTEAP Governing Board member of your country to the Indian Embassy/High Commission in your country. (For list of the members please see inside of the front cover page and our website www.cssteap.com for contact details). However, the applicants from non-Governing Board Member countries need to submit completed application forms to the Centre through the Indian Embassy/High Commission in the respective country. **The application should be completed in all respects and accompanied by attested and/or certified copies of all the certificates (School, Bachelor's and Master's, TOEFL, English Proficiency, etc.). Wherever, these certificates are**

issued in a language other than English, the same may be translated in English and certified by the Head of the organisation or provide English transcription of all such documents.

Completed application forms should be sent through the Indian Embassy/High Commission in the respective country to:

Dr. B. Simon

Course Director, CSSTEAP, SATMET - 11

Atmospheric and Oceanic Sciences Group (AOSG),

Space Applications Centre (ISRO),

Department of Space, Govt. of India,

Ambawadi Vistar P.O., Ahmedabad - 380 015.

Gujarat, India.

Phone : +91 79 2691 6067

Fax : +91 79 2691 6078

Email : babysimon@gmail.com

cssteapsatmet@sac.isro.gov.in

Website : www.cssteap.org

However, advance copies of the application form signed by Head of the nominating/sponsoring agency, may be sent to the above address for taking necessary advance action (either by FAX or scanned document through e-mail or speed post).

Preference in selection will be given to those candidates whose expenses are fully or partially borne by themselves or sponsoring agency.

To download application form or to know more about CSSTEAP, its past and future programmes, list of participants and countries who have been benefited from these courses and the Pilot Projects carried out through these programmes, please visit us at www.cssteap.org

ELIGIBILITY FOR ADMISSION

Master's degree or equivalent in Physics, Meteorology, Mathematics, Applied Mathematics, Oceanography, Geophysics or allied subjects with at least 5 years of experience in teaching/research or professional experience in the field or Meteorology and/or related disciplines. (For candidates with higher qualifications, the minimum experience may be relaxed). Graduate level knowledge in Physics and Mathematics is essential besides the Master's degree requirements.

Important and Mandatory

The selected applicants will be required to bring original documents for verification at the time of reporting in India.

SELECTION PROCEDURE

The Centre will select the candidates through a well laid procedure, which includes satisfying academic eligibility, proficiency in English language, funding/forwarding by nominating/sponsoring authority/organisation, country representation, etc. Only selected candidates will be intimated by 30th April, 2018 and list of selected candidates will also appear at Centre's web-site (www.cssteap.org). Preference in selection will be given to those candidates whose expenses are borne by the candidate and/or sponsoring agency. Once a candidate has been sponsored and admitted, the nominating/sponsoring authority/organisation or candidate need to inform at least 15 days in advance for withdrawal or cancellation of the candidature. If the sponsoring authority wishes to call back its candidate after joining the Centre or in the middle of the course or the candidate wants to leave the course and go back to his/her country, the travel cost needs to be borne by either sponsoring authority or by the candidate.

ABOUT HOST INSTITUTE

Space Applications Centre (SAC), one of the major centres of the Indian Space Research Organisation (ISRO), is responsible for the applications programmes of ISRO. It extensively interfaces with the actual users of satellite systems. SAC is active in R & D in the fields of Satellite Meteorology & Oceanography, Remote Sensing and Satellite Communications.

ISRO has an important programme in Meteorology and Oceanography. The INSAT-1 series of four satellites and the indigenously developed INSAT-2A, B, E, 3D, 3DR geostationary satellites had operational Very High Resolution Radiometers (VHRR), designed and developed at SAC, provide cloud images, winds etc, for cyclone tracking and other weather observations. Currently INSAT-3A and Kalpana 1 (METSAT) and recently launched INSAT-3D/3DR, with additional sounding capability are in use and data are being received at SAC. Microwave radiometers for atmospheric and oceanic observations were flown on Bhaskara I and II satellites more than 20 years ago.

IRS-P4 (Oceansat-1) launched in 1999 had a Multi-channel Scanning Microwave Radiometer (MSMR) besides an Ocean Color Monitor (OCM). Megha Tropiques, a joint collaborative project with CNES, France, launched in October 2011 carries a MW radiometer, sounder and radiation budget instruments. ISRO has also launched Saral Altika and Oceansat – II SCATSAT for sea surface for winds, ocean color and ocean circulation studies. These instruments provide inputs to the meteorological and oceanographic observations particularly over the Indian and the Pacific Ocean regions for studying rainfall, El Nino and related phenomena, besides many regional problems like tropical cyclone/hurricane, summer, winter monsoons, etc. ·

Data from the Indian INSAT and IRS satellites and from non-Indian meteorological / oceanographic satellites like NOAA, ERS, SSM /I, TRMM, TERRA, AQUA, $QUARIS, CALIPSO, CLOUDSAT, GPM etc. are being utilised by the scientists at SAC. Information on Sea Surface Temperature (SST), winds, temperature-humidity profiles, etc. is being retrieved. There is also a very strong programme of using these data for applications in monsoons, tropical cyclones and other important weather phenomena of the region, besides many oceanographic applications, such as gyres, Salinity, sea mounts, bathymetry, ocean circulation, etc. General Circulation Models, WRF Models in various time scales are being used by assimilating these satellite data for carrying out impact and prediction experiments. Climate research using numerical models and satellite data is one of the thrust areas.

For land based remote sensing, SAC has designed and developed payloads for operational Indian Remote Sensing (IRS) satellites starting from 1st operational satellite IRS 1A (1988), Resourcesat-2 / 2A, CARTOSAT-2E, a follow on mission for the Resourcesat-1, payloads LISS-4, AWIFS A & B and LISS-3 cameras were developed & qualified at SAC and are configured to provide continuity of data with enhanced performance.

These include Linear Imaging Scanning Sensors (multi-spectral and higher resolution panchromatic cameras) and Wide Field sensors. Applications towards earth resources (land and marine) have been developed such as: agriculture, forestry, geology, water resources of various types, fisheries, offshore oil exploration, environment, soils/land covers, urban/rural/district level planning, coastal zone management, terrain mapping, etc.

SAC has also established and operationalised a Meteorological and Oceanographic Data Archival Centre (MOSDAC) at its Bopal Campus with a view to disseminating quality data products from ISRO satellite missions on near real time basis and to promote synergy of different sources of satellite data into practical and usable datasets for R&D in atmospheric and oceanic studies.

In the field of satellite communications, payloads for APPLE, INSAT-2 & INSAT-3 transponders etc., have been designed and developed at SAC. Payload development activity at SAC started with the India's first experimental communication satellite APPLE. Since then, SAC is involved in the conceptualisation, design & development of advanced communication systems. Many transponders are added to the INSAT fleet. GSAT-14, Navigation payloads IRNSS Series were developed and launched. GSAT-14 communications satellite has the domestic communications capacity at Extended C and Ku-Bands. It carries two Ka Band beacons for propagation studies. IRNSS series will provide time and position signals across the Indian subcontinent and ocean region, enabling these services on a completely indigenous footing. Assembly, Integration and delivery of payloads for GSAT-17, GSAT-19 have been delivered. New technologies like ETM Rubidium Atomic clock, Optical terminal for 1 GPS Link, Establishment of SAC-Bopal Free Space Optical link and System engineering for advanced communication payloads were developed. BES–Bopal Earth Station facility at Bopal SAC Campus caters to EUMETCAST and VHRR data reception from INSAT series of Satellites. Ahmedabad Earth Station (AES) is mainly involved in SATCOM based operations and Experiments including Special events at SAC main campus and Bopal campus through BES. It supports Space-Net based Video Conferencing Facility, VHRR data reception, SATCOM course under CSSTEAP. In ground segment, SAC has been engaged in the design, development, installation and commissioning of a number of earth stations for different SATCOM experiments and applications. Presently SAC is engaged in a number of projects involving design and development of VSAT, S-band Digital Audio Broadcasting Receiver, S-band Mobile Satellite System-reporting terminal, Satellite-based interactive Direct Reception TV System for development, education, training etc. A number of indigenous technologies developed by SAC for INSAT ground systems like Radio Networking Terminal, Disaster

Warning System (DWS), Meteorological Data Collection Platform, Meteorological Data and News Dissemination System, etc. are manufactured and marketed by Indian industries. Data Reception and Processing System for INSAT and NOAA, processor for Local User Terminal of INSAT Search and Rescue System, Satellite News Gathering Terminals, etc., developed by SAC are fully operational.

ISRO is embarked on the space exploration with Chandrayaan-1 and Mars Orbiter Mission (MOM) with Chandrayaan-2 on pipeline. SAC has significantly contributed in realising of Chandrayaan payloads and analysing the chandrayaan-1 data. SAC has played key role in developing the payloads for MOM.

Sensors for future generation of Remote Sensing satellites, including the high resolution SAR, Scatterometer and transponders for future generation of INSAT-4 series of communication satellite are also being developed at SAC. The campus of SAC is situated in the western outskirts of the city of Ahmedabad, (latitude 22.8 deg. N and longitude 72.5 deg E) in Gujarat State of Western India. A new SAC campus was established in the western suburb of Ahmedabad and houses the training facilities and the residential complex for the participants of CSSTEAP. A new Bopal Campus is developed for payload integration and checkout.

FACULTY

The faculty for the course constitutes of scientists in different fields, drawn from Space Applications Centre, India Meteorological Department, other Centres of Indian Space Research Organisation (ISRO) and various other agencies / universities from India. These experts have long and varied experience in the retrieval, analysis of various satellite data and their applications. An active modeling group involved in experimenting with various weather and climate models also exists at the Centre. The core faculty has a strong scientific background with a number of publications, experience of participating in international scientific programmes, organising a number of courses etc. to their credit. A few visiting international experts are also invited to deliver lectures on advance and specialised topics. In past, experts from Bureau of Meteorology (Australia), EUMETSAT (Germany), Japan Meteorological Agency (JMA), NOAA, KNMI (Netherland), US Universities and Malaysian Meteorological Services, etc. have delivered lectures.

MEDIUM OF INSTRUCTION

The medium of the instruction/teaching is English. **Proficiency in written and spoken English is most essential. Candidates who are not proficient in English should not apply.** Applicants, who have done their higher studies in a medium (language) other than English, are required to submit TOEFL score or a diploma/certificate of English language issued by an accredited language institution or by the local UNDP for satisfactory establishment of the applicant's competence in spoken and written English language. Preference will be given to those who secure high score in TOEFL examination. Supporting document regarding the accreditation of the institute should the enclosed along with application.

TEACHING METHODS AND FACILITIES

Modern facilities exist at the Centre for class-room teaching and practical instructions/demonstrations. Printed as well as digital course materials of the lectures are supplied. Earth stations located in Bopal and SAC campus receive and process INSAT, Megha Tropiques, Saral-Atlika, Ocansat-II, Scatsat satellite data. There is a strong computer support with high and low power work-stations, a large number of PCs, standard peripherals, etc. and all are interconnected through network. The computing facility is updated for climate model simulation. Facilities also include state-of-the-art General Circulation Models (GCM), mesoscale models (MM5, WRF), ocean circulation model, ocean wave Model, and image processing, graphic and visualisation softwares, 4-D GIS etc. The group has access to global data from different satellites through EVMETCAST. A Meteorological satellite data archival center exists at SAC. One of the major strengths of the institute is its library with latest subject literature, text books, e-books, online-journals, etc.

PEFORMANCE EVALUATION

The performance of the participants is assessed through written, interactive-sessions and/or computer-assisted practical exercises. Independent assessments of theory exams are conducted by external and internal faculty. However, the practical examination is conducted jointly. The participants need to pass each examination paper. Participants, who fail to qualify in the examinations in the nine months course, may be considered for award of only a "Certificate of Attendance" by the Centre.

AWARD OF DIPLOMA / DEGREE

On successful completion of the Phase-I study, i.e. nine-months course, the participants will be awarded Post Graduate Diploma. Certificate of Attendance will be given to the candidates who fail to qualify. If the participant is able to complete Phase-II Project work, i.e. research project in home country satisfactorily within four years thereafter the work can be submitted to the Andhra University (India) for award of M. Tech. Degree.

COURSE EXPENSES

The overall expenses of the course are given below, this is besides the international travel (to and from city of the course participant to course venue):

- Course Fee : Approximately US $ 6000 per participant
- Local tours : US $ 1200 per participant
- Living expenses : US $ 1100 per participant

The participants are expected to find suitable sponsorships or funding for meeting the expenses while attending the course in India.

FINANCIAL ASSISTANCE TO PARTICIPANTS

For the current course, Government of India (GOI) has offered to bear the course fee of US $ 6000 per participant of the Asia-Pacific region selected by the Centre. Thus, no course fee is payable by the selected participants from the Asia Pacific region. However, preference will be given to sponsored candidate.

Government of India has also offered a limited number of Fellowships consisting of the following:

- Living expenses in India : INR 16,000 per month for the duration of 9 months.
- Book allowance : INR 2,000 per annum (One time)
- Project allowance : INR 1,500 per annum (One time)
- Local tour and travel expenses : Up to INR 50,000

The Centre is trying to obtain financial assistance for international travel for a limited number of participants of the Asia-Pacific region through agencies like UN Office for Outer Space Affairs (UN-OOSA), UNESCAD, etc.

Candidates proposing to avail the GOI Fellowship and the international travel assistance have to specifically request for the same in Application Form. Candidates who are not offered GOI Fellowship and travel assistance, have to make their own arrangements for living expenses and international travel.

HEALTH AND LIFE INSURANCE

Medical, life and disability insurance should be undertaken before reaching India, by the participants themselves or on their behalf by their sponsoring institute/organisation for covering entire health and disability risks. No medical expenses will be borne by the Centre. However, participants who receive the Fellowship of the GOI will be paid medical expenses for minor ailments on actual basis (as out patients only) as and when such expenses are incurred. The centre will have only limited liabilities as far as medical expenses are concerned in such cases. ***Candidates must clearly specify if they are suffering from any health disorders which may affect their study programmes. Candidates in sound physical and mental health only should apply.*** Participants, who are not covered by appropriate Medical insurance while in India, would be required to take a Medical Insurance policy in India by themselves.

In case if any medical information requiring attention is hidden and if found during the course, the centre will be compelled to send the candidate back home and all expenses towards the same will be borne by the candidate/sponsoring organisation.

ACCOMMODATION

Accommodation for the participants only will be arranged in Hostel. Kitchenette facility will be made available to all the participants. A sum of Rs. 1500/- per month is to be paid by each participant towards accommodation charges. Boarding and other expenses such as cooking gas are to be borne by the participants. Spouse/no other person will be allowed to stay along with the candidate in the hostel during the entire tenure of the course. Staying in hostel is compulsory for all the participants and staying outside is strictly not allowed.

EDUCATIONAL TOURS

As part of the course, the participants will have the opportunity to visit different centres of ISRO/Dept. of Space, Govt. of India and other organisations concerned with Satellite Meteorology related research.

SATMET COURSE AT A GLANCE

The Satellite Meteorology and Global Climate Course of 9 months duration have two semesters spread in three modules. The first module covers basic concepts in Satellite Meteorology and Remote Sensing, besides image interpretation aspects. The second module will focus on parameter retrieval and specific application areas using mainly digital information. Problems specific to the region and modeling aspects will also be covered here. In the third module, each scholar will formulate and execute a Pilot Project under the guidance of the faculty. These three modules are described below:

Module - 1: Fundamentals of Meteorology, Climatology and Remote Sensing (Three Months)

Theory

- **Concepts in Meteorology and Climatology:**
  - ✓ Basic concepts of Meteorology, Climatology and Oceanography
  - ✓ Mathematical and Computational Techniques for Satellite Meteorology
- **Concepts in Satellite Meteorology:**
  - ✓ Principles of Meteorological Remote Sensing
  - ✓ Overview of Meteorological Satellites / Orbits
- **Image Processing & Interpretation and GIS:**
  - ✓ Image Processing Techniques and Geographic Information System (GIS)
  - ✓ Image Interpretation in Meteorology and Weather Forecasting

Laboratory Exercises

- ❖ Computer Orientation
- ❖ INSAT-VHRR cloud characteristics, feature extractions and applications
- ❖ NOAA-AVHRR Data Processing – feature extractions and applications
- ❖ Estimation of Rainfall using INSAT-VHRR data
- ❖ Meteorological data processing
- ❖ Cloud Motion Vectors and Applications

- ❖ Image Processing for Meteorological Applications
- ❖ Visualisation and analysis of Meteorological Data, Demo of Application of satellite data in Tropical cyclone

Module - 2 : Advance Concepts and Techniques in Satellite Meteorology and Global Climate (Three Months)

Theory

- **Geophysical Parameter Retrieval**
  - ✓ RT Theory, Atmospheric Parameters
  - ✓ Land and Oceanic Parameters

- **Applications of Satellite Derived Parameters**
  - ✓ Applications in Meteorology and Weather Forecasting
  - ✓ Satellite Data Assimilation in Numerical Models
- **Global Climate and Environment**
  - ✓ Short Term Climate Variability
  - ✓ Long Term Climate Change
  - ✓ Environment Issues and Societal Impacts

Laboratory Exercises

- ❖ Temperature and Moisture profiles from NOAA-ATOVS/AIRS/INSAT-3D/IASI and validation
- ❖ Geophysical Parameter Retrievals from MW Radiometer data / Megha Tropiques (MT)
- ❖ Humidity Profiles from AMSU-B/SAPHIR-MT
- ❖ Fog Monitoring, Climate simulation Demo
- ❖ SST from MODIS/NOAA-AVHRR/INSAT-3D data and study of Ocean Thermal features
- ❖ Assimilation of Satellite Data in Numerical Weather Prediction (NWP) Models
- ❖ Agromet Applications
- ❖ Cloud radiative forcing (CRF) using Satellite data [SCRab/ERBS/CIRRUS]

Module – 3: Pilot Projects (Three Months)

The topics of the projects are of relevance to participant's region involving extensive use of satellite data and applications.

PHASE II: ONE YEAR PROJECT

Each participant after completing Phase-I of the course, will have to carry out an approved project in his/her home country for a period of one year. This is to be formulated jointly by the scholar and his/her advisor at the Centre during Module 3 of Phase I in an area relevant to the interest of the sponsoring institution/country. The sponsoring institution/country is obliged to guarantee on the return the scholar would remain in a suitable position with commensurate and progressive remuneration and other entitlements for a minimum period of 3 years and will be provided all facilities to carry out the work. This course programme will be considered complete on acceptance/approval of the submitted project report.

ABOUT ANDHRA UNIVERSITY

Andhra University was established in 1926. It is a premier institute of higher learning and it became a trendsetter in higher education and university administration. It is accredited with 'A' Grade by National Assessment and Accreditation Council of India and is the first composite university in India to get ISO 9001 – 2008 certificate. Andhra University is a multi-disciplinary university and has 6 constituent colleges within the university campus.

The University is strong in all faculties and was headed by the greatest personalities like Dr. C.R. Reddy, and Dr. Sarvepalli Radhakrishnan and others as Vice-Chancellors.

Andhra University is considered to be one among the 14 best Universities in India in terms of Research by the Department of Science and Technology, Govt. of India.

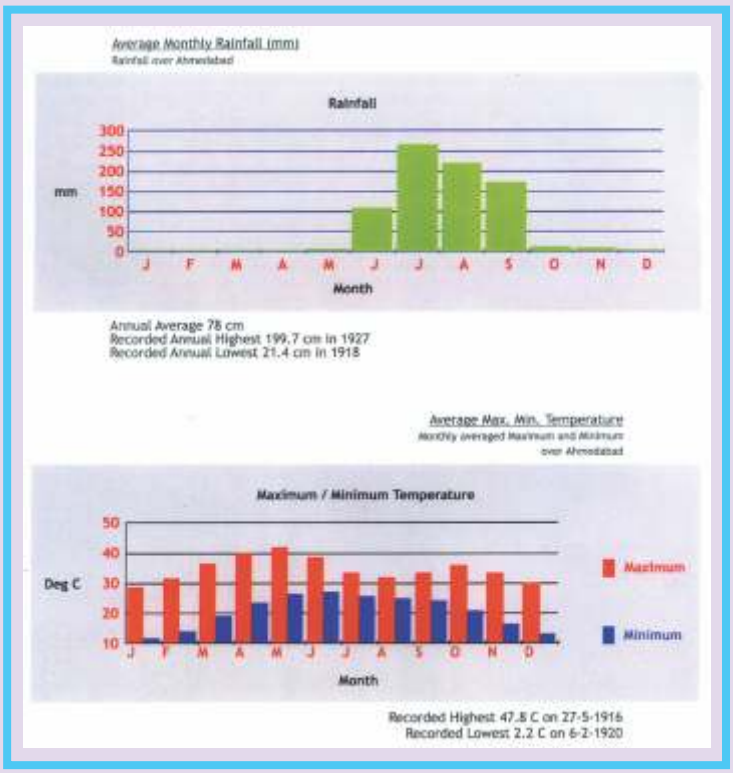
Andhra University also offers Ph.D. programmes in a various specialisation of contemporary interests by all the Departments.

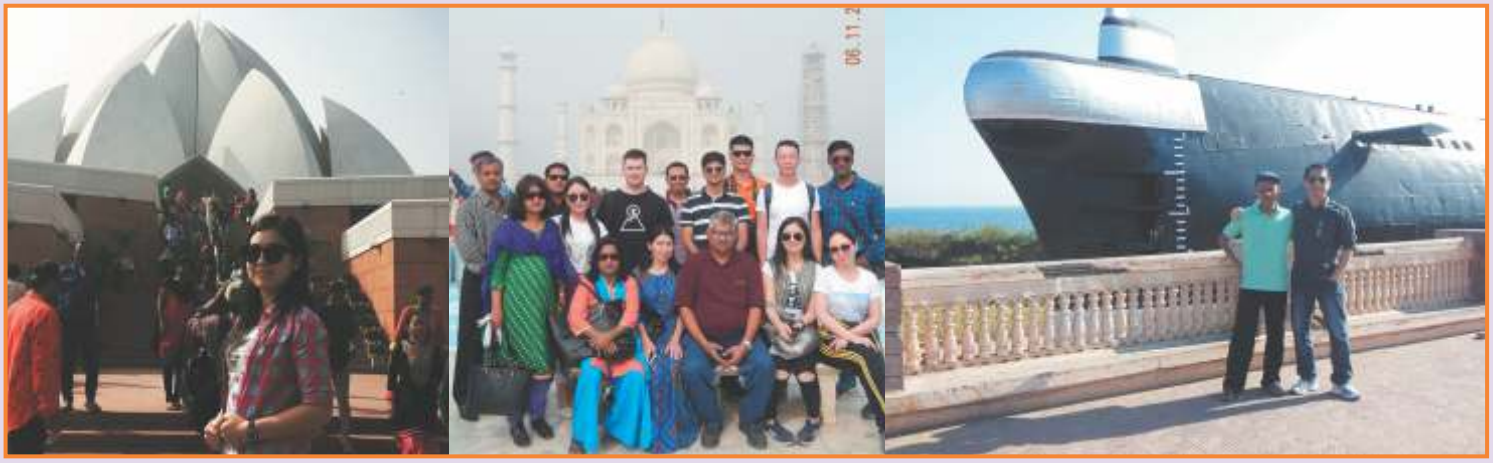
ABOUT AHMEDABAD CITY

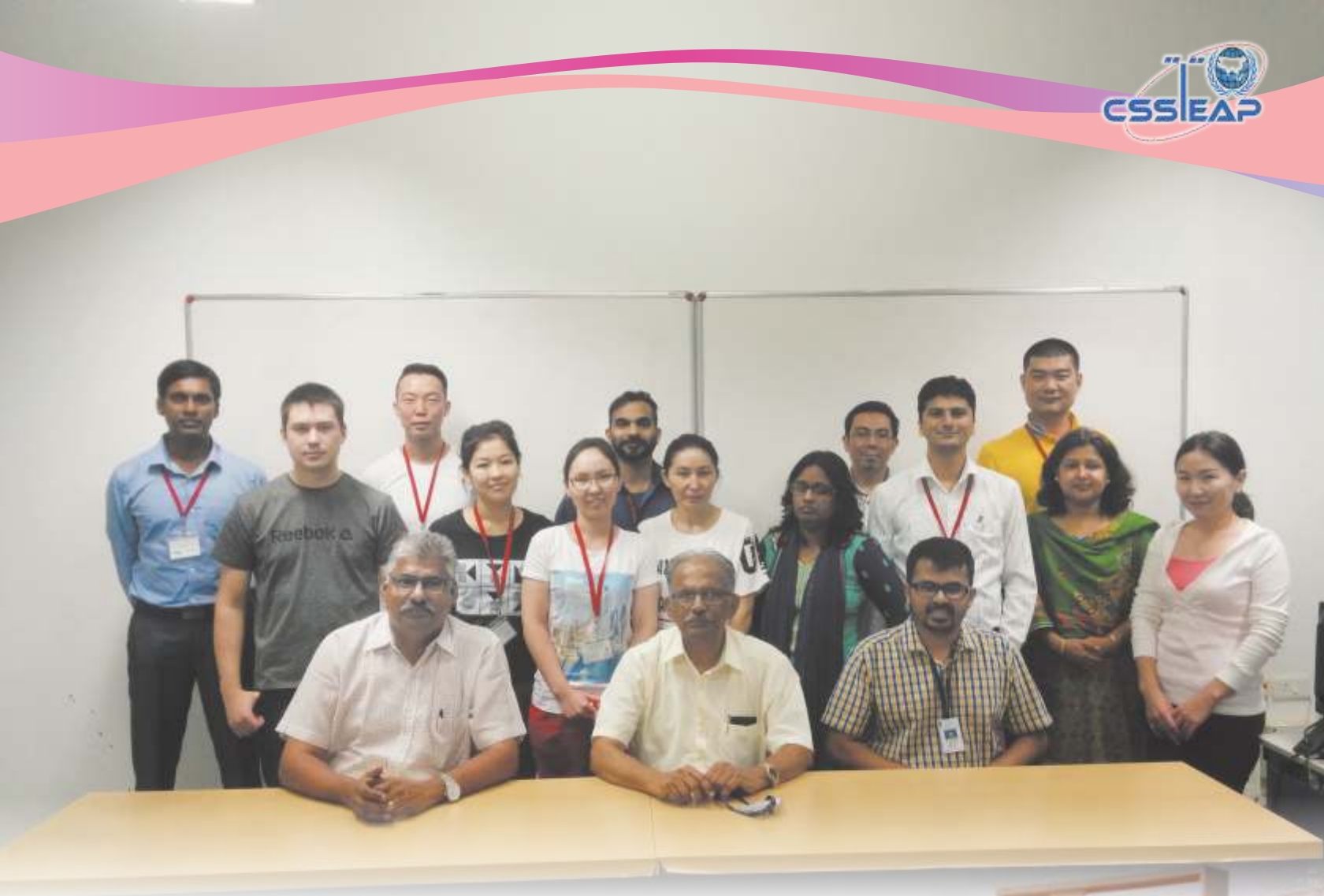
Ahmedabad is an important business centre in western India. A large number of textile mills and other industries are located in and around Ahmedabad. Well-known educational and research institutions like Indian Institute of Management, Physical Research Laboratory, Ahmedabad Textile Industries Research Association, National Institute of Design, Space Applications Centre, Institute of Plasma Research etc. are located here in addition to many Universities including Gujarat University and Gujarat Vidyapeeth. The famous Sabarmati Ashram, from where Mahatma Gandhi organised the non violent movement during India's freedom struggle, is also situated here.

Ahmedabad is well connected to all important cities of India by air, rail and road. International airports of Delhi and Mumbai are about an hour's flight time from Ahmedabad. A few international flights also land and originate at Ahmedabad.

The nine day dance festival of Garba (October-November) followed 20 days later by the light and sound festival of Deepawali, the kite festival of Makarsankranti (January 14) and the colour festival of Holi (March) are occasions to enjoy in Ahmedabad.







CENTRE FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION IN ASIA AND THE PACIFIC
(AFFILIATED TO THE UNITED NATIONS)

APPLICATION FORM FOR ELEVENTH POST GRADUATE COURSE IN "SATELLITE METEOROLOGY AND GLOBAL CLIMATE"

August 1, 2018 to April 30, 2019
at
Space Applications Centre, Ahmedabad, India
Last date for receipt of application: March 01, 2018

SATMET-11
(for office use only)

Application No.:.....

Date Received :.....

(Please type or use **CAPITAL LETTERS**)

Affix Recent Passport size Photograph

Important:
All the correspondence (issue of admission letter, e-tickets for travel, enquiries, etc.) from CSSTEAP with the applicants will be through emails on internet and sometimes on phone (Home/ Office), therefore kindly ensure that email-id(s), phone(s), fax, etc., are correctly and clearly mentioned.

1. Name (Dr/Mr/Mrs/Miss): ..... (As mentioned in the Passport)

2. Father's Name: ..... **3**. Name of mother/husband/wife: .....

4. Date of Birth (DD/MM/YYYY): .....**5.** Place of Birth: .....

6 Gender (Male/Female): .....**7.** Nationality: .....

8. Contact Information: Present official Address (Valid until what date):

.....

.....

Contact number: (Please give complete Phone No. with country, city codes)

Home : ..... Office : .....

Mobile :.....

Fax : ..... E-mail : .....

Important:

a) Interested persons may detach last 4 pages from this brochure and use them as Application form.
b) It is essential that full passport details are mentioned in the Application Form or provided to the Centre at the earliest.
c) Application Forms without passport details may not be considered.
d) Providing alternate email-id would ensure timely communication with applicants.
e) Please note, for faster communication with the applicants, CSSTEAP Secretariat will be using your email-id for all purposes (e.g. admission letter, air tickets and logistic arrangement)

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9. Permanent home Address (in your country):

……

……

Contact number: (Please give complete Phone No. with country, city codes)

Telephone:……

Fax: ……

E-Mail (alternate, preferably G-mail or Yahoo):……

10. Nearest International airport (Specify the place/city):……

11. ACADEMIC QUALIFICATIONS:

Degrees (Bachelor/Master)/ Diploma	Duration of Course (mention from which year to year)	University/ Institution	Year of Passing	Grade/ percentage	Major Subjects/ specialization

(Enclose copies of Degree/Diploma/Certificates/marks/ grades obtained etc. and their certified translation in English)

Major subjects in last examination: ……

Area of Specialization: ……

Medium of Instruction/Language:…… TOEFL Score: ……

Proficiency in English – tick (✓) in appropriate item below:

Reading : Fair ☐ Good ☐ Very Good ☐ Excellent ☐

Writing : Fair ☐ Good ☐ Very Good ☐ Excellent ☐

Spoken : Fair ☐ Good ☐ Very Good ☐ Excellent ☐

(Enclose certified copies of marks/grades of degree, diploma, TOEFL(validity period), etc. certificates and their certified translation in English)

12. DETAILS OF EXPERIENCE:

(a) Present Position: ……

Present Responsibilities *:……

Organisation and Complete Address……

……

Date of joining this Organisation (dd/mm/yyyy): ……

* Attach additional sheets giving details of your technical activity during last one year (2016-2017)

(b) Experience during past 15 years:

Name of Organization(s)	Position(s)/ Post (s) held	Nature of work done	Duration

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13. (a) Activities & Projects in which your present organisation is engaged (mandatory) and nature of your duties *

……

……

……

(b) Main Scientific/Technical facilities available in your organization *
(Including approximate number and type of computers, type of software available etc.)

……

……

……

*If required attach separate sheet.

14. Have you done any other course from CSSTEAP (If 'yes'; please give details including the month & year)

……

15. How do you foresee, the proposed PG Diploma Course in SATMET will help you

……

……

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16. DETAILS OF PASSPORT : Please provide valid passport details below and if not holding a valid passport, please forward copy of the passport whenever available.

Passport Number	Place of Issue (City and Country)	Date of issue	Passport valid up to	Issuing Authority	Whether previously visited India if so place and date of last visit

17. PHYSICAL FITNESS:

a) Are you suffering from any recurring/chronic/serious communicable disease which may affect your study program in India?

b) If yes, please specify nature of illness (Candidates are advised to attach medical fitness certificate from a government hospital or government recognized hospital on hospital letter head)

18. How do you propose to meet the international travel & stay expenses in India? (preference will be given to those who will make their own travel or both travel and stay arrangement himself/herself)

……

……

19. DECLARATION BY THE CANDIDATE:

I have read the announcement brochure and will abide by the rules and regulations of the Centre and maintain discipline harmony and will not indulge in unlawful activities in campus hostel or during educational and field visits. I have made/ am making/ have not made travel arrangements for attending the course and local expenses for the period of stay in India.

Date:
Place:

Signature of the candidate

20. SPONSORING / NOMINATING / ENDORSING AGENCY CERTIFICATE:

Dr/Mr./ Ms……….…………………....………….....………………is sponsored/ endorsed by……………………………… to attend the **Eleventh Post Graduate Course in "Satellite Meteorology and Global Climate"** to be held at Space Applications Centre, Ahmedabad, India during August 1, 2018 – April 30, 2019. We envisage to utilize his/her experience in specific tasks of our organisation / agency. The candidate will be allowed to report back to the organisation and carryout the project work for a period of one year after his/ her return to this country and will be provided with all the facilities required for the same. Following statements are mandatory for certification by the sponsor.

a) He/ She will be/ will not be provided international travel support.
b) He/ She will be/ will not be provided financial assistance for the period of stay in India.
c) He/ She possesses adequate knowledge of English Language required for the course.

(Mandatory: please tick appropriate option)

Date:………………..	Signature:
Place:………………	Name in Capital Letters:
	Designation:
	Phone No:
	Fax No:
	E-mail:

(Official seal of the nominating/ sponsoring authority)

Note : Application without official seal of sponsoring or nomination authority and their details will not be considered

21. FORWARDING NOTE BY THE RESPECTIVE INDIAN EMBASSY/HIGH COMMISSION IN YOUR COUNTRY OR YOUR EMBASSY/HIGH COMMISSION IN INDIA, NEW DELHI

This is to forward the application of Dr/Mr. / Ms. ……………….………………………….of …………………………… (Specify the Country Name here) for the 9 months Post Graduate Course in SATMET - 11 of CSSTEAP to be held at Space Applications Centre, Ahmedabad, India during August 1, 2018 – April 30, 2019.

Date :	Signature :
Place :	Name :
	Designation:
	Phone No:
	Fax No :

(Official Seal of the Embassy/High Commission)

Note : **Application without official seal** of the Embassy or High Commission will not be considered

N.B. Please send an advance copy of the application form duly signed by the sponsoring agency to the Course Director SATMET-11, Space Application Centre, Ahmedabad, India by fax (+91-79-2691-6078/6075) or Email to babysimon@gmail.com, cssteapsatmet@sac.isro.gov.in for quick processing. Original copy to be sent through Indian Embassy/High Commission of your country after duly signed by the sponsor or through your Embassy/High Commission in New Delhi, India.

IMPORTANT

- The Application which is not complete in all respects is likely to be rejected.
- Candidates must attach copies of certificates of:
  - a. Medical fitness to attend the course including Chest X-ray (PA), Blood Test (including Random Blood Sugar, HIV, HBs, Ag), Urine complete (in case any medical information requiring attention is hidden and if found during the course, the centre will be compelled to send the candidate back home at the cost of nominating agency or candidate).
  - b. Attach copy of Highest degree obtained (Degree certificate and marks sheet/grade card)
  - c. Proof of Proficiency in English needs to be provided or certificate provided by the nominating agency.
  - d. Attach copy of All Degree Certificates, if not in English, may please be translated in English and attested by the Head of the organization or transcript in English can also be submitted.
- Expecting mothers are advised to take a judicious decision before applying and joining the course.
- Smoking and consuming alcoholic drinks in class room and office campus is prohibited.

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IMPORTANT DATES FOR SATMET – 11 COURSE

Last date for Receipt of Applications	March 01, 2018
Information of Selection	April 30, 2018
Commencement of Course	August 1, 2018
Completion of Phase-I (in India)	April 30, 2019

Mail the application form on the address given below through Governing Board member (list on inside of the front cover page of this brochure) to Indian Embassy/High Commission in your country.

To,

Dr. B. Simon
Course Director, SATMET-11, CSSTEAP
Space Applications Centre (Bopal Campus)
Indian Space Research Organisation
Department of Space, Govt. of India
Ambawadi Vistar P.O.,
Ahmedabad – 380 015 – Gujarat (INDIA)

Phone : (O) +91 – 79 – 2691 6067
Fax : +91 – 79 – 2691 6078, +91-79-2691 6075
Email : babysimon@gmail.com, cssteapsatmet@sac.isro.gov.in

Note : Also mail an advance copy of the application form signed by the sponsors to the same address for taking necessary advance action.

Headquarters
IIRS Campus
4, Kalidas Road
Dehradun- 248 001 (INDIA)
Tel: +91-135-2740737 & 2740787
Fax: +91-135- 2740785
Email: cssteap@iirs.gov.in
Website: www.cssteap.org

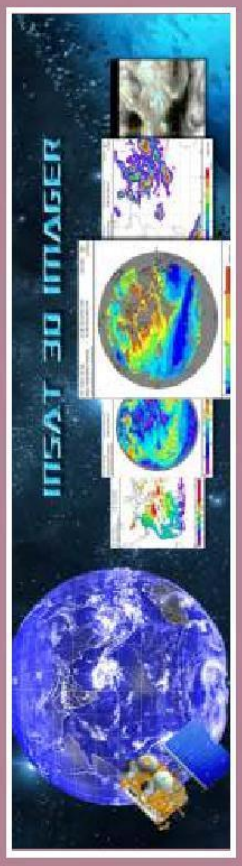
IIRS Campus
Indian Institute of Remote Sensing
No. 4, Kalidas Road
Dehradun - 248 001 (INDIA)
Tel: +91-135-2744 583
Fax: +91-135-2741 987

SAC Campus
Space Applications Centre
Ambawadi Vistar P.O.
Jodhpur Tekra
Ahmedabad- 380 015 (INDIA)
Tel: +91-79-2691 3344
Fax: +91-79-2691 5843

PRL Campus
Physical Research Laboratory
Navrangpura
Ahmedabad- 380 009 (INDIA)
Tel: +91-79-26314759
Fax: +91-79-2630 2275

ISAC Campus
ISRO Satellite Centre
Vimanpura Post
Bengaluru- 560017 (INDIA)
Tel: +91-80-2520 5252
Fax: +91-80-2520 5251

Delhi Office
Department of Space
Lok Nayak Bhawan
3rd floor, Khan Market
New Delhi- 110 003 (INDIA)
Tel: +91-11-2469 4745
Fax: +91-11-2469 3871



GSLV Mk III is a three-stage heavy lift launch vehicle developed by ISRO.