EXPECTED BENEFITS AFTER THE COURSE

After attending the course the participants are expected to gain theoretical and practical knowledge on the potentials of using remote sensing data for various applications on coastal and marine ecosystems. The participants should be able to use this knowledge in their country for their different applications that will help them to set up National Disaster Management Centre/Unit based on latest technology and trends.

TRAINING COURSE FEE AND ACCOMMODATION

A course fee of ₹15,000 (equivalent to US$ 300) is charged which includes course material and field trips. Accommodation for the participants will be arranged in hostel at IIRS, Dehradun. During the stay at Dehardun ₹50/day will be charged from the participants. The cost of consumables such as cooking gas need to be borne by the occupants themsleves.

FELLOWSHIPS TO PARTICIPANTS

The candidates are required to send their personal details/bio-data to the Course Director, IIRS, Dehradun on the prescribed Application Form, appended to this "Announcement Brochure" or download from website (www.cssteap.org). Candidates are expected to make their own arrangements for all expenses. Preference will be given to the candidates who are financially supported by their organizations. A few fellowships covering to and fro international air travel, domestic travel in India and living expenses (₹16,000 for course duration) are available from Government of India. However, preferences will be given to the fully self sponsored candidates or sponsoring organization and/or candidates bearing the cost of international to and fro travel. Indian participants will be reimbursed train fare to a maximum or equivalent to 2AC by shortest route. UNESCAP will provide travel support to some of the participants.

HEALTH AND INSURANCE

Medical, Life and disability insurance should be undertaken before leaving their country for India by the participants themselves or on their behalf by their nominating/sponsoring institute/organization 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 an out patients only) as and when such expenses are incurred. The Centre will have limited liabilities as far as medical expenses are concerned in such cases. Candidates in sound physical and mental health only need to apply.

APPLICATION PROCEDURE

Dully filled application form appended with this document (can also be downloaded from www.cssteap.org) need to be sent on the contact details given below. The application form along with education certificates needs to be nominated and/or forwarded through CSSTEAP Governing Board member in your country (please see details on the website) or through Indian Embassy/ High Commission in your country or your Embassy/High Commission in India. For faster processing the advance copy can be sent to us directly either through or email.

About the Host Institute - Indian Institute of Remote Sensing (ISRO)

ISRO is a premier government organisation in India for space science and technology missions and developments. It is also premier agency for the development Earth Observation and Communication satellites, launch vehicles, etc. Moon and Mars missions are noteworthy amongst several achievements. IIRS (est. 1966) is an unit of ISRO, Department of Space, Government of India and is mandated for education/training in Remote Sensing, Geoinformation Science and GPS technologies. It is a premier institution for imparting training and education in basic technologies and their applications for natural resource management. The institute has very strong R&D programme. The endeavour of the institute has been to bring young, middle as well as senior thematic experts from various user communities to educate/apprise about technology/ applications at Post Graduate level with the overall goal of 'technology transfer' and user awareness. The institute has evolved many programmes tuned to the different needs of various target groups. IIRS addresses the cause, awareness and research needs at different levels of management. and therefore, conducts a variety of courses for the different categories of users and fresh students viz., M. Tech., M.Sc., PG Diploma, 4 months Certificate Courses, 2 months National Natural Resource Management System (NNRMS) sponsored courses for University faculty, 2 weeks on demand Special Courses, 1 week duration Overview Course for Decision Makers and tailor-made courses for users departments from India and abroad. IIRS has so far trained more than 9500 scientists/engineers. About 925 foreign students from various countries of Asia, Africa and Latin America have also benefitted under SHARES Fellowship programme of the Department of Space, ITEC, SCAAP fellowship scheme of the Ministry of External Affairs, Government of India and other fellowship schemes. For further details visit http://www.iirs.gov.in

IMPORTANT DATES

Last date of submission of application: February 28, 2015

Notification of admissions : By March 15, 2015

Contact Details

Course Director, RS&GIS

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

(Affiliated to the United Nations)

IIRS Campus, 4, Kalidas Road, Dehradun 248 001, India

Phone: +91 135 2524226/+91 135 2524181

Fax: +91 135 2740785, Email: cssteap@iirs.gov.in

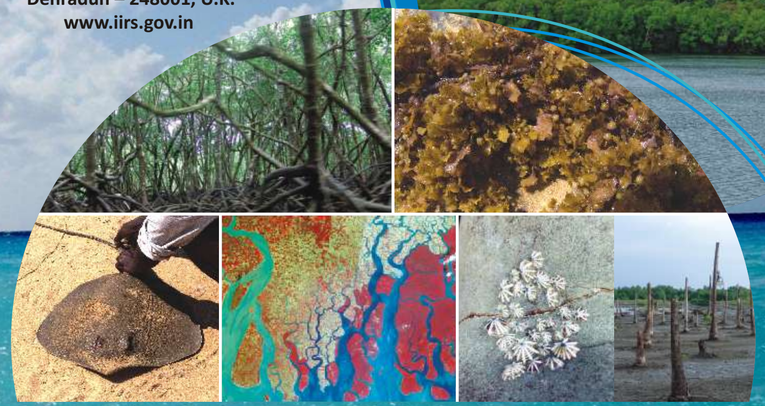
Website: www.cssteap.org

Printed at **Allied Printers**, Dehradun. 0135-2654505, 3290845

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

Course Duration
4th-31st May 2015

Conducted at
Indian Institute of Remote Sensing
Indian Space Research Organisation
Dept. of Space, Govt. of India
Dehradun – 248001, U.K.
www.iirs.gov.in



Jointly organized by

United Nations Economic & Social Commission for Asia and the Pacific
The United Nations Building
RajadamnernNok Avenue
Bangkok 10200, Thailand

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

INTRODUCTION

The coastal and marine ecosystems are most likely to get influenced by the inevitable changes in the climate over the next century. Global warming is expected to accelerate the rate of sea level rise by expanding ocean water and melting glaciers. If current projections of climate models are reasonable, global sea level may stand up to nearly a meter higher by the end of this century. Coastal zone faces natural disasters like Tsunami, cyclones, etc. This will seriously threaten many low-lying islands and coastal zones, rendering some countries uninhabitable. In the context of climate change, conservation and management of coastal environment including mangroves and coral reefs, sea grass and wetlands require reliable, regular and updated information about their status and health in space and time. Strengthening *in-situ* observations and adopting geospatial techniques to forecast the future state and dynamics of these ecosystems is one of the most important and current day research objectives. The advent of satellite remote sensing has initiated a new era of monitoring the Earth's surface, atmosphere, ocean and land processes. The sensors on the satellite provide vital information to study and understand the important constituents of the atmosphere, ocean, land and their dynamics. Several satellite systems with different sensors provided data for a wide range of atmospheric parameters that enhanced our understanding of Earth-atmosphere processes and dynamics. This knowledge will help us to manage the coastal disasters more efficiently and effectively.

Oceans provide food, recreational and transport corridors to mankind. As a result villages, townships and cites are concentrated all along the coasts throughout the globe. The coastal and ocean ecosystems are subjected to stresses imposed by developmental activity, land use change, environmental pollution, over fishing and natural hazards like cyclone and tsunami. In addition to the above, the effect of climate change will create fresh challenges for the coast and marine environment. Therefore, there should be a holistic approach to protect this beautiful coastal and marine ecosystem for future generations.

ABOUT CSSTEAP (AFFILIATED TO THE UNITED NATIONS) AND ITS ACTIVITIES

The Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP) was established in India in November 1995 with its headquarters in Dehradun and is considered as the Centre of Excellence by UN-OOSA. The 1st campus of the centre was established in Dehradun, India within the campus of Indian Institute of Remote Sensing (IIRS), Dehradun, which is a unit of Indian Space Research Organisation (ISRO), Government of India. For conducting its Remote Sensing & GIS programmes the Centre has arrangements with IIRS as a host institution.

The Centre has been imparting training and education, helping participants in developing research skills through its Master Degree, Post Graduate and Certificate programmes. This is achieved through rigorous class-room (theory and hands on exercises), group discussions, field campaigns and pilot projects in the field of space science and technology. These programmes aim at capacity building for participating countries, in designing and implementing space-based information, research and application programmes. The Centre also fosters continuing education to its alumni.

ACADEMIC ACTIVITIES

The Centre organizes Post Graduate courses of 9-months at host institutions of Indian Space Research Organization (ISRO) in the areas of Remote Sensing and Geographic Information System at IIRS, Dehradun; Satellite Communication, Satellite Meteorology and Global Climate and Global Navigation Satellite Systems at Space Applications Centre, Ahmedabad, Space and Atmospheric Sciences at Physical Research Laboratory, Ahmedabad and Physical Research Laboratory, Ahmedabad. The successful participants also get an opportunity to take up master's programme (Master of Technology degree from Andhra University, Visakhapatanm). The Centre also organizes short courses on Small Satellite Missions and RS&GIS and on demand special courses for United Nations Agencies like UNSPIDER, UNESCAP, and other agencies such as IWMI, SAARC DMC, etc. About 1389 professionals from 34 countries within and outside the Asia-Pacific region have graduated so far from the Centre (http://www.cssteap.org). More than 122 participants from these countries have also passed M.Tech. degree programme.

OBJECTIVES

The overall objectives of this training course is to generate awareness among users/researchers/ engineers/professionals/decision makers/academicians on the concept of coastal and marine ecosystems processes, disasters and impact of climatic change and disasters in coastal zone. The participants will be familiarized to use of various kinds of remote sensing data starting from analysis of problem, potential vulnerability and hazards and climatic trends to planning and preparedness to mitigate the adverse situations that would affect life and property adversely.

ELIGIBILITY

Master's degree in science or Bachelor's degree in engineering or equivalent qualification relevant in the field of study with at least 5 years of experience in teaching/research or professional experience in the field of Remote sensing technology or environment or coastal and marine ecosystem (candidates with higher qualification, the condition of minimum experience may be relaxed). High school-level knowledge in mathematics and/or statistics is essential besides the Master degree as base qualification.

TRAINING COURSE DURATION AND LOCATION

The training course will be conducted at Indian Institute of Remote Sensing (IIRS) Dehradun and jointly organized by United Nations Economic & Social Commission for Asia and the Pacific (UNESCAP) Bangkok and Centre for Space Science and Technology Education in Asia and Pacific (CSSTEAP), IIRS Campus, Dehradun, India from 4th - 31st May, 2015.

LANGUAGE

The medium of the instructions/teaching is in English. Proficiency in written and spoken English is most essential. The candidates who are not proficient in English are advised not to 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. Nominating agencies are requested to ensure this.

COURSE STRUCTURE

The course is modular in structure and provides a balanced treatment of theory, application and practical experience as follows:

Module 1 (1st & 2nd week): Introduction to fundamentals and basic of Remote Sensing and Geographic Information System, optical, hyperspectral, thermal, microwave and RADAR remote sensors and their applications. Coastal and marine ecosystems characterisitcs, biodiversity, geology, geomorphological process, land use and land cover changes, pollution, disasters and hazards, vulnerability, climate change.

Module 2 (3rd & 4th week): Applications of remote sensing data to analyze the important climatic variables in marine and coastal environment to study the coastal processes, modelling of Carbon flux estimation, NPZ Model, primary productivity, coral reefs, mangrove ecosystem, wetlands etc. Impact of climate change on coastal and ocean environment, modelling for salt water intrusion into coastal aquifier, land use practices, etc.

COURSE IMPLEMENTATION/ORGANIZATION

The course curriculum will be implemented through a mixture of theory and practical, by using state of the art hardware, software and instrumentation facilities. This course will be conducted by the faculty of Indian Institute of Remote Sensing (ISRO), Dehradun, India. The core faculty also consists of experienced scientists/engineers working at various centres of Indian Space Research Organisation/ Department of Space, Govt. of India. Each participant will be provided a PC loaded with image processing and GIS software to have hands on experience.