

# **International Training Course on “Application of Space Technology for Disaster Management Support with Emphasis on Flood Risk Management”**

**(August 20 - September 14, 2007)**

Conducted at :

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

**Dept. of Space, Govt. of India,**

**4 Kalidas Road, Dehradun-248 001 (India)**

**<http://www.iirs-nrsa.gov.in>**

## **COURSE REPORT**



Centre for Space Science &  
Technology Education  
In Asia and the Pacific  
(CSSTEAP) - (Affiliated to UN)  
IIRS Campus, 4, Kalidas Road,  
DEHRADUN- 248 001  
Uttarakhand, INDIA  
[www.cssteap.org](http://www.cssteap.org)



International Institute for  
Geo-Information  
Science and  
Earth Observation (ITC)  
The Netherlands  
[www.itc.nl](http://www.itc.nl)



United Nations University -  
ITC School for Disaster  
Geo-information  
Management, (ITC)  
The Netherlands  
[www.itc.nl/unu/dgim](http://www.itc.nl/unu/dgim)





Inauguration of the Course by Shri R. Ravi Shanker, Principal Secretary, Govt. of Uttarakhand



Course participants with DIRECTOR, CSSTEAP and DEAN, IIRS



# **International Training Course on “Application of Space Technology for Disaster Management Support with Emphasis on Flood Risk Management”**

**(August 20 - September 14, 2007)**

**Conducted at :**  
**Indian Institute of Remote Sensing (NRSA)**  
Dept. of Space, Govt. of India,  
4 Kalidas Road, Dehradun-248 001 (India)  
<http://www.iirs-nrsa.gov.in>

## **COURSE REPORT**



<b>Centre for Space Science International Institute United Nations University &amp; Technology Education for Geo-information - ITC School for Disaster in Asia and the Pacific Science and Earth Geo-information (CSSTEAP) - (Affiliated to UN) Observation (ITC)</b>	<b>Management, (ITC)</b>
<b>IIRS Campus,</b>	<b>The Netherlands</b>
<b>4, Kalidas Road</b>	<b><a href="http://www.itc.nl">www.itc.nl</a></b>
<b>DEHRADUN- 248 001</b>	<b><a href="http://www.itc.nl/unu/dglm">www.itc.nl/unu/dglm</a></b>
<b>Uttarakhand, INDIA</b>	
<b><a href="http://www.cssteap.org">www.cssteap.org</a></b>	

## FOREWORD

The "Regional Centres for Space Science and Technology Education" are established by the efforts of United Nations Office for Outer Space Affairs (UN-OOSA), to assist in the development of indigenous capacity of each country of the region to apply space science and technology to enhance social and economic development. The first such centre was established for the Asia-Pacific region with India as host country -- Centre for Space Science and Technology Education for Asia and the Pacific (CSSTEAP). This training course is organized as part of the CSSTEAP educational programme to train middle level managers to get in depth theoretical knowledge and on the job training in applying Space Science and Technology for developmental activities.

I am happy that for the current course 18 scholars from 12 countries could participate. Apart from the lectures, they were also given hands on training on applying space technology for various phases of flood management. On behalf of CSSTEAP I wish to thank Dr. V.K. Dadhwal, Dean IIRS for organizing the course at IIRS and Dr. V. Hari Prasad, Course Coordinator for doing an excellent job in conducting the course.

This booklet contains the details of the curriculum followed, the list of faculty, and the course participants. The recommendations made by the participants are also included.

I hope this booklet will be of use to others who wish to organize similar training courses.

**(George Joseph)**  
**Director, CSSTEAP**



## PREFACE

It is believed that during the last decade, world experienced about 20 fold increase in disasters when compared to the decade in 60's with increase in number of fatalities as well as economic loss. While many natural disasters, including the Floods can not be prevented, however, there is a possibility of reducing the losses. With the advances in the information technology, including use of remote sensing, GIS and GPS, it is possible to undertake steps to mitigate the impacts of disasters.

Similar to many countries in south east Asia, India is one of the highly flood prone countries in the world. About 40 million hectares of land is prone to floods in the countries, in addition to 8% of geographical area is prone for cyclones. In order to provide vital inputs and support in the event of a flood disaster, Dept. of Space (DOS) has been developing techniques and methodology under Disaster Management Support Programme (DMSP) for operational use the space technology inputs and services on a reliable and timely basis for strengthening India's resolve towards disaster management. In addition India is a signatory of 'International Charter Space and Major Disasters,' where member countries are committed to provide support to all the countries where natural or man made disasters are occurring, including sharing of satellite data.

To communicate the developments in geo-spatial technology to various agencies involved in disaster management support and capacity building for mitigation and preparedness, Indian Institute of Remote Sensing (NRSA) has introduced a number of training programmes at certificate, post graduate and Master of Science level and also short course for Asia-Pacific region for Centre for Space Science Technology and Education in Asia & Pacific (CSSTEAP).

Prior to this course, IIRS had conducted similar training in "Application of Geo-informatics for Disaster Management" in 2002 and also 2004 for participants from Asia-Pacific region. Based on experience, in this course, special emphasis has been given for integration of all space technology components such as remote sensing technology, field-based information and satellite communication all put together for flood risk management. It is expected that the participants will get a holistic view of the approach for flood risk management in their country.

Though the course duration is only 4 weeks, lectures delivered were supported with hands on experience with the case studies based on real problems in flood prone areas of Orissa and Assam.

I congratulate all the faculty members of IIRS and also guest faculty from India and also abroad, especially from ITC, Netherlands and DHI, Denmark for contributing to this course. I also congratulate all the course participants for showing sincerity and dedication in learning the modern tools.

At the end, I compliment Dr. V. Hari Prasad, In-charge, Water Resources Division for conducting this course successfully.

(Dr. V.K. Dadhwal)  
Dean, IIRS



# ACKNOWLEDGMENTS

*An International Training Course on "Application of Space Technology for Disaster Management support with Emphasis on Flood Risk Management"* was organized by Indian Institute of Remote Sensing (NRSA) during August 20 - September 14, 2007 for Centre for Space Science Technology and Education in Asia and Pacific (CSSTEAP) - Affiliated to United Nations.

To organise this course, support from several institutions from India and abroad, several offices, several divisions and sections of IIRS were involved. It is customary to remember all of them. This course is partly sponsored by Ministry of Finance, Govt. of India (TCS Colombo Plan), and International Institute for Geo-information Science and Earth Observation (ITC), The Netherlands. I thank the employers of all the 18 course participants, who have deputed them for attending this course, without which it is not possible to conduct this course.

Faculty for this course is from India and Netherlands. A faculty from International Institute for Geo-information Science and Earth Observation (ITC), The Netherlands came all the way from Netherlands and delivered and conducted practicals. The govt. organizations which contributed their faculty are National Institute of Disaster Management (NIDM), Ministry of Home Affairs, Govt. of India, Indian National Centre for Ocean Information Services (INCOIS), Ministry of Earth Sciences, Govt., of India, Space Application Center (SAC), Dept. of Space, Govt. of India, Central Water Commission (CWC), Ministry of Water Resources, Govt. of India, Orissa State Disaster Management Authority (OSDMA), Govt. of Orissa, National Remote Sensing Agency (NRSA), Indian Institute of Remote Sensing (NRSA) and also a private software company Danish Hydraulic Institute (DHI), India Pvt. Ltd., New Delhi demonstrated the MIKE software for Flood Modeling and management during this course.

Organising the course requires support from various people. I thank all the faculty and staff of IIRS for rendering full support in making all the necessary arrangements and also helping me in conducting this course.

Last but not the least, full co-operation and support of Dr. George Joseph, Director, CSSTEAP and Dr. V.K. Dadhwal, Dean, IIRS in duly acknowledged in this effort. I express my sincere gratitude and thanks to Dr. K. Radha Krishnan, Director, NRSA and Dr. P.S. Roy, D.D. (RS&GIS AA) for providing all the required information about Decision Support Centre and also manual on Flood Mapping specially made for this training course and also sparing two scientists of NRSA for delivering lectures in this course.

Dr. V. Hari Prasad, In-charge, Water Resources Division and Course officer for this course sincerely thank Dr. George Joseph, Director, CSSTEAP and Dr. V.K. Dadhwal, Dean, IIRS for having confidence and giving me the responsibility of conducting this course and providing all the necessary help.

(Dr. V. HARI PRASAD)

In-charge, Water Resources Division &  
Course co-ordinator, CSSTEAP Short course



# CONTENTS

FOREWORD .....	iii
PREFACE .....	iv
ACKNOWLEDGEMENTS .....	v
1.0 BACKGROUND .....	1
2.0 THE COURSE PARTICIPANTS .....	2
3.0 IMPLEMENTATION OF THE COURSE	
3.1 THEORY LECTURES .....	2
3.2 PRACTICALS EXERCISES .....	4
3.3 MATERIAL HANDED OVER .....	4
4.0 THE FACULTY .....	5
5.0 OUTCOME OF THE COURSE .....	6
ANNEXURE I : COURSE BROCHURE	8
ANNEXURE II : LIST OF COURSE PARTICIPANTS AND THEIR DETAILS	10
ANNEXURE III : COURSE SCHEDULE	15
ANNEXURE IV : LIST OF FACULTY	18
ANNEXURE V : PARTICIPANTS RESPONSE ON UTILITY OF THIS COURSE (UN-EDITED)	22



# ***International Training Course on*** **"Application of Space Technology for Disaster** **Management support with Emphasis on Flood Risk** **Management"**

## **1.0 BACKGROUND**

Large areas in developing countries including Asia-Pacific region are disaster prone and huge loss of life and property caused by natural calamities are not uncommon. According to UNESCAP, Asia-Pacific region is prone for 85% of natural disasters in the world and the economic losses due to natural disasters in Asia-Pacific region is about 25% of the world.

Of all the natural disasters, flood is known to be the most destructive to property, crops, infrastructure and loss of human life, causing large economic loss and human suffering. Several countries in Asia-Pacific region such as Bangladesh, China, India, Vietnam etc are prone for flood related disasters every year. The magnitudes of flood related disasters vary from country to country in this region. For example, in Philippines, damage to houses is relatively high because it lies on the path of cyclones and with the rapid increase in population, most of the houses and buildings are not strong enough to withstand typhoons and floods. In Thailand urban flooding, such as that in Bangkok Metropolis, has become in recent years a major economic problem. By experience of Bangladesh, it is felt that flood management must be considered as part of the river basin management. In India, also in the recent times, urban flooding most of the cities such as Mumbai, Surat etc has become a regular phenomenon.

Natural disasters cannot be prevented from occurring, but it is possible to minimize the loss of property and human lives by adopting effective disaster management strategy. Space systems from their vantage position have unambiguously demonstrated their capability in providing vital information and services for disaster management. Space technologies such as Earth Observation, Communications, Navigation etc. can provide long term monitoring and warning capabilities, while at the same time being able to rapidly deploy observation and communications system during a hazard.

Application of space technology for monitoring, assessing and predicting natural disasters especially Floods for relief and rehabilitation operations and also efficient use of communication technology are gaining importance in several countries of the Asia-Pacific region. However, there is an urgent need for more and better-trained scientific personnel, who have the technical know-how to provide space inputs for disaster managers. With this in view, this short term course is being organized at Indian Institute of Remote Sensing (IIRS), Dehradun, as part



### 3.2 Practicals Exercises

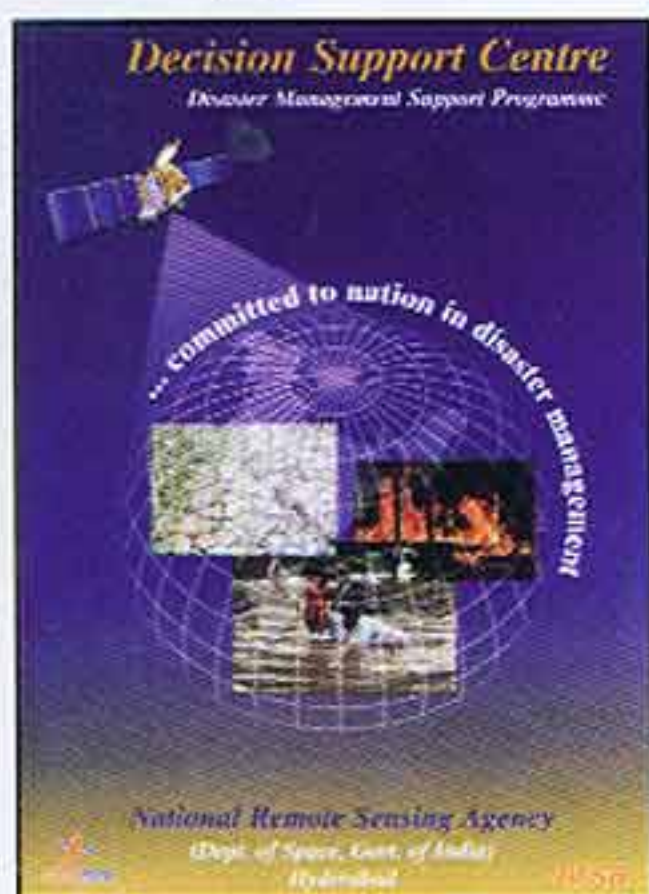
Each participant has been provided with one Computer (Pentium - IV) computer with required image processing and GIS softwares such as ERDAS IMAGINE 8.7 and ILWIS 3.3.

### 3.3 Material Handed over

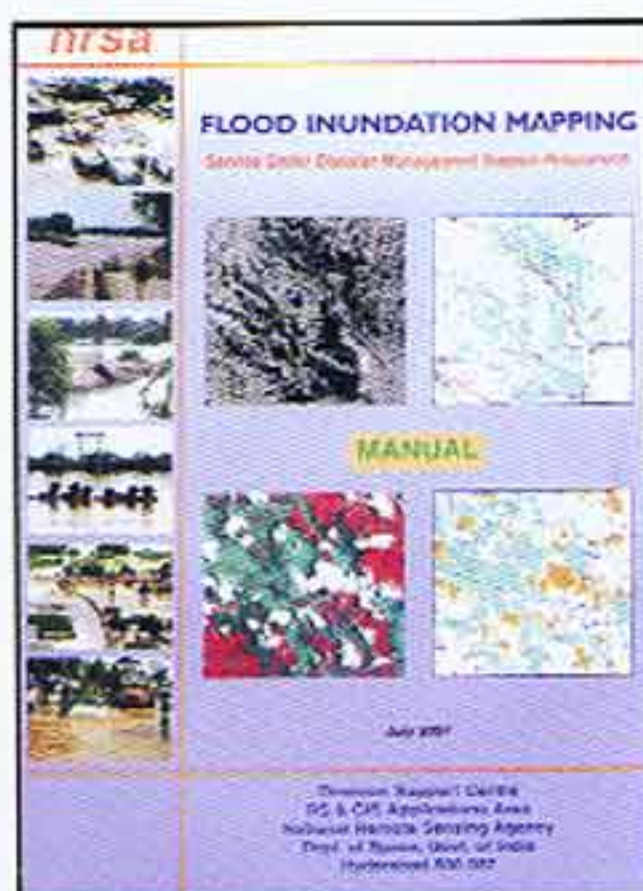
At the end of this training programme, the participants are provided with the following material, which will help them to implement some of the activities relevant to them in their country.

- A CD ROM consisting of the lectures notes and presentations in the form Adobe documents and also the public domain softwares (HEC-HMS and HEC-RAS) which were used extensively in this training programme.
- Two handouts have been generated exclusively for this training programme at Decision Support Centre (DSC), NRSA under Disaster Management Support Programme of ISRO were handed to the course participants. They are
  - Activities of Decision Support Centre including the details of the various disasters and detailed infrastructure established to support the national activities on various disasters.
  - A manual describing the flood inundation mapping including near real time flood mapping operational at DSC, NRSA.

The cover pages of the documents provided are shown here :



**Handout about Decision Support Centre**



**Handout on Flood Inundation Mapping**

The schedule of the lectures and practicals topics covered are given in *Annexure III*.



programs included in the different needs of various target groups. IIRS has trained more than 6000 scientists/engineers. About 650 foreign students from various countries of Asia and Africa have also benefited by IIRS under SIAREP Fellowship Program of the Department of Space, ITEC/SCAAP Fellowship Scheme of the Ministry of External Affairs, Government of India and other Fellowship Schemes etc. CSSTEAP has arrangements with IIRS, as host institution for conducting programs related to Remote Sensing and GIS (PG Course in RS and GIS and also international short course every year).  
(Further details see website : [www.iirs-irsa.gov.in](http://www.iirs-irsa.gov.in))

## INTERNATIONAL INSTITUTE FOR GEOINFORMATION SCIENCE AND EARTH OBSERVATION (ITC), THE NETHERLANDS

ITC is an internationally recognized centre of excellence in international education. ITC aims at capacity building and institutional development of professional and academic organizations and individuals specifically in countries that are economically and/or technologically less developed. The education is based on knowledge exchange between scientific and professional organizations in less developed countries on the one hand and those in the Western world on the other, whereby ITC acts as a two-directional gateway for knowledge exchange. The knowledge field of ITC is geo-information science and earth observation, which consists of a combination of tools and methods for the collection - through aerospace survey techniques -, storage and processing of geo-spatial data, for the dissemination and use of these data and of services based on these data. ITC's approach is application-oriented, directed at finding solutions for and strengthening civil society in addressing issues of local, national and global dimensions such as the multifunctional use of scarce resources, including space, the effects of climate change and environmental security.  
(Further details see website: [www.itc.nl](http://www.itc.nl))

## UNITED NATIONS UNIVERSITY (UNU)-ITC SCHOOL OF DISASTER GEO-INFORMATION MANAGEMENT (DGM), THE NETHERLANDS

According to the Agreement between United Nations University (UNU) and ITC, the long-term objective is "to strengthen the capacity of institutions at national and local level in developing countries to reduce the vulnerability to natural hazards". The overall objective of the School for Disaster Geo-Information Management is to support capacity building of organizations in developing countries through training of individuals in the collection, management, analysis and dissemination of spatial information before, during and after disaster events. In order to reduce the impacts of natural and related environmental and technological hazards.  
(Further details see website: [www.itc.nl](http://www.itc.nl))

## CENTRE FOR SPACE SCIENCE AND TECHNOLOGY EDUCATION IN ASIA AND THE PACIFIC (CSSTEAP)

In the wake of the need for regional self-reliance and self-subsistence in Space science and technology CSSTEAP came into existence under affiliation to the United Nations in India during 1995. It has been supported by the Department of Space Government of India, and is advised by a 15 member International Governing Board. Its activities span across Remote Sensing and GIS, Satellite Communications, Satellite Meteorology and Space Science. It conducts postgraduate courses in all these disciplines. Since its inception, the Centre has trained about 655 persons from than 30 countries of the Asia Pacific region.  
(Further details see website: [www.cssteap.org](http://www.cssteap.org))

## HOW TO APPLY

The candidates seeking admission for the course are requested to provide the following information:

- Name (Mr/Ms./Dr.)
- Date of birth
- Nationality
- Passport details : number, date and place of issue, validity
- Name of organization where employed
- Designation (position)
- Work Place Address : mailing address, including phone, fax and e-mail
- Proficiency in English : good, average, poor; include English language proficiency certificate, if available
- Academic qualifications : graduate, post-graduate, PhD & disciplines/subject
- Professional experience in research, teaching, consultancy etc.
- Signature of applicant.

- (A) In case you or your organization pays the course fee, subsistence and travel expenses, please specify the payment details. Payments should preferably be made in the form of bank draft (DD) in favour of Accounts Officer, CSSTEAP payable at Dehra Dun, India. In case your organization pays for you, we request the sponsoring authority to state so in writing.
- (B) Foreign candidates seeking admission for the course may be considered grant of Fellowship by Govt. of India under TCS of Colombo Plan. Please contact Embassy or High Commission of India in your country for details of the fellowship and procedures to be followed.
- (C) The Regional Information Service and Education and Training Network of UN-ESCAP is responsible for the promotion and exchange of information on developments in Remote Sensing & GIS and other space technology applications in the region. The network also provides through the Regional Space Applications Programme for Sustainable Development (RESAP) training fellowships in applications of space science and technology. UN-ESCAP has been supporting over the year to the CSSTEAP education program and have extended travel grants to more than 70 number of CSSTEAP course participants in the last 8 years. This contribution by UN-ESCAP is highly supportive to the overall CSSTEAP activities.

The completed application form and payment have to be sent latest by 30<sup>th</sup> June 2005 to the following address:

**DIRECTOR  
CSSTEAP**  
IIRS Campus, 4, Kalidas Road,  
Post Box No. 222, Dehra Dun- 248 001, INDIA  
Tel. : 0091-133-2740737, 2740787  
Fax : 0091-133-2740785  
E-mail : [cssteap@iirs.gov.in](mailto:cssteap@iirs.gov.in)  
Website : [www.cssteap.org](http://www.cssteap.org)

## About Dehradun City

Dehradun city is located in one of the outer valleys of Himalaya in north India. Weather of Dehradun is moderate during August - September and this period is part of rainy season. The valley is surrounded by dense forest and provides pristine environment for academic pursuits. Dehradun is well connected by train and road from Delhi. IIRS/CSSTEAP campus is about 6 km from Dehradun railway station. Many important Indian national organizations / Institutions are located in Dehradun. There are number of tourist places in and around the city. The hill station Mussoorie is 30 km from Dehradun. Haridwar and Rishikesh, the two famous pilgrim centers are about 50 and 40 km, respectively from Dehradun.

## ANNOUNCEMENT

## INTERNATIONAL TRAINING COURSE ON APPLICATION OF SPACE TECHNOLOGY FOR DISASTER MANAGEMENT SUPPORT WITH EMPHASIS ON FLOOD RISK MANAGEMENT

AUGUST 20 TO SEPTEMBER 14, 2007

Organised by :



**CSSTEAP**

Centre for Space Science and Technology  
Education in Asia and the Pacific  
(Affiliated to the United Nations)  
IIRS Campus, Dehra Dun, India

Conducted by :



Indian Institute of Remote Sensing  
(National Remote Sensing Agency)  
Department of Space  
Govt. of India  
Dehradun, India







International Institute for Geo-Information Science & Earth Observation (ITC)  
The Netherlands



United Nations University  
- ITC School for Disaster Geo-information Management, ITC,  
The Netherlands



## List of Course Participants and their details

S. No.	Name & Country	Address, Phone, Fax, E-Mail	Photo
1	Mr. Shamsuddin Ahmed  <b>Bangladesh</b>	Meteorologist Bangladesh Meteorological Department, Abhawa Bhaban, Agargaon, Dhaka 1207 Ph: +880-2-8116634, 8119832 Fax: +880-2-811230 Email: directorbmd2005@yahoo.com swcbmd@yahoo.com, sham_morgist@yahoo.com	
2	Dr. TV Praveen  <b>India</b>	Professor Andhra University College of Engineering Visakhapatnam 530003 Ph: 0891-2567120 @, 9440166333 (m) Fax: 0891-2747969 Email: tvpraveen@hotmail.com	
3.	Mr. Edy Irwansyah  <b>Indonesia</b>	Mapping & GIS Coordinator Yayasan Inovasi Pemerintahan Daerah (YIPD), Jalan Madium No.9 Menteng, Jakarta Pusat 10310 Ph: +6221-3903680 Fax: +6221-31930780 Email: edirwan@yipd.or.id	
4.	Mr. Suwarsono  <b>Indonesia</b>	Staff Researcher Jl. LAPAN No. 70, Pekayon, Pasar Rebo, Jakarta Timur, Jakarta Ph: +62-21-8710786, 8710274 (o)/ +62-21-87700751 @ Fax: +62-21-8710274, 8722733 Email: landsono@yahoo.com	



S. No.	Name & Country	Address, Phone, Fax, E-Mail	Photo
13.	Mr. MGSD Nilantha  <b>Sri Lanka</b>	International Water Management Institute, # 127, Sunil Mawatha, Pelawatte, Battaramulla Ph: +9411-2787404 Fax: +94-11-2786854 Email: n.gamage@cgiar.org	
14.	Mrs. Jamila Baidulloeva  <b>Tajikistan</b>	Agency of Hydrometeorology, 47 Shevchenko Str. 734025 Dushanbe Ph: +992-37-231772 Fax: +992-37-215522 Email: jbaidulloeva@hotmail.com	
15.	Mr. Kongjak Jaidee  <b>Thailand</b>	Center of Information & Communi- cation Technology, Ministry of Natural Resources & Environment, Soi Arce, Phayathai, Bangkok, Thailand 10400 Ph: +66841661728, +6622788682 (o) Fax: +662-2985735 Email: goodjai@yahoo.com	
16.	Mr. Panya Polsan  <b>Thailand</b>	Royal Irrigation Department, Ministry of Agriculture & Cooperation, Hydrology & Water Management, Center for Lower Northern Region, 204 Moo 8, Tha Thong, Muang, Phitsanulok 65000 Ph: +66-81-9723498 Fax: +66-55-334007 Email: ppolsan@gmail.com	



# ANNEXURE III

## Course Schedule of International Training Course on "Application of Space Technology for Disaster Management support with Emphasis on Flood Risk Management"

(August 20 - September 14, 2007)

Date	0915-1005	1005-1100	1115-1205	1205-1300	1400-1715
20.08.2007	REGISTRATION	L1	INAGURATION	L2	VISIT TO IIRS FACILITIES
21.08.2007	L3	L4	LIB	L7	P1
22.08.2007	L5	L6	LIB	L8	P2
23.08.2007	L11	L11	LIB	P3	P3
24.08.2007	L12	L13	LIB	L14	P4
25.08.2007		L9 & L10		SATURDAY	
26.08.2007	SUNDAY				
27.08.2007	L15	L16	LIB	L17	P5
28.08.2007	L18	L19	LIB	L20	P6
29.08.2007	L21	L22	LIB	L23	P7
30.08.2007	L24	L25	LIB	L26	P8
31.08.2007	L27	L28	LIB	L29	Departure to Delhi By Shatabdi
1.09.2007	SATURDAY (LOCAL SIGHT SEEING DELHI )				
2.09.2007	SUNDAY (Excursion to Agra)				
3.09.2007	Monday (Visit to Delhi Earth Station) & Return to Dehradun by A/C Special Train				
4.09.2007	Jannastami - HOLIDAY				
5.09.2007	L30	L31	LIB	L32	P9
6.09.2007	P10				L33 & L34
7.09.2007	L35	L36	LIB	L37	P11
8.09.2007	SATURDAY				
9.09.2007	SUNDAY				
10.09.2007	Field Visit				
11.09.2007	L38	L39	L40	L41	P12
12.09.2007	L42	L43	L44	L45	P13
13.09.2007	L46	L47	LIB	L48	P14
14.09.2007	FEED BACK	Panel Discussion		PASSING OUT	



## LIST OF FACULTY

S. No.	Name of the Faculty and Topic Covered	Communication Address and E-mail
1.	Dr. Vinay Sehgal <b>Disaster Management concepts and Initiatives in India</b>	Professor National Institute of Disaster Management Ministry of Home Affairs, Govt. of India IIPA Campus, I.P. Estate New Delhi-110 002. (India) Email: vksehgal@gmail.com
2.	Ms. Shefali Agarwal <b>Basic Principles of Remote Sensing</b>	Scientist-SE Photogrammetry and Remote Sensing Division Indian Institute of Remote Sensing (NRSA) Dept. of Space, Govt. of India 4, Kalidas Road, P.O.Box 135, DEHRADUN-248 001. (INDIA) Email: shefali_a@iirs.gov.in
3.	Ms. Minakshi Kumar <b>Basic Principles of Digital Image Processing</b>	Scientist-SE Photogrammetry and Remote Sensing Division Indian Institute of Remote Sensing (NRSA) Dept. of Space, Govt. of India 4, Kalidas Road, P.O.Box 135, DEHRADUN-248 001. (INDIA) Email: minakshi@iirs.gov.in
4.	Mr. C. Jeganathan <b>Basic Principles of GIS</b>	Scientist-SE Geoinformatics Division Indian Institute of Remote Sensing (NRSA) Dept. of Space, Govt. of India 4, Kalidas Road, P.O.Box 135 DEHRADUN-248 001. (INDIA) Email: jegan@iirs.gov.in
5.	Dr. V. Hari Prasad <b>Basic Hydrology, Rainfall - Runoff Relationships using Hydrological Modelling,</b>	Scientist 'SF' & In-charge Indian Institute of Remote Sensing (NRSA) Dept. of Space, Govt. of India 4, Kalidas Road, P.O.Box 135,



## PARTICIPANTS RESPONSE ON UTILITY OF THIS COURSE (UN-EDITED)

### Mr. Shamsuddin Ahmed, BANGLADESH

1. Briefly explain what is your nature of work in your country?

As an operational weather forecaster in the Bangladesh Meteorological Dept. I prepare and analyze surface and upper air charts, analyze Radar and Satellite imageries, issue routine weather forecast, special weather bulletin and warnings for the tropical cyclones in the Bay of Bengal, floods due to heavy rainfall and do research on weather and climate. I assist Director Bangladesh Meteorological Dept. in planning and developing an Early warning system for weather and water related hazard in Bangladesh, on the uses of Remote sensing technique and GIS - mapping in Tropical cyclone and flood warning, on updating and modernizing warning dissemination system in the remote coastal areas of Bangladesh.

2. How they can utilize the course material and also knowledge gained during this course in future in your office?

Course material and knowledge gained in this training can be utilized in my office e.g.

- (a) R.S. input for operational weather forecasting, Satellite data for Tropical cyclone prediction can be utilized to improve track prediction of Tropical cyclone models and forecasting.
- (b) Course material for planning and implementation of SATcom communication system for flood disaster may be useful to develop warning dissemination system in the remote coastal areas of Bangladesh.
- (c) Course material for flood damage assessment, flood mapping and monitoring using R.S. and GIS, flood hazard zonation, Real time flood mapping can be utilized in my office for Disaster Management.



1. Briefly explain what is your nature of work in your country?

The Yayasan Inovation Pemerintahan Daerah/Center for Local Government Innovation (YIPD/CLGI) is an independent non profit organization that focuses its efforts on strengthening the managerial capacity of local governments in Indonesia, especially in the fields of administrative management, financial management, policy analysis, and training. The operating unit responsible for implementing the vision and mission of YIPD is the Center for Local Government Innovation (CLGI). YIPD/CLGI works in partnership with local governments and their associations, community organizations, institutions of higher learning, donors, and the private sector to achieve good governance in Indonesia. YIPD/CLGI began as an initiative of USAID Indonesia and has now become an independent Indonesian foundation, with funding from various sources.

Since 2004, YIPD has been supporting post disaster support activity in Aceh province (after tsunami) and Yogyakarta province (after earthquake). In Aceh with funding from USAID, YIPD was carry on village mapping and continue with village planning in the impacted area of the west coast and northeast coast of that island. Village map have been creating used aerial photograph regarding with the output scale of the map in the 1 : 2.000 until 1 : 5.000. Others high resolution imagery such Quickbird and Ikonos have been used in the different part regarding with the un-covered that area by aerial photograph.

In Yogyakarta province, YIPD have been worked with International organization for Migration (IOM) with funding by USAID. One of the YIPD responsibilities is implementation of disaster information system (DIS) to handle various earthquake impact databases including in GIS format. The early phase of this program is collecting all data relation with disaster (social, economy and physical data) and continues with application development phase.

In the future, YIPD in collaboration with ministry of home affair and various institutions will involved in others type of disaster likes drought, volcanic eruption and flood. The used of information based on remote sensing in this opportunity possible to implement.

2. How they can Utilized the course material and also knowledge gained during this course in future in your office?

For this time, YIPD activity not to directly relation with disaster management but in future as become our planning, flood and others disaster become whole area of YIPD service.

India experiences how to manage and implement various application of space technology for disaster support can be lesson learn for YIPD as institution. Case study in flood disaster in different area in India can be a useful model how to organize the same case in our country.

Knowledge gained during this course can be additional experiences for us and organization how to support Local government capacity to handle disaster management especially for not only flood disaster. Since now experience of the government officer in local level to manage disaster are very low and un-coordination.

Possibility to organized international course in area of various disasters for local government officer in Indonesia with collaboration between YIPD and CSSTEAP as a part of increase management capability in disaster fields always open and YIPD very welcome.



**Mr. Azlan Ross Omar, MALAYSIA**

**1. Briefly explain what is your nature of work in your country ?**

As operational meteorologist at Malaysian Meteorological Department I need to analyse surface and upper air weather chart, radar and satellite imageries and then come out with the forecast and weather warning. Basically my nature of works was divided into two categories which are:

- i) Military purposes
  - a) Prepared weather document that will be using by pilot in their flight planning.
  - b) Issued 'TAFOR' Terminal Aerodrome Forecast which is using by pilot for take-off and landing
  - c) Issued Meteorological Warning to the Air Traffic Controller if there any possibilities of bad weather come across the aerodrome.
  - d) Prepared weather forecast for Search and Rescue Operation for Royal Malaysian Airforce.
- ii) Civil purposes
  - a) Issued daily weather forecast to the radio, television, paper and etc
  - b) Involved in committee of Disaster Management for local government at the state and district level. (mainly in monsoon season)
  - c) Technical advised (weather) to the public in their research, paper work and etc

**2. How they can utilize the course material and also knowledge gained during this course in your future in your office.**

Firstly is for my carrier developing. Using the course material and knowledge gained during this course, I've got many information about space technology and it's application mainly in the disaster management. In my department there has a satellite division which is need the person who able and experts in space technology mainly for it's application for meteorological purposes.

By using space technology, I can know better where are the flood prone areas , then I can give more intention to that area in my forecasting. By using space technology too, we can produce as well as disseminate weather forecasting on real time basis. The development in space technology are usefull for our preparedness in terms of weather forecasting.

In meteorology earth observation satellites enables continuos monitoring of atmospheric as well as surface parameters attributing to weather phenomena. The operational role of satellites communication like satellite phone can help in disseminating warning of disaster like typhoon/cyclones or heavy rain to the remote areas or inaccessible areas.

This technology can save human life and very important for mitigation, preparedness, response and recovery due to disaster management.



1. Briefly explain what is your nature of work in your country?

I am a lecturer and working at the remote sensing department of Mandalay Technological University under Ministry of Science and Technology. My specialization is Electronics. I attended the 9th Post Graduate Diploma Course in Remote Sensing and GIS (2004-2005) under CSSTEAP Training Programme in Indian Institute of Remote Sensing. I have been working at this department for nearly one year. As a faculty of remote sensing department, I am now training the fundamental of remote sensing and GIS to the new recruitments of our department. As our department, we have to study the techniques of remote sensing and GIS, observe and contribute the knowledge to the other respective sectors in our country.

2. How they can Utilize the course material and also knowledge gained during this course in future in your office?

By attending this course, I can get the knowledge immensely. The course material from this course can be utilized as a reference for training course of our department. I can also contribute to my colleagues and new recruitments of our department to get the knowledge of Disaster management especially in floods which I learnt from this course. I believe that the knowledge and techniques gained during this course helps us in such a way to make better for solving the natural disasters such as flooding.



**Ms. Jamila Baidulloeva, TAJIKISTAN**

**1. Briefly explain what is your nature of work in your country?**

I supervise over all activities of metrological weather forecast center (MWFC) Dushanbe, Republic of Tajikistan. The Main objectives of the MWFC are:

- Providing branches of the national economy and other relevant organizations with meteorological forecasts;
- Processing and analyzing synoptic maps and cloudy zones through satellite data;
- Systematic analysis of current meteorological and forecasting conditions;
- Preparation of timely weather forecasts (daily's, 4-daily's, monthly) according to Republic's main regions and cities/towns, etc.;
- Preparation of the specialized weather bulletins for the principle branches of the national economy;
- Preparation of the notification of warning about expected hazards and risks of the natural and hydrometeorological disasters and extreme weather events;
- Study of meteorological regime and climatic peculiarities of the territory of Tajikistan; assessment of natural and hydrometeorological disasters and extreme weather events frequency;
- Implementation of measures aimed at the meteorological enhancement of the national economy;
- Providing public circles, including local and regional mass media, with the weather forecast newsletters;
- Preparation of information about expected and current natural and hydrometeorological disasters, and possibilities of the potential damage (either done or expected to be done) on the national economy or human safety;
- Analysis of unjustified weather forecasts and natural/hydrometeorological disasters occurrence;

**2. How they can Utilize the course material and also knowledge gained during this course in future in you office?**

Flooding is the most dangerous and destructive phenomena in summer period of the river Pyandj (biggest river in Tajikistan). Since we are involved with forecasting of the flood and other climatic events, the knowledge gained through the course will strength above process and other steps involved with that. There I hope my center could play important role relevant to flood forecast, communication and other management practices in near future with this knowledge and gained other relevant organization as well.

Additionally our center has strong ties with neighboring countries as well, and I hope to share this knowledge with them specially in the cross boundary issue.

As a university teacher who teach synoptic and aviation meteorology I hope add this knowledge as new subject to them. There I hope to teach them all the aspects of floods which I gained within this course.



**Mr. Thudchai Sansena, THAILAND**

1. Briefly explain what is your nature of work in your country

I work at Geo-Informatics and Space Technology Development Agency. GISTDA is Thailand's public organization in space technology and geo-informatics. Its core missions are to develop space technology and geo-informatics applications to be beneficial to the general public, and develop the satellite data base and the derived natural resources information center.

My position is Geo-Informatics scientist at Geo-Informatics official and my responsibilities are

- Create and develop GIS and RS database for decision support other government agency.
- Develop Geo-Informatics applications
- Lecturer of GISTDA training courses
- Meeting with other organizations

2. How they can Utilize the course material and also knowledge gained during this course in future in your office.

The experience from training course will certainly support the development of flood data base at GISTDA by integrate Hydrology model (IIEC-HMS, HEC-RAS) with Geo-Informatics data for warning and prediction, create flood hazard map and flood risk map from simulation flood event.

In report to my director, I will provide and present about benefit on satellite communication systems to support emergency situation, which is absolutely crucial for flood risk assessment and warning for Thailand in the further.