COURSE REPORT ON

THE 4th COURSE ON APPLICATION OF GEOINFORMATICS FOR DISASTER MANAGEMENT (GSI TI–ISRO COLLABORATIVE PROGRAME) (28th April to 30th May, 2008)

Remote sensing and GIS have an important role to play in understanding the natural disasters like landslides, floods, earth quakes etc. Keeping in view the capabilities of GSI in RS & GIS, the ISRO mooted a collaborative training programme on the application of Geo-informatics for Disaster Management. The first precursor course on Application of Geo-informatics in Disaster Management was conducted in F.S. 2004-05.The present course was conducted during 28.4.2008 to 30.5.2008. over a period of 33 days. A total 17 participants sponsored by the different Universities as given under have successfully completed the course.

Apart from the above core faculty, a number of eminent geoscientists from GSI and other organizations delivered guest lectures on specific specialized topics including case studies on various disasters. Detailed list of topics covered by them is given in page 3.

In the inaugural session held on 28.1.2008, Dr. J.Simhachalam, Course Director welcomed the chief guest, chairman, participants and other gathering. After a brief self introduction by the participants, Sri S. S. Nayak, Geologist (Sr), presented course curriculum. Sri P. K. Sinha, Dy . Director General GSI TI and Chairman of the session advised the participants to interact with the faculty and guest faculty to extract maximum benefit during the training programme. Smt. G.D. Priyadarshini, Additional Commissioner, Disaster Management Cell, Govt. of Andhra Pradesh delivered keynote address outlining various agencies in the disaster management.

The course was conducted in four modules as under:

1. Introduction to Remote sensing 28.4.20080 to 9.502008
2. Project work on Photogrammetry and Digital Image Processing 10.5.2008 to 13.5.2008
3. Introduction to Geographic Information System and GPS 14.5.20080 to 21.5.2008
4. Application and case studies 22.5.2008 to 29.5.2008

Module **1 : Introduction to Remote Sensing**

This module covered the following aspects:

A. Fundamentals of aerial photography, physics of remote sensing, sensors and platforms
B. Fundamentals of visual interpretation of image / photo for geology including landforms and geomorphological process and their role in image interpretation
C. Digital Image Processing – covering fundamental aspects, image statistics and its role in image processing, Image loading and geometric rectification of the satellite data, various imag enhancement techniques and their utility, image mosaicing, Image classification, 2-D feature extraction and map composition

This module also included Digital photogrammetry covering fundamental aspects, creation of DEM, ortho-rectification and 3-D feature extraction using both aerial photos as well as CARTOSATN – 1 data.

Module 2: Project work

In this module the participants were given project work, which involved generation of different thematic maps using processed images, creation of DEM, ortho-rectification and 3-D feature extraction using areal photos as well as CARTOSAT-1 data.

Module III: Introduction to Geographic Information System (GIS) and GPS

this module covered fundamental aspects of GIS like data concepts and models, data management spatial data analysis, and modeling. In this module through the thrust was on Open Source Software, Arc -GIS proprietary software was also introduced to the participants.

Module IV: Application and case studies

In this module several case studies on applications of Geoinformatics in management of disasters related to landslides, earthquakes, drought and coastal zone management were presented by the experts in the respective fields.

1. Remote sensing in thermal and microwave regions : Dr. K. Vinod Kumar, Scientist, NRSA, Hyderabad
2. Role of satellite meteorology application and mitigation measures for disaster management : Dr. B. Maniciam, Scientist ISRO, Bangalore
3. Remote sensing and GIS for Disaster Management : Dr. Bhanumurthy,Scientist, NRSA, Hyderabad
4. Remote sensing for drought monitoring and management : Dr. C. S. Murthy, Scientist, NRSA, Hyderabad
5. Application of RS&GIS in Coastel zone managemet : DR. T. Srinivaskumar Scientist F, INCOIS, Hyderabad
6. Neotectonic and active fault studies with special reference to Bhutan-Assam Himalayas : Dr. S. K. Ray, Dy Director General (Retd), GSI, Kolkata
7. Active fault mapping : Dr. S. K. Ray, Dy Director General (Retd), GSI, Kolkata
8. Seismic Macro and Micro-zonation and case studies on Vizag and Pondicheryarea: Sri. L. Harendranath, Director, GSI, Kolkota
9. Basic concepts and Characterization of Landslides Hazard evaluation with case studies : Dr. R. K. Avasti, Director, GSI, NR, Lucknow
10. Site specific study of landslides :Dr. R. K. Avasti, Director, GSI, NR, Lucknow
11. Landslides hazard zonation on macro and micro scales : Sri. V. Balachandran, Director, GSI, Hyderabad
12. Risk assessment and disaster management : Sri PrabhasPandy, Director, GSI, NR, Lucknow

13. Earthquake hazards in India- case study from Bhuj earthquake :Sri PrabhasPandy, Director, GSI, NR, Lucknow

The participants were also taken to the earth Receiving Station at Shadnagar where they had a first hand experience of the process of live recording of the satellite data at the various processes involved before the data are sent the data processing Laboratory of NRSA.

The participants understanding of the various aspects covered during the course was evaluated through a written test. They also briefly presented the fundamental aspects of the various topics dealt with during the course and also the project work carried out by them.

Feedback:

1. All the participants have felt that the course was well organized and the course content relevant to the objective of the course. Individual feedback sheets are placed at the end of the project.
2. Almost all the participants have opined all the lectures on specialized topics and guest lectures are relevant, good to excellent. However, some of the participants have felt that lectures by some of the guest faculty need improvement. One participants have felt that in some case studies Geoinformatics was lacking.
3. Considerable number of participants (as many as four) have expressed their dissatisfaction on the GIS module. The comments include:
    a. More duration required for the of the GIS module
    b. More support required from the faculty at the time of hands on practice.
    c. Proprietary software (ArcGIS) should be given more emphasis.
4. Almost all the participants have rated hostel facility (both boarding and lodging) is inadequate. All the participants have rated games and entertainment facility as inadequate.
5. Though the attitude of the supporting staff in general has been rated as good and positive, that of the drivers has been termed as irritating and intolerable by all the participants.

The other suggestions include:

1. Inclusion of lecture on urban planning
2. Inclusion of 1 or 2 days of fieldwork

Course Director's Comments

1. The allotment of the for each module depends on its role in this course. Further increase in time period for GIS module is not possible.
2. Minor adjustments in the course schedule of the GIS module may be made in future so as to provide more time for proprietary software.
3. Reduction of time in conventional aerial photo interpretation and increase in soft copy interpretation is to be considered in future.

4. Inclusion of a lecture on urban planning may be considered.

The valedictory session was held on 30.05.2008. Dr. J. Simhachalam, Course Director delivered the welcome address. Sri. S. S. Nayak presented the course report. Sri P.K Sinha, DY. Director General, GSI Training Institute presided over the session. Sri. R.P Verma, DY. Director General, operations Andhra Pradesh, GSI Sothern Region, Hyderabad was the chief guest. He distributed certificates to the participants and gave the valedictory address. Sri. D. K. Choudhury proposed vote of thanks.

List of Faculty

TI Faculty

JS	Dr. J. simhachalem , Director (SG), GSITI, Hyderabad
SSN	S. S. Nayak, PGRS Division, GSITI, Hyderabad
DKC	D.K. Choudhaury, PGRS Division, GSITI, Hyderabad
SRM	Shri. S. Rama Murthy, CGMT, GSITI, Hyderabad
NRSR	Dr. N.R.S. Reddy,CGMT,GSITI, Hyderabad
BKS	Dr. B.K.Sahu, CGMT,GSITI, Hyderabad
SAM	S. Anand Murthy, Hyderabad Centre,GSITI, Hyderabad
CF	CGMT Faculty, GSITI, Hyderabad
PF	PGRS Faculty, GSITI, Hyderabad

Guest Faculty – GSI

LPS	Dr. L.P. Singh, PGRS division, GSI SR, Hyderabad.
LH	Sri. L. Harenndranath, Geologist (Sr.), SR, Hyderabad
PP	Dr. P. Prabhas Pande, Director, GSI, NR, Lucknow:09415016625
RKA	Dr. R.K. Avasti, Director, N.R., Luknow: 09839225979
VB	V. Balachandran, Director, SR, Hyderabad
BK	B. Kanishkan, Director, and Opp.: TNPK, Chennai: 044-24911093

Guest Faculty – Retired GSI

SKR	Rds. Ray, Dy. Director General (Retd.), GSI, Kolkata: 033-23343389, 09432495128

Guest Faculty – OutsideGSI

GDP	GD Priyadarshini, Addl. Commissioner, Disaster Management, Govt. of Andra Pradesh: 23452144
GB	G. Behra, Group Head, NRSA, Hyderabad

BM	Dr. B. Manckiam, Scientist, F, ISRO HQ. Bangalore
KVK	Sri. K, Vinod Kumar, Scientist, F, NRSA, Hyderabad
SN	Dr. Sailesh Nayak, Director, INCOIS, Hyderabad
SS	Dr. Sesh sai, Scientist, NRSA, Hyderabad
YVNK	Dr. Y.V.N. Krishna Murthy, Head, RRSSC, NWSSC&LUP capmpus, Nagpur