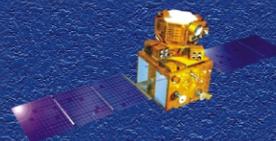


CONTACT



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...on mission for transferring technology through education and training

From the editors desk

Dear Alumni

We are here again with a new issue of ' CONTACT' to keep you in touch with activities of IIRS and thrust areas and applications of RS and GIS.

The first M.Sc Programme in Geoinformatics has concluded. It was a tremendous success as our earlier courses had been. The students had the opportunity to carry out part of their research project at ITC, Enschede, The Netherlands. An M.Sc. programme in Environmental Assessment & Disaster Management has also been started at IIRS. The first batch of students are also visiting ITC, The Netherlands.

IIRS had been busy addressing a number of issues for the betterment of the society like Biodiversity assessment, seismic microzonation, disaster management, NSDI in the past six Months. The glimpse of which you will find inside.

With this edition we are also circulating one page feed back form for our alumini separately, to review our activities. We request you all to fill up the form & send it to us by fax, email or by post as early as possible.

Editor

Important dates : Training Courses at IIRS

GEOINFORMATICS : TECHNOLOGY AND APPLICATION	Duration	
Certificate Courses	19.07.04	12.11.04
Post Graduate Diploma in Geoinformatics	19.07.04	13.05.05
**M.Sc in Geoinformatics	19.07.04	20.01.06
GEOINFORMATICS FOR ENVIRONMENTAL ASSESSMENT & DISASTER MANAGEMENT		
Awareness Course	05.07.04	16.07.04
Certificate Course	05.07.04	29.10.04
Post Graduate Diploma Course	05.07.04	29.04.05
**M.Sc	05.07.04	06.01.06
DECISION MAKERS COURSE (4 days)		
	21.09.04	24.09.04
NNRMS ISRO SPONSORED COURSES		
GIS Technology and Applications	03.05.04	25.06.04
RS & GIS Applications to Water Resources	03.05.04	25.06.04
RS & GIS in Forestry/Botany/Ecology/Environment	03.05.04	25.06.04
RS & GIS in Urban & Regional Planning	03.05.04	25.06.04
Cartography and Mapping	03.05.04	25.06.04

** Joint-IIRS-ITC PROGRAMME

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Decision Makers Course

IIRS annually organizes a short course entitled “Remote Sensing : An overview for Decision Makers” for decision makers to make them aware of the utility of remote sensing and geographic information in decision making and planning process. This year the course was organized from 23-26 September, 2003 for four days. The course had an overwhelming response in terms of 19 participants from YASHADA,Pune, Town and Country Planning , Hyderabad, DGBR, Shri Krishna Institute of Public Administration, Ranchi, Irrigation Management Training Institute, Trichy, Ministry of Agriculture, New Delhi, Forest Department, Bihar, Sai Infotech Systems Ltd and C-DAC Noida. They included Director General, Additional Commissioner, Chief Conservator of Forest to Professor and Executive Engineers.



The course participants were exposed to the two technologies and their potentials followed by case study presentations and demonstrations. The course participants expressed that the course was well organized and nicely structured.

Dr. S.P.S. Kushwaha

Master of Science Course in Geo-Information Science and Earth Observation:

A milestone for IIRS (NRSA) - Successful completion of first of its kind

“Geoinformatics for Environmental Assessment and Disaster Management” project, shortly called as IIRS-2, was initiated under the SAIL foundation, Netherlands. Three institutions from the Netherlands: ITC, IHE & WUR¹, have collaborated with IIRS-NRSA in India. This project was aimed to address the use of Geoinformatics technological research & applications in the disaster management and environmental assessment process. Under this programme ITC have coordinated and provided its expertise for the fields of Geoinformatics and the application of Remote Sensing & GIS in hydro-meteorological, geological and environmental hazards. Master of Science degree course in Geoinformatics was born as a technological capacity building program under this project.

For implementing the M.Sc program at IIRS, initially a Task Group was constituted by Dean, IIRS for design of course curricula in June 2001. ITC, IHE & WUR participated and provided the necessary support to formulate it. Then National Advisory Committee (NAC) was constituted and Chaired by Director, NRSA consisting of experts drawn from Department Of Space, NRSA/IIRS, Survey Of India, C-DAC, and Private Entrepreneurs (ESRI & Rolta). An International workshop was also organized for addressing Technology, Applications, Developments and issues related to Capacity Building in Geoinformatics in October 2001. Approval of course curriculum by NAC was obtained for further implementation of the program. With the profound help of ITC’s expertise the formulation and implementation of Geoinformatics Program was successfully done. Finally the first M. Sc Geoinformatics course was started on 1st July, 2002 with the 2 weeks initial workshop on Application of Geoinformatics for Environmental Assessment and Disaster Management.



Structure of the program

In order to utilise the time efficiently, three different courses; 4 months certificate course, 10 months Post Graduate Diploma and 18 months M.Sc. program are integrated into a single package. It is structured into 16 theoretical modules of 3 weeks each and 6 months for research. Already existing certificate course was restructured and combined with M.Sc. program. Detailed course structure of M.Sc. geoinformatics program is available in IIRS website and the program starts in the July month of every year.

Contributions

From the very beginning IIRS staff have contributed their best, starting from making proposal, course curriculum development, course announcement, course material development, course implementation, lectures & practical involvement, students research proposal plan & execution guidance, having

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proper communication with ITC counter part and finally making placement brochures for the self sponsored candidates. Overall 65 % of the total load of this program was taken by IIRS staffs. ITC has contributed significantly in overall, starting from the formulation of course curriculum, training IIRS/NRSA scientific manpower, providing much needed hardware, software, scientific expertise by involving in teaching of the advanced modules of the program. As a part of the M.Sc program the students have been provided with fellowships by ITC for the last part of their research thesis for a total duration of three months including return air fare. At the end of the program students have been awarded with the M.Sc degrees at ITC, The Netherlands. Cheerful contributions from other DOS centers and many government and private organizations through guest lecturers was of great support and their contribution is highly acknowledged.

About 1st Batch (2002-2003) Students

Group of 10 students from various departments like Defense (1 Number), Forest (1), Urban Department (1), Academia (1), NGO (1) and self-sponsored (5) candidates including two foreign nationals (Nepal and Germany) attended the first M.Sc course. The students have carried out their research and applications in the area. Geoinformatics. Students have done excellent research work, which is very much appreciated by ITC professors. After the students return from ITC, a Geoinformatics workshop was organized in IIRS to share out the research carried out by the students under this M.Sc to all other IIRS community. Also a passing out Ceremony was held on the final day, 26th December 2003 and the Surveyor General of India Dr. Pritvish Nag kindly handed over the Degree to the students. Also for the first time IIRS has tried to help the self sponsored students who are in need of placement by preparing the placement brochure and distributed it to various private & government organizations and IITs in India. Our best wishes for their future endeavors.

Overall the program has been conducted successfully with the excellent cooperation of ITC and IIRS (NRSA), DOS.

¹International Institute of Geoinformation Science & Earth Observation (ITC), Enschede.

International Institute for Infrastructural, Hydraulic and Environmental Engineering (IHE), Delft
Wageningen University & Research Center (WUR), Wageningen

PL.N. Raju & C. Jeganathan

Short Course on Remote Sensing

IIRS organised 4th prestigious ITEC/SCAAP (Indian Technical and Economic Cooperation / Special Commonwealth Assistance of Africa Plan), Ministry of External Affairs, Government of India sponsored Short Course of Remote Sensing with special emphasis on Digital Image Processing during 5th January – 27th February 2004. The course was formally inaugurated on 6th January by Sri E. Barwa, Joint Secretary, MEA. Sri Barwa also released the two volumes of lecture & practical notes and a CD containing all the educational material in digital form, specially generated for the course as a collective efforts of PRS division faculty. This course is primarily meant to train middle level resource managers and professionals in application of RS techniques in various disciplines from India and abroad and is attended by 28 persons from 14 countries (Algeria, Colombia, Comoros, Cuba, Myanmar, Peru, Republic of Palau, Syria, Thailand, Timor Leste, Uganada, Uzbekistan, Vietnam and India) representing 4 continents of the world. Out of these 28 participants, 24 are sponsored under ITEC plan, 2 under SCAAP and 2 under Departmental sponsorship. So far 88 participants from 28 countries have been trained under ITEC sponsored course at IIRS.



This course of 8 weeks duration is designed in such a way that it offers a blend of latest technology and conventional techniques. It covers the basic concepts of Remote Sensing, photogrammetry, aerial & satellite photo interpretation, fundamentals of GIS & GPS, digital photogrammetry, thermal & microwave remote sensing, SAR interferometry and basic & advanced topics on Digital Image Processing like image pre-processing and georeferencing, image enhancement techniques, image transformations, image classification and accuracy assessment, digital change detection, image fusion, hyperspectral remote sensing, wavelet transformation, image segmentation, automatic information extraction etc. These topics are covered in theory lecture classes and all the lectures are followed up by practical demonstrations & field visits. Ample opportunity is provided for self-learning by multi-media tutors and library reference.

Apart from the IIRS faculty, guest faculty from different reputed organization of India and abroad also delivered lectures on topics: Satellite Data Acquisition, Evolution of RS data availability by Sri S. Raghunathan, Dy. Dir., NRSA, Hyderabad; Geospatial

Data Infrastructure by Dr. Olajidi Kufoniya, Dir., RECTAS, Nigeria; GIS for assessing renewable energy resources by Prof. Jean-Claude van Duysen, Dir., EIFER, Germany; & Indian Earth Observation Program by Dr. V. Jayaraman, Dir., EOS, ISRO Hq., Bangalore. The course participants had the unique opportunity to attend Map India 2004 conference at Delhi and got the beneficial exposure of latest technological offerings by the RS, GIS and GPS industry.

As an effort of combining training and recreation, the participants were also taken to Mussoorie, Haridwar and Paonta areas for short field visits. As the course was organised with the motive of technology transfer and cultural exchange for international course participants, excursions to Agra and Delhi are organised to provide them historical glimpse of India. Also get-togethers and cultural evening are organised for informal interaction with faculty and course participants of other courses including foreign participants of CSSTEAP course.

R.D. Garg

Tutorial on Spatial data Infrastructure for Urban Planning and Management

ISPRS WG IV/4 organised a tutorial on “Spatial data Infrastructure for Urban Planning and Management” under the auspices of ISPRS WG IV/4 and the Indian Society of Remote Sensing (ISRS) at Indian Institute of Remote Sensing (IIRS), Dehradun from 6th - 8th November 2003. In total 31 participants from India and Asia pacific countries viz. Philippines, Nepal, Bangladesh, Srilanka, Vietnam, Indonesia, Uzbekistan, Mongolia, Maldives, Azerbaijan, China, Fiji, Kyrgyz Republic, Myanmar, and Thailand attended the program. The tutorial was organized through lectures and case study demonstration by experts from India and abroad.

The tutorial was inaugurated by Prof. Martein Molenaar, Rector, ITC, The Netherlands. Dr. P.S. Roy, Chair ISPRS WG IV/4 welcomed the tutorial participants and the guest. The opening remarks were made by the guest of honour Dr. R.R. Navalgund, President ISPRS TC VII. Dr. PK Champati Ray, secretary ISRS, highlighted the role of Indian Society of Remote sensing.



The morning session on the first day started with a keynote address delivered by Prof. Martein Molenaar on *Spatial Data Semantics in NSDI* followed by a lecture on the basics of Spatial Data Infrastructure concepts its components and purpose, standardization and metadata concepts (SDI Technology) by Dr. Sameer Saran, Scientist IIRS. Brigadier Girish Kumar from Survey of India NSDI-India's vision delivered a talk on spatial data infrastructure for urban planning and management. Case Studies on urban application using aerial remote sensing data was presented by Dr. V. Raghu, National Remote Sensing Agency, Hyderabad. Afternoon session primarily consisted of case study demonstration on Solid waste management using RS- GIS techniques and Analysis of existing wireless communication system using geospatial data. A case study of Dehradun City respectively by Mrs Minakshi Kumar and Mr. Anil Kumar scientists of IIRS.



The second day of the tutorial began with a lecture on use of spatial data in municipal governance by Dr. Anjana Vyas, Professor, Center for Environmental planning and Technology, Ahemdabad followed by a lecture on Urban growth and urban land management using remote sensing and GIS by Shri V. Raghavswamy, National Remote Sensing Agency, Hyderabad. Dr. S.K. Pathan, Space Application Center Ahemdabad highlighted the Role of Geoinformatics in the preparation of a Development plan and then demonstrated the above concepts through an extensive case study carried out by them in the city of Indore. In the afternoon session Shri B.S Sokhi gave an illustrative overview on the 3-D Cityscape models followed by a case study demonstration by Shri Sandeep maithani, IIRS on Earthquake loss estimation using Radius Methodology.

On the third day lectures were delivered on Perspectives on Indian scenario in emerging Urban Information System by Mrs. Shefali Agrawal, IIRS. National Urban Information System (NUIS)- Salient features by Mr. J.P.N Singh from TCPO,

Delhi, Remote Sensing and GIS inputs for transportation Studies by Shri V. Raghavswamy, National Remote Sensing Agency, Hyderabad. This was followed by a lecture on Dr. Udai Raj from Regional Remote Sensing Service Center highlighting the role of Geoinformatics for Infrastructure Planning and was supplemented with a case study demonstration. During the discussion two participants also presented their case studies on urban sprawl and navi mumbai development plan.

The three-day workshop concluded with a valedictory address and distribution of certificates by Dr. P Nag, Surveyor General of India.

Shefali Agrawal & B.S. Sokhi

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Workshop on “Methodology for Seismic Microzonation and its Applications for Society”

Indian Institute of Remote Sensing (NRSA), Dehradun in collaboration with the Wadia Institute of Himalayan Geology, Department of Science and Technology, and International Institute for Geoinformation Science and Earth Observation (ITC), Enschede, The Netherlands has organized a workshop on “Methodology for Seismic Microzonation and its Applications for Society” during November 10-11, 2003 at Wadia Institute of Himalayan Geology.

The Dehradun city, situated in the tectonically active part of the Garhwal Himalaya, has already experienced ground motion in the past earthquakes triggered 100-200 km away from the city. During the 1905 Kangra earthquake, 1991 Uttarkashi earthquake and 1999 Chamoli earthquake, Dehradun city has experienced higher damage than the surrounding region. So considering the effect of ground motion from distant earthquakes in any urban center, the estimation of ground motion across the city is of prime importance for consideration of urban development and mitigation of earthquake risk. Therefore, the workshop was aimed to focus on the Methodology and Principles of Seismic Microzonation and Risk Assessment as given below.



- Assessment of seismic microzonation methods and principles
- Data requirement for suitable methodology
- Assessment of existing and available data with different organizations
- Seismic loss estimations and risk assessment methods

The workshop was the first on seismic microzonation and was attended by over 60 participants from India, Nepal, USA and The Netherlands. The two day long workshop was inaugurated by Dr. P. Nag, Surveyour General of India. In the inaugural address he highlighted the need of such study and stressed that all relevant data should be shared between organizations for betterment of the society. Dr. B.R. Arora Director, WIHG in his welcome address mentioned about the uniqueness of the workshop and how three institutes have come together on such important issue. Dr. P.S. Roy, DEAN IIRS gave an outline of the IIRS-ITC collaboration and the background of the proposed project and workshop. Dr. C.J. van Westen gave an insight of ITC activities in different parts of the world on strengthening the capability of local institutions and how towards that the proposed project can contribute. Dr. A. Mahajan, the Organizing Secretary thanked all for valuable contributions and full support.

PROCEEDINGS OF WORKSHOP ON
METHODOLOGY FOR SEISMIC MICROZONATION
& ITS APPLICATIONS FOR SOCIETY (MSMAS)

10-11 November 2003

Jointly Organized by:

Indian Institute of Remote Sensing (IIRS)

Wadia Institute of Himalayan Geology (WIHG)

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



The workshop was concluded by a Panel Discussion chaired by Dr. Amod Mani Dixit. At the end it was highlighted that with existing data seismic microzonation can be attempted for various regions. First attempt should be on generation of Level-1 map, which can be subsequently converted to Level-2 and Level-3 maps based on additional information, the collection of which is underway in many places as informed by GSI and WIHG. It was also suggested to have an expert group to assess all results and develop suitable methodology for generation of seismic microzonation maps, which will be upgraded and integrated with loss estimation methods. At the end Prof. R.C. Lakhera expressed that the outcome of the discussion and presentations would help immensely in carrying out microseismic zonation study in Doon valley and requested that the dialogue what was initiated at the two day workshop must continue to provide information to public which will eventually help in preparedness and reduction of earthquake disaster.

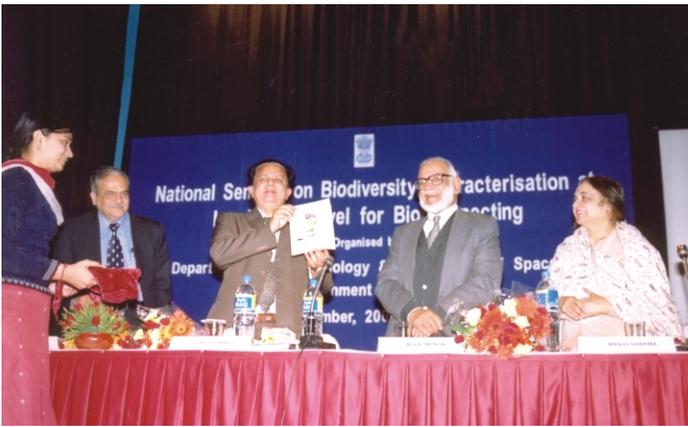
An abstract volume was prepared for ready reference and the proceeding volume consisting of all abstracts and presentations have been brought out on a CD. The full papers presented in the workshop are planned to be published in an International Journal by ITC.

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Dr. P.K. Champati Ray & Prof. R.C. Lakhera

National Seminar on Biodiversity Characterization at Landscape Level for Bio-prospecting



Biodiversity assessment at different level (genetic/species to landscape) is of prime importance for evolving conservation strategies and sustainable utilization. The regular inventorying of flora and fauna has mostly focused on species level inventories. Such inventories lack information on habitats, landscapes and alteration therein with human intervention. For bio-prospecting and conservation, it is necessary to link the species level inventories with their habitat attributes. Such an approach will ensure sustainable approach in conservation. Geospatial approaches enable to prioritize the sites for detailed inventories in space and time. The Department of Biotechnology under its network programme on “Bioprospecting and Molecular Taxonomy Programme” took a major initiative to characterize biodiversity elements at different level. Under this initiative a multi-institutional programme has been initiated with Department of Space in October 1997 on Biodiversity Characterisation at Landscape Level (BCLL) using Satellite Remote

Sensing and Geographic Information System in four priority sites of India viz., North-East region, Western Ghats, Western Himalaya and Andaman-Nicobar Islands.

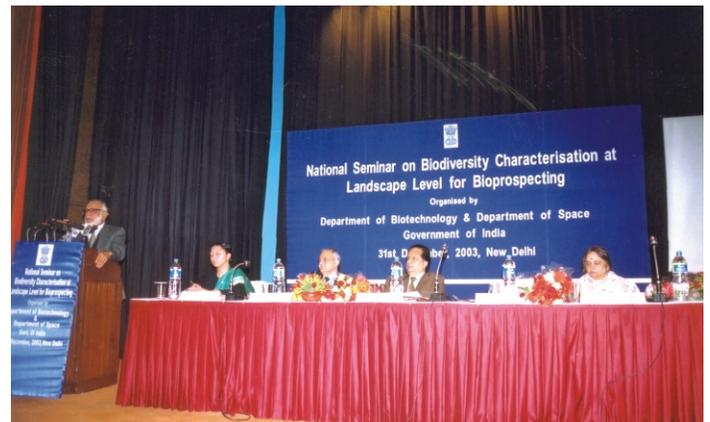
To mark the end of Phase I of the project the Department of Space and Department of Biotechnology, New Delhi on December 31, 2003 organized a national seminar. Shri G. Madhavan Nair, Chairman, ISRO and Secretary, Department of Space inaugurated the seminar. Prof. M.G.K. Menon, Dr. Vikram Sarabhai Distinguished Professor, ISRO presided over the function. Dr. (Mrs.) Manju Sharma, Secretary Department of Biotechnology welcomed the august gathering on this occasion. Dr. R.R. Navalgund, Director, NRSA apprised the audience about the project. The scientific community, users from various lead institute and non-governmental organization were invited to participate in the national seminar. On this occasion Dr. Menon, who stressed the need for biodiversity conservation and application of remote sensing, released the last report on Andaman & Nicobar Islands prepared under this project. Dr. Manju Sharma, Secretary, BDT released a CD on Biodiversity monitoring methodologies prepared by Center for Ecological Studies. Shri G. Madhavan Nayar delivered the inaugural address and released summary report of the entire project covering four regions. 13 speakers from different disciplines made deliberations. Nearly 100 participant attended the seminar.

In the first technical session Dr. P.S. Roy, Dean, IIRS and Project Director presented a detailed overview of the project. He informed the house, how the concept of landscape characterization was realized in mid 90s, which later on led to conceptualization of the project of this magnitude. He made a detailed presentation on the concept and methodology and emphasized the importance of RS and GIS. Audience was given a glimpse of results and products available and the large databases on these four biodiversity hotspots regions of India. This was followed by the 'on-line' demonstration of 'BioSPEC' database developed under the BPMT programme.

During the Panel Discussion, eminent scientist from different scientific disciplines and organizations offered their comments on the work done.

It was felt that the information system on biodiversity need to be strengthened through public awareness at various levels. Several other important issues like, evolving methodology for data dissemination to different levels particularly at grass root level, monitoring of biodiversity using the existing plot information generated during this project, validation of the information, issues related to accuracy etc. were discussed at length. The scientific community also discussed modalities to enrich this database in future.

Scientists involved in this project were felicitated by the Prof. M.G.K. Menon.



Dr. Sarnam Singh

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IIRS at 91st Indian Science Congress

The Indian Science Congress Association (ISCA) owes its origin to the foresight and initiative of two British Chemists, namely, *Prof. J. L. Simonsen* and *Prof. P.S. MacMabon*. It occurred to them that scientific research in India might be stimulated if an annual meeting of research workers somewhat on the lines of the British Association for the Advancement of Science could be arranged. The Association was formed with the objectives to advance and promote the cause of science in India; hold an annual congress at a suitable place in India; publish proceedings, journals, transactions and to popularize science. After modest beginning, with 105 members scientist from the world over and 35 papers communicated for reading at the 1st session, from January 15 -17, 1914 at the premises of the Asiatic Society, Calcutta ISCA has grown into a strong fraternity with more than 10,000 members and nearly 1000 papers communicated to till date. The 34th Annual Session of the ISCA was held in independent India at Delhi on January 3-8, 1947 with Pandit Jawaharlal Nehru, Prime Minister of India, as General President.



This was the 1st time in the 91st Session of the ISCA, a special section of *Environmental Sciences* was introduced and the satellite remote sensing was given a niche to show its structural and functional outputs. Our Institute participated in section of Environmental Sciences as a session *Satellite Remote Sensing for Environmental Sciences*. *Dr. P.S. Roy* Dean IIRS, Convener of the section, organised this special session. The session had presentations on *Indian Earth Observation Strategy for Sustainable Environmental Management* (V. Jayaraman, ISRO HQs); *Satellite Remote Sensing for Aerosol and Atmospheric Chemistry Studies* (A. Jayaraman, PRL), *Remote Sensing of Agroecosystems* (V.K. Dadhwal, SAC), *Satellite Remote Sensing Applications in Wetland management and conservation* (S.N. Prasad, SACON) and *Satellite Remote Sensing Application for Forest and Biodiversity* (P.S. Roy, IIRS).

In addition to the presentations made by the eminent scientist of DOS family, the special contribution of IIRS was to display the latest activities/applications of remote sensing and GIS for Environmental Management. The display of representative posters from all the divisions of IIRS was an interesting feature of the session, which drew the attention and enriched the knowledge of the delegates. The delegates were also pleased to get the information about the various courses in the institute. The team felt shortage of the course brochures with the over whelmed response towards our training and educational courses. With this the institute got an opportunity to contribute to the science, academics and amalgamate with the objectives of ISCA to popularize and promote science in India at a suitable place.

Dr. P.K. Joshi

Courses at IIRS during last five years - an Account

Indian Institute of Remote Sensing (IIRS) part of National Remote Sensing Agency (NRSA) is an autonomous organization under Department of Space, Government of India. With a humble beginning in 1966, the Institute (which was then known as Indian Photo-interpretation Institute) started imparting training in four major disciplines, namely: Photogrammetry, Geology, Forestry and Soils using Aerial Photographs for natural Resource Mapping and Aerial Photo Interpretation.

IIRS has responded well to the changing times and advancements in technology. It now, has fully functional eight divisions. New courses are now being offered in the field of Remote Sensing and GIS, Digital Image Processing, Global Positioning System, Geoinformatics for Environmental Assessment and Disaster Management and Digital Photogrammetry. After the establishment of CSSTEAP, the institute (IIRS) has taken a quantum jump, in not only pursuing its slated goal of providing training for capacity building but also by offering educational courses to fresher's from university and mid career officers from various organizations.

In my last article of September 2003, I had focused on short-term courses. The present write up highlights other course programs that are being offered by the institute. Apart from the regular Certificate and PG Diploma programs three new educational courses have been added to the IIRS course calendar starting 2002.

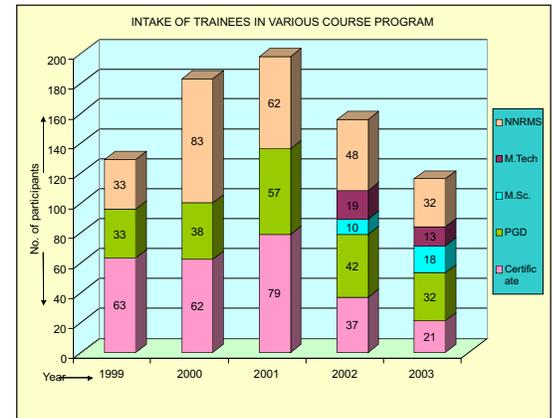
The first M. Tech. program commenced from March 2002. M. Tech. is offered in six major disciplines (Agriculture and Soils, Forestry and Ecology, Geomorphology and Geohydrology, Marine Sciences, Urban and Regional Planning and Water Resources). The M. Tech. Degree is awarded by Andhra University under the MOU between Andhra University and NRSA. Other two course programs are "Geoinformatics Technology and Application" and

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“Geoinformatics for Environmental Assessment and Disaster Management”. Until the start of 2002 season, courses upto PG Diploma were offered. From July 2002 both these courses have been upgraded to M. Sc. level. M.Sc. degree is awarded by ITC (International Institute for Geo-Information Science and Earth Observation), the Netherlands, under a joint logo program between IIRS & ITC. First batch under the above two M.Sc. course programs received their degrees on December 26, 2003. This year a new stream ‘**Digital Photogrammetry and its Application**’ is introduced at P.G. Diploma level Commencing from 1, March 2004.

With the increasing awareness and popularity of Remote Sensing and Geoinformation Science and their applications in various fields more and more universities have introduced or are in the process of introducing these subjects in their course curriculum. National Natural Resource Management System (NNRMS) foresaw this long back. As a result of this NNRMS sponsors courses in five major disciplines, are also being conducted at IIRS exclusively for the university faculty. Following table indicates the intake of trainees in various course programs during the last five years.

Course	1999	2000	2001	2002	2003
CERTIFICATE	63	62	79	37	21
PGD	33	38	57	42	32
M.Sc.	-	-	-	10	18
M. Tech.	-	-	-	19	13
NNRMS	33	83	62	48	32
Total	129	183	198	156	116



S.C. Gupta

IIRS Library- A profile

The emerging new technologies have influenced every aspect of life, libraries are no exception to this. Virtually every facet of Library operation and service has been influenced by this technology. Today most of the libraries in India are fully or partially automated. Technologies such as mini and micro-computers, CDROM Databases, Optical Storage Devices, Scanners, Barcode Technology etc. have replaced the traditional registers, catalogue cabinets, borrowers card etc., which was once the basic tools of any traditional library. Libraries today are not just a store house of knowledge, they are Information Centres, where the information is acquired, organized, processed and disseminated to its end-users, thus providing the right information to the right user and saving the time of users, according to the second and fourth law of Library Science respectively.

IIRS Library is one such Information Center, located in the left wing of the Administration Block of IIRS. The Library is fully Air Conditioned, equipped with ergonomically designed furniture and fixtures and managed with skilled and dedicated staff. Library came into existence with the establishment of the Institution in 1966. At that time library consisted of few books stocked in steel almirahs in a small room. In 1971 a full-fledged Library came into existence. Today the library has grown both in quantity and quality. The Library is pro-actively catering to the information needs of its users through a wide range of information technology based service and products.

Objective: The objective of IIRS Library is providing “User Satisfying Services”. To collect, organize and disseminate information on Remote Sensing and its application fields.

Our Collection: 19,000 volumes of books, bound serials, thesis, technical reports, CD-ROMs, Video Cassettes, Maps and Atlas etc. comprise of IIRS Library collection. The Library has rich collection on Remote Sensing Technology and its Application fields. Also a good collection of books on Geographic Information Systems are available in the Library. Around 1000 books are added annually to the library collection including gifted books. IIRS Library Subscribes to 74 journals/ periodicals of which 31 are foreign journals and the remaining are Indian Journals. Almost all important journals on Remote Sensing and GIS both of international and national level are available in IIRS Library. Our annual budget is about Rs.32 lacs, of which Rs.17 lakhs is for journal procurement alone. The Library also maintains the library collection of CSSTEAP, a UN organization set-up within the institute premises.

Library Automation: The library is partially automated. Most of the in-house activities of library have been computerized and efforts are on towards achieving a fully automated library.

Our Services: Our emphasis is on Value Added Service. The library provides to the users standard and variety of services apart from lending services such as:

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- Online Public Access Catalogue
- Reference Service
- Bibliographic Service
- Content Information Service
- Digital Information Service
- Conference Information Service
- Internet and Email
- Inter Library Loan
- Reprographic Service



Achieving the objectives of an organization is not a single man show. It is a team effort with dynamic leadership. Today, the modern IIRS Library stands witness to the careful guidance and continuous motivation of Dr. P.S. Roy, Dean, IIRS and countless efforts of the staff of IIRS Library.

It would be right to conclude with the words of Nobel Laureate Shri. Rabindra Nath Tagore, “The Library where the interest is manifest welcomes readers with pleasure that is what is called Graciousness. That is the Library not in size but in Nature.” IIRS Library is a small library by quantity but quality is what matters at the end. And in IIRS Library the emphasis is Quality of Collection. Come and visit IIRS Library, there is something for everyone to cherish “Information the basic requirement of mankind”.

Suman Celina Paul

Cellular Automata for Land cover Change Detection: A Glimpse

Land-use land-Cover Change (LUCC) researches focuses on situation analysis for identifying the drivers (parameters) of change, modeling the drivers and predicting the future scenario. Since the influence of a driver is different at different locations, the non-spatial modeling approaches failed to address such spatial significance. Remote sensing and GIS have helped LUCC study to take a big leap to include various natural and human activities spatially. Though the traditional statistical models like Markov chain analysis, multiple regression, factor analysis and logistic regression, have contributed initially, but was criticized due to their hidden assumptions as sample should follow normal distribution and the future landcover will depend upon only previous states of that location, which are not the case in reality. To enhance such limitations many advanced researches like cellular automata (CA), fuzzy based modeling, artificial neural network based approach have been developed. In this article we have tried to provide a glimpse of CA from our research experience.

Cellular Automata was first conceptualized by John Von Neumann in late 1940s. The first practical application of CA was developed as Game of Life by John Horton Conway. The basic element of a CA is the CELL. It can be thought of a small memory element, which can take value either 1 or 0, meaning either it is alive or dead. Second, these Cells are arranged/ distributed in a spatial spread called LATTICE. In one dimensional lattice, the cells are arranged like a line. To demonstrate its usability, many CA are built in one-dimensional lattice or 2-dimensional lattice. Since these CELLS evolve over time, their attribute changes over time and also they grow or die spatially, hence 1 & 2-dimensional CA are more easy to visualize than 3-D CA. Third, the state of a cell are influenced by its NEIGHBOURS. In 1-D CA there can be only 2 neighbours. In such case, the possible state of the neighbours including the center cell, are of the order $2^3 = 8$ states. That means we have to define a TRANSITION RULE for each state, in order to find the future state of a cell, so we need 8 rules for the evolution of cells. In case of 2-D, if we take 3×3 neighbourhood, we will have 8 neighbours, in such case the number of rules required is $2^8 = 256$ rules. The problem is how to define these large number of rules in spatial domain (2-D).

In spatial domain there are associated natural and human related parameters responsible for different growth/decay processes, at local, regional and global levels. These information can be modeled to find a suitability of a particular landuse or landcover for each cell using multi-criteria evaluation (MCE) technique. Apart from this, the neighbourhood influence will also be calculated from the cell state for that landcover, for each time step. Using these two information final score of a cell can be obtained using weighted sum approach. By using a threshold limit (as a transition rule), we can finally get a predicted future state of that particular landcover. Since there may be a biasness in threshold fixing, we need some more information. This biasness can be eliminated by first finding out the demand of a particular landcover for a particular time and we start allocating the cells from highest score till the demand is fulfilled. The major difference in this approach is finding the presence & absence of each cell and the neighbourhood influence calculation for each time step.

There have been attempt to find out the transition rule through Neural network techniques and Fuzzy approaches. It is found that CA tries to incorporate the ground interaction in a logical manner and it is very simple & efficient.

C. Jeganathan & Anuj Kumar Singh

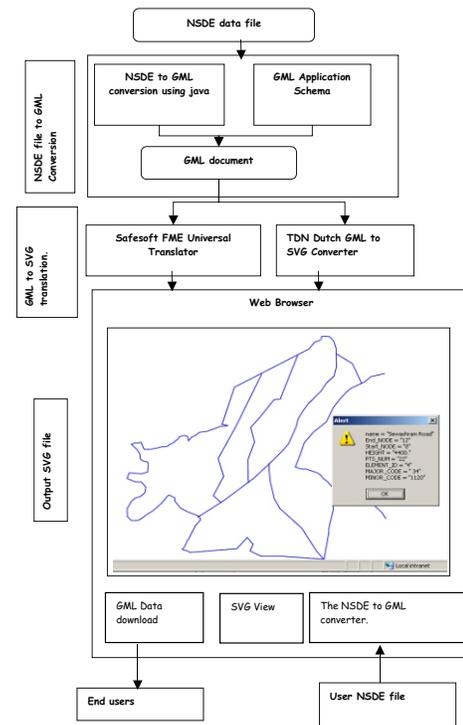
Interoperable Geo Spatial Data Model In the Context of the Indian NSDI

National Spatial Data Exchange Format (NSDE) is a data exchange standard for geospatial maps in India. In the development of Indian National Spatial Data Infrastructure, NSDE has been specified as the format for data exchange in governmental GIS procurements. This is with the aim of keeping all the GIS data of India in one format to fight the problem of heterogeneity at least at national level. But with the present scenario where interoperability is the prime issue of consideration, abiding with the NSDE format will be contradictory to the concept of openness. However, it is quite possible that the NSDE format can be mapped to a format, which is recommended as open and helps in interoperability. GML (Geographic mark-Up Language) is recommended by Open GIS Consortium for interoperable data exchange, it is a dialect of World Wide Web recommended XML and thus inherits the qualities of XML. GML allows the domain specific user to design a flexible and extensible schema, which suits the NSDE (National Spatial Data Exchange) format requirements as well as the OGC recommendations for interoperable data exchange and transfer. This thesis covers the schematic mapping of NSDE to GML and hence moves the existing GIS bases into XML domains. It covers the experiences in converting NSDE data to GML documents, with emphasis on the requirements and design choices in mapping the NSDE data format to a GML application schema. For the demonstration purpose various visualization techniques for GML to some graphical form like SVG are also considered.

Highlights of the work:

- Designed a GML based schema, which complies with the requirements of Indian NSDI Format and fulfills the GML specifications given by OGC.
- Designed a NSDE (NSDI data exchange format) to GML document converter using Java.

- GML to MAP: Study and implementation of Various visualization Methods like SVG, using XSLT. Studying use of existing software for visualization, and finding possibility of transfer and sharing of GML data on the fly.



Ms. Sujata Rawat & Dr. Sameer Saran

Evaluation of IRS-P6 : LISS-III and AWiFS Data For Post Kharif Crop Inventory

The major objective of RESOURCESAT-1 (IRS-P6) mission is to provide remote sensing data with enhanced spectral and spatial coverage for improved integrated land and water resources management from regional to micro levels. This feasibility study on the potential use of recently launched IRS-P6: LISS-III and AWiFS sensors digital data, was carried out with the following objectives-

- discrimination of post Kharif crops following digital classification of LISS-III and AWiFS data,
- evaluation of usefulness of SWIR band both for LISS-III and AWiFS sensors for crop discrimination,
- evaluation of VNIR and SWIR based spectral indices for crop condition and land cover features assessment

The study area consisted of two tehsils Bagpath and Sardhana of Bagpath and Meerut districts, respectively, of part of western Uttar Pradesh. Digital IRS-P6-LISS:III and AWiFS data of path and row: 56 and 49, date: November 04, 2003, were used in this study.

Nine crop and other land cover classes such as sugarcane1 (moderately less matured); sugarcane2 (over matured); sugarcane3 (less matured); paddy (matured); vegetable; fallow land; mango plantation; forest; habitation/settlements and water body (rivers/canals/ponds), dominantly present in the study area were discriminated by digital classification of both LISS-III and AWiFS data. Digital classification accuracies for crop cover classes were improved by inclusion of SWIR (band-5), both for LISS-III and AWiFS data. Relatively higher classification accuracies were observed for LISS-III compared to AWiFS data. This was attributed to higher spatial resolution of LISS-III data as compared to AWiFS data and better identification of small crop fields in the study area by LISS-III data.

Higher radiance NDVI values for all land cover classes in the study area were observed for AWiFS compared to LISS-III sensor. Slightly higher values of Infrared Index (II) were also noticed for AWiFS when compared to LISS-III sensor. Crop covers showed higher values of radiance NDVI and Infrared Index

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(II) and lower values of Moisture Stress Index (MSI). Non agricultural land covers had lower values of NDVI and II and higher values of MSI. Vegetated covers because of higher canopy moisture content showed higher values of II and lower values of MSI. Vegetable crop having relatively higher moisture content among the vegetation cover classes showed highest value of II and lowest value of MSI. Over matured sugarcane (Sugarcane2) having lowest canopy moisture content among sugarcane class showed relatively lower II and higher MSI values compared to other sugarcane classes.

The following major conclusions could be drawn from the results of the present study-

- IRS-P6 AWiFS data can be used effectively for post Kharif crops discrimination and area estimation with nearly comparable digital classification accuracy obtained for LISS-III data.
- Improved post Kharif crop inventory can be effectively done by inclusion of SWIR band along with VNIR bands.
- High ranges of radiance NDVI and II values for AWiFS were observed compared to LISS-III data.
- SWIR band based spectral indices viz. MSI and II are very useful for crop condition assessment on the basis of canopy moisture status.

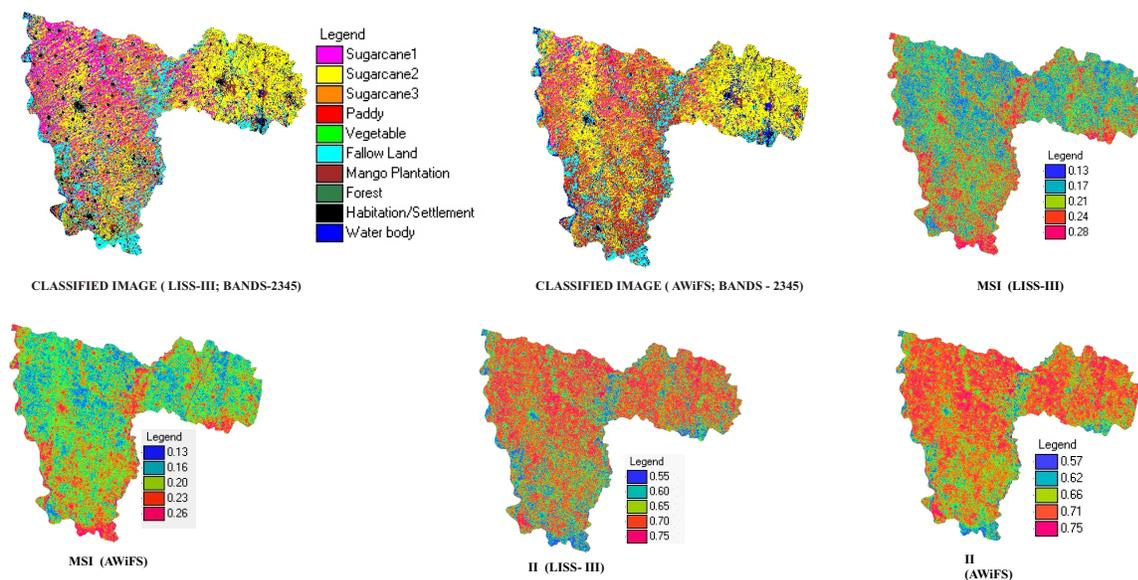


Figure-1: IRS-P6 classified images; SWIR based spectral indices of the study area

Dr. S.K.Saha

In situ Capacity Building: An Appeal

Indian Institute of Remote Sensing (IIRS) in addition to achieving its set objectives of capacity building through technology transfer also achieves the goals through research, user dialogues and sharing of experience in the field of natural resource survey, mapping, infrastructure development and environmental management for sustainable development. It also addresses on inter-disciplinary interface including attention to socio-economic and environmental considerations through research and consultative projects.

One of the best components of these projects is interaction with the local people for field knowledge collection in the different parts of the country. In one such project entitled 'Biodiversity Characterization at Landscape Level' (DOS-DBT Project), a field party of Ms. Pushpa P. Dash, Research Scholar and Mr. Mukesh Kumar M.Tech student and myself went to Jharkhand. During the survey in Betla we happen to meet Shri Murlidhar Mishra a schoolteacher of Rajya Madhya Vidyalaya, Baresaur. On his request we went to the school and share views about Universe, Satellite System and Environment. The students took great interest to know the things and hidden science in it. Each eye had dream to lead the space science and be in the forefront of technology and its applications for the cause just beyond the academic and research.

It is an appeal to all readers perusing remote sensing a profession and art. We all get opportunity to go down to the field for ground truth and socio economic data collection through research activities. If in each field we could spare some time, interact with tomorrows' scientist and could lit a flame of this technology in the locals, it will be a real interface to socio-economic and environment consideration, a motive to capacity building.

Dr. P.K. Joshi

Feedback by Outgoing Officer Trainee

Good Afternoon Ladies & Gentlemen !

It is with great pleasure to give some words of gratitude and thanks on behalf of the 28 participants in this final moment which we eagerly waited - the passing out of the ITEC Sponsored course on Remote Sensing, IIRS, Dehradun, India.

Before I proceed, let me acknowledge the staff of directorate of this Institution who are present here today My due respect to Dr. V. Jayaraman, Dr. P.S. Roy, Dean IIRS, Namaste ! Prof. Govil, Mr. Mittal, the high Caliber teachers who are really sharp and Intelligent , despite the language barrier among participants, they can still impart the knowledge with patience and perseverance; to mention Meenakshi, Shefali, Poonam, Hina, Anil Kumar and to all the guest lecturers We salute You !!!

Most of all, to the person who made all things happened, the very accommodating and facilitative Mr. R.D. Garg, our course officer who always see to it that everything is in place, rain or shine. I also would like to thank Mr. Batra of Student Affairs for all his help. To the administrative of technical staff of this Institute and to all people who in one way or another has give us the necessary support and has made our stay in this place very memorable, to my fellow participants to the course of various nationalities, I'd like to give thanks to you all.

In my own point of view, the basic knowledge that I acquired from my 2 months study here in IIRS is immensely valuable. It has somewhat given me a broader perspective of knowing, learning and eventually disseminating this revolutionary new tool and amazing technology that tends itself useful applications in a variety of areas of high relevance to my country .

We will always cherish all the beautiful memories we have in IIRS, the new found friends, the beautiful friendship we shared as beautiful as the flowers in the campus, the warm accommodation, the joy of knowing each other, our experiences in the Himalaya, in Taj, in Ganga, I will never forget the monkeys and everything that we have been through , all are captured in each cameras, photographs & memories.

To all our teachers & mentors headed by Dr. P.S. Roy, Prof. Govil, Mr. Mittal & Mr. R.D. Garg, saying thank you is not enough for all the wonderful things that you have done for us. We will never forget you. To the ITEC who sponsored our scholarship and has given us the necessary moral and logistical support most of all the financial support, thank you very much !!!

Saying goodbye is a very hard thing to do especially to people who we have known for quite sometimes, Eight weeks of fun, of knowing each other, learning together in lectures, laboratory works, field trips, tea time and in photo sessions. Eight weeks, seems like yesterday we're counting days, now we're counting hours of we'll soon pass ways to be back to each one's Country & Family. As we part, we wish each one good luck and a happy trip back home with our prayers that someday, somehow our Almighty God will bring us back together again in this one beautiful place called IIRS, Dehradun.

Again, on behalf of all 28 participants I would like to thank, You all very much & GOD BLESS !!!



Galbraith Gabriel

Republic of Palau

(Course participant of Short Course on Remote Sensing)

Congratulations



IIRS family takes pride in congratulating Dr. R.R. Navalgund , Director , National Remote Sensing Agency (NRSA) on receiving Prof. K.R. Ramanathan memorial lecture 2002 Gold Medal at the 40th Annual Convention of Indian Geophysical Union (IGU) in Chennai on December 17, 2003.



R.D. Garg, scientist Photogrammetry and Remote Sensing Division has been awarded prestigious ISRS-SPECK AWARD 2003 for best oral paper entitled "Transport Route Planning using advanced mathematical algorithms in RS-GIS Environment" presented at National Symposium on Resource Management with special reference to Geoinformatics and Decentralised Planning, 9-12 December 2003 at Thiruvananthapuram

Adieu

We bid fond farewell to our colleagues on attaining Superannuation and wish them a happy, healthy and fruitful life ahead.

Shri Shakti Chand, HVD 'D'
Shri L.M. Pandey, Sr. Accounts Officer
Shri B.S. Thapa, LVD 'B'
Shri D.K. Jugran, Scientist/Engineer 'SF'

C. Jeganathan ,
scientist ,
Geoinformatics
Division received
**KLAAS JAN BEEK
AWARD** for Best M.Sc
Research Thesis
entitled *Development Of Fuzzy Logic Architecture For Assessing
Sustainability Of Forest Management* for 2003.

