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2003 number 1

introduction

Student life at ITC can be pretty hectic one way and another, with lectures, practicals and a whole new environment to explore. Ever wonder what happened to that particular friend who shared your voyage of discovery? You had the odd meal together, debated the hot topics of the day, and even occasionally (or perhaps rather more than occasionally) moaned about study loads and the Dutch weather. You always planned to stay in touch but then, what with the rush and tear of everyday life, letter writing was consigned to the back burner. It's a situation we all recognise only too well.

But now Internet has arrived on the scene to make life that much easier. With a click on the button, your message wings its way to the other side of the world and contact is re-established. ITC is more than willing to play its part, and is now offering its alumni free e-mail accounts (page 15). The scheme has several advantages and will soon be used as one of the ways of giving advance notice of receptions, workshops, seminars and the like. Of course, we're also hoping you'll keep in touch with us. Your views, suggestions and contributions are always most welcome. They help us to ensure that *ITC News* hits the spot and covers subjects of interest to you the readers. Some alumni have already responded positively to the call, as you will see in this issue (pages 17, 21, 22 and 23). Maybe their names will strike a chord.

However, even in this technological age - and while admittedly enjoying the many benefits - we're by no means adverse to the more traditional forms of communication. After all, hopefully *ITC News* itself bears witness to the value of the printed page. Still, there's no getting away from it, sometimes there's nothing like the personal touch. Lively discussions, face to face, can achieve a great deal when it comes to building and reviving relationships (pages 2 and 10). Prof. Ian Masser, who retired as head of the Urban Planning and Management Division in September 2002 (page 7), was noted for his social skills, and was never happier than when having an evening out with his colleagues and students. That's communication for you!

A brief introduction should really be just that ... brief. So now it's time to sit back and let the first 2003 issue of *ITC News* speak for itself.

Janneke Kalf

Acting Managing Editor

colofon

ITC NEWS is published quarterly, by ITC, Enschede, the Netherlands

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Director External Affairs Visits South Korea

ITC News

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On the initiative of Dr Kyu-Jon Cho, president of the Korean Association of Surveying and Mapping (KASM), Sjaak J.J. Beerens, ITC's director external affairs, visited South Korea in March to explore the revitalisation of collaboration and the participation of South Korean students in ITC's educational programme.

The close collaboration between South Korea and ITC dates back to the five-year "Joint Korea-Netherlands Aerial Photo Survey Project", which started in 1966. Under this project, which was a collaborative effort between the National Geography Institute (NGI, the Korea National Mapping Agency), KLM Aerocarto and ITC, the western and southern parts (30,000 km²) of South Korea (100,000 km²) were photographed in their entirety to produce scale 1:25,000 topographic maps. During this five-year period, scores of South Korean professionals were trained at ITC, many of whom were guided by Prof. Jan Visser, who passed away recently. Prof. Visser was greatly respected by his former Korean students for his sincere dedication to his work. The lifetime of some of the equipment procured under this project has been extended by upgrading it to partially meet digital requirements. In this way optimal use is being made of the support provided through the Korean-Dutch collaboration.

During his stay in Korea, Sjaak Beerens met with Mr Young-Hwan Kim, director general of the NGI (<http://www.ngi.go.kr>) in Suwon



Sjaak Beerens at the NGI in Suwon City, with Dr Kyu-Jon Cho on his right; in the background the statue of the famous Korean cartographer, Mr Jeongho Kim, who made a complete map of Korea in 1861, travelling on foot

City, which is in charge of national surveying and mapping. The NGI establishes and maintains the geodetic control, including triangulation stations and benchmarks which provide the framework for the national coordinate system for all surveying and mapping carried out in Korea. As in many countries, increasingly the NGI is also playing a key role in managing the national spatial information system.

Sjaak Beerens also met with Mr Jae Hwa Choi, former KASM president, who initiated the translation into Korean of ITC's two textbooks, the *Principles of Remote Sensing* and the *Principles of Geographic Information Systems*. The translation is close to completion, with publication expected mid-2003.

The visit concluded with a farewell dinner attended by a number of ITC alumni. Although there are about 160 ITC alumni in



ITC alumni from South Korea: (from left to right) Dr Jae Hong Jeon, Mr Jae Hwa Choi, Dr Kyu-Jon Cho and Dr Wonik Kim



Dr Kyu-Jon Cho (President of the Korean Association of Surveying and Mapping and Dean of the Graduate School of Industrial Technology and Information of Kyonggi University, Suwon City) with one of the instruments procured under the Korean-Dutch mapping project and upgraded to meet current digital requirements, thus optimising the economic lifetime

South Korea, up-to-date contact details are lacking. Dr Kyu-Jon Cho undertook to update at least half the list, and Korean alumni can help in this task by contacting him by e-mail (kjcho@kyonggi.ac.kr).

South Korea is no longer considered a developing country. It has not been eligible for support under the Netherlands Fellowship Programme since the early 1990s. In spite of the loss of this facility, many students from South Korea have still been participating in ITC's educational programme annually. The lively discussion with KASM and NGI representatives revealed a strong desire to revive the relationship with ITC. Both parties have agreed to pursue such cooperation, but now within a framework of scientific and technological collaboration rather than development aid.

Some Factors Affecting Human Resources Development in Third World Countries

... the story as told by an ITC alumnus

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One of the problems militating against rapid development in Third World countries - otherwise known as developing countries - is the underutilisation of capacity building, particularly to meet the challenges of applying science and technology in national development. The rapid development of satellite technology, for instance, has revolutionised the utilisation of space science and technology in finding appropriate solutions to socio-economic problems. Today, nearly all aspects of human life and development are impacted by the results of space research. The

application fields vary from defence and security - the reason for the early utilisation of space technology - to resources inventory and management, environmental management, disaster mitigation and management, weather forecasting, navigation, communication, education, health and scientific research. The breakthrough in the developed countries, measured by the level of socio-economic development, no doubt remains a big challenge for the developing countries. While some countries such as China, India and Brazil are catching up, the African coun-

tries, apart from South Africa, are yet to enjoy the desired benefits.

The areas where the results of space research can be applied and where maximum exploitation can be expected still remain virgin for most African countries. Where some efforts have been made to train experts both locally and in institutions abroad, the results of such training are yet to be related to the socio-economic development.

A beneficiary of such training and the first trained PhD student at ITC, one of the most reputable remote sensing and GIS institutions in the world - it might have been expected that my training would be brought to bear not only on my life in terms of job satisfaction but also on one or two areas of socio-economic development in Nigeria. In the course of my experience as a civil servant, however, I have identified some limiting factors that prevent the full realisation of the potential of Nigerians or Africans trained abroad.

Much as we appreciate the provision of fellowships and aids from the donor countries or organisations, such fellowships often do not bear their full responsibilities and in most cases do not take into account the sustainability of the training by making the necessary provision for the trainee's return home. My first challenging experience on my return to Nigeria in 1990 after my ITC training was the non-availability of computer facilities. This meant I was unable to apply my knowledge in the area of remote sensing and GIS for optimum road planning or the development of road maintenance modelling/strategy for Nigeria. The frustration caused by the non-availability of requisite facilities, owing to the lack of funds, made me leave the Nigerian Building and Road Research Institute in Lagos to seek greener pastures. I believe that the provision of computer facilities by my sponsor (European Economic Community) would have made a great difference and given me the opportunity to meet the challenges of national development.

(a) Non-appreciation of the usefulness and considerable advantages of space application, compared with conventional methods,

for solving socio-economic problems in order to rapidly realise the goals of government programmes; (b) lack of a sensible and diplomatic approach to convince decision makers of the need for space- or GIS-related methodologies for solving socio-economic problems.

Some decision makers or heads of government institutions who could influence government decisions are firmly glued to conventional methods and are unwilling to finance new approaches being introduced by the younger generation - either because of an inferiority complex or because of the lack of personal financial benefits. Added to this, some of our approaches often lack the necessary ingredients for sensible reasoning. For example, what does a director given a mandate to develop land for farmers to produce so many tons of grain or yams know about the spatial information management system (SIMS)? The present information management technology has never familiarised him with remote sensing or GIS. This often deprives our approach of the ability to stimulate understanding and reasoning.

My experience and frustration between 1993 and 1999 grew worse instead of better, despite moving to a newly established organisation, the National Agricultural Land Development Authority (NALDA). I worked with a departmental director to package a land use planning and management programme, which we called SIMS. Basically this programme was designed for purposes of farm site parcellation and land use planning, and included the establishment of an agricultural database for all project sites. Despite the level of detailed information and the work to be done, I later realised that neither our budget nor our approach was properly related to projected yield per ha or to our intentions in terms of soil and land conservation. Of course, our ideas may have lacked a sensible approach, but the general director with overall responsibility was unwilling to be convinced. He was in haste to meet the government objective of food for all within a period of one or two years. In fact, there was little or no planning invested in NALDA's land development programme. My departmental director and I became objects of ridicule, nicknamed "SIMS", because our ap-

proach was too academic to fulfil the government's immediate expectations. I was seen as good enough for posting to farm sites to supervise farmers and organise them into cooperatives, a duty normally performed by an extension officer. However, the challenges were accepted and the duties creditably discharged - though without the usual sense of job satisfaction. Having produced a PhD thesis *Highway Cost Modeling and Route Selection Using a Geotechnical Information System*, I now saw myself exploring a field for which I did not have the relevant competence.

I kept on doing the job, sometimes grudgingly, until January 2000, when the new civilian government phased out NALDA in the move to rationalise government establishments. But I knew that many factors besides poor funding were responsible for NALDA's dismal performance.

Indecision and the inability to take risks and explore other possibilities are sometimes responsible for our frustrations. Overseas training should be viewed in the real sense of capacity building - to develop and bring out the full potential of the trainee. And that means the trainee's management of resilience, bearing in mind that an uncertain future demands that we should be prepared to shape the future and our destiny by our own observation and action. While we (the staff of NALDA) were waiting for redeployment by the government, it began to dawn on me that time was moving fast and I needed to work on a few proposals related to my own field of specialisation. My intention was to send such proposals to relevant organisations that might be interested in implementing them. As providence would have it, the first proposal I wrote, entitled "Application of space technology for rail route location and potential railway network

development in Nigeria", was accepted by the National Space Research and Development Agency (NASRDA) and forwarded to the Federal Ministry of Transport. A copy went to the President of the Federal Republic of Nigeria, and Heaven only knows my joy when he forwarded the proposal to the Minister of Transport for action. Subsequently, a committee was set up to look at the proposal. This proposal eventually facilitated my deployment to NASRDA, where I now work as the director of the Department of Space Application.

Conclusion

That there are similar factors relating to the underutilisation of human resources in developing countries cannot be overstated. Experiences vary from one trainee to another but one common associated factor is the brain-drain - and this applies particularly to those unable to cope with frustration. In the scholarships offered, donor organisations should always consider the training needs of their beneficiaries in their home countries. Trainees should learn to explore and also develop appropriate strategies to relate with decision makers. It would make even more impact if our scientists could be part of the decision-making processes. I hope a few - or perhaps even more than a few - other trainees can learn from my own experience. It is evident that to make rapid progress Africa needs an environment of not only adequate and effective human resources development but also effective human resources utilisation.



Joseph Akiniyede

events

Workshop on Cadastral Data Modelling

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Cadastral systems include a database containing spatially referenced land data, a set of procedures and techniques for the systematic collection, updating, processing and distribution of data, and a uniform spatial reference system.

Recent developments in geo-information and communication technology (ICT) are having a serious impact on the development of cadastral systems. Both theoretical and practical developments in ICT, such as the ubiquitous communication system (Internet), database management systems (DBMS), the information system modelling standard UML (Unified Modelling Language) and positioning systems, will improve the quality, cost-effectiveness, performance and maintainability of cadastral systems. Further, users and industry have accepted the standardisation efforts in the spatial area by the OpenGIS Consortium and the International Standards Organisation (e.g. the ISO T211 Geographic Information/Geomatics). This has resulted in the introduction of new - or new versions of - general ICT tools with spatial capabilities (e.g. eXtensible Mark-up Language / Geography Mark-up Language (XML/GML); Java (with geo-libraries); object relational geo-DBMS, including support of simple geographical features). It is the very first time that such a set of worldwide-accepted standards and development tools have been available (UML, XML, Geo-DBMS, OpenGIS standards).

Next Step

It is felt that starting to develop standardisation of the cadastral domain would be a useful next step. Many

countries experience the development of cadastral systems as complex. Starting from scratch is even more complex than adapting and extending an existing system. Introducing a simple generic core cadastral domain model could encourage and support the flow of information relating to land property between different organisations (e.g. planning authorities, private surveyors, cadastres, conveyancers and land registries), as well as between these agencies and the public. While it should be possible to facilitate access to data and its collection, custody and updating at a local level, the overall land information infrastructure could be recognised as belonging to a national uniform service to promote data sharing. A core cadastral domain model, with classes and associations

between classes representing objects, attributes and operations derived from different tenure systems, could contribute to efficiently fulfilling local cadastral needs. Support of vendor software would increase efficiency even more. The ultimate ambition is to create a model with the common elements of cadastral systems.

Workshop

On 17 and 18 March 2003, a workshop was held on this subject at ITC. This workshop was organised by ITC and the Netherlands Cadastre, in close cooperation with ESRI, provider of ArcInfo and ArcGIS software. About 30 experts in this field, from cadastral organisations, universities and commercial companies, participated in this workshop. The idea was to define the building bricks and de-

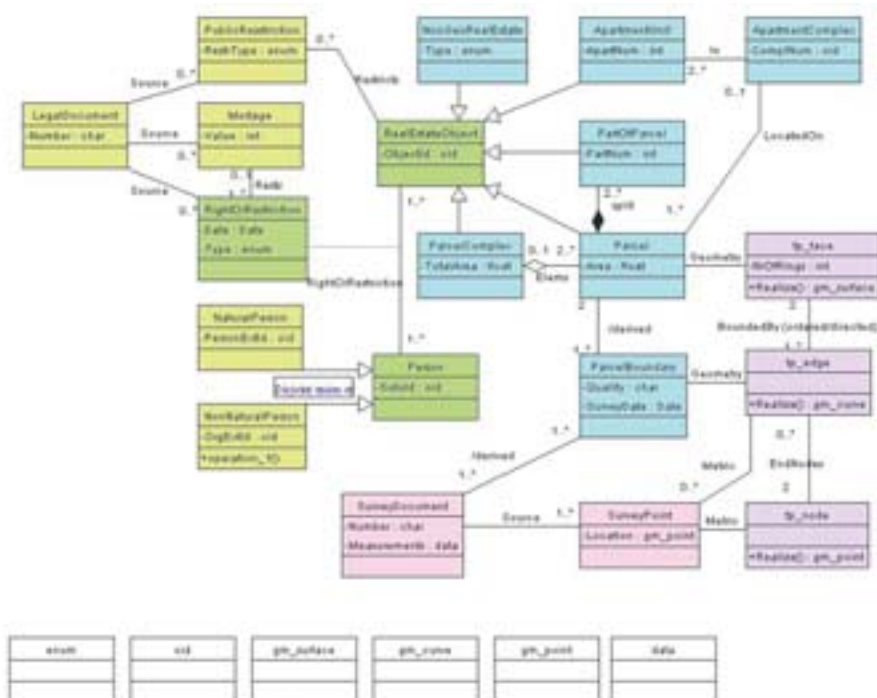


Figure 1



The Workshop participants

velop a concept for a generic cadastral data model, later to be implemented in ESRI's products. After a series of presentations on the subject, break-out sessions were organised to discuss legal, technical (surveying) and administrative subjects within the context of data modelling. The basis of these discussions was the Cadastre 2014 Model and a draft proposal for a cadastral data model developed by Delft University of Technology and ITC (see Figure 1). You should not look at the whole model at once as

the colours are supposed to represent different "packages" or aspects:

- Green: real core
- Green and yellow: legal/administrative aspects
- Green and blue: real estate object specialisations
- Blue, pink and purple: surveying/geometrical/topological aspects

During the workshop, agreement was reached that:

- the approach should be object-oriented
- a spatial representation of (public) restrictions on land should be included in the model
- data maintained by different organisations (e.g. cadastre and land registry) should be integrated in the model
- all object classes and attributes should be identified
- there should be the flexibility to include in the implementation only

those objects that will be maintained

- maintenance of historical data should be possible
- model implementation could begin on the data publication side, followed by attention to land transactions (e.g. the inclusion of spatial representation of areas with public restrictions)

These valuable observations will be used as input for further developments.

Documentation

Of course the documentation, papers and presentations are accessible for research, commercial and governmental purposes (see www.oicr.org, the electronic library on cadastre and land management of the International Federation of Surveyors (FIG)).

staff news

Seminar in Honour of Prof. Ian Masser's Contribution to ITC

Richard Sliuzas
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Ian Masser was professor of urban planning at ITC from April 1998 until his retirement in September 2002.

In this relatively short time - actually even shorter when you consider his appointment was on a 60% basis - he had a substantial impact on the Division of Urban Planning and Management and on the field of urban planning and management at ITC. Although there were some people who may have questioned the wisdom of having a part-time professor, and particularly a professor with one leg in the Netherlands and one leg in the UK, Ian was quick to put to

rest any doubts about his ability to get the job done.

His comparatively brief stay marked a significant increase in the research activities in the urban field, with a total of five PhD researchers under his direct supervision. Moreover, he instigated the highly successful Urban Research Seminar Series, which brought a number of the world's leading authorities to ITC, greatly enhancing the division's educational and research programmes in the process.

Ian is a prominent figure in the fields of urban planning and GIS, and his professional contribution extends far

beyond the walls of ITC. For example, he has been a leading figure in the Association of Geographic Information Laboratories in Europe (AGILE), he is a past-President of the



Ian and Suzy Masser after the valedictory address

European Umbrella Organisation for Geographic Information (EUROGI), and he recently became the first president of the Global Spatial Data Infrastructure Association. Fittingly, he was presented with a lifetime achievement award by the UK Association of Geographic Information last November, in recognition of his many significant contributions to developing the field of GIS.

On Tuesday, 14 January 2003, it was ITC's turn to honour Prof. Masser, in the form of a short seminar organised to commemorate his achievements. However, in a lively address, rather than looking back, Ian chose to look forward. His valedictory address, entitled *Future Research Agendas for Urban and Regional Planning and Geo-information Management*, covered some key issues likely to domi-

nate this field in the years to come. These included the challenges presented by the growing urbanisation of the world's population, the new approaches to planning that are emerging to respond to these challenges, and the opportunities that have been opened up by the development of geographical information and earth observation technologies for analysing and exploring urban issues. It also focused attention on recent research completed by his PhD students and staff, and highlighted two research themes that Ian believes will be of great importance in future work at ITC: urban spatial data infrastructures and the development of planning support systems.

These themes were discussed in more detail by two guest speakers, both with distinguished track records, who traced the development of GIS and its

application throughout the world. The first topic, "Establishing urban spatial data infrastructures", was examined by Prof. William Huxhold of the School of Architecture and Planning at the University of Milwaukee, USA. This presentation was followed by a paper entitled "New methods for a new planning", which was given by Prof. Richard Klosterman of the Department of Geography and Planning at the University of Akron, USA.

All three papers will soon be published and made available.

The seminar concluded with the presentation of gifts to Ian and his wife Suzy by Prof. Martien Molenaar on behalf of ITC and the former Division of Urban Planning and Management. In the reception that followed, the many guests from the Netherlands and abroad were able to congratulate Ian in person. Of course those who know him well realise that his career is by no means at an end. He remains very active in the GIS field and still has some ties with ITC. So don't be too surprised when you see him roaming the ITC corridors in the coming months.

Ian and Suzy, many thanks and our very best wishes.



Prof. Masser receives a retirement gift from ITC's rector, Prof. Martien Molenaar



Richard Sliuzas, Ian and Suzy Masser, Prof. Richard Klosterman and Dr William Huxhold

Welcome to ITC	Christie Agema	Secretary, Department of Earth Systems Analysis (per 1 April 2003)
	Fabio Corsi, MSc	Lecturer, Department of Natural Resources (per 14 April 2003)
	Daphne Wennink	Secretary, Staff member Service Desk, Facility Management (per 14 April 2003)
Staff leaving	Hans Kuipers	Technical Affairs, Facility Management (per 28 February 2003)
	Tonnie van der Jest-Visscher	Housekeeping, Facility Management (per 28 February 2003)
	Marina van Doorn	Staff member Service Desk, Facility Management (per 31 March 2003)
	Ad Dousi	Project Manager, Financial and Economic Affairs (per 30 April 2003)
	Anouk de Goede-Oosterhoff	Secretary, Section Engineering Geology (per 4 February 2003)
	Ineke Theussing	Student Support and Assistance, Department of Educational Affairs (per 28 February 2003)
	Johan Weggen	Sports coach, Department of Education Affairs (per 31 March 2003)
	Dr. Jacek Gurwin	Post-doctoral fellow, Department of Water Resources (per 17 February 2003)
	Prof. Dr. Wim Bastiaansen	Visiting Professor, Department of Water Resources (per 31 March 2003)
Prof. Dr. Alfred Zinck	Professor in Soil Survey, Department of Earth Systems Analysis (per 28 February 2003)	
Patrick Wolters	Project Administrator, Bureau Project Services (per 30 April 2003)	

announcements

ILWIS 3.12 Released!

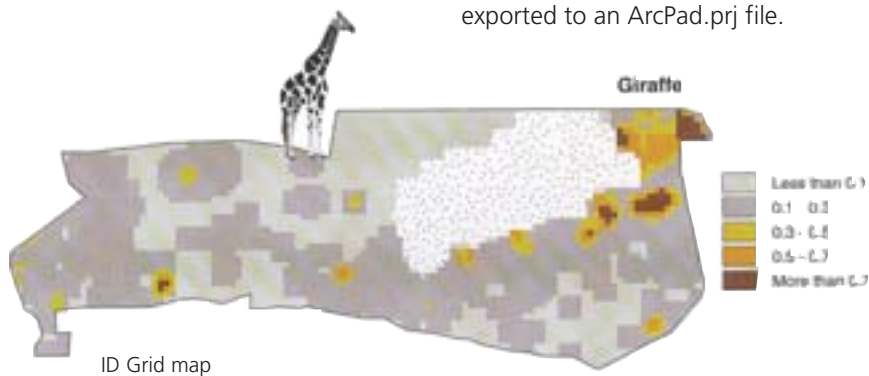
Lyande Eelderink

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What's New?

ID Grid Map

ID Grid Map is a new application that, given a coordinate system and an attribute table, creates a polygon map. The polygon map consists of rectangular grid cells with a unique ID, and can be linked to a table with attribute data when sample data are available (e.g. biodiversity data in 5 x 5 km blocks).



Spherical Distance

A Spherical Distance option has been added to the operations Spatial Correlation, Cross Variogram, Nearest Point, Moving Average, Moving Surface, Kriging and CoKriging. This option calculates distances over the sphere instead of in a plane.

Export to ArcPad.prj

ILWIS coordinate systems can now be exported to an ArcPad.prj file.

User-Defined Datums

It is now possible to define your own datum and store it in a coordinate system.

Important Bug Fixes

Correct use of ellipsoid from WGS84 datum when importing with Geogateway, and the import of Excel files is enabled.

To download and install ILWIS 3.12, please visit http://www.itc.nl/ilwis/downloads/1_ilwis_31/ilwis31.asp

NOTE: This information applies ONLY to users of academic versions of ILWIS; this patch will not work for non-academic versions. Customers of PCI Geomatics should contact the company in order to upgrade their software (<http://www.pcigeomatics.com>).

Switchboard to Websites of National Statistical Offices

Corné van Elzakker

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On 5 March 2002, our GFM.2 student Ms Daisy Redido-Cusi (Philippines) successfully defended her MSc thesis "Disseminating Philippine Census Data through the Web". Within the framework of her thesis work she made a worldwide inventory of the functionalities of the websites of national statistical offices. In December 2002, her inventory was updated by Mr Guido van der Molen of Utrecht University. Daisy's work formed one of the starting points of the chapter "The dissemination of census and other statistical data through Web maps" in the forthcoming book: M.P. Peterson (ed.) (2003),

Maps and the Internet, New York and Amsterdam: Elsevier Science. The chapter is co-authored by Corné van Elzakker, Ferjan Ormeling, Barend Köbben and Daisy Cusi.

In conjunction with this publication, Barend Köbben has built the website <http://kartoweb.itc.nl/nso/>, which can be considered as a switchboard to the websites of the national statistical offices throughout the world. Through this website, you will not only be informed about the (current) functionalities of each site but can also be directly linked to an NSO website. We think this will prove useful whenever

you or your students are in need of (geo-)statistical data for a particular country.

Have fun with it!



visiting itc

Visit by Director of Royal Jordanian Geographic Centre

John Horn

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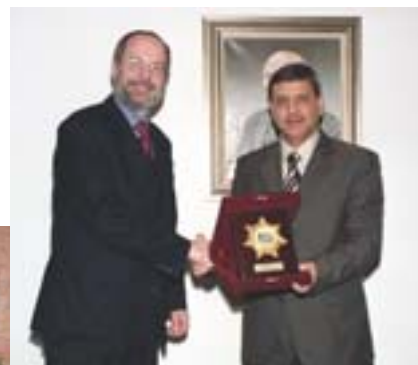
On Wednesday, 26 February, ITC was pleased to receive a visit from the director of the Royal Jordanian Geographic Centre (RJGC), Major General Saliem Mohammed Khalifa. Major General Khalifa was accompanied on his visit by Mr Nedal Alsagarat of RJGC and Dr Adnan Koucher of Larenstein University.

Hosted by ITC's director external affairs, Drs Sjaak Beerens, Major General Khalifa's visit included briefings by ITC staff on the various educational programmes offered, and on the major research and project activities.

Major General Khalifa has expressed a wish to strengthen the educational relationship with ITC in the future, and it is envisaged that a number of RJGC staff will shortly commence study programmes here.



Drs Sjaak Beerens, Dr Ben Maathuis, Major General Khalifa, Dr Adnan Koucher, Mr Nedal Alsagarat, Drs Johan de Meijere, Mr John Horn



Major General Khalifa presenting insignia of the Royal Jordanian Geographic Centre to Drs Sjaak Beerens

project news

Special Course at Makerere University, Uganda

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Recently a start was made with a special training course that had been requested by the Geography Department of Makerere University in Kampala, Uganda.

In 2001 ITC was approached with a request to support the Geography Department in a staff development programme, the aim being to incorporate the subjects spatial data handling, geographical information systems (GIS) and remote sensing into the university curriculum. The training course was designed specifically to fit the needs of staff of the Geography Department. The Dutch government is funding the special training course

under a special component of the Netherlands Fellowship Programme (NFP), which is administered by NUFFIC.

The course consists of two parts. The first part (which took place in Kampala in February of this year) introduced staff from the Geography Department to the basics of GIS, remote sensing and database design. This course component was carried out by staff from the University College of Lands and Architectural Studies (UCLAS) in Dar es Salaam, Tanzania, with support from ITC and the Makerere University Institute for



The training course was designed specifically to fit the needs of staff of the Geography Department

Tailor-made courses in the new NFP programme

As of 1 January 2003, changes have been introduced into the Netherlands Fellowship Programme (NFP). Most ITC alumni will be familiar with NFP as the programme that provided fellowships for studying in the Netherlands. Under the academic component of the new NFP, it is now possible to request special tailor-made courses for staff development in educational institutes, ministries and (non-)governmental organisations.

This NFP programme is meant to enhance the overall functioning of organisations by training selected groups of their staff members. As a tailor-made training course is designed to meet the specific needs identified by the requesting organisation, it does not lead to a regular degree or diploma. The training can take place in the Netherlands, in the developing country or region concerned, or in both. The location will depend on the needs and the possibilities. Usually tailor-made training courses can last anything from two weeks to 12 months.

The courses are demand-driven, which means that ideas and requests for these special courses must come from the organisations themselves. Ideas can be submitted throughout the year to the Dutch embassy or consulate in your country (there is no fixed deadline). Information on the new NFP programme in general and tailor-made courses in particular can be found at the Nuffic website (www.nuffic.nl/; under Products and Services, click: Netherlands Fellowship Programmes, then go to Tailor-made Training).



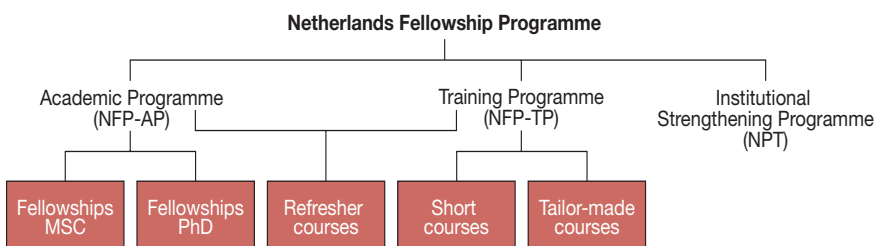
Makarere University in Kampala, Uganda.

remote sensing. Students expected to work critically and independently have to master very specific skills. Alternative teaching methods such as project-based learning, participatory learning through group assignments, and problem-oriented learning are considered much more effective in achieving this.

In discussion with ITC staff, the curricula for selected courses in the undergraduate and postgraduate programmes of the Geography Department will be reviewed and adapted to include elements of GIS and remote sensing, making use of the most appropriate teaching methods.

As a result of the special training course, staff of the Geography Department will be conversant with developing and implementing university-level courses on the application of GIS and remote sensing in its regular degree programmes.

Overview of the new NFP structure



"This was an informative and interactive introductory course that enabled me to easily understand the basic concepts. Its ability to address natural resource dynamics makes it an invaluable tool for resource management, which is my area of interest. Students, and we the trainers, will benefit a great deal from its operationalisation in the field of natural resource management."



Mr Paul Musali

Environment and Natural Resources (MUIENR) in Kampala. UCLAS has been ITC's counterpart for the past five years in the EISCAP project, during which capacity was developed to deliver short and tailor-made courses.

For the second part of the training course, staff of the Geography Department will travel to the Netherlands for a six-week period of study at ITC. The emphasis in this second part will be on curriculum development, the preparation of case study materials, and appropriate teaching methods. In comparison with classroom teaching, more effective and more challenging methods are available for teaching GIS and re-

"The course in GIS and remote sensing application has been beneficial. The new knowledge acquired in database management has motivated me to start an urban planning database centre for Uganda in Makerere. This knowledge will be used for instructing students, as well as for research."



Mrs Rhoda Juliet Bazira

Course on Geo-Information for Disaster Management in Tokyo, Japan

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March 2003 saw the end of a three-week course on the use of geographical information for disaster management, which was carried out at the Tokyo headquarters of the Remote Sensing Technology Center of Japan (RESTEC).

Among the course participants were ten staff members from the newly created Disaster Assessment Unit of the Japanese Cabinet Satellite Center. The course was organised and presented by a team of four ITC staff in collaboration with Mr Noburo Kazuki of RESTEC. The lecturers included staff from ITC's departments of Earth Observation Science (EOS), Earth Systems Analysis (ESA) and Urban and Regional Planning and Geo-Information Management (PGM).

With an environment that has proved highly susceptible to natural disasters, the Japanese government is keen to use the most modern data sources and processing techniques available in order to provide its decision makers with accurate and timely information on potential damage that could result from various types of natural hazard.

The students were introduced to the use of decision support tools for disaster management, as well as methodologies for the assessment of hazard, vulnerability and risk, with particular emphasis on highly populated urban areas. In terms of geographical information for risk/disaster

assessment and management, the focus was on geo-information needs and on highlighting the strengths and weaknesses of high-resolution satellite imagery in the various sub-fields of disaster management. The course consisted of lectures and practical exercises; the Nepalese city of Kathmandu was used as a case study during the GIS/remote sensing practical sessions.

It is hoped that this initial course will lay the foundation for further cooperation in the near future between ITC, RESTEC and the Japanese Cabinet Satellite Center. Furthermore, the course highlights the significance of the ITC SLARIM research project (Strengthening Local Authorities in Risk Management). This internally-funded research initiative currently being undertaken at ITC aims to develop methodologies for urban risk assessment and a decision support system for risk management.

As one or two photographs show, in addition to their daily work schedule the ITC team found sufficient spare time to enjoy the local culture and culinary delights!



The teaching team: Dr Norman Kerle, Dr Lorena Montoya, Dr Cees van Westen and Dr Luc Boerboom



View of the Tokyo Tower and Tokyo Bay from the Roppongi district



Norman Kerle practising his chop-stick skills



The never-ending sushi conveyor belt

ITC Participates in Upgrading the Geological Database of Mozambique

Phil Westerhof

westerhof@itc.nl

The mining policy of the government of Mozambique focuses on promoting private investments to develop the mining sector, based on the favourable geological environment and mineral potential of the country. As part of this policy, the Ministry of Mineral Resources and Energy (MIREME), through the National Directorate of Geology (DNG), is currently developing the geoscientific infrastructure of the country in order to support this investment promotion and the sustainable social and economic development of the country. Next to prospectivity, investment climate and mining legislation, the availability of basic geological information is an important parameter in promoting investments in the mineral industry, as well as an essential tool for planning civil infrastructure and mitigating natural disasters.

Mozambique has made a great effort to develop its basic geoscientific infrastructure. Geological mapping has been carried out since colonial times, and extensive geophysical, geochemical and geological surveys have been carried out since independence. The DNG archives contain a wealth of geoscientific information - although most is now outdated as regards the technology used and the geological concepts supporting mineral resource development. Moreover, the geological mapping accomplished during the war was constrained by the difficulties in carrying out fieldwork. Consequently, it is of utmost importance to complete and modernise the national geoscientific infrastructure. The government of Mozambique has therefore embarked on the Mineral Resources Management Capacity Building Project (MRMP), a major international programme to achieve this end. The MRMP is funded by the World Bank, with co-financing from

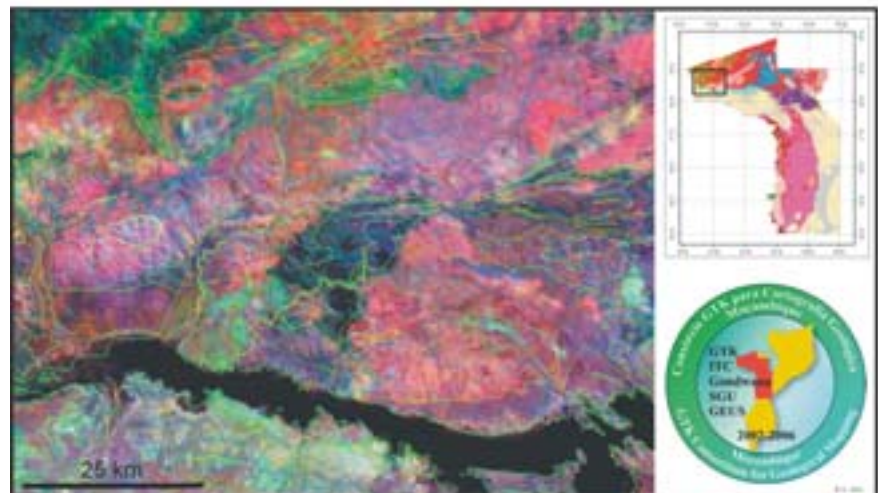
the African Development Bank and the Nordic Development Fund.

As part of the MRMP, the DNG has launched the Geological Infrastructure Development Project. This aims to re-map areas or improve existing geological maps in order to create a comprehensive coverage at a scale of 1:250,000. Selected areas of high mineral potential will be mapped in more detail, at scale 1:50,000. The manufacture of the new generation of maps will be based on modern geodynamic and metallogenic concepts, thereby using state-of-the-art technology, including satellite imagery, global positioning systems and airborne geophysical data in a GIS environment. The digital map products will be interactively linked to geoscientific databases (e.g. a mineral occurrence database).

The area to be covered, approximately 150,000 km², comprises the central-western part of the country,

roughly between 14° and 20° S, 35° E, and the international boundary with Zambia and Zimbabwe. The executing consortium comprises, apart from ITC, the Geological Survey of Finland (leading partner), the Geological Survey of Sweden and Gondwana Lta (local partner). The Department of Earth Systems Analysis will implement ITC's share of the project. The services mainly entail preparing topographic base maps, interpreting satellite imagery and airborne geophysical data, analysing existing maps, and merging these data sets into the first draft of upgraded maps. Based on these maps the first field campaign will be planned. The project began in October 2002, when the contract with the government of Mozambique was signed, and runs till the end of 2006, thus allowing four field seasons for ground verification.

For further information, please contact the writer at the above e-mail address.



IHS composite image of potassium, thorium and uranium gamma-ray spectrometry channels and band 5 of Landsat 7 processed at ITC to support geological interpretation of the project area. The composite image provides excellent lithological differentiation north of Lake Cahora Bassa within granitoids (red and pink), the ultramafic Atchiza complex (dark-gray and blue) and migmatitic gneisses, quartzites and meta-arenites of the Zambue Group (green and dark gray). Overlay of yellow lines show the lithological map compilation that was conducted by Hunting Ltd. in 1984, overlay of blue lines the re-interpreted lithological compilation prepared by the project consortium. The inset shows the generalized re-interpreted geology of the LOT2 project area and logo.

PhD Graduation: Lorena Montoya

Monday, 2 December 2002, Utrecht University

On 2 December 2002, Lorena Montoya of ITC's PGM Department defended her PhD thesis entitled *Urban Disaster Management: A Case Study of Earthquake Risk in Cartago, Costa Rica* at Utrecht University.



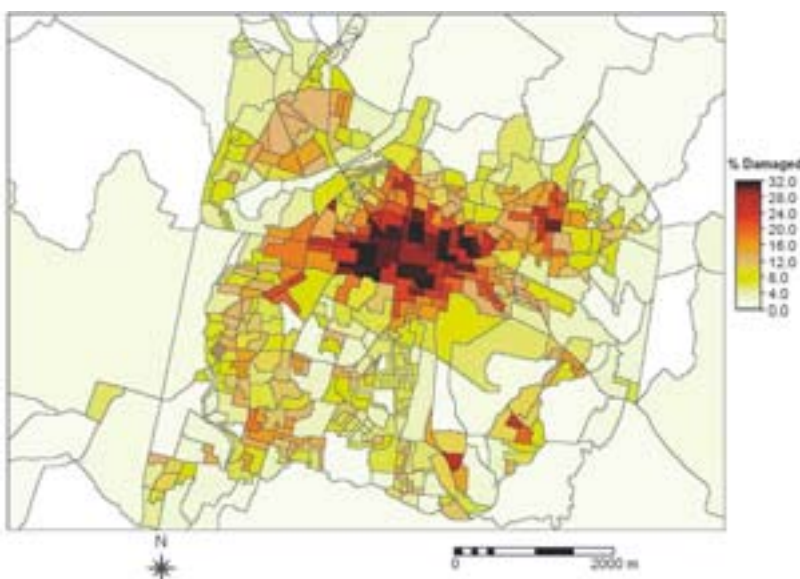
Lorena with paranymphs Ruben Vargas and Lyande Eelderink

Lorena Montoya was born in San José, Costa Rica, in July 1967. At the Universidad Autónoma de Centro América (UACA) she obtained her Bachelor's degree in architecture in 1991, followed by a Licentiate's degree in architecture in 1993. In 1994 she received professional certification from the Colegio Federado de Ingenieros y Arquitectos de Costa Rica (CFIA). From 1991 to 1998 she was employed at MD Arquitectura SA and carried out site selection, design and construction supervision of private and government-funded housing projects. This line of work led her in 1995 to enrol for a postgraduate course in housing, planning and building at the Institute for Housing Studies (IHS) in Rotterdam, the Netherlands. Subsequently, she followed a programme on geo-information for urban planning at the International Institute for Geo-Information Science and Earth Observation (ITC) in Enschede, the Netherlands, where in 1998 she was granted an MSc degree with distinction. In 1998 she was employed by the Project Development Department of the Ministry of Health (CCSS) in Costa Rica to produce a report laying the foundations for the application of GIS for the planning and monitoring of health facilities. Since 2000 she has been a lecturer and PhD researcher at ITC's Department of Urban and Regional Planning and Geo-Information Management.

Using a geographical information system (GIS) to integrate and process data, the research concentrated on the particular problem of forecasting direct urban disaster losses (of human life and buildings) attributable to earthquake hazards, for the purpose of improved urban planning and management. The research focused on earthquake loss, and its ultimate objective is to help bridge a serious gap that exists between the



Prof. Ian Masser delivering his speech



Building damage ratios aggregated to census tract level

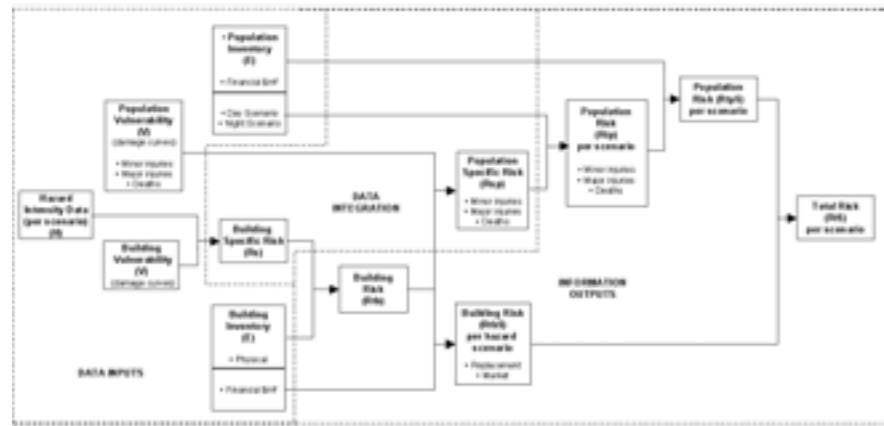
mapping of hazardous events and urban decision and policy making.

The main accomplishments of the research were the following:

1. Development of a methodology for providing timely and economically feasible inputs for assessing the earthquake risk of people and buildings. This required the identification of what data should be collected and how. Different data collection methods were analysed in terms of speed, effectiveness and cost. Since the aim was to develop a method applicable to urban areas where few data and economic resources are available, the focus was on (a) developing a method of data collection that could be carried out mostly by non-specialists (e.g. undergradu-

ates, construction workers, building inspectors) rather than the complex data acquisition techniques that only highly trained and costly specialists can perform, and (b) using video and photograph capture and interpretation for developing an inventory of relevant building and population characteristics.

2. Testing such methods in a case study and evaluating the strengths and weaknesses of the methodology.
3. Determining how to effectively incorporate risk assessment in the process of urban strategy formulation, with particular emphasis on its contribution to establishing the cost-benefit of mitigation measures.
4. Evaluating the use of GIS as a tool for (a) data storage and integration interoperability, (b) zonation of urban risk and (c) urban decision making.



Risk assessment conceptual model



Graduate with promoters (from left to right: Dr Ing. N. Rengers, Prof. Dr H.F.L. Ottens, Dr Arq. L. Montoya and Prof. Dr F.I. Masser)



During the reception with ITC colleagues and friends (from left to right: Drs Sherif Amer, Drs Jeroen Verplanke and Erna Leurink)

The thesis is published as part of the ITC Publication Series and is available at the ITC bookshop. It is also available online (http://www.itc.nl/library/Academic_output/2002/PhD_theses_2002.asp).

life after itc

Alumni - Forging Links, Forging Friendships

Sjef van der Steen

alumni@itc.nl

Recognising the importance of maintaining and strengthening relations with its alumni, ITC is developing an alumni interaction system (AIS). This is to serve as a platform for supporting the exchange of information with and between alumni.

Accordingly, a task force has drawn up plans in which ITC alumni, the organisations in which they work, and ITC itself play a crucial role. A project has been established, and resources have been reserved to carry out the proposed plans. Sub-projects should lead to the creation of an interactive network of the three partners, which will promote the evolution and acti-

vation of the new system.

The possibility for alumni to have an ITC e-mail box is an important element of the AIS. This digital communication tool will stimulate the exchange of information, and the Institute feels that the chance to benefit from the opportunities offered should be open to all.

Below we briefly explain the major components of the system and the steps still to be taken.

Free E-mail Account

To keep in touch with our alumni, and to allow them to keep in touch with each other and with us, we are offering our alumni a free e-mail account. Using this, alumni can read and send mail via the Web. If you apply for this e-mail account (see our website www.itc.nl/alumni), you will be given an e-mail address that will be stored in an e-mail address book accessible to alumni as well as to ITC staff and students.

Since December 2002, students leaving ITC - and so becoming alumni - have been given the option of keeping a free e-mail address at ITC.

Discussion Groups

The Institute wishes to encourage and enable its alumni to exchange information on ITC education, and on research and project topics concerning ITC's knowledge fields, as well as to discuss personal experiences or ask questions relating to current management issues in their work and organisations. Via the alumni discussion groups, you can participate in discussions on the website and access information on latest developments.

Refresher Courses

Each year ITC organises some six to eight refresher courses across the

world, and in 2003 such courses are scheduled for Ethiopia, Indonesia, Nepal, South Africa, Thailand and Vietnam (see page 19 for an overview). These courses are open to alumni from these and neighbouring countries who attended a regular course at ITC in the Netherlands about five to 12 years ago.

Keep in touch with fellow alumni and ITC.

Apply for a free e-mail account and/or join the alumni discussion groups!

Go to: www.itc.nl/alumni

ITC News

ITC News is a quarterly newsletter published to keep alumni, client organisations and other interested relations abreast of developments at the Institute in the fields of policy, research, education, project services, partnerships, and student and staff matters. If you are an alumnus/ alumna but do not receive *ITC News*, or if you wish to contribute to the newsletter yourself, please contact the managing editor.

Alumni Associations

Alumni may be interested in joining an alumni association in their home country. There are 24 Netherlands Alumni Associations, providing an umbrella for alumni from all Dutch education organisations, and two ITC

Alumni Associations, in Nepal and Uganda. An overview of all alumni associations is available on our website and is published in *ITC News* on a regular basis.

At the moment we are investigating the desirability of, and prospects for, setting up more ITC alumni associations. Your reactions to this initiative are most welcome and the alumni coordinator (address below) would be happy to hear from you.

Alumni Events

Wherever and whenever possible, ITC organises meetings, workshops, seminars and receptions linked with the missions of its staff. We will notify our alumni of these events in advance in *ITC News*, on the alumni web pages and - in the near future - by e-mail. Later we will report (with photographs) on these events.

Other Services to Alumni

The Institute offers access to ITC's library services. Furthermore, it handles the distribution of ILWIS, ITC's remote sensing/GIS software, and provides the relevant support.

In Progress

- Studying opportunities for mutual information exchange using postal services (those without an Internet connection have certainly not been forgotten)
- Creating awareness among current ITC staff, students and alumni of the importance of alumni
- Investigating possible support for involving alumni in various ITC activities
- Obtaining feedback from alumni in order to check whether education standards are meeting requirements (education quality check)
- Finding local contacts for sponsoring activities
- Organising meetings during field-work, congresses, and refresher and special courses
- Exploring possibilities for alumni within the marketing context



The members of the "Operational Unit Alumni Interaction System"

Sjeff van der Steen

John Horn

Robert Voskuil

Remarks

Although we are aiming for widespread participation, unfortunately we are not in contact with all our alumni. Address lists cannot always be kept up to date, organisations change, and people move on. Consequently, it would be appreciated if you could pass this message on to other ITC alumni. This would help to spread the word and help

others to make contact with us. Ensuring the greatest participation will increase the success of the information exchange between you and us!

For more information on the above, or for any questions, ideas or suggestions concerning alumni matters, please contact:

Alumni Coordinator
ITC
PO Box 6
7500 AA Enschede
E-mail: alumni@itc.nl

Don't forget to check out our alumni web pages (www.itc.nl/alumni) regularly!

ESRI Internship

Julian Gomez

juliangmz@yahoo.com

Although it took a bit longer than expected to get all the paperwork processed, I finally travelled to Redlands on 1 November 2002, thanks to the concerted efforts of Rolf de By and Marijke Smit. (I graduated from my MSc course in geoinformatics and received the ITC-ESRI internship nomination in March 2002.) My ESRI experience has turned out to be excellent. Not only have I had the chance to do practical work in ESRI's Database Services Department, I've also been able to assist in many of the courses offered by ESRI at its Learning Center - gaining more knowledge about their software in the process.

The Database Services Department belongs to ESRI Services, the division that provides GIS consulting. Initially I participated in the pilot project for the national map of Mongolia. This project gave me the opportunity to work with some professionals from ESRI and four professionals from the Mongolian national mapping agency. My participation consisted of reviewing the migration procedure documents and developing applications with ArcObjects to facilitate the migration of data from CAD files to ESRI'S geo-database. This pilot project ended in January 2003. Since

February I've been working with the aeronautical team, the group in charge of producing aeronautical charts for NIMA. I'm working with their programming unit, developing applications that assist the chart production team. Now I have to "wrestle" with ellipsoids, datums, rhumb lines and great circles when trying to write functions to generate the geometry for NIMA's aeronautical database, and for this all the concepts learned at ITC have proved essential.

Regarding everyday life in Redlands, it was a bit tough at first to realise that in southern California you're quite restricted without a car. Public transportation is very limited and very slow compared with the car (completely different from in Europe). Anyway, I use my bicycle to get around Redlands.

One thing has made my stay much nicer. After a month I met a group of Colombian and Spanish ESRI employees, who have been incredibly welcoming and generous (otherwise I'd have been spending my free time on my own). With them I've been able to undertake some enjoyable activities during my time off. In addition, despite transport constraints, I've had the chance to travel around some places in California: Santa Monica, Los Angeles, Palm Springs, San Diego and San Francisco.



The ESRI building where I work



The mountains around Redlands on my way home

All in all, I've felt very comfortable during these past six months at ESRI. The working atmosphere is very pleasant and challenging, and I consider this experience to be the best possible complement to the scientific education received at ITC. Many thanks ITC and ESRI!

In addition to being an excellent experience for graduate students, I

think that the ITC-ESRI internship could be a great opportunity for ITC research groups (especially in geoinformatics) to see at first hand what's being implemented in ESRI's widely used software. ITC could send current PhD students or staff for short internships with ESRI's developing teams, and in this way directly benefit from this excellent interchange.



Me! (right)

Alumni Gathering, Lima, Peru

Lyande Eelderink eelderink@itc.nl
Jan Turkstra turkstra@itc.nl

On 7 March 2003, a reception for Peruvian alumni was organised at the José Antonio Hotel in Lima.

Approximately ten alumni and 20 other people interested in studying at ITC attended this reception hosted by Lyande Eelderink and Jan Turkstra.



During the famous raffle, Mr Manuel Barrantes Rangel, who studied at ITC in the period 1962-63, won the ILWIS software (see photo).



A student from the Catholic University won a copy of the *Environmental Atlas of Trujillo*.

-advertisement-

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Refresher Courses 2003

ITC News

itcnews@itc.nl

Refresher courses form one of the more important types of service to our alumni. Each year ITC organises some six to eight of these courses across the world. Refresher courses are short courses organised for alumni in their home countries, and in principle are designed for Netherlands Fellowship Programme (NFP) alumni who followed a regular course in the Netherlands about five to 12 years earlier.

Colleagues and managers of alumni are also allowed to participate in part or all of a refresher course, as are alumni of former DGIS projects.

In 2003, the following refresher courses will be organised:

Ethiopia

Geospatial Data Infrastructure for Eastern Africa (GDIEA)

Objectives

- To transfer knowledge of GDI concepts, critical success factors and available technology
- Regional networking among ITC alumni
- Capacity building.

In most countries the national mapping authorities/surveys are the main actors in developing the national spatial data infrastructure. Managing this process, however, requires the involvement of all other organisations developing or producing maps and other spatial data.

Location

Addis Ababa, United Nations Economic Commission for Africa (UNECA)

Course period

19 October - 1 November 2003

ITC contact person

Ir W.T. de Vries (e-mail: devries@itc.nl)

Ethiopia

Drought Monitoring and Food Security: The Use of Geoinformatics for Hazard and Disaster Management in Eastern Africa

Objectives

- To strengthen the capacity of representatives of regional and local governmental and non-governmental organisations to apply geo-information in hazard and disaster management, related especially to drought and crop monitoring and food security

- To familiarise course participants, by means of case studies, with the various steps involved in the disaster management process
- To demonstrate the potential of both currently operational and forthcoming earth observation systems and data analysis techniques, as well their effective adaptation and integration into existing activities.

Location

Addis Ababa, United Nations Economic Commission for Africa (UNECA)

Course period

September 2003, duration two weeks

ITC contact person

Dr N. Kerle (e-mail: kerle@itc.nl)

Indonesia

Geo-information for Natural Disaster Management in Indonesia

Objectives

- To strengthen the capacity of representatives of local and governmental and non-governmental organisations to apply geo-information in disaster management
- To demonstrate by means of a local case study the various steps involved in the disaster management process.

Location

Yogyakarta, Universitas Gadjah Mada (UGM), Fakultas Geografi

Course period

Mid-2003, duration two weeks

ITC contact person

Drs R.P.G.A. Voskuil (e-mail: voskuil@itc.nl)

Nepal

Institutionalisation of Geo-information for Urban Disaster Management

Objectives

- To strengthen the capacity of representatives of regional and local governmental and non-governmental organisations in the Himalayan region to institutionalise geo-information in urban disaster management in mountainous environments
- To improve understanding of the roles and responsibilities

of the various stakeholders (municipal authorities, governmental and non-governmental organisations) in disaster management

- To demonstrate the possibilities for urban disaster management, by means of local case studies dealing with the generation of planning and decision support systems, as well as using supporting databases for hazard, vulnerability and risk management for the city of Kathmandu (Nepal).

Location

Kathmandu, International Centre for Integrated Mountain Development (ICIMOD)

Course period

September - October 2003, duration two weeks

ITC contact person

Dr Ir L.G.J. Boerboom (e-mail: boerboom@itc.nl)

South Africa

Modern Aspects of Remote Sensing and Geo-information Science for Professionals in Earth Sciences

Objective

- To provide a two-week programme on novel approaches to developing and building geoscience databases and information infrastructures for earth scientists.

The course coherently integrates aspects of remote sensing and ground-based data acquisition, data integration, information extraction, and analytical GIS approaches to mapping and modelling earth systems. This will provide participants with the practical skills and underlying theoretical aspects necessary to streamline the information and knowledge development process for individual projects, as well as to obtain valuable insights into how to modernise geospatial data infrastructures in their home organisations. The focus is on geoscience databases in support of the work carried out by geological survey organisations in a modern setting.

Location

Johannesburg, University of Witwatersrand, Faculty of Science, School of Geosciences

Course period

29 September - 10 October 2003

Requirements

Background in earth science

ITC contact person

Dr T. Woldai (e-mail: woldai@itc.nl)

Thailand

Imaging the Future: Global Monitoring of the Environment

The course centres on the state of the art in geological remote sensing. It combines specialist knowledge in earth science fields with the latest insights in the field of geo-information management and observation methods.

Objectives

- To create an expert body of earth scientists capable of independently tackling earth science problems in a given area by the proper application of scientific analytical criteria
- To develop a conceptual framework for understanding the potential new sources of information from earth observation techniques and their applicability in earth sciences
- To assist in developing strategies for data acquisition directed towards the specific needs of earth scientists and to provide insight into where data can be retrieved.

Location

Bangkok, Asian Institute of Technology (AIT)

Course period

November 2003, duration two weeks

ITC contact person

Prof. Dr F.D. van der Meer (e-mail: vdmeer@itc.nl)

Vietnam

Geo-information for Upland-Lowland Interactions in Hydrological Hazards and Disasters

Objectives

- To strengthen the capacity of representatives of regional and local governmental and non-governmental organisations to apply geo-information in the management of hydrological hazards and disasters
- To improve understanding of the internal dynamics of selected river systems, sedimentary coastal plains and lagoonal waters in Vietnam, within the context of upland-lowland interactions (under land use change or climatic variability)
- To take participants through the various steps involved in strategies for mapping and analysing impacts and vulnerabilities with regard to land use change, river flooding, upstream watersheds, and adaptive responses in low-lying coastal areas.

Location

Hue City, Hue College of Science

Course period

October 2003, duration two weeks

ITC contact person

Dr T.W.H.J. Hobma (e-mail: hobma@itc.nl)

A Full and Eventful Life

Dr (Lt Col.) L.R.A. Narayan, India

drlran@md4.vsnl.net.in

My experiences after following the ITC postgraduate diploma programme Integrated Surveys of the Natural Environment in 1971.

When I was selected for the post-graduate diploma programme **Integrated Surveys of the Natural Environment** by the Indo-Dutch authorities in 1969, I had already had nearly 15 years' experience in professional surveying and cartography. After graduating in engineering at the Survey of India, I had held a regular commission in the Indian Army, serving in the Corps of Engineers. In the year 1964-65, I had also followed an observer training course in Washington with the then Army Map Service of the USA. With this background and with a fair amount of experience in all aspects of surveying and mapping, including photogrammetry, my selection for an ITC programme did not prove a problem. My first attempt failed, however, as the Surveyor General of India would not consider releasing me from my service, stating that integrated surveys was not relevant to my work ... I disagreed. I made a second attempt the very next year and appealed to higher authorities, emphasising the importance of the subject and how my background, which involved considerable experience of aerial photographs, was most suitable.

So I arrived at ITC Delft in October 1970, and successfully completed my studies, with very good grades for all the subjects covered. In view of my background, ITC allowed me to attend 40 to 50 lectures given by Prof. Jerie and Prof. Visser, as well as some practical exercises, as additional input. I also went to an international air show in France, attended a camera course in St Gallen, Switzerland,

and visited M/s Wild, M/s Zeiss and a few other institutions in the UK, but without neglecting my regular assignments. The course, probably the second or third at ITC, took us to Antalya in south Turkey, in the Mediterranean region, for fieldwork. After receiving the diploma, I was asked to stay on for two more months as editor of the final course report - to which the Indian government readily agreed.



Dr (Lt Col.) L.R.A. Narayan

Soon after I returned home I was assigned to the then Indian Photo Interpretation Institute (IPI) at Dehra Dun, as head of the Photogrammetry and Photo Interpretation Division and also as overall deputy director. There were three other divisions, Forestry, Geology and Soil Surveys, all using aerial photographs. IPI (now known as the Indian Institute of Remote Sensing (IIRS)) was established through Indo-Dutch cooperation. The Netherlands was represented by five or six ITC faculty staff, while the Indian counterparts were officials of the Survey of India. The ITC contingent withdrew over a period, after

ensuring that the Indian staff could run various courses efficiently. My stay at IPI gave me many opportunities both to enhance my knowledge and to undertake research and development activities. This led me to register at the well-established Agra University for my PhD degree. In view of the knowledge and experience I had already accumulated, I was not required to be physically present at the university the whole time. I worked at IPI for three years. Soon after, in 1975, the Indian government felt the need to set up the National Remote Sensing Agency, and I was selected and persuaded to head the Applications Division. I worked there for nearly 15 years, while also establishing an aerial photography wing and an advanced research institute.

During my days at IPI and NRSA, I had the opportunity to be the first to operationalise remote sensing - this field had opened up in 1971, with the provision of satellite data as well as aerial data. In 1976 I was invited by ITC to follow the course for administrators and also to attend the Jubilee celebration. In 1989, at the age of 60, I retired from government service, but not before I had had the opportunity to develop remote sensing as an invaluable technology. This technology can gather ever-increasing knowledge about our natural environment. For example, it provided such information as the rate at which our forest wealth is depleting, identified wastelands in about 40% of our country for the first time, and enabled the introduction of many innovative methods. Our remote sensing applications became the envy of most countries of the world and, with the help of several dedicated scientists, we completed nearly 150 projects of various kinds.

Although after retirement I was offered the opportunity to continue, I preferred to accept an assignment as visiting professor and advisor at Anna University, Chennai, in their Institute of Remote Sensing.

Still not satisfied, I left Anna University after a little more than two years and became advisor in cartography and remote sensing with the Computer Maintenance Corporation of India, simultaneously becoming a Distinguished Fellow of the famous M.S. Swaminathan Research Foundation. Furthermore, I wrote articles on remote sensing and related topics for an eminent newspaper founded some 100 years ago.

Even now I am writing articles, as well as delivering lectures in various forums and participating in many seminars and symposiums. I have also published some books, one of which led to an award at the ISPRS congress held in 1996 in Vienna and again in 2000 in Amsterdam.

Incidentally, in a drive by ITC in 1979-1980 to raise awareness of remote sensing, I was accepted as one of their faculty in the Netherlands, Kuala Lumpur and Nairobi. I also lectured at some UN organisations, and in addition acted as a consultant to the FAO in the Republic of the Maldives for about a year.

In India the majority of people engaged in remote sensing, global positioning systems, GIS and general geoinformatics know me, at least by name if not in person.

So it can be seen that from 1955 to date I have been engaged in propagating all that I learnt. And I am continuing to do so, although with somewhat less intensity, besides being a freelance consultant to a few organisations active in mapping and geoinformatics. In the process, an Indian company engaged in mapping and geomatics has established branches in Oman, Botswana and perhaps Iran too - in which I have played a role.

In 1993 I was invited to present a paper at the First Symposium on Operationalising Remote Sensing, held at ITC. This provided a further opportunity to exchange views with various faculties. Moreover, when I came to Amsterdam for the ISPRS congress in July 2000, I was invited to visit ITC for about a week and interact with many scientists.

I would like to close here by expressing my deep appreciation to ITC and some of my old teachers, such as Prof. Nossin, Prof. Hempenius, Prof. Van den Broek, Prof. Jerie, Prof. Visser, Prof. De Haas, Prof. Van der Weele, Prof. Karl Harmsen, Prof. John van Genderen and scores of others, including the present rector, Prof. Martien Molenaar. I know I have missed out the names of many more friends, well-wishers and teachers. This is absolutely unintentional, as all of them contributed to my living a full life and to my continuing to do so.

ITC Tag Worked Like a Charm

S.K. Jena

jenaspeck@rediffmail.com

When I followed the postgraduate diploma course in production photogrammetry in 1988-89 (Director of Studies: Mr Hendrikse), I was already working as a "C" scientist with the National Remote Sensing Agency (NRSA), Department of Space, Government of India. Although I was a surveyor and photogrammetrist by profession - having already worked ten years for the government before attending the course - I acquired my real understanding and knowledge of the field of photogrammetry from ITC. My distinction in the subject pumped up my confidence and I felt on top of the world



Mr S.K. Jena (second from left) during the ISPRS Symposium on Environmental Monitoring held in Hyderabad in December 2002

as far as photogrammetry was concerned. In fact, it was mostly due to the quality of teaching at ITC ... and to certain extent to my own efforts.

Armed with this knowledge, I was instrumental in bringing about the first digital photogrammetry production facility equipped with state-of-the-art technology in NRSA, Hyderabad, India, and in building a strong team of some 25 scientists trained in using aerial and satellite imagery for the whole gamut of photogrammetric mapping. The aerial photography wing of the department, which had been functioning for nearly 15 years by that time, could see that for the first time someone was available with a deeper understanding of the various processes associated with aerial photography, planning, path recovery and image quality assessment. This helped me to contribute successfully to bringing this unit up to a level of knowledge and practical expertise in the areas of aerial photography, photogrammetry and GPS that could be

found only in this national organisation. While the organisation had been growing, it had carried me up to the level of "SF" scientist, managing the entire technical range of aerial photography, photogrammetry and GPS till I left NRSA in 2000.

Thanks to the in-depth knowledge imparted by the late Mr Kure in the areas of mapping standards, and accuracy requirements versus scale of photography, as well as associated knowledge from other ITC faculties, I was able to prepare proposals and understand photogrammetry mapping specifications. Consequently, I could prove myself a successful consultant for Speck Systems of Hyderabad, India, by winning the first large photogrammetric project for the country from the National Survey Authorities (NSA) of Oman. Probably, my ITC tag worked like a magic charm in Oman, winning over the tough NSA ordinance survey veterans responsible for evaluating the proposals. After this modest beginning,

Speck Systems continued to grow within Oman and, from 1993 onwards, carried out most of their high-specification mapping jobs for nearly a decade.

My career as a regular consultant with Speck Systems started in 2001. I trained a team of photogrammetrists for digital photogrammetry production, responded to mapping contracts at the international level, and developed the company's production team, making it an enviable photogrammetric production facility that probably ranked number one technologically in the country. At present I am handling quite a number of digital ortho and mapping projects from the USA, the Middle East and Europe.

With the strong knowledge base acquired at ITC and appropriate placement while working for the government, I have been able to contribute considerably to the general growth of geomatics in both the government and private sectors.

Calling Photogrammetric Engineers of 1972-74

Antonio E. Balce

Tony.Balce@gov.ab.c

I came from the Philippines, and received my ITC postgraduate diploma in photogrammetric engineering (PI) in 1973 and my MSc in photogrammetric engineering (P2) in 1974.

When I left ITC in 1974, I was at a crossroads in my life. One option was to go back home to the Philippines, to Saint Louis University, and serve my contract to teach for at least two years. The other option was to follow my heart and rejoin my fiancée (also from the Philippines) in Toronto, Canada. I'd met her in Amsterdam and she was my true inspiration while studying at ITC. I followed my heart.

She tried to sponsor me as an immigrant to Canada, but my application was turned down because of my status as a student with a commitment to go back to the Philippines. I then tried to get a visitor's visa. Again I was turned down. Next I went to the US embassy in The Hague and asked for a US visa; this was granted immediately. I flew from Brussels, Belgium, to New York, USA, where my fiancée met me. Together we toured New York for a few days before taking a bus to Toronto.

We got married in Toronto and I re-applied for immigration. However, I was told to return to the Philippines



Antonio E. Balce

and apply from there. Luckily I received a working permit to stay for one year. In 1975, I went back to the Philippines and re-applied for immigration, and in 1976 I returned to Canada as an immigrant. Working in Canada as an immigrant was difficult. I started as a chairman of a survey company during the hot summer months. Later on, I became an instrument man. When fieldwork tailed off in winter, I was re-assigned to the office to perform survey computations.

In 1977, I was hired as a senior mapping supervisor by the provincial government of Alberta. I supervised the production of control bases for forest inventory mapping, using slotted templet triangulation. With some innovations on my part, I was able to convert slotted templet triangulation to analytical triangulation by using

the programs I had written at ITC for my MSc thesis. With the help of a digitiser, a computer and an automatic drum plotter, I managed to save the government the huge office space required for slotted templet triangulation.

While working for the Alberta provincial government, I succeeded in registering as a professional engineer in Alberta without having to sit any written examinations. I believe my MSc degree from ITC was a factor. I also received my commission as a Canada Lands Surveyor. I developed the Alberta Photogrammetric Control System, a major source of control points for mapping anywhere in the province, and supervised the generation of digital elevation models for

the entire province (only recently completed).

I'm currently working on digital elevation models, supervising the detection and removal of errors, as well as on the implementation of softcopy photogrammetry for various applications. This is my 25th year of service as a geomatics engineer with the Alberta provincial government, and now I'm looking forward to retiring in March 2004. I might go back to the Philippines and serve my two-year contract with Saint Louis University in Baguio City.

I'm still married to my wife after 28 years, and we have three children: two daughters aged 27 and 25, and a son of 20.

I would love to hear from anyone who followed the PI (1972-1973) and P2 (1973-1974) courses. You can reach me at the e-mail address given above or at the following postal address: 13 91 0 Stony Plain Rd, #215, Edmonton, Alberta, Canada, T5N 3R2.

Map India Conference 2003 and ITC Alumni Meet

John Horn

horn@itc.nl

Already one of the most important and influential conferences of its kind in the region, Map India 2003 drew greater interest than ever this year.

Map India 2003 is the sixth annual international conference and exhibition in the field of geographical information technologies such as GIS, GPS, aerial photography and remote sensing. Although it primarily serves the Indian geographical community, over a period of time it has attracted considerable international participation and provides a platform for collaboration between India and rest of the world.

As in previous years, ITC was pleased to participate in the event as a co-sponsor, with both an exhibition stand and its ever-popular alumni evening meet.

In line with their close educational links, ITC and IIRS (the Indian Institute for Remote Sensing, Dehra Dun) this year decided to mount a joint exhibition of their educational activities. Representing ITC on this occasion were Drs Gerard van Dorp (director internal affairs) and John Horn (Bureau Project Services).

In the days immediately preceding the conference, Gerard van Dorp paid a short working visit to IIRS for talks

with its director, Dr P.S. Roy. High on the agenda of discussion topics was the recently initiated decentralised MSc programme.



Mr S.C. Gupta of IIRS and ITC's Gerard van Dorp exchanging ideas at the joint exhibition stand

The traditional ITC alumni meet on the first evening of the conference brought together some 60 former ITC students, as well as some members of the present IIRS courses.

Although formal talk was kept to minimum in favour of social interaction, a brief "state of the union" welcome speech was given by Gerard van Dorp, and John Horn brought guests up to date on various recent changes in the ITC educational pro-

grammes and the Netherlands Fellowship Programme procedures. In what was a most entertaining and memorable address, Brig. Dutta recalled his days at ITC in the 1950s when he studied under ITC's founder, Prof. Schermerhorn.



Dr L.R.A. Narayan making a speech of thanks at the alumni meet



Mrs Usha Prasad Mahavir and Prof. Dr Mahavir of the Centre for Remote Sensing and GIS, School of Planning and Architecture, New Delhi



Brig. Dutta, who studied under Prof. Schermerhorn, addressing the assembled alumni



Alumni associations

Listing of all Netherlands and ITC alumni associations

The mission of the Netherlands Alumni Associations (NAAs) and the ITC alumni associations is to enable people all over the world who have studied in the Netherlands or at ITC in particular to build personal networks and share knowledge, ideas and experience with one another and their Dutch counterparts. Alumni who would like to set up similar associations in their own country can contact ITC.

ARGENTINA

Asociación Cultural Argentino-Neerlandesa de Ex-Becarios (ACANEB)
c/o Royal Netherlands Embassy
Avda. de Mayo 701, Piso 19
1084 Buenos Aires
President: Ing. Pablo Bereciartua
Phone/fax: +54.11.4345.4399
E-mail: info@acaneb.org.ar
Website: <http://www.acaneb.org.ar>

BANGLADESH

Netherlands Alumni Association of Bangladesh
Mr Qazi H. Kabir, Secretary General
42/7 Block F, Babar Road
Mohammadpur, Dhaka 1207
Phone: +880.2.323855

BULGARIA

Bulgarian-Dutch Alumni Association
P.O. Box 1196, Sofia – 1000
President: Dr Tihomir B. Mustakov
Phone: +359.2.769230
Fax: +359.2.518601

BURKINA FASO

Netherlands Alumni Associations of Burkina Faso
A.D.Z.A.
01 BP 1255, Ouagadougou 01
President: Kiemtoré Moustapha
Phone: +226.31.81.56

CHILE

Corporación Cultural Chileno-Holandesa:
José Miguel Infante 146
Providencia, Santiago de Chile
Chairman: Mr. Enrique Román.
Phone: +56.2.2641700
Fax: +56-2-2642763
E-mail: eroman@cepri.cl
Website: <http://www.ccchh.cl>

EGYPT

Netherlands Alumni Association in Egypt
54, Sheikh Ahmed El Sawy Street
Makram Ebeid, Nasr City
Contact: Dr. Wadid Fawzy Erian,
Board of Directors Secretary

Phone: +20.2.2746513
Fax: +20.2.746327
E-mail: erian@link.net

GHANA

Ghana Netherlands Alumni Association (GNAA)
P.O. Box 8148, Accra-North
Interim President: Mr S.A. Amoah
Phone: +233.21.773664
Fax: +233.21.773655

INDIA

Netherlands Alumni Association of India
Prof. C.P. Tewari
K-10/19 Phoase II, D.L.F. City
Gurgaon - 122002, Haryana
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+91-11-06198615 (office)
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Alumni associations

INDONESIA

IKANED Netherlands Alumni Association
c/o Erasmushuis
Jalan H.R. Rasuna Said-Kavel S 3
Kuniga, Jakarta 12950
Chairman: Mr Adnan Ganto
Executive Chairman: Mr Chandra Soemitro
E-mail: cw3@indosat.net.id
Phone: +62.21.5241079
Fax: +62.21.5700734

KOREA

Korea Netherlands Alumni Association (KNAA)
College of Education, Seoul National University
San 56-2, Shinrim-dong, Kwanak-gu
Seoul
President: Prof. SON Bong Ho
E-mail: bongsonnl@yahoo.com
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Fax: +82.2.871.0635

MALAYSIA

c/o Royal Netherlands Embassy
7th Floor, the AmpWalk (South Block)
218 Jalan Ampang
50450 Kuala Lumpur
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Fax: +60.3.26948268
President: Ir Dato' Hj. Keizrul bin Abdullah
Secretary: Mr Tan Teow Soon
E-mail: jps28@pop.moa.my

MALAWI

Netherlands Alumni Association of Malawi (NAAM)
P.O. Box 349, Blantyre
Chairman: S.B. Lumwira
Phone: +265.621619
Fax: +265.634034

MEXICO

Asociación Mexicano-Holandesa de Exalumnos de Instituciones Académicas, A.C.
Embajada del Reino de los Países Bajos
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Avenida Vasco de Quiroga 3000 - 7 piso
Colonia Santa Fe, 01210 México D.F.
President: Sr. Héctor Ramírez Reyes
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NEPAL

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P.O. Box 8975 EPC 1224
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NEPAL

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E-mail: raja@cht.mos.com.np
censusmap@wlink.com.np

NIGERIA

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No 23 Opebi Road
P.O. Box 55279
Ikeja, Lagos, Nigeria
Phone/fax: +234.1.4974684

PAKISTAN

Netherlands Alumni Association of Pakistan
53, Plaza, Fazalul Haq Road
Adjacent PIA Building, Blue Area
Islamabad
President: Mr. Syed Waqar Haider,
Phone: +92.51.214336/214337

PERU

Asociación de Ex-Becarios
Calle La Higuera 229
Santa Felicia la Molina, Lima 12
President: Herminio Porras
E-mail: minio7@hotmail.com
Hermi@terra.com.pe

PHILIPPINES

Netherlands Fellowship Foundation of the Philippines inc. (NFFPI)
Land Geology Division
Mines and Geoscience Bureau
North Avenue, Diliman, Quezon City
President: Dr Ricarte Jabelosa
Fax: +63.2.9288544

SINGAPORE

Netherlands Alumni Association of Singapore (NAAS)
C/o Plant Health Centre SFES
Lorong chencharu
Singapore 769194
Vice President: Mr Soon See Cheong
Fax: +65.7382979

SRI LANKA

Netherlands Alumni Association of Lanka (NAAL)
95, Prince Street, Colombo 11
President: S.P.C. Kumarasinghe
Phone: +94.1.695590
Fax: +94.1.677877
E-mail: Kumar4@sri.lanka.net

THAILAND

Netherlands Alumni Association of Thailand (NAAT)
Chief, Foreign Relations Sub-Division
Thai Industrial Standards Institute
Rama 6 Road
Bangkok 10400
President: Ms Uraiwan Chandryu
Phone: +66.2.2464085/2461174
Fax: +66.2.2487987

UGANDA

ITC Alumni Association of Uganda
Dept. of Forest Products Engineering
Fac. of Forestry and Nature Conservation
Makerere University
P.O. Box 7062, Kampala
Phone: +256.41.543647/543648
Fax: +256.41.533574

VIETNAM

Vietnam-Netherlands Alumni Club (VNAC)
105A Quan Thanh Street
Hanoi
Chairman: Prof. Pham Huy Dung
Phone: +84.4.08044057
Fax: +84.4.8432756
E-mail: vnac@fpt.vn

CONFERENCE CALENDAR

ASPRS 2003

3 – 9 May 2003
United States, Alaska, Anchorage

www.asprs.org/alaska2003/index.html
teidel@gci.net

GeoAlberta 2003

7 – 9 May 2003
Canada, Calgary

www.geoalberta.com
program@urisab.org

Symposium IT Renewal Strategy for Land Registry and Cadastre

8 – 9 May 2003
The Netherlands, Enschede

www.fig.net/figtree/commission7/pauline.vanelstand@kadaster.nl
ITC attendance: Rolf de By, Chrit Lemmen, Johan de Meijere, Paul van der Molen, Arbind Tuladhar

Third Meeting of the Committee on Development Information

10 – 16 May 2003
Ethiopia, Addis Ababa

www.uneca.org/codi/
ITC attendance: Yola Georgiadou, Menno-Jan Kraak

Geo-Fluids IV

12 – 16 May 2003
The Netherlands, Utrecht

www.nitg.tno.nl/eng/geofluids/index.shtml
m.hoogendoorn@fbu.uu.nl

GeoSpatial World 2003

19 – 21 May 2003
United States, New Orleans

www.geospatialworld.com
iguc@intergraph.com

Regional Workshop on the Use of the Space Technology for Disaster Management for Europe

19 – 23 May 2003
Romania, Poiana Brasov

www.oosa.unvienna.org/SAP/stdm
david.stevens@unvienna.org

SpaceGRID Workshop

21 – 22 May 2003
Italy, Frascati (Rome)

www.earth.esa.int/rtd/Events/SpaceGRID_2003/index.html
workshop@spacegrid.org

URBAN 2003

22 – 23 May 2003
Germany, Berlin

www.tlc.unipv.it/urban_2003/
hellwich@fp.tu-berlin.de

International Symposium on Deformation Measurements

25 – 28 May 2003
Greece, Santorini

www.heliotos.net/conf/11fig
stiros@upatras.gr

Global Warming

27 – 30 May 2003
United States, Boston

www.globalwarming.net
gw14@globalwarming.net

ISESS 2003

27 – 30 May 2003
Austria, Semmering

www.isess.crle.uoguelph.ca/2003.html
linda@cis.uoguelph.ca

23rd EARSeL Symposium

2 – 5 June 2003
Belgium, Ghent

www.earsel.org/earsel_events/index.html
earsel@meteo.fr
ITC attendance: Freek van der Meer

ScanGIS 2003

4 – 6 June 2003
Finland, Espoo

www.dipoli.hut.fi/geomatiikka/scangis2003
scangis2003@dipoli.hut.fi

MapServer Users Meeting

6 – 7 June 2003
United States, St. Paul

www.mapserver.gis.umn.edu/mum/

Geoinformation Forum Japan and Exhibition

11 – 13 June 2003
Japan, Tokyo

www.jsurvey.jp/geoinfol/geoinfo.htm
geoforum@jsurvey.jp

Realising a World of Information 2003

12 – 15 June 2003
The Netherlands, Garderen

www.worldofinformation2003.com
events@rics.org

Geoscientific Information for Spatial Planning

17 – 20 June 2003
Italy, Bologna

www.regione.emilia-romagna.it/geologia/convegni/4th_congress/conveu4~en.htm
seg4cegr@regione.emilia-romagna.it

Three-dimensional Mapping from InSAR and LIDAR

17 – 19 June 2003
United States, Portland

www.intermaptechnologies.com/isprs_wgii_2/
mike@sbgmaps.com

11th International Conference on Geoinformatics'2003

25 – 27 June 2003
Canada, Toronto

www.geomaticseng.ryerson.ca/Geoinformatics2003/default.htm
tao@yorku.ca

GI-days

26 – 27 June 2003
Germany, Münster (Westf.)

www.gi-tage.del/englisch/startseite/index.html
info@gi-tage.de

Remote Sensing of Urban Areas 2003

27 – 29 June 2003
Germany, Regensburg

www-urs2003.uni-r.de
carsten.juergens@geographie.uni-regensburg.de

IUGG 2003

30 June – 11 July 2003
Japan, Sapporo

www.iugg.org
iugg2003@ics-inc.co.jp
ITC attendance: Colin Reeves

OSI Workshop-9

30 June – 4 July 2003
Japan, Hiroshima

makoto.takano@ctbto.org
ITC attendance: Ben Maathuis

3rd International PHOTOMOD User Conference

1 – 5 July 2003
Russia, Moscow

www.racurs.ru
info@racurs.ru

ESRI International User Conference 2003

7 – 11 July 2003
United States, San Diego

www.esri.com/events/luc/index.html
uc2003@esri.com

ITC attendance: Rolf de By, Lyande Eelderink, Jan Hendrikse, Mark Noort, Jeroen van den Worm

SVG.Open developers conference & GML dev days

13 – 19 July 2003
Canada, Vancouver

www.svgopen.org/
ITC attendance: Barend Köbben

Laser-Scan User & Partner Conference

17 – 18 July 2003
United Kingdom, Cambridge

www.laser-scan.com/usrgpr/uk_conf.htm
info@laser-scan.com

Cambridge Conference for National Mapping Organisations

20 – 25 July 2003
United Kingdom, Cambridge

www.cambridgeconference2003.com
hstirrat@ordsvy.gov.uk
ITC attendance: Menno-Jan Kraak

2nd Annual URISA Public Participation GIS Conference

20 – 22 July 2003
United States, Portland

www.urisa.org/ppgis.htm
info@urisa.org

ITC attendance: Connie Blok, Corné van Elzakker, Menno-Jan Kraak, Sjef van der Steen

IGARSS 2003

21 – 25 July 2003
France, Toulouse

www.igarss03.com

International Conference on Problematic soils

28 – 30 July 2003
United Kingdom, Nottingham

www.cipremier.com/announce/ps03.htm
cipremie@singnet.com.sg

21st International Cartographic Conference

10 – 16 August 2003
South Africa, Durban

www.icc2003.gov.za
icc2003@dla.gov.za

XVth International Congress on Carboniferous and Permian Stratigraphy (XV ICC-P)

10 – 16 August 2003
The Netherlands, Utrecht

www.nitg.tno.nl/eng/iccp.shtml
m.deruijter@fbu.uu.nl;
p.david@nitg.tno.nl

Studying Land Use Effects in Coastal Zones with Remote Sensing and GIS

13 – 16 August 2003
Turkey, Antalya/Kemer

www.ins.itu.edu.tr/rslucoat1/
fsunar@ins.itu.edu.tr

GI in Land Management

14 – 19 August 2003
Hungary, Szekesfehervar

www.geo.info.hu/giss/
giss@geo.info.hu

Mobile Mapping Technology 2003

25 – 27 August 2003
China, Kunming

www.geoict.net/MMT2003/index.htm
tao@yorku.ca

DMGIS 2003

29 – 30 August 2003
The Netherlands, Enschede

www.itc.nl/dmgis03
tempelman@itc.nl
ITC attendance: Rolf de By

Photogrammetric Week 2003

1 – 5 September 2003
Germany, Stuttgart

www.ifp.uni-stuttgart.de/phowo/index.html
martina.kroma@ifp.uni-stuttgart.de

Hutton Symposium on the Origin of Granites and Related Rocks #5

2 – 6 September 2003
Japan, Toyohashi

www.gsj.jp/Info/event/hutton
Hutton-V@m.aist.go.jp

Challenges in Geospatial Analysis, Integration and Visualization II

8 – 10 September 2003
Germany, Stuttgart

www.iuw.uni-vechta.de/personall/geoinf/jochen/isprs03.htm
jschiewe@fzg.uni-vechta.de

SPIE's Remote Sensing Europe

8 – 12 September 2003
Spain, Barcelona

www.spie.org
spie@spie.org

International Conference on Mathematical modelling of Ecosystems

9 – 12 September 2003
Kazakhstan, Almaty

www.space-science.narod.ru/MAINE.HTM
ikikz@yandex.ru; space-science@narod.ru

15th Annual EAIE Conference

10 – 13 September 2003
Austria, Vienna

www.eaie.nl/conf2003/

Photogrammetric Image Analysis

17 – 19 September 2003
Germany, Munich

helmut.mayer@unibw-muenchen.de

Intergeo 2003

17 – 19 September 2003
Germany, Hamburg

www.intergeo.de
info@intergeo2003.de

Annual Meeting and Symposium on Advanced Technology

19 – 23 September 2003
Poland, Krakow

www.fig.net
pauline.vanelsland@kadaster.nl

Digital Earth - Information Resources for Global Sustainability

21 – 25 September 2003
Czech Republic, Brno

www.geogr.muni.cz/digitalearth03
digitalearth03@geogr.muni.cz