content

2006 number 4

introduction

While we've been working to bring you *ITC News 2006-4,* the New Year celebrations have come and gone and we're already well into 2007. Celebrations around the world took many colourful forms, but dazzling fire-work displays were often prominent features. We all know that fireworks should be handled with care, but just how dangerous and destructive they can be was demonstrated when a fire broke out in a fireworks depot on 13 May 2000 and Enschede hit the international headlines. Now, six years later, a great deal of progress has been made in reconstructing the devas-tated area of Roombeek, and you can read about these developments on page 8.

Our readers will be saddened to learn that Professor Soekiman Atmosoedarjo, who was appointed Honorary Fellow of ITC on 17 December 1976, passed away on 27 November 2006 at the age of 83 (page 26). Highly respected and admired by his colleagues and indeed by all who knew him, both for his personal qualities and for his dedication and commitment to his work in forestry and conservation, he will be sadly missed.

How to sum up briefly the rest of the articles? Well, you could say it was business as usual for ITC in the fourth quarter of 2006 - but then again ITC business is anything but usual! Research is in the news, with a visiting com-mittee of experts evaluating the ITC Research and Graduate Programme 2001-2005. You can read about their conclusions on page 14, as well as about the contribution being made by ITC PhD research to the innovation programme *Ruimte voor Geo-Informatie* (page 11). And Professor Martien Molenaar presented an innovative gift to Dr Dadhwal, dean of IIRS, at the celebrations to mark 40 years of IIRS-ITC collaboration in capacity building: a PhD fellowship no less (5).

The School for Land Administration is certainly flourishing and has recently made its presence felt in both Africa and Southeast Asia (pages 10 and 20). To quote from one article: "It is easy to make land administration very com-plex, but it is very complex to make it easy." An interesting precept that I'm sure our readers will be able to adapt and apply to their work and everyday life. So I'll leave you to think of some likely and possibly unlikely examples, while hopefully enjoying the current issue of *ITC News.*

Janneke Kalf
Managing Editor

colofon

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4th Executive Seminar for National Mapping Organisations: Geo-information Technology within an E-governance Context

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National mapping organisations (NMOs) in both Western and non-Western countries have been partners of ITC for more than half a century.

To nurture the partnership with NMOs and to help to innovate capacity building activities, ITC has so far organised three seminars for NMO executives (in 1988, 1991 and 1996). This tradition was continued by organising the 4th Executive Seminar for National Mapping Organisations at ITC from 13 to 15 December 2006. The seminar was attended by 16 NMOs from Bangladesh, Rwanda, Kenya, Tanzania, Peru, Ghana, Burkina Faso, Senegal, Sri Lanka, Malawi, Zimbabwe, Zambia, Indonesia, Chile, Pakistan and Nepal.

The seminar served as a forum for exchanging knowledge and experiences on the changing roles of NMOs within the context of electronic governance (e-governance). E-governance concerns the use of information and communication technologies (ICT) in improving governance processes such as public policy formulation and implementation, internal government operations, and the provision of relevant information services to citizens. The objective of the seminar was to explore how NMOs can better support these processes. The seminar was divided into four sessions, each session starting with presentations by two invited speakers and completed by plenary discussions.

Content of the Executive Seminar
The use of geo-information technology (GIT) in public e-governance involves the design and implementation of flexible geo-information infrastructures (GII) properly embedded within the overall information infrastructure for public governance. NMOs can play important roles in designing and implementing GII if they can overcome certain technological, organisational and institutional challenges. The first three sessions focused on gaining insight into how GIT can support public policy formulation and implementation, internal government operations, and the provision of relevant information services to citizens. The fourth session explored the implications for developing NMO capacity in the context of e-governance.

Session 1: Geo-information in public policy formulation and implementation, including compliance with international environmental agreements (IEA)
Dr Van der Wouden of the Netherlands Institute of Spatial Research (NISR) argued that science-based politics was an illusion. He emphasised that political arguments were and would be more important than scientific arguments in deciding between public policy options. However, he concluded that spatial research had an "enlightenment" function for policy makers, since it made their values, goals and instruments clearer. Dr R. Sudarshana of the Regional Organization for the Protection of the Marine Environment (ROPME) in Kuwait stressed the importance of regional and multilateral collaborations in monitoring compliance with IEAs. According to Dr Sudarshana, both the harmonisation of national regulatory regimes with the regime of international

agreements and the development of equitable geo-information capacity of all involved nations are prerequisites of effective compliance with IEAs.

The main conclusion of the discussion was that, although considerable GIT use was observed in utilities, defence and cadastral applications, current use of GIT in actual policy making was relatively low. Despite the policy makers' ignorance of GIT, there was a growing overall awareness of geo-information, thanks to the technology push.

Session 2: Internal workings of government: alignment of business and technology
Ir Vanden Berghe, director of the Belgian NMO, presented the process of change at her organisation in the context of e-governance. This process is being guided by key ideas such as "the world is changing, we must change", "change without effort does not exist; it is called degeneration", "be a reliable partner", "don't try to beat them, join them", "do not only talk about changes, but also 'do' the changes". Mr Kanamugire, ICT adviser to the President of Rwanda, discussed the formulation and implementation of ICT policies to support public service delivery in Rwanda, the aim being to transform the Rwandan economy into a knowledge economy, using ICT as the engine for this transformation.

The ensuing discussion focused on how NMOs should align new business with GIT. Interestingly, the participants favoured an emphasis on business processes and strategies rather than on technical systems and strategies. Technology was not seen as the main bottleneck in the process of change.


Participants and ITC staff

Session 3: Provision of relevant services to citizens: service-driven geo-information infrastructures (GII)
Dr Jordi Guimet of the Centre of Support of the Spatial Data Infrastructure of Catalonia, Spain, presented the case of the Catalonia GII development. He emphasised the importance of the permanence of agreements, flexibility and adaptability, and the re-use and interchangeability of components, depending on the domain and customisable applications. Professor Rahul De' of the Indian Institute of Management, Bangalore, India, used the case of the Bhoomi project in Karnataka to illustrate the difference between a service-driven GII and a GII supporting governance processes. While Bhoomi was deemed successful as a "service-driven information infrastructure" (e.g. it improved the quality of service to citizens, facilitated land records administration, and achieved financial sustainability), it failed to increase the political freedom of citizens, enhance security, or increase transparency in dealing with government.

The discussions in this session indicated a shift from pure data provision by NMOs to provision of demand-driven information services in support of governance efforts. It was felt that GIIs should be citizen-oriented as opposed to government-oriented. When implementing GIIs, it was important to be aware of the potential causes of failures, such as lack of awareness of user needs, top-down development, inaccessibility and unavailability of relevant information in the right format, and language barriers.

Session 4: Implications for capacity development
Dr Jide Kufoniyi from RECTAS, Nigeria, discussed the high demand for geo-information education in Africa, as well as persistent problems, such as obsolete curricula and facilities, the difficulty of releasing officers for long training, lack of in-campus cooperation and networking, lack of financial resources for overseas training, absence of uniform academic standards, and inadequate enabling technologies. Dr Kufoniyi concluded that the

Information services to citizens

joint educational programmes (JEP) between ITC and partner universities addressed several of these problems.

Discussions centred on how JEPs and other capacity building partnerships between ITC and international partners could serve NMOs in adapting to the requirements of e-governance. For this last round of discussions, participants were divided into two groups based on two criteria: (1) whether or not the NMO already had a basic critical mass of human and technical resources in GIT, and (2) whether it was in an establishment phase or an updating and integration phase. The education needs indicated by the first group were still mainly related to basic technical skills (e.g. in digital data acquisition, data modelling techniques, computer programming, DBMS) and managerial skills (communication, strategic planning), while the second group stressed the importance of understanding actual customers' needs.

Concluding Remarks

In summary, the 4th Executive Seminar provided a useful platform for exchanging knowledge and experiences concerning the changing roles of NMOs within the context of e-governance from a Western and a non-Western perspective.

We wish to thank the session rapporteurs, Drs Emile Dopheide, Ms Kate Lance, Dr Rob Lemmens and Drs Ineke ten Dam: their detailed session reports will serve as input for a forthcoming, more thorough, analysis of the outcomes of the seminar.

The process of change

40 Years and Beyond: IIRS and ITC Collaboration in Capacity Building

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On 28 and 29 November 2006, 40 years of close cooperation between ITC and the Indian Institute for Remote Sensing (IIRS) was celebrated with a commemorative workshop in Dehra Dun, India, under the title '40 Years and Beyond: IIRS and ITC Collaboration in Capacity Building'

Over 225 people participated in this festive two-day event, which was jointly organised by IIRS and ITC. All sessions took place in the IIRS convocation hall, which was abundantly decorated with flowers for the occasion. The hall is next to the main building, which is illuminated along the entire façade in the evening hours.

Among the important dignitaries present during the event were Dr Radakrishnan, director of the Indian National Remote Sensing Agency (NRSA) and Dr D.P. Rao, former director of NRSA and an ITC fellow. The Dutch embassy was represented by the ambassador, Mr Eric F.C. Niehe, and the counsellor for science and technology, Mr Theo Groothuizen.

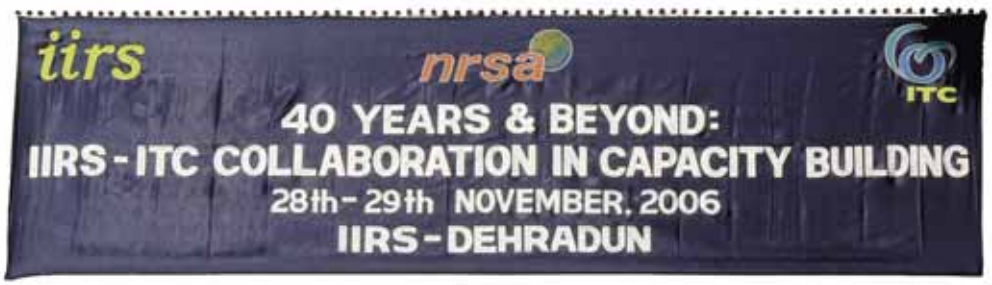
Mr G. Madhavan Nair, chairman of the Indian Space Research Organisation (ISRO), addressed the audience by means of a video conferencing facility, and talked about the Indian objective to launch at the end of 2007 a dedicated satellite system for developing countries, with cheap ground receiving capabilities.

Ten ITC staff participated in the event, including Rector Professor Martien Molenaar, Director External Affairs Sjaak Beerens and Emeritus Professor Allard Meijerink.

Last but not least, quite a few retired IIRS staff, and a large group of ITC alumni travelled from all over India to Dehra Dun to meet old friends - some of whom had been among the very first batch of students!

The first day of the programme comprised a combination of plenary addresses and congratulations by dignitaries. In the session "Reflection and Milestones", several speakers looked back in time, with anecdotes from the past 40 years. Professor Meijerink took the opportunity to give a lively speech on the "good old days" during the first years of the cooperation.

The future of the collaboration between IIRS and ITC was debated during a panel discussion. One conclusion of this session was that research generated by the collaboration should result in technological innovations that might contribute to solving problems encountered in practice. Another conclusion was that spatially related problems cannot be solved by looking only at technical solutions; organisational and institutional aspects should also be considered, as well as issues related to information management.



Delegates at entrance IIRS auditorium

A small exhibition, with joint IIRS-ITC research publications and several panels displaying historic photographs (e.g. of the 1957 visit of the Indian Prime Minister Pt. Jawahar Lal Nehru to ITC in Delft, and of retired ITC and IIRS professors in their younger days) was officially opened by the Dutch ambassador. A substantial part of the exhibition was dedicated to posters showing the research work of 14 MSc students from the ITC-IIRS joint education programme. The students were given the opportunity to explain their work individually to both the ambassador and the counsellor for science and technology.

A performance of traditional Indian dances and a dinner in a nearby hotel brought the first day to a close.

The next day started with two sessions on recent advances in earth observation applications, during which four IIRS and five ITC staff presented their scientific work. The subjects varied from topographical map generalisation to neo-tectonic deformation and seismic risk assessment in the Dehra Dun area. The scientific part of the programme was brought to an end by presentations from three graduates of the IIRS–ITC PhD sandwich programme.

During the closing session of this very successful event, Professor Molenaar presented a gift of one PhD fellowship to Dr Dadhwal, dean of IIRS.

What remains of the two days in Dehra Dun are some very good memories - and I realise that for some participants these will span the last 40 years! To mark the event for posterity, several high-ranking participants planted trees next to the new IIRS guesthouse. The longstanding cooperation has also been given physical shape in a book of more than 100 pages, with many messages from dignitaries, a wealth of colour photographs from the past, and abstracts from the scientific presentations.

For the many alumni of the ITC-IIRS cooperation, the day was rounded off with a buffet in the garden restaurant of the Madhuban Hotel.

Dr Radhakrishnan, Director National Remote Sensing Agency (NRSA) planting a tree

Dr. Hari Prasad with students of the Geo-Hazards Joint Educational Programme and ITC's rector Martien Molenaar and Drs. Michiel Damen

Dr Dadhwal, Dean IIRS with students of the Geo-Hazards Joint Educational Programme and ITC's Dr Paul van Dijk and Emeritus Professor Allard Meijerink

H.E. Eric Niehe Ambassador of the Netherlands (right) having a conversion with one of the delegates during lunch time

Dinner at the Madhuban hotel during the ITC-IIRS alumni meeting

Professor Jha, IIRS organizer of the Commemorative Workshop (center) with IIRS-ITC alumni from the first hours

ITC's Drs. Sjaak Beerens (right) and rector Martien Molenaar addressing the ITC-IIRS alumni

ITC's contacts with India date back to the early 1950s, when Professor Willem Schermerhorn, prime minister of the Netherlands and founder of ITC, visited the Survey of India, and officers were sent to ITC for training. In 1957 Prime Minister Pt. Jawahar Lal Nehru visited ITC; he was so impressed that he wanted to have a similar institute set up in India.

In 1964 the UN Cartographic Conference for Asia and the Far East (ECAFE) was held in Bangkok. There it was advocated that regional centres should be established in order to promote and accelerate training in photogrammetry and photo-interpretation techniques in developing countries. During this conference, discussions took place between the Indian and Dutch delegates with regard to drafting a collaborative agreement between the two governments. This agreement was signed at the end of 1964, heralding the start of the project for technical assistance to set up a photo-interpretation institute in India, with ITC as the executive authority. It was one of the first large bilateral technical assistance projects undertaken between the Netherlands and a developing country.

In May 1966 the first course started, and in 1967 16 students completed the course in the three divisions forestry, geology and soil survey. By August 1968 the first dean was appointed: Col. J.N. Sinha.

In 1976 the IPI was transferred to the control of the National Remote Sensing Agency (NRSA). Since then this institute has been known as the Indian Institute of Remote Sensing. In 1979 Col. Prabhakar Misra was appointed director. Under his leadership the Human Settlement Analysis Group of IIRS was established in 1983 with the collaboration of ITC.

Some examples of recent joint projects are as follows:

- Geo-Information Systems Applications for Natural Resources Development and Environmental Planning and Management
- Geo-informatics for Environmental Assessment and Disaster Management, Institutional Strengthening of the Indian Institute of Remote Sensing (GEONEDIS)
- MSc degree and postgraduate diploma courses in geo-informatics
- MSc degree and postgraduate diploma courses in geo-hazards
- Cooperation within the context of the School for Disaster Geo-Information Management

Roombeek, a Neighbourhood under Reconstruction

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Enschede with its 154,000 inhabitants is one of the most important cities in the east of the Netherlands. The loss of the textile industry at the end of the 1960s left deep marks. Just as it was emerging from decline - the centre of gravity in terms of employment having gradually shifted to service sectors - the city suffered a major setback as a result of the firework disaster on Saturday, 13 May 2000.

The firework disaster caused a tremendous amount of damage and immense suffering to people who lived and worked in the Roombeek district. As a consequence of the explosion, 23 people died, more than 1,000 were injured, more than 1,450 lost their homes, and 123 businesses lost their premises. In total about 42 ha of the city of Enschede were ruined.

These tragic statistics marked the start of a major reconstruction process. Its objective was to enable victims of the disaster to reclaim their lives in a renewed and prosperous district. At that time, it was evident that participation of all interested parties – including the people directly affected by the disaster – would play a key role in the reconstruction process. It was the only way in which local government could regain trust.

Participation in Creating a New Vision of Roombeek

In the autumn of 2000, exceptional and intensive participation was initiated with all groups concerned. More than 3,000 wishes, suggestions and ideas were received as part of the first phase of the participation process. The urban development spatial vision "Roombeek, a familiar district" (October 2001) translates all these contributions into one cohesive plan. Besides initiating the physical reconstruction, this plan also contributed towards the social and economic programmes for Roombeek. The planning area Roombeek lies in the heart of Enschede North, and covers 62.6 ha.

"In no other district in the Netherlands have private individuals had such a large say in the realisation of their district as in

The Roombeek area on 14 May 2000

Roombeek. An exceptional, widely supported plan where the participation of both former residents and newcomers has clearly worked well." (Peter Kuenzli, Managing Director of the Reconstruction Project Office [*Projectbureau Wederopbouw*] 2001-2004).

Roombeek Development Plan

Together with representatives from the organisations concerned, the spatial vision was translated into the Roombeek Development Plan (RDP) - a plan full of ambition that stemmed especially from the tremendous enthusiasm, energy and creativity that emerged in response to the disaster. On the whole, perhaps "breeding ground" is perhaps the best way of describing the RDP (November 2002) - a breeding ground for former inhabitants, for modern self-builders, artists, ICT specialists and entrepreneurs, who all feel at home and meet and inspire each other. Roombeek offers them the scope to develop their talents in a challenging, high-quality environment, which is filled with possibilities for them to shape their own environment and build their own houses.

Reconstruction Project Office

The Reconstruction Project Office was tasked with coordinating the social, economic and physical reconstruction of Roombeek. Many former residents were (temporarily) rehoused elsewhere in Enschede. The social programmes were therefore implemented citywide. The aim of all Project Office programmes and activities was to give the new district added social value both for returning former residents and for new residents, as well as to help to upgrade the entire city of Enschede.

Shaping possibilities for former residents was also a departure point of the reconstruction: everyone who had lived in the district of Roombeek on 13 May 2000 had the right to return to the district. Now, six years on, about 40% of the residents that formerly lived there in rented housing have returned. House-owners were given the opportunity to acquire a parcel in the area where they had lived before.

Conclusion

Overall, one can say that the participation process with its bottom-up approach has functioned very well. Research by the University of Twente during the participation process shows that the people involved were satisfied with the process and confident that Roombeek would grow to be a prosperous district. The reconstruction has been successfully turned into an opportunity to further strengthen the economic structure of the city and create a new economic and cultural identity for Enschede. The reconstruction of Roombeek has now become a laboratory for innovations and urban renewal.

In a following article, we will show more results of the planning process.

Map of the Roombeek area

education news

Successful Completion of Two Short Courses on Land Administration in 2006

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With the aim of contributing to the worldwide programme on capacity building in land administration that supports socio-economic development and poverty reduction programmes in developing countries, the ITC School for Land Administration Studies (ITC is an associated institution of the UNU) successfully conducted two short courses on land administration during 2006.

The first short (two-week) course, under the title "Geo-Information for Land Administration in Africa: Trends and Innovation", was held in Kumasi, Ghana, from 19 to 30 June 2006. It was jointly organised with the Department of Geomatic Engineering at Kwame Nkrumah University of Science and Technology (KNUST) in Kumasi, Ghana. It attracted 32 participants, including practitioners, local traditional chiefs, academics and professionals, from various national and local organisations of eight African countries (Burkina Faso, Ethiopia, Kenya, Ghana, Namibia, Rwanda, Tanzania and Uganda).

The keynote speaker was Professor Karl Harmsen, director of UNU-INRA, Ghana, who gave some impressive examples of land administration applications in natural resource management in support of sustainable development. Later, key lectures were delivered by Dutch and Ghanaian experts, followed by the exchange of participants' experiences, lively discussions, and visits to regional and local land agencies. Issues such as land policy reform with respect to statutory and customary tenures, and its impact on sustainable development and market economics, as well as the innovative land tools of Geo-ICT-based registration systems, with the emphasis on spatial data infrastructure, guided the participants towards reformed land polices with a strong emphasis on good governance and MDGs (the local situation must be taken into account, with a strong emphasis on land rights for women, and indigenous and disabled people in the region). Further, discussion focused on managing local areas through innovative concepts integrated with the spatial planning process through harmonised processes between the various institutions in the context of land policy reform, as well as on the need to focus on customer requirements in a coordinated fashion based on the one-stop shop concept. The vision of developing a communication model with stakeholders, with a periodic survey of their requirements, and of developing human resources for land administration in combination with Geo-ICT, was strongly emphasised in the region.

Participants, guests and contributing staff from KNUST and ITC in Kumasi, Ghana

The second short course was organised for the Southeast Asian Region from 4 to 14 September 2006 in cooperation with the Department of Geodesy and Geomatics Engineering, Faculty of Engineering of Gadjah Mada University (GMU), in Yogyakarta, Indonesia. Twenty-three professionals and six academics (including five female participants) from Bangladesh, Cambodia, India, Indonesia, Nepal, Pakistan, the Philippines and Vietnam actively participated in the search for shared, enhanced knowledge and innovations for land administration, and for Geo-ICT potential, with a view to learning from the experiences of these countries in disaster situations attributable to the tsunami, which had severely disrupted the management of land administration systems. There is an urgent need for good land administration as a strategic instrument for the global environment for human prosperity. By using appropriate land policies, land administration helps to minimise land conflicts in many kinds of situations.

The keynote speaker for this course was Dr Joyo Winoto, chairman of the National Land Agency (BPN), who introduced philosophical and innovative concepts for reconstructing land ad-

ministration systems and community-based adjudication in Indonesia (referring to the work of Hernando de Soto). This short course was delivered through a series of key lectures, followed by lively discussions on focal issues, practicals, study visits to regional offices, and country presentations on the land administration situation by the course participants. The sessions concentrated largely on land administration and the changing environment, from concept to practice. Discussion and country presentations provided the participants with in-depth knowledge. Land administration is more than just registration: it is about implementing (comprehensive) land policies. Land administration is there for everyone: pro-poor land management, customary tenure and informal settlements have to be integrated in the systems. Land administration can be substantially improved: Geo-ICT can support better performance via standardisation, modern data acquisition tools, workflows in data processing, and data distribution. It is easy to make land administration very complex, but it is very complex to make it easy.

Finally, the participants of the short courses concerned indicated that there is a great demand for such courses in the regions.

Participants and distinguished guests at the opening session in Yogyakarta, Indonesia

research news

Innovation Programme Ruimte voor Geo-Informatie

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On 1 March 2004, the Dutch Ministry of Housing, Spatial Planning and the Environment granted 20 million euros to *Ruimte voor Geo-Informatie* (RGI), an innovation programme executed by a specially created foundation of the same name. The board of the RGI foundation includes representatives of knowledge institutes, companies and public authorities, while representatives of the Ministry of Housing, Spatial Planning and the Environment, the Ministry of Agriculture, Nature and Food Quality, and the Ministry of Transport, Public Works and Water Management sit on its Supervisory Board.

With an investment of 20 million euros, RGI is imposing structure on location-specific information in the Netherlands. This work is of vital importance, because digital maps are more than a way of providing useful data on where people, buildings, soil types, storms and roads are, they are absolutely indispensable for the proper functioning of society (source: www.rgi.nl).

ITC is participating in the RGI programme through the projects given below.

3D Topography

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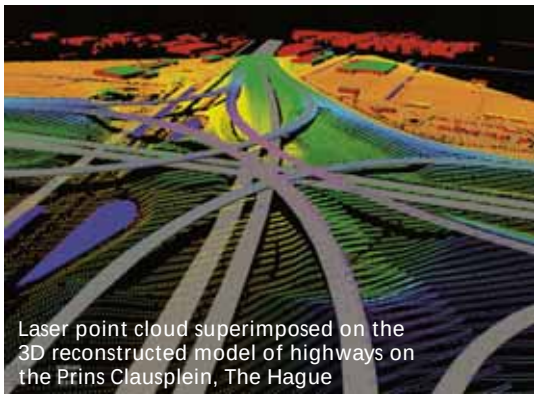
A new 3D topographical product model is being further developed, together with new methods and techniques for data acquisition, storage and analysis. The main project objective is to force a major breakthrough in the application of 3D topography in corporate ICT environments through the structural embedding of 3D methods and techniques.

Sander Oude Elberink

Oude Elberink's PhD research focuses on the automated acquisition of 3D topographic objects. Airborne laser data and 2D map data will be integrated and processed in a rule-based approach. Rules for 3D reconstruction are being set up for groups of objects. These rules have to ensure the geometrical, topological and semantic correctness of the 3D map.
More information and initial results (a 3D reconstruction of the complex interchange Prins Claus Plein) can be found at:
www.itc.nl/personal/oudeelberink.


Laser point cloud superimposed on the 3D reconstructed model of highways on the Prins Clausplein, The Hague

Project partners: **TU Delft, ITC, Topografische Dienst Kadaster, Rijkswaterstaat – Adviesdienst Geo-informatie & ICT, Oracle USA & NL, NedGraphics CAD/GIS B.V., Stuurgroep AHN**
Supervision by: **Prof. Dr Ir Vosselman (ITC)**

Virtual Reality for Urban Planning and Safety

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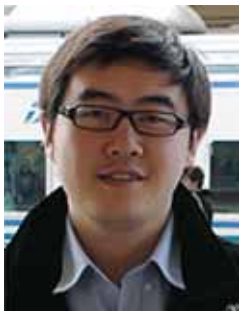
Shi Pu

Realistic 3D city models are required for many purposes, such as urban planning and safety. Originally, the involvement of citizens in urban planning was generally limited to 2D designs because they might have difficulty in interpreting 3D design plans. The availability of 3D models of the current urban environment, as well as new urban objects and their alternatives, would increase this involvement remarkably. 3D city models can also play an important role in security analyses. A realistic environment is essential for making good security analyses and for training purposes, particularly where physical security (dangerous activity, security of infrastructure) and social security (liveability, feeling of security) are concerned.
Shi Pu's PhD research focuses on the automatic reconstruction of 3D city models. Urban features will be extracted from terrestrial laser data and 2D map data and used in geometrical models. Then digital imagery will be used for the model textures.
More information and some simple examples can be found at http://www.itc.nl/personal/pushi.

Project partners: **ITC, Cyclomedia, Oranjewoud, Cebra**
Supervision by: **Prof. Dr Ir Vosselman (ITC)**

Geo-Information Management for Civil Engineering Infrastructure (GIMCIW)

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Wiebke Tegtmeijer

Around the world, people are busy with the realisation of infrastructural projects. Efficient planning and construction requires the variety of data and knowledge collected by different professionals (e.g. engineering geologists, GIS technologists) to be combined. To facilitate the exchange of geo-information throughout the whole process of infrastructural development, the GIMCIW project concentrates on developing various tools and frameworks. One of the main challenges is data harmonisation. Problems in this context are often caused by uncertainties relating to data, interpretations and real-world representations.

Consequently, Tegtmeier's PhD research covers two major topics. The first deals with the quantification of quality and uncertainty, particularly in (sub-)surface representations. The second focuses on the harmonisation

of metadata and semantics as used by different parties involved in infrastructural projects. Using common semantics that include sharp definitions of the various terms frequently used by the different professions, a uniform framework is to be developed throughout this research to promote data harmonisation.

Project partners: **TNO-NITG, TU Delft, ITC, Grontmij, DHV, Arcadis, Fugro Inpark, Toposcopie, RWS-Bouwdienst, RWS-AGI, Boskalis, EnergieNed/Nuon**
Supervision by: **Dr Robert Hack (ITC), Dr Sisi Zlatanova (TU Delft), Prof. Dr Ir Peter van Oosterom (TU Delft)**

Generation and Use of Base Maps for Integrated Querying of Digital Physical Development Plans

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Eddie Poppe

A topographic map is a general reference map that can be used for many purposes. It can, for instance, be used as a base map, providing a topographic and geographical setting for a thematic map. The function of a base map is to facilitate localisation and orientation and to highlight geographical relations between the thematic information and the topographic information. For many applications, topographic maps produced by national mapping agencies are used as base maps. Nevertheless, these topographic maps are not principally designed to support the specific topographic information needs that the users of the thematic maps may have in order to achieve their goals. Consequently, using topographic maps that are not specifically designed for the applications involved may cause misinterpretations. Generalisation can bridge this problem, as it involves reducing the complexity in a dataset or map at reduced scale by extracting or emphasising the essential and meaningful information and simultaneously removing or suppressing the inessential and meaningless information, in order to enhance the usability of the dataset or map.

Automated Application-Driven Generalisation of Topographical Information in order to Derive Base Maps

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Theodor Foerster

The objective of Poppe's research is to develop a method for the automated generalisation of topographic information in order to derive base maps for specific applications. Application refers in this context to the retrieval, consultation and processing of information in support of user requirements. To best satisfy the information needs of the users and the goals of the geographical information providers, this method for automated generalisation should be application-driven. Poppe will use principles of user-centred design and task analysis for the development of this method. The objective of Foerster's research is the technical development of a web-based framework for the application-driven generalisation of Dutch topographic data. Foerster is seeking not only a classification of different generalisation operators but also an appropriate web-based architecture for generalisation processing.

Project partners: **ITC, TU Delft, Wageningen UR, Ministry of Housing, Spatial Planning and the Environment, Province of Overijssel, Province of Zuid-Holland, Kadaster, Topografische Dienst Kadaster, LSV GBKN, ESRI NL, NedGraphics and Bentley**
Supervision of Eddie Poppe by: **Dr Corné van Elzakker and Prof. Dr Menno-Jan Kraak (both ITC)**
Supervision of Theodor Foerster by: **Dr Jantien Stoter and Prof. Dr Menno-Jan Kraak (both ITC)**

Visiting Committee Evaluates the ITC Research and Graduate Programme 2001-2005

Martin Hale hale@itc.nl

Like all reputable research institutes, ITC is aware of the importance of maintaining its position at the forefront of science, in this case of geo-information science and earth observation. We strive to achieve this through our research and graduate programme. But to know how well (or otherwise) our programme is performing, we need to have independent experts evaluate it.

The current research and graduate programme was launched in 2001 and, after five years, was thought to be due for evaluation. Preparations were begun at the beginning of 2006 and culminated on 26-27 September 2006 with a series of interviews of ITC researchers by a visiting committee of experts:

- Professor Tejo Spit (chairman), Utrecht University
- Professor Marc Bierkens, Utrecht University
- Professor Rik Leemans, Wageningen University and Research Centre
- Professor Salle Kroonenberg, Delft University of Technology
- Dr Theo Jetten (secretary), Wageningen University and Research Centre.

The committee was asked to evaluate the ITC Research and Graduate Programme according to the KNAW Standard Evaluation Protocol, which is the protocol used for the (re-)accreditation of research schools and graduate schools. At the end of the committee's visit, its chairman gave a verbal report of its preliminary findings to the audience gathered in the auditorium.

He first mentioned that the committee much appreciated the documentation/self-evaluation, which it found "open." The SWOT analyses were particularly helpful in formulating questions and conclusions. Also the committee appreciated the open-mindedness/attitude of both the staff and research students it interviewed.

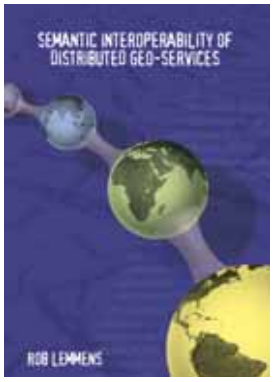
Using as one benchmark ITC research prior to 2001, the committee felt that the programme as formulated in 2001 had been a good impetus for research at ITC. Using as another benchmark the performances of the research institutes of the committee members themselves, the committee evaluated the programme as satisfactory in terms of quality and productivity and as good in terms of relevance and vitality. At the level of spearheads and projects, however, the committee noted large differences in quality, productivity and vitality. It questioned the added value of spearheads and advised the consideration of new ways of clustering excellent research groups.

Turning its attention to the research students, the committee pointed out that every research student should have a sound training and supervision plan. There was also a need for research student representation in the board(s) dealing with the research and graduate programme.

By way of conclusions, the committee felt that an enormous effort had been realised and it was time to ask ourselves if we were now where we wanted to be. If, rather, we want to further improve, we must (1) strengthen research in the academic sense, and (2) translate the findings and recommendations of the committee throughout the organisation, even to the individual level.

Subsequently the committee completed its task by delivering a concise written report, which elaborated on the findings summarised here. Then on 11-12 December 2006, some 25 ITC professors and associate professors discussed the report and sought ways forward at a "research think tank". The sound ideas for further improving that emerged are now being brought to bear on structuring and managing the next phase of the ITC Research and Graduate Programme.

Listings of academic output of all ITC's staff members, PhD and MSc students are available at http://www.itc.nl/library/Academic_output/default.asp



project news

TIGER Advanced Course on Optical Data Processing for Water Management

Bob Su b_su@itc.nl

A four-day short course on advanced optical data processing for water management was held for selected principal investigators and project members at the University of the Western Cape, Cape Town, from 22 to 25 November 2006. These participants were sponsored by the Tiger Capacity Building Facility and other sources.

Originally, 15 projects should have been represented, but due to some technical difficulties, not all representatives could be present. An additional five students were directly sponsored by ESA, and six extra students were supported by South Africa. During the course, interviews were held with the participants representing the selected Tiger projects for tailor-made capacity building. The results of these discussions were implemented in the individual training plans. At the end, the course participants completed an evaluation form. This feedback was very positive, giving us encouragement for the next course.

The University of Western Cape provided excellent facilities for the course, and special thanks go to Professor Xu and Mr Nel. The Tiger Capacity Building Facility is hosted by ITC. (Source: *The Tiger Newsletter*, issue N.5 December 2006)

TIGER Advanced Course on Optical Remote Sensing for Water Management

Cape Town, South Africa, 22-25 November 2006

Day 1: Radiative transfer and atmospheric correction of optical data
(Lecturer: Professor Wout Verhoef, professor of advanced earth observation)

Day 2: Spectral signatures and applications in land use classification and water quality
(Lecturer: Dr Zoltan Vekerdy, assistant professor)

Day 3: Time series processing and applications
(Lecturer: Professor Wout Verhoef, professor of advanced earth observation)

Day 4: Energy balance and applications in estimation of evapotranspiration
(Lecturer: Professor Bob Su, professor of spatial hydrology and water resources management)

The course participants

TIGER Capacity Building Facility: An Important Pillar of Sustainability

Bob Su b_su@itc.nl

TIGER aims at developing sustainable earth observation information services for integrated water resources management, with a focus on Africa. One of the main activities within this initiative is supporting water-related research in the region. Fifty selected projects form the research component of the programme, and these are carried out by African and North-South research teams. Since September 2006, their work has been supported by the TIGER Capacity Building Facility (TBCF), which is responsible for setting up a capacity building and training programme in support of the research.

The work is based on a long-term vision following the initiatives of the participating African countries on developing human, technical and institutional capacity. In the first phase, an 18-month plan is being carried out with the following objectives:

- To support at least 15 TIGER research projects with tailored capacity building activities to achieve their objectives, while developing their human, technical and institutional capacity to use earth observation technology within the water management process.
- To contribute to developing sustainable information services and systems to improve integrated water management (IWRM) (at regional, national and local scales) by using space-based technology to overcome the water information gap in African countries.
- To support the consolidation of a critical mass of technical centres, water authorities and universities in Africa with the skills and capabilities to derive, disseminate and use space-based water-relevant information for IWRM.
- To contribute to improving water research results in Africa by exploiting the advantages of earth observation technology.

ITC (www.itc.nl) is implementing the first phase of the TCBF. Working out the detailed programme of the Facility is an iterative process between ITC, ESA and the participating African research groups.

The organisation of two advanced training courses focusing on the main needs of the selected projects is part of the programme. In fact, the first such course was held at the University of Western Cape, in Cape Town, South Africa, at the end of November 2006 (see separate article on page 15). A second course is planned to take place mid-2007.

Participants listening to a lecture at the first TCBF training course (Advanced Optical Remote Sensing, 22-25 November 2006, Cape Town)

Complementary to the advanced training courses, a tailor-made training programme is being implemented, which consists of three components:

- enrolment of project staff in core-level remote sensing and GIS e-learning courses
- participation of project staff in applied short course modules according to their research topics and needs, both through face-to-face training at ITC and e-learning via the World Wide Web
- support for project research in the form of on-the-job training focusing on the execution of the research projects through personal tutoring and supervision.

The programme also foresees initiatives for MSc/PhD research and training, but additional funds are needed for these to be fully realised.

In the first phase, the available resources permit the inclusion of participants from 15 projects. However, from the very beginning, ITC has encouraged the other TIGER research projects to participate in the activities of the Facility.

The TBCF is also active in the field of communication and promotion, maintaining a website with online resources, education material and the

latest news, preparing a special TIGER issue of an international scientific journal, issuing press releases, and organising contributions to the TIGER brochure.

By preparing, in collaboration with partners, proposals to suitable donors and mobilising additional resources, the core activities such as training sessions and tailored capacity building actions will be reinforced.

The results of phase 1 will be summarised, and a proposal will be made regarding how to proceed with the activities, including the attraction of funding from donor organisations.

The TCBF is now up and running. Please do not hesitate to contact us (b_su@itc.nl) with your questions and suggestions, as the Facility is open to all TIGER participants and aims to serve the whole TIGER community. (Source: *The Tiger Newsletter*, issue N.5 December 2006)

Assessing Land Degradation in Thailand

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Land degradation, a decline in land quality owing to human activities, is a worldwide problem. It is directly linked to food security and the quality of the environment. In Thailand, land degradation processes such as land sliding, soil erosion, flooding and soil salinity are common issues.

A project aimed at developing methodologies to assess land degradation in the context of land use planning started in 2003, in collaboration with the Land Development Department (LDD) of the Ministry of Agriculture and Cooperatives, Bangkok, Thailand. Activities such as staff training and collaboration on the application of various tools, techniques and methods in assessing land degradation have been carried out within the framework of this project. The project is being coordinated by Dr Dhruba Pikha Shrestha, and ITC's Dr Abbas Farshad and Drs Dinand Alkema are also involved. In Thailand the coordinators are Mr Anukul Suchinai and Mr Satira Udomsri, both ITC alumni, while overall responsibility lies with Mr Chumphol Lilittham, director of the LDD Soil Survey and Land Use Planning. During the first phase of the project, many LDD staff received training, both at ITC and in Bangkok. Some project results have already been presented on various occasions, for example, at the 25th Asian Conference on Remote Sensing (Thailand, 2004); a conference in Vietnam (2005); a workshop in Hua Hin (Thailand, 2005); the 2nd Annual Meeting of the Asia Oceanic Geophysical Society (Singapore, 2005); the International Conference on Human Impacts on Soil Quality Attributes (Iran, 2005); and the World Soil Congress (USA, 2006).

Agreement for Phase II of the LDD Project

The first phase of the three-year project was completed in 2005 and was rounded off by a workshop in Hua Hin, where the results of the work carried out within the time frame were presented. This led to the project being extended for a second phase, with some adjustments to the project document. The addendum to the proposal for the second phase of the project was finalised, and the agreement was signed by LDD Director-General Chaiwat Sittibush and ITC Director External Affairs Sjaak Beerens on 29 August 2006 in Bangkok.

ITC Director External Affairs Sjaak Beerens (left) and LDD Director-General Chaiwat Sittibush (right) signing the project agreement

Pilot Area Studies

Pilot areas were selected for studies on land degradation problems. Landslides and soil erosion are the main land degradation problems in the Doi Angkhan area, about 160 km north of Chiang Mai. In Petchabun province (the Namchun and Lomsak areas), flooding is an annual problem in addition to landslides and soil erosion. The landslides and flash flood caused by excessive rain in 2001, which caused severe damage to land and infrastructure and the loss of human life in Petchabun province, is still vividly remembered. On the other hand, in the northeastern part of Thailand (Korat), soil salinity is the main issue. Dr Abbas Farshad, Drs Dinand Alkema and Dr Dhruba Shrestha have all been involved in land degradation studies in Thailand.

Field data are crucial for analysing and assessing land degradation hazards. ITC students have been selecting topics related to land degradation for their MSc research in the project pilot areas in Thailand, and the data collected during their fieldwork have proved very useful for the project. In 2006 five ITC students did fieldwork in Thailand. Other data are being collected by the LDD staff responsible for designated tasks (e.g. Mr Anukul Suchinai: landslide data; Mr Boonrak Patanakanog: land use data; Mr. Satira Udomsri: soil erosion data;

With course participants

Mr Somsak Sukchan: soil salinity data; Ms Saowanee Sriprachan, flood data; and Dr Sumitra Watana: soil mapping/soil salinity data).

Tailor-made Course

Within the framework of the LDD project, a tailor-made course on the application of geopedology and digital terrain analysis techniques for mapping soils on sloping areas was conducted during the period 21 August to 8 September 2006. The course was designed to assist soil surveyors in using modern tools and techniques to carry out soil mapping in the inaccessible mountainous areas of Thailand.

In former times, most of the agricultural practices in Thailand were concentrated in the lowlands, and the sloping areas were covered with forest. In the recent past, however, due to population pressure, the mountainous areas have been encroached for cultivation purposes. This has led to deforestation, exposing the sloping areas to various land degradation processes and resulting in landslides and soil erosion in the uplands and annual flooding in the lowlands. Although soil data are indispensable for proper land use planning, such data are often missing for sloping areas because in the past soil surveying concentrated mainly on the lowlands. The tailor-made course was therefore designed to achieve the rapid mapping of soil in inaccessible mountainous sloping areas. Forty-two soil surveyors assigned to different places in Thailand were taught how to use a geopedological approach in image interpretation, in combination with the digital processing of remote sensing data and the application of various terrain parameters derived from elevation data.

The course was given by Dr Farshad and Dr Shrestha. The first week was spent in Bangkok and dealt with geomorphology, the principles of geopedology applied to soil mapping, and computer-based predictive soil mapping. The lectures were combined with exercises on photo interpretation. The second week was devoted to fieldwork in the Hua Namring area in Chiang Rai province, about 60 km from Chiang Mai. At the end of the fieldwork, groups of participants presented their findings. The third week was devoted mainly to the application of modern tools and techniques (e.g. satellite image analysis techniques, deriving and applying various terrain parameters from digital elevation models) for soil mapping and land degradation assessment.

The three-week course came to a close with the presentation of certificates. Before the official closing, Ms Marjan Kreijns, ITC representative for Thailand and Vietnam, explained to the course participants the Netherlands Fellowship Programme and the application procedures for studying at ITC.


Fieldwork in Petchabun


Taking soil data from a road cut


Measuring a cross section of a river


Fieldwork in Korat

events

50th Anniversary of Wuhan Technical University of Surveying and Mapping (WTUSM)

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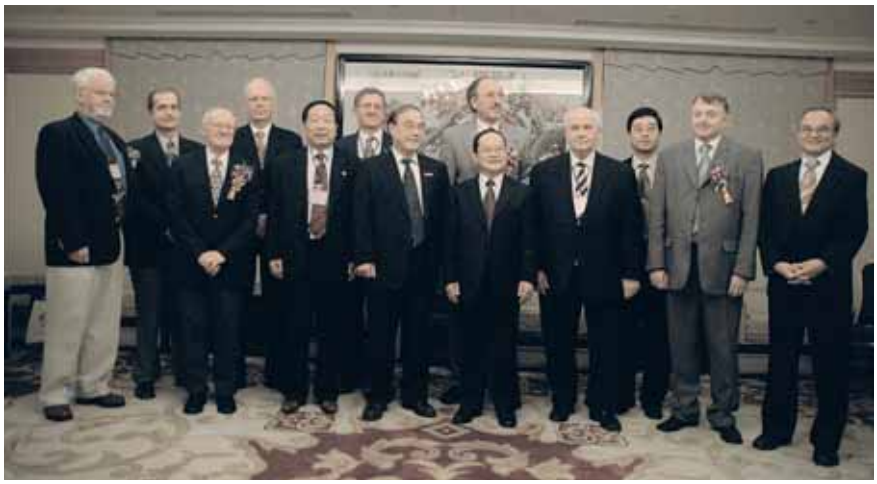
In October 2006, ITC participated in the 50th anniversary celebrations of Wuhan Technical University of Surveying and Mapping (WTUSM), which is now part of Wuhan University.

WTUSM is recognised as the founder of the surveying, mapping, photogrammetry and remote sensing discipline in China. ITC and WTUSM have a longstanding relationship, one that started 27 years ago. The celebrations were attended by some 4,000 guests and WTUSM alumni. The ITC group consisted of Rector Martien Molenaar, Professor John van Genderen, Dr Richard Sliuzas, Paul Schoonackers and Chang Zheng. To commemorate the event, the Wuhan University organised not only a series of workshops but also the 14th International Conference on Geoinformatics.

The 50th anniversary of WTUSM was also an excellent occasion for ITC staff to meet many ITC alumni in China and friends from all over the world.



Director-general of SBSM welcomes the honoured guests

The president of Wuhan University addressing the alumni on the 50th anniversary of WTUSM

NRSA Workshop: Modern Aspects of Remote Sensing and Geospatial Data Processing

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A two-day workshop under the title "Modern Aspects of Remote Sensing and Geospatial Data Processing" was organised at the National Remote Sensing Association (NRSA) in Hyderabad, India, on 24 and 25 November 2006. The key organisers were Professor A. Stein from ITC and Dr K.M.M. Rao from NRSA.

The workshop was chaired by Professor B.L. Deekshatulu and was attended by some 50 people, including Dr K. Rhadakrishnan, the director of NRSA. The workshop focused on the research field of spatial data mining - from database issues, through modern methodology, to relevant applica-

tions. It was the fourth scientific meeting to take place between staff of ITC and NRSA in the last two and a half years.

The presentations were limited in number and short in length so that crucial information could be exchanged. It was felt that exchanging scientific views and opinions through open and somewhat lengthy discussion was an important part of the workshop. This apparently worked out quite nicely, leading to a "dialogue" type of a workshop where different views were expressed. The programme was further structured so that, as far as possible, speakers on the same topic gave their presentations in succession. Although it was not possible to maintain this throughout, at times it stimulated very lively discussions. Discussion topics ranged from the applicability of the various methods and techniques to projects at NRSA, through data exchange issues, to outspoken intentions to collaborate further. The workshop finished with a two-hour tour through the facilities of NRSA. This showed the various ways in which modern Indian satellites are being used and applied for diverse tasks and topics. For example, important work is currently being done with sensors on board the Resourcesat-I and Cartosat satellites.

Apparently a regular schedule of initiatives has now taken effect. It is envisaged that this will lead to further staff exchange next year. The next meeting is scheduled for December 2007, this time at ITC.

Professor A. Stein (left) and
Dr K. Radhakrishnan during the workshop

Workshop programme:

Rolf A. de By:	A database view on geospatial imagery: requirements for data mining
Norman Kerle:	Social vulnerability assessment using satellite data: a case study for Tegucigalpa, Honduras
C. V. Rao:	Automatic image registration
Alfred Stein:	Developments in image mining for vague objects
Valentyn Tolpekin:	Super-resolution mapping from satellite images with Markov random field and simulated annealing
G. Varaprasad:	Development of super-resolution techniques from IRS images
Wim Bakker:	Hyperspectral split and merge
S. Subramaniam:	Automatic land use - land cover feature extraction
A. Senthil Kumar:	Development of analytic software tools for hyperspectral image analysis and processing
K. Vinod Kumar:	Initial results on hyperspectral data analysis for end-member separation for lithological discrimination
Martin Hale:	Mapping potential for gold in the Alpine-Himalayan belt
Mark H.P. Zuidgeeest:	Using remote sensing and GIS in ecological transport footprint analysis: some research ideas
P. Aravind Kumar:	Terrain visualisation for large areas

Proceedings of the workshop, containing the abstracts of all presentations, have been produced in both digital and printed form.

Innovative Approaches to Land Administration in Africa

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Conventional land registration and cadastre hardly seem to appeal when it comes to solving the land problems in Africa. The colonial heritage (in the form of individual property rights) is difficult to match with the traditional customary land rights, with chieftaincy and family authority.

Uncertain land tenure and fewer means of securing one's individual or common property are the widespread result in Africa. Unequal access to land constitutes another social time bomb and threat to societal solidarity that is not easily solved by land redistribution processes. The United Nations University requested the School for Land Administration Studies (an initiative of ITC and the Cadastre, Land Registry and Mapping Agency) to organise a meeting of high officials from various African countries (a meeting of decision makers) who are responsible for the development of national policies regarding the land issue (land policy, land management, land administration). The aim was to determine opinion within the governments as to how land policy should proceed and how this would impact on land administration. This might shed new

light on how land administration systems should be developed to better meet the demands. In turn this would have an effect on how capacity building could be arranged.

The meeting on 7 and 8 December 2006 at the Polytechnic of Namibia in Windhoek attracted about 25 high-level officials - ranging from director-generals of lands to land commissioners to members of supreme courts - from almost 20 African countries. After two days of presentations and discussions, the participants could make up their minds. First of all, it was concluded that all countries had similar political objectives, such as poverty eradication, social stability, economic growth, food security and environmental sustainability, and that the role of land in these objectives was paramount. All countries were attempting to define the role of land and to formulate government policy for dealing with this issue. Differences, of course, were observed in the vision, objectives and principles that constituted such policies, but in all cases the institutional aspects of pluriform land tenure arrangements, rules for access to land by women, foreigners, youth, bonafide and lawful occupants, and "strategic road maps" were addressed. Furthermore, at different levels attention was paid to ways of implementing such land policies. The participants concluded that setting up a legal framework was a prerequisite, and that many countries were struggling when it came to getting the right laws in place. In addition, it seemed difficult to appropriately allocate the tasks and mandates among public, private and customary parties. Creating efficient, low-cost and transparent land administration processes was still a challenge, while the application of subsidiarity principles (do a task at the government level where it is appropriate) differed from country to country.

The meeting attracted about 25 high-level officials from almost 20 African countries

The participants found that the design of a land policy was best facilitated through fully consultative processes, with attention given to donor coordination and risk assessments. The implementation of a land policy appeared to be particularly interesting. What kinds of instruments might allow the authorities to make the policy a reality? There are a few, such as measures to improve land tenure security, even in a pluriform legal environment; measures to regulate the land market; land use planning; development and control; land taxation; and measures for land reform. What emerged was that conflict resolution mechanisms are part of the solution, as evidence showed that without such mechanisms the whole judiciary system might become clogged up, causing enormous delays and backlogs.

It became clear that implementing these instruments depends on the existence of tools such as systems for land registration, cadastre, valuation and land use, where the maxim "as little as possible, as much as necessary" should be applied, always taking into account specific local situations. According to the audience, not only was capacity building an important issue when it came to making everything work, but also cost efficiency and the use of ICT. At the end of the meeting, the participants recommended that political objectives, policy, and policy instruments and tools be soundly related, in order to promote efficiency and effectiveness. It was recognised that land policy might be a single policy document, but also a set of documents over time; that an effective policy might be enhanced through participatory processes; and that implementation might profit from the principles of subsidiarity.

Africa has the ability to create new forms of land tenure, such as flexible tenure, certificates of occupancy, and village titles. This should continue, but it was also recommended that attention be paid to ensuring the better performance of land administration systems. With regard to ICT, the participants made it clear that it was probably necessary to use technology of the highest sophistication possible to achieve good performance at low cost. Finally, African high officials concerned with land apparently lack sufficient opportunity to meet regularly and coordinate land policy and land management in their continent. Maybe the UN could play a role? This was the final suggestion that wrapped up the meeting.

More information
School for Land Administration Studies
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www.itc.nl/unu/la/default.asp

International Conference on Space Technology and Geo-Informatics 2006

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In 2006, people all over the Thai Kingdom were extremely proud to be celebrating the 60th anniversary of the accession of His Majesty King Bhumibol Adulyadej (Rama IX) to the throne.

To commemorate this momentous occasion, in cooperation with the Royal Thai Survey Department, the Geo–Informatics and Space Technology Development Agency (GISTDA) organised the International Conference on Space Technology and Geo–Informatics 2006 in Pattaya from 5 to 8 November 2006. The main conference objective was to share knowledge and experience in space technology, with presentations and discussions concerning the field of geo-informatics technology applications and related technologies. There were 450 participants from many countries. ITC was represented by Rector Martien Molenaar, Eduard Westinga and Marjan Kreijns. Professor Molenaar was one of the key speakers on the opening day, with his presentation "Good governance requires good geo-information: geo-information and earth observation in a globalising world".

The conference provided a great opportunity to meet a large number of colleagues and friends from the geo-information sector. We were very proud to notice that our network of ITC alumni in Thailand is substantial and forms the core of the Thai remote sensing and GIS society. During the conference Professor Molenaar had fruitful discussions with many participants, including two distinguished ITC alumni: Dr Thongchai Charupat, executive director of GISTDA, and Lt Gen. Dr Vichit Satharanond, director of the Royal Thai Survey Department and chairman of the GISTDA Executive Board. Professor Molenaar also had the opportunity to explain ITC's work to His Excellency Professor Dr Yongyuth Yuthavong, the minister of science and technology.

The conference took place during the full moon in November, and at that time one of the most beautiful and popular festivals, Loy Krathong, is celebrated all over Thailand. During the first evening of the conference the participants went to the beach to float their *krathongs* (see photograph). By the end of the evening, there were hundreds of flickering lights bobbing up and down on the water and balloons with candles were flying in the air. It was a spectacular and memorable evening.

For more information and to download Professor Molenaar's presentation and other conference papers, please visit: http://spacegeo.gistda.or.th/

Professor Molenaar and Marjan Kreijns with two ITC alumni who work at Royal Thai Survey Department

Professor Molenaar having an informal talk with the minister of science and technology of Thailand (in the middle Lt Gen. Vichit)

Visiting the exhibition

ITC alumnus Chatchai showing his krathong to Marjan Kreijns and Eduard Westinga

Education Fairs in Thailand and Vietnam

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HEF Vietnam
18-26 September 2006
Hanoi, Danang, Ho Chi Minh City, Can Tho

A group of 15 Dutch higher education institutes, including ITC, participated in the Holland Education Fairs 2006 Vietnam.
The event was organised by NESO Vietnam (Netherlands Education Support Office) and received financial support from EVD, the Ministry of Economic Affairs' Agency for International Business and Cooperation.
From 18 to 26 September, fairs, seminars, matchmaking events and agent meetings were organised in four cities in Vietnam. The ITC booth at the fairs was staffed by Ms Marjan Kreijns and several highly enthusiastic ITC alumni. The range of events was well organised by Mr Boris Dongelmans (director NESO Vietnam) and his team, and the fairs in the four main cities of Vietnam attracted more than 2,300 visitors.

Receptions were hosted in Hanoi and Ho Chi Minh City by the Dutch embassy and the Dutch consulate, respectively, under the slogan "Holland welcomes its alumni". The Netherlands Alumni Network in Vietnam (NANV) was officially established during these events. If you would like to become a member, please contact NESO Vietnam (Ms Thuy Chi: e-mail: chi.b@nesovietnam.com).

Participants at the HEF Vietnam


Dutch Consul-General Ton van Zeeland visiting the ITC booth in Ho Chi Minh City


Dutch Ambassador Andre Haspels visiting the ITC booth in Hanoi


ITC alumni at the reception at the Dutch consulate in Ho Chi Minh City. Ms Le Thi Dinh, who graduated from ITC in 1973, was one of the first Vietnamese graduates


ITC alumni at the reception in Hanoi

EHEF Bangkok,
11-12 November 2006

The European Higher Education Fair (EHEF) took place at the Queen Sirikit Exhibition Center in Bangkok on 11 and 12 November 2006. Higher education institutions from all 25 EU member states were invited to exhibit at the fair. ITC alumni Mrs Parida Kuneepong and Mr Chatchai Chinavornsiriwattana and ITC representative Marjan Kreijns staffed the ITC booth. They received visits from many interested students looking for further studies, and had discussions with their parents about living and studying in Enschede. The assistance of the ITC alumni was very important

in promoting the Institute. Minister Khunying Dhipavadee Meksawan (minister attached to the Prime Minister's Office), accompanied by Dutch Ambassador Pieter Marres, showed great interest in ITC's work and courses (see photographs).

A reception was hosted by the Dutch ambassador for the Dutch participating universities and higher education institutes and all their alumni.

Mrs Parida Kuneepong in the ITC booth at EHEF Bangkok

"Dutch" girls offering stroopwafels at the fair

Minister and ambassador visiting the ITC booth at EHEF Bangkok

Dutch Ambassador Pieter Marres welcoming alumni and representatives of the Dutch higher education institutes

announcements

AARSE-ESA Award for Best Paper Presentation for Ben Maathuis and Bas Retsios

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Dr Ben Maathuis and Ir Bas Retsios received the AARSE-ESA Award for their paper entitled "Installation, setup and use of a low cost C-band Meteosat-8 ground receiving station in Rwanda".

The paper was co-authored by Florent Lasry and Michelle Schilling of the Geographic Information Systems & Remote Sensing Research and Training Centre (CGIS-NUR) at the National University of Rwanda.

Ben presented the paper at the 6th African Association of Remote Sensing of the Environment (AARSE), which was held in Cairo, Egypt, from 30 October to 2 November 2006.

See also: http://www.cgisnur.org/article.php3?id_article=19

AARSE Award of Merit for ITC

During the same conference ITC received the AARSE Award of Merit for *"The unflinching support of ITC for capacity building in geo-information science and earth observation in Africa"*.

The award was presented to ITC's Director of External Affairs Sjaak Beerens by Professor Ayman El-Dessouki, chairman of the Egyptian National Authority for Remote Sensing and Space Sciences.

PGM Department Full Member of AESOP

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The Association of European Schools of Planning (AESOP) is a network of universities and university departments that teach and conduct research within the field of urban and regional planning.

The network exists to promote the development of teaching curricula and research within the member schools through regular dialogue, exchange visits, and the dissemination of research and best practice. These aims are achieved through an annual congress where staff and students not only give presentations and discuss papers on European, national, regional and local spatial planning issues, but also debate planning curricula. A three-day PhD workshop precedes the congress.

All the prominent planning schools in Europe are members, and more and more schools and individuals in the world of planning are deciding to join. Also wishing to associate themselves with AESOP's aims and activities are a number of enlightened organisations concerned with planning aspects in the fields of government, property and development. AESOP has over 175 members, including 100 full members and 40 associate members.

The ITC department Urban and Regional Planning and Geo-Information Management (PGM) has recently been admitted to full membership. "For ITC this membership constitutes an excellent instrument for further networking with other schools of planning in Europe," says Chris Paresi, PGM chairman and ITC contact person for AESOP.

For more information about the Association of European Schools of Planning (AESOP), see http://www.aesop-planning.com/

ITC Selected as Host Institution for World Bank Scholarship Programme

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For nearly 20 years, the Joint Japan/World Bank Scholarship Programme (JJ/WBGSP) has provided learning opportunities for Master's degree studies to mid-career professionals from developing countries. As of 2007, the programme will have a new structure, with a predetermined list of cooperation universities.

ITC is very honoured to be one of the (about 50) host institutions selected across the world. The programme and ITC will engage in a cost-sharing arrangement to make optimal participation possible.

More information on the Japan–World Bank Programme is available at: www.worldbank.org/wbi/scholarships.
The deadline for applications is 31 March.

Obituary

Professor Ir Soekiman Atmosoedarjo

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Professor Ir Soekiman Atmosoedarjo, Honorary Fellow of ITC, passed away on 27 November 2006 at the age of 83. Professor Soekiman was appointed Honorary Fellow of ITC on 17 December 1976, on the occasion of ITC's 25th anniversary, in recognition of his contribution to the collaboration between Indonesia and ITC.

He was one of the first two professionals from Indonesia to be trained at ITC, starting in 1952 with a one-year course in aerial photo interpretation with a fellowship from the Food and Agriculture Organization of the United Nations (FAO).

In a personally written note that he prepared at my request during a visit to his residence in Jakarta in February 2006, he referred to his experiences in those early days as follows (translated from Indonesian):

"*We left Indonesia for the Netherlands (city of Delft), where ITC education was still being conducted in accommodation facilities provided by others, pending a decision by the Dutch government as to where a new building for ITC would be built. The course was managed by Professor W. Schermerhorn, assisted by Drs De Haas and a range of lecturers on forestry (Ir D.A. Boon), soils and cartography. Course participants came from Indonesia, Thailand and Malaysia, among other countries.*"

On completing his training at ITC, Ir Soekiman returned to Indonesia to take up his duties with the Indonesian Forestry Service. At the request of the FAO, he later shared his knowledge and skills in aerial photo interpretation by supporting the FAO in organising training courses in various countries in Asia.

Throughout his career, Professor Soekiman maintained contact with his *alma mater*, visiting ITC whenever an opportunity linked to his regular international travel presented itself. His last visit to ITC was on 28 April 2003, when he paid a surprise visit to his *alma mater*. Accompanied by his wife, Professor Soekiman had a look round the ITC building, checking his stereoscopic vision and talking to several Indonesian students - spanning an age difference of some 50 years (*ITC News 2003-2*).

Professor Ir Soekiman Atmosoedarjo

With the passing of Professor Ir Soekiman Atmosoedaryo, Indonesia has lost a great supporter of forest protection and conservation, his wife and children have lost a devoted husband and father, and ITC has lost a truly loyal alumnus and honorary fellow. May his soul rest in peace!

On 28 April 2003 Professor Soekiman paid a surprise visit to his alma mater. While looking around the ITC building, he checked his stereoscopic vision

visits

Rector Visits Heilongjiang Bureau of Surveying and Mapping

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Professor Martien Molenaar, rector of ITC, and Mr Chang Zheng, ITC representative for China, visited the Heilongjiang Bureau of Surveying and Mapping on the 2 and 3 November 2006.

The visit to the Bureau was to explore the opportunities for cooperation in education, scientific research, and project management between the two parties. In the morning of 2 November, the delegation visited Heilongjiang Geomatics Industrial Park and the National Digital Surveying and Mapping Production Base. They looked at the infrastructure, living environment, management level and development potential of the Bureau, and considered the Geomatics Industrial Park to be an organisation with great attractions. Professor Molenaar hoped that there would be more chances to cooperate with the Park.

Mr Li Zhigang, director of Heilongjiang Bureau of Surveying and Mapping, met the delegation in the afternoon, and they exchanged ideas on extending cooperation fields, and developing directions in the geomatics industry and in surveying and mapping enterprises. Professor Molenaar suggested that both parties should arrange for two or three coordinators to discuss potential cooperation.

Dr Miao Qianjun, deputy director of Heilongjiang Bureau of Surveying and Mapping, had detailed discussions with Professor Molenaar. They not only reviewed the situation regarding the implementation of cooperation projects right from their inception, but also talked about extending the fields of joint courses, strengthening scientific and technical exchange, implementing science and technology and project cooperation, and constructing a key laboratory. Professor Molenaar proposed that the cooperation should start from degree education and short course training in surveying and mapping and the natural resources management field, and then go deeply into academic exchange, science and technology cooperation in surveying and mapping sciences, remote sensing application, natural resources management, urban planning management and other professional fields.

A friendly talk between Director Li Zhigang and Professor Martien Molenaar

Director Li Zhigang presenting a souvenir to Professor Molenaar

Visit to Heilongjiang Geomatics Industrial Park

Visit to the National Digital Surveying and Mapping Production Base

life after itc

Refresher Course: Novel Approaches in Earth Observation and Geo-information Science for Earth Scientists, SEAMIC, Tanzania

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The refresher course Novel Approaches in Earth Observation and Geo-information Science for Earth Scientists was held from 9 to 20 October at the Southern and Eastern African Mineral Center (SEAMIC) in Dar es Salaam, Tanzania.
It was the second refresher course in a series of three offered on the African continent that centred on state-of-the-art geological remote sensing, geoscience database management and spatial data integration approaches. The first course was offered in 2004 at Wits University, Johannesburg, South Africa, and the third was offered in November 2006 in Cairo, Egypt. The aim of these refresher courses is to combine specialist knowledge on economic and environmental geology, geophysics and geochemistry with the latest insights in the fields of geo-information management and earth observation. The courses have been developed for earth scientists (geologists, geochemists, geophysicists) engaged in exploration, environmental geology or reconnaissance mapping who are employed in geological survey departments and earth science organisations in the academic or private sector. The second refresher course offered at SEAMIC focused on a spatial data integration approach that integrates hyperspectral remote sensing with mobile GIS, digital field data capture and geoscience database management. Among the ITC lecturers were Professor Freek van der Meer, Dr Ernst Schetselaar and Drs Frank van Ruitenbeek.

Course participants and lecturers at the entrance of the SEAMIC building


Course participants practising digital field data capture at a limestone/clay quarry in the Dar es Salaam coastal area


Dr Mtakiewa Medadi of the Department of Geology, Faculty of Science, Dar es Salaam University, lecturing on karst features in the Quaternary limestone of the Dar es Salaam coastal region


Closing ceremony chaired by Dr Katema Kadesse, director-general of SEAMIC, the Hon. Bernard Kamilius Membe, deputy minister of energy and minerals of Tanzania, and Drs Frank van Ruitenbeek

Twenty-two ITC alumni from Ethiopia, Sudan, Uganda, Kenya, Tanzania, Zimbabwe, Mozambique, Botswana and Namibia participated in a two-week programme consisting of lectures, practicals, workshops, and a one-day field excursion that introduced the participants to the Quaternary geology of the Kundichi beach area. The excursion was conducted by Dr Mtakiewa Medadi of Dar es Salaam University.

During the first part of the programme, the course participants were introduced to the theory and practice of using hyperspectral remote sensing and ASTER data for reconnaissance geological mapping of greenstone belts in the Victoria lake area and mineral mapping of hydrothermal alteration zones.

During the second part of the programme, the course participants learned how to organise and implement field validation of follow-up targets obtained from the interpretation of remotely sensed data. Hands-on instructions were provided when the participants interpreted a multiple-source remotely sensed dataset of the Dar es Salaam area loaded in ITC-GANFELD, a scripted customisation of ESRI's mobile GIS software Arcpad™. This mobile GIS application has been developed under ITC's test bed geospatial data infrastructure (TGDI) research project in cooperation with

the Geological Survey of Canada. It provides a discipline-independent mobile data acquisition tool that can be tailored to many geoscience disciplines, including those represented by ITC's application departments. Participants learned how to organise fieldwork for their own projects by compiling hierarchical class dictionaries and their attribute descriptions to support classification of point, line and polygon features that were outlined on the basis of image analysis. The spatial data were transferred to PDA computers for field data acquisition during the fieldwork exercise, and subsequently integrated in the GIS office environment at SEAMIC to integrate the newly acquired field data with the remotely sensed dataset and the derived interpretations. Hence, the participants were exposed to a complete digital workflow - from image analysis and interpretation, to field validation, and finally to data revision and integration.

During the third part of the course, the participants were introduced to state-of-the-art hyperspectral processing techniques, building on the first introductory part. Students learned how to extract information on hydroxyl-bearing mineral groups from hyperspectral Hymap and Hyperion cubes, including spectral angle mapping and linear unmixing. This part also included a participant workshop, during which ITC alumni gave presentations on their organisation, their work field, specific projects conducted, and the problems that arise in these projects. The sharing of experiences with other participants and lecturers resulted in a dialogue that enabled a better focus of course deliverables on participant needs.

The refresher course was officially closed by the deputy minister of energy and minerals of Tanzania and the director-general of SEAMIC. During the ceremony, course certificates were handed out to the course participants.

Refresher Course: Earth Observation and Dynamic GIS Modelling of the Earth Surface for Environmental Management and Forest Conservation Aimed at the Latin America Region

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From 6 to 19 November 2006, the NUFFIC-funded refresher course Earth Observation and Dynamic GIS Modelling of the Earth Surface for Environmental Management and Forest Conservation Aimed at the Latin America Region was held on the campus of the Universidade Federal de Lavras (UFLA, Department of Forestry, Lavras, Minais Gerais, Brazil).

This two-week course was the follow-up to a refresher course held at ILRI in Nairobi (Kenya) in 2005. Aspects of nature conservation, forestry, earth sciences, remote sensing and geo-information science were covered in the 2006 course. The course was organised by Professor Steven de Jong of the University of Utrecht, together with Dr Luis de Carvalho of UFLA. ITC professors Victor Jetten and Freek van der Meer of the Department of Earth Systems Analysis contributed to the course. In total 20 NFP alumni from ITC and IHE from Brazil, Columbia, Bolivia, Peru and Cuba participated, as well as six UFLA staff.

The first part of the course was devoted to applied earth observation with an emphasis on hyperspectral remote sensing. Applications of earth observation were oriented towards vegetation, crop, soil and mineral

Group photo in front of the computer building of the Department of Forestry on the UFLA campus

mapping and monitoring. Participants were introduced to methods of classifying crops, vegetation, soils and rocks, as well as to methods of determining their properties on the basis of remote sensing imagery. In the second half of the first week, emphasis was put on methods using both spectral and spatial information for object classification and object properties extraction. These methods included the rotating template matching (RTM), wavelet analysis and data fusion techniques.

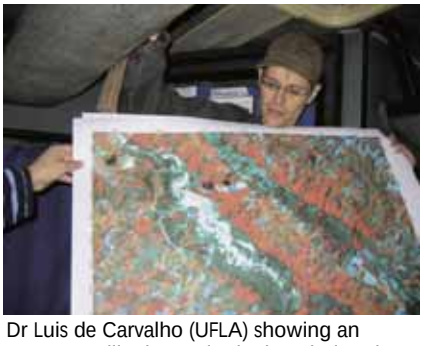
On Saturday, the quartzite outcrops and open mining areas of quartzite near the village of São Tomé das Letras were visited. This area is located approximately 70 km west of Lavras. The open-pit mines of quartzite and the outcrops show up as very bright areas in the satellite images. The soils developing in these formations do not support the natural vegetation very well, resulting in open and exposed areas of bare rock. The weathering processes of the quartzite rock formations and the colouring of the quartzite into red, brownish and yellow colours owing to the presence of iron and/or manganese were studied in the quarries. The excursion on Sunday took the group to an area east of Lavras, near the city of Tiradentes. Around Tiradentes, soil erosion occurs because of the removal of the natural vegetation cover of Cerrada and open forests, and because of overgrazing. The group visited a number of badland areas and gully complexes, investigated the soil profiles and soil surfaces, and looked at the devastating consequences of soil erosion processes.

On Monday of the second week, the group visited the Instituto Nacional de Pesquisas Espacias (INPE), the Brazilian aerospace establishment based in São José dos Campos. Participants were welcomed at INPE by Dr Flavio J. Ponzoni. Dr Ponzoni gave an overview of INPE's activities and explained the importance of quantitative methods in remote sensing. After his presentation, the INPE laboratory facilities were visited, where Dr Ponzoni showed how the portable field spectrometers are used in the laboratory and in the field to collect accurate spectra of objects.

The remainder of the second week of the course was devoted to land degradation processes, to spatio-dynamic modelling of these unfavourable land degradation processes, and to explaining how remote sensing can be used to monitor these processes and collect input data for the simulation models. The lectures started by providing an overview of land degradation processes such as soil erosion, flooding, mass movements and salinisation, and their most important causes. Next, the basic concepts of environmental modelling using a spatio-dynamic geographical information system were presented. Hands-on exercises familiarised the course participants with the software and with the concepts of environmental modelling. On Wednesday the theory and concepts behind the soil erosion process were explained. Next, the participants built their own spatio-dynamic erosion model in PCRaster software. They worked out a number of computer simulation scenarios, investigating the effects of soil steepness, deforestation and land management measures on the total erosion. On Thursday Dr Joao Marques gave the course participants a tour of the UFLA campus.

QuickBird satellite image of the UFLA campus in Lavras projected in true visible colours (circled: the computer room of the Department of Forestry, where the course took place)

Professor Steven de Jong (University of Utrecht) explaining about badlands during the field excursion



Dr Luis de Carvalho (UFLA) showing an ASTER satellite image in the bus during the field excursion

On the final day, a so-called participant workshop was organised, during which course attendees gave presentations on projects related to their work and the use of earth observation and geo-information sciences. The workshop presentations comprised the following:

- E.G. Couto: Spatial variability of soil physical attributes used for soil mapping in the southern Amazon
- M.A. Torrico: Natural hazards and risk analysis for the Cochabamba project
- H. Palacios: Research in remote sensing applications in the Pontifical Catholic University of Lima
- R. Vargas Rojas: Somalia Land and Water Information System
- H. Juarez: Adding value to biodiversity and GIS in urban and periurban areas of Lima
- J.C. Ledezma: Modelling conservation status in Bolivia
- M. Flores: Land use planning in Bolivia using GIS
- S. Beskow (UFLA): Applications of PCRaster in soil erosion modelling in Minas Gerais.

Overall, the participants gained insight into the scientific and methodological advances made in earth observation and into spatial dynamic modelling with GIS. The hands-on exercises also provided them with personal experience of working with these types of data. Furthermore, a fruitful basis for future cooperation between the Latin American participants has been created. We are grateful to NUFFIC for providing the possibility for this refresher course.

If you are interested in organising a similar course at your institute in the near future, please do not hesitate to contact any of the organisers listed below:

- Professor Freek van der Meer (ITC, vdmeer@itc.nl)
- Professor Victor Jetten (ITC, jetten@itc.nl)
- Professor Steven M. de Jong (University of Utrecht, s.dejong@geo.uu.nl)
- Dr Luis de Carvalho (UFLA, passarinho@ufla.br)
- Fausto Weimar Acerbi MSc (UFLA, fausto.acerbi@wur.nl)

ITC Alumni in Thailand

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In 2006 ITC opened an office in Bangkok, Thailand. Working from here, ITC will strengthen and establish contacts and collaboration with organisations in Southeast Asia. The ITC alumni community in Thailand is a large and valuable network. In our experience, ITC alumni are among our best ambassadors, and alumni are often our future partners. That's why we promote active networking with and between our alumni. In 2006 several alumni events were organised in Thailand.

In August 2006, Director External Affairs Sjaak Beerens visited Bangkok to give a keynote speech at the Map Asia Conference. On 28 August, an alumni dinner was hosted at the residence of ITC's representative in Thailand, Ms Marjan Kreijns. During a very pleasant evening, it was decided that the ITC alumni would like to set up their own organisation in Thailand.

In September/October 2006, a small group investigated the possibilities and had discussions with the Dutch embassy in Bangkok and the Netherlands Alumni Association of Thailand (NAAT). It was decided not to form a separate association but to become a chapter of NAAT. The first step was to update the ITC alumni database. Although we knew that the Thai alumni community was large, we had lost contact with many former students. Some months of hard work under the guidance of Ms Parida Kuneepong improved the alumni database significantly, but constant effort is still required to keep the database up to date.

In November 2006, Professor Martien Molenaar, rector of ITC, visited Thailand and was invited by the Dutch embassy and NAAT to give a guest lecture for alumni.
On 6 November, Mr Pieter Marres, the Dutch ambassador, presided over the inauguration of the ITC alumni chapter of NAAT and a dinner to celebrate the establishment of ITC-NAAT. A large number of alumni attended the guest lecture and dinner and they were pleased to have the opportunity to visit the beautiful new chancellery of the embassy.

Besides being a social and professional network, ITC-NAAT is also going to carry out some voluntary

Thai alumni at the August reception

Signing the MoU to make ITC-NAAT a chapter of NAAT, with Mr Pieter Marres as witness

work for the rural communities in Thailand. One of first activities is to assist schoolteachers to incorporate basic geo-information knowledge into their school curriculum. Alumni are spread all over the country and can assist the schoolteachers in their own region. At this moment lecture material is under preparation and the first group of teachers is being trained in Prachuab Khiri Khan, the hometown of the ITC-NAAT chairman, Mr Thiva Supajanya. ITC was very pleased to hear that its alumni are initiating such projects, and offered support in this endeavour. One staff member, Eduard Westinga, has come to Thailand to assist in preparing the material and attend the first training workshop. In addition to this work, a joint (ITC-NAAT and ITC) research project on flooding in Thailand is under consideration.

The ITC-NAAT chairman, Mr Thiva Supajanya, is a very well-known and highly distinguished professional in Thailand. He has been working at Chulalongkorm University, and was a senator until the recent political unrest in Thailand. Mr Thiva stressed that, thanks to his education at ITC, he had been able build a very special career - not only because of the knowledge he had gained at ITC, but also because ITC had made him think in a different way. As Mr Thiva put it: "ITC taught me how to think."

Ms Parida Kuneepong has been appointed secretary. She used to work at the Land Development Department (LDD) of Thailand and, although she has now officially retired, she is still very active as adviser to LDD. Full of energy and ambition, she accepted the position of ITC-NAAT secretary and is taking the task of making the chapter a success very seriously. Like Mr Thiva, she has always stayed in close contact with ITC since her graduation. She has visited ITC on a very regular basis, was the initiator of projects between ITC and LDD, and is now very happy to be part of ITC-NAAT.

Please contact Ms Parida Kuneepong for more information on ITC-NAAT, and contact ITC's representative in Thailand with any questions or requests about studying at ITC, project work and developing joint research - or just to get in touch with ITC.

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Toasting the establishment of ITC-NAAT

Dr Pisit Leeahtam (NAAT president) and Mr Thiva Supajanya (ITC-NAAT chairman)

Mr Chatchai, Dr Pisit Leeahtam, Mr Thiva Supajanya and Mrs Parida (ITC-NAAT secretary) at the embassy reception

Dr Pisit Leeahtam and Mr Thiva Supajanya shaking hands with Professor Molenaar

Professor Molenaar presenting a gift to the ambassador, Mr Pieter Marres