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2008 number 3

introduction

September is a significant month in the ITC calendar: it marks the opening of the academic year, a time when the Institute sees many new students from all over the world passing through its portals. The official opening ceremony (see page 2) also gave Professor Martien Molenaar, as master of ceremonies, the opportunity to welcome many distinguished guests to the city of Enschede, in particular Dr Gilberto Câmaro, whose name now appears on the impressive roll of ITC Fellows and who delivered this year's Schermerhorn Lecture, tackling the issue of deforestation in Amazonia. Dr Anne Flierman, chairman of the Executive Board of the University of Twente, was also among the afternoon's speakers, and there was no lack of audience attention as he outlined the progress made in the move towards full ITC integration in January 2010, incidentally the year of the Institute's 60th anniversary. Sixty years old - a venerable age but no question of resting on laurels: there's ground-breaking history to be made!

From deforestation in Amazonia to tree planting in Twente, this issue of *ITC News* brings you details of some interesting research into compensation for the CO_2 emitted by ITC activities (page 15). The results may surprise you. And still on the subject of combating emissions (unless you include the blood, toil, tears and sweat of the academics involved in the social event), page 18 reports on the first CAN scientific workshop on cycling-inclusive planning.

Unfortunately, page 25 strikes a sombre note, bringing you the sad news of the death of Professor Hans Jerie. He will be remembered with great affection, not only for his energy and enthusiasm in the field of photogrammetry but also for his integrity and fine qualities as a teacher and a man.

We opened by referring to the arrival of many new students. The day will come when they too will graduate and join ITC's worldwide network of alumni, so let's close by directing their (and your) attention to such pages as 29, 30 and 31, which show that worldwide ITC alumni are extremely active in making their presence felt. In fact, you may recognise the names of a number of former fellow students as you read this issue. And who knows, perhaps you even sampled traditional Dutch fare (with potatoes, of course) together in the ITC restaurant.

Hoping you will find plenty to catch your eye on the following pages,

Janneke Kalf
Managing Editor

colofon

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Opening Academic Year 2008-2009

ITC News itcnews@itc.nl

Deforestation: an event or a process? No need to ponder too long on this question as the Schermerhorn Lecture will reveal all, but it does prompt another thought. The Opening of the Academic Year: an event or a process?

An event, no doubt about it, but if we were to trace the history of this event over the years, with particular attention to the subjects selected by the distinguished guest lecturers, we may well be able to identify a process that mirrors the changing interests and priorities in the world about us.

Be that as it may, the colourful Opening of the Academic Year 2008-2009 held on Thursday, 25 September, marked yet another step in the history of ITC. It also marked a return to the Grote Kerk in the old market square, which was shown off to advantage by the bright autumn sunshine. Surely those terrible tales of the Dutch climate that seem to circulate among students from abroad are nothing but a myth? The guests, students and staff took their places to the music played once again by Gijs van Schoonhoven on the mighty organ of 1892.

Addressing the audience from the podium, Rector Martien Molenaar welcomed the members of the ITC Board of Supervisors; Dr Anne Flierman, president of the University of Twente; their excellencies the ambassadors of Rwanda and Kenya; Mr Jelmer van der Zee of the municipal government of Enschede; the participants of the International Executive Seminar on Earth Observation for Improving Water Management in Africa; and Mr Laarakker of the Netherlands Cadastre. Naturally, an especially warm welcome went to Dr Gilberto Câmara, who was to deliver the Schermerhorn Lecture that afternoon, and to the 250 new students who had arrived just that week from nearly 60 countries. "They join the more than 200 students who came last year and earlier this year, as well as the 120 PhD students engaged on research for their doctor's degree."

In his opening speech, Professor Molenaar charted some of the changes that had come thick and fast over the last two or three decades, changes affecting both society and the professional community of which ITC is part - moreover, changes that demanded an intrepid response. Dr Flierman also took up this theme, as he related the progress made concerning the coming integration of ITC into the University of Twente. Next it was the turn of Mr Marco Rusmini, general secretary of the Student Association Board, to take the stand. As he warmly welcomed his new student colleagues, the nervous ones among them could take heart from his words and reflect on what a difference a year makes. It was then the pleasant duty of Professor Molenaar to present two awards: first the ITC MSc Award for best MSc thesis and then the ITC Research Award for the best scientific paper by a PhD student.

Now came the time to enjoy a brief interlude amid the business of the day and appreciate the place of the Arts in this technological age. Gijs van Schoonhoven forsook his seat at the organ in favour of one at the piano to accompany his son Frans (on violin) in a rendition of *Hejre Kati* by Jenö Hubay (1858-1937). A strategically placed screen and the zoom functionality allowed the intricate fingerwork to be admired, and this fluent performance charming ear and eye was duly rewarded with a well-deserved round of applause.

Running a finger down the programme showed the next item to be the official installation of Dr Gilberto Câmara as Fellow of ITC. No routine occurrence this, so the new Fellow is assured of being in illustrious company. But after the congratulations and the applause had died away, it was down to work as it was Dr Câmara's happy task to

Opening Speech
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deliver the first lecture of the new academic year: the Schermerhorn Lecture.

Opening Speech

Rector Martien Molenaar

Rapid change characterises the times we live in and Professor Molenaar opened by charting its effects both in the world about us and in the world of science. "Only 20 years ago, we witnessed the collapse of the communist societies in Eastern Europe, and today we are seeing the signals of the collapse of the fundamentalist free-market thinking - or maybe the end of the absolute freedom of greed. The rapid changes experienced in society at large are also being experienced in the narrower context of our professional community." He explained that, when he had graduated from university with a degree in geodesy 36 years ago, photogrammetric instruments, although requiring an immense investment, were expected to operate for at least 25 to 30 years; primary and secondary triangulations of a small country such as the Netherlands would take several years, with the maintenance of such networks being a 10-year programme; and the lifetime of data was 15 years or more (even 50 years was quite normal). Indeed, the basic concepts and methods of geodesy and surveying had hardly changed over the past century. But computers had just made their entry into the arena. What would they mean for the profession? Well, as it turned out, quite a lot - along with the spiralling technologies they unleashed.

"Through the rapid development of ICT," said Professor Molenaar, "the emphasis in our field has shifted from data capture to data management. The technical lifetime of equipment has been reduced to about three years, and technical innovations force us to renew software every five to seven years and the underlying theoretical concepts every eight to 12 years. With the development of technology, there are new opportunities for the development of new geo-information products and services." Consequently, old professions and disciplines are fading, new ones are being born, and those in the technical domain are changing radically over the course of a mere 15 years.

Rector Martien Molenaar

Many more developments are also having a major impact within the scientific domain of the Institute. In specific, Professor Molenaar mentioned the development of the Web and internet over the past decade, which had stimulated new concepts of data access and dissemination. Furthermore, old distribution systems and traditional organisations for map provision were being supplanted by new spatial data infrastructures, while map production lines formerly managed by organisations once pillars of the mapping profession have now been replaced by decentralised global product and service supply chains. "Presently, we are seeing the development of sensor webs that continuously monitor and measure our living environment. Will we still need maps of our living environment if we can permanently observe it?"

The proliferation of new tools has helped to create the present sense of emergency concerning climate change and its possible effects, with the importance of earth observation being expressed in the declaration issued by the leaders of the Kokkaido Toyako Summit. "Equally interesting," continued Professor Molenaar, "is the fact that there is a direct link to the need for capacity building. ITC has been active in this field for almost 60 years and, in our experience, despite the numbers of scientists and professionals we have trained or educated, there has always been a growing need for more." And the current demand for education and re-education, training and retraining, in geo-information and earth observa-

Words of Welcome UT

Opening Academic Year 2008-2009

tion is escalating, as rapidly developing technology leads to twists and turns over the career span of technical professionals in this highly innovative sector.

Summing up, Professor Molenaar said that these considerations showed that there would be a substantial and sustainable market for ITC education and training services for a long time to come. In addition, "the development of our academic domain requires the intimate connection of our own disciplines with other disciplines available at universities" and therefore, alongside the continuing and intensive cooperation with the universities of Delft, Utrecht and Wageningen and many abroad, it is increasingly urgent for the Institute to become a full member of the university community. He said that good progress was being made concerning the integration of ITC into the University of Twente, and this would be realised, as planned, by January 2010, the year that ITC will celebrate its 60th anniversary. "In fact, the newly arrived students who will join our MSc programme, as well as the many new PhD students, come here today as students of ITC but will leave as graduates of the University of Twente. I would like once more to welcome our new students and wish them good luck with their studies here at ITC."

Hokkaido Toyako Summit Declaration: Paragraph 31

To respond to the growing demand for earth observation data, we will accelerate efforts within the Global Earth Observation System of Systems (GEOSS), which builds on the work of UN specialized agencies and programs, in priority areas, inter alia, climate change and water resources management, by strengthening observation, prediction and data sharing. We also support capacity building for developing countries in earth observation and promote interoperability and linkage with other partners.

Dr Anne Flierman,

Chairman Executive Board University of Twente

After thanking Professor Molenaar for the opportunity to speak on this occasion, Dr Flierman felt it appropriate to say a few words on the process of integrating ITC into the University of Twente - a process that has been going on for more than a year now, a process that is going well. "We are currently working on many practical issues, and we hope that during the first half of 2009 we will be able to submit our final agreement to the boards of ITC and the University for approval, and then initiate the process of implementation in the second half of the year. In this way, by January 2010 everything will be settled and we can start the new year with the fresh situation."

In the meantime, the university has been discussing its future strategy, and Dr Flierman considered this to be a good time to share some of the strategic thinking with his audience - "on the one hand, because it's important for you to know what's going on at the University, on the other, because an Institute like ITC fits very well into that strategy. Let me explain. As Board of the University, we have realised over the last two or three years that the world around us is changing rapidly. This is nothing new, of course, but it means that we have had to formulate an answer to changing conditions in terms of funding from government, in terms of being attractive to students and staff, and in terms of our international position. This led to a debate about where we as a university should

Dr Anne Flierman

Student Association Board

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stand in 2014, and even in 2020, and the road we should travel to achieve our objectives." Reiterating his opinion that ITC fitted wonderfully well into this perspective, Dr Flierman said that, whereas formerly we talked of technology and social sciences as two components, "in future we will talk about only one university of technology, meaning that we put technology in a central place in the university - but always technology in context. We are well aware that technology in itself has no meaning. Technology becomes meaningful when it is applied in society, in businesses, and by people. And this leads to the notion of a modern university of technology, a university where the social sciences are just as important as mathematics and mechanical engineering."

So what will this new profile mean for research and education? With regard to research, "it means that we have to be excellent in a number of disciplines and technologies - and of course we are very happy that the three major converging technologies of the 21st century, biotechnology, nanotechnology, and information and communication technology, are well-established disciplines within our University. However, from these disciplines you will work in multidisciplinary mode, cooperating across the borders of your institutions to look at applications too. That's where social sciences comes into the picture. If we talk about health, it's a matter not only of technology but also of application for the benefit of people. Water purification, river management, coastal area development, disaster management, all these disciplinary components are present within the University and ITC and will enable us to help government to formulate answers to actual development and social problems."

It is this profile that will give the new-style University of Twente including ITC a foremost position in the Netherlands, in Europe and in the world. Cooperation between the two parties is already well underway in a number of fields: water, management, geoinformation, the development of sensor networks, land management and disaster management - all fields where the education and research of the University and the Institute converge.

Turning specifically to education, Dr Flierman said, "We have the same profile; we want to train and educate people not only in the knowledge of technology but also in the application of technology in society. This means that we as a university will develop a graduate school (in a sense ITC is already working as a graduate school), as well as a school of social sciences, a school of engineering, and a number of undergraduate programmes. It is our hope that we can combine ITC activities and UT know-how in developing several new graduate and undergraduate programmes for students from the Netherlands and Europe and from more distant parts of the globe." So while the practical work underpinning the integration goes on behind the scenes, dealing not only with issues of research and educational content but also with those essential components of personnel, finance and organisation, the prospects for the future look decidedly interesting, not to say exciting.

Finally, drawing to a close, Dr Flierman took the opportunity to wish "a very successful year" first to the students, who had come from all over the world and would enrich both Enschede and the University of Twente by creating the desired international climate, and then to the staff of ITC in preparing for this integration and working on issues that are so important for present-day society here in Europe and worldwide.

Student Association Board

Speaking on behalf of the Student Association Board, General Secretary Mr Marco Rusmini said that this occasion gave him the opportunity to express his gratitude to the ITC community and, at the same time, welcome its newest members. "As students, we have the honour to be part of an internationally recognised centre of excellence in scientific education. In the last 55 years or so, more than 19,000 participants from over 170 countries have followed ITC courses, and over these years ITC has developed a wide selection of courses in such disciplines as earth sciences, water resources, land administration, urban planning and management, natural resources and the environment, and geoinformatics."

ITC MSc Award

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He went on to say that the high level of education was guaranteed by the solidity of the Institute's research - research to which some 120 PhD students were currently contributing their scientific knowledge gained from countless fieldwork activities around the world.

He reserved a special mention for the teaching body: "They are women and men who dedicate their entire personal career to educating the scientists of tomorrow. Is there anything more satisfying than giving immortality to science? Behind the desk, I have found them to be unreachable examples of professional rigour. But that superiority disappears when the lectures end and in the restaurant they ask, 'May I sit at your table?' There you discover the humanity and sense of respect that makes them teachers at this honourable Institute."

Addressing the students who had already been at ITC for quite some time, Mr Rusmini said that they had great responsibilities towards their fellow countrymen. "In a few months, they will have to carry back new knowledge representing the life blood of scientific development in their countries. During last year's ceremony, I was sitting here confused and frightened in a foreign country, with unknown neighbours, but now I see the same people hugging each other and holding hands. I see new friendships and even love blossoming in this wonderful community."

"Be like children!" That was Mr Rusmini's advice to the new students in the audience. "Children are like empty vases, ready to be filled. Be prepared to understand and make your own the vast amount of knowledge you are going to receive. The high educational standards at ITC are not stumbling blocks but rather a challenging opportunity to demonstrate your value. Children are curious. Take advantage of every single sunny weekend and travel as much as you can. Children are pure and call each other friend. Erase any prejudice and cultural barriers. Exchange your heritage and experiences in the name of brotherhood and equality."

Bringing his speech to a close, Mr Rusmini had a few more words of encouragement:

Marco Rusmini

"Always bear in mind that somebody bet on you: your organisations, your parents or yourselves. And you are here to demonstrate that they were right to do so. It's your turn now! And may I wish you every success in your study, your career and your personal life in the coming year."

ITC MSc Award

for Best MSc Thesis 2008

It was now the pleasant duty of Professor Molenaar to announce the winner of the MSc Thesis Award, consisting of a certificate and € 1,000 - an award made possible through the Schermerhorn Fund of ITC. This year the award went to Mr Juan Pablo Ardila Lopez from Colombia for his thesis entitled *Assessment and modelling of angular backscattering variation in ALOS ScanSAR images over tropical forest areas*.

Winner of the MSc Thesis Award Juan Pablo Ardila Lopez

ITC Research Award

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Introducing the winner and his work to the audience, Professor Molenaar said: "Mr Ardila Lopez joined the GFM MSc programme in September 2007 and is now a PhD student at ITC. The overall object of his thesis was to study the influence of the incidence angle on radar backscattering in ALOS ScanSAR images and to develop a model for its correction in tropical forest regions. ALOS ScanSAR products became available in 2005 and cover 350km-wide strips with L band radar in 100m resolution. This makes these images excellent for monitoring land cover on a regional scale. However, the wide swath comes at a cost: a variation in incidence angle of 25°, with an effect on backscatter that cannot be ignored and for which no correction models have existed. The work of Mr Ardila Lopez brings operational monitoring based on ScanSAR images another step closer."

"Mr Ardila Lopez had very clear ideas about the topic of his MSc research and the area of application - to use his own words: 'our ever-sacred tropical forests in Colombia'. He conducted his research in a very enthusiastic and independent manner. He was able to establish contacts with organisations and researchers in the field, discuss artefacts found with the image provider, and be a constant and positive challenge to his supervisors to keep up with his rapidly developing ideas."

Having painted a clear picture, Professor Molenaar invited Mr Ardila Lopez to come forward to receive his award and, on behalf of the jury and the ITC Scientific Council, heartily congratulated him on his achievement. The resounding applause from the floor that accompanied the winner's progress to the podium echoed these sentiments.

ITC Research Award 2008

The ITC Research Award is made annually to an ITC graduate student (a PhD student or an AiO) for the authorship or co-authorship of an outstanding scientific paper dealing with geo-information science and/or earth observation within the context of the ITC Research Programme. The award consists of a certificate and € 1,000. The award was presented for the first time last year and went to Dr Wu Guofeng for his paper on dredging impact assessment in Poyang Lake, China, which was published in *Water Research*.

So much for the brief history of the award, but now it was time to turn the page. It was Professor Molenaar's happy task to chart this year's proceedings and of course, most important, announce the outcome. "While five papers were submitted for the Research Award this year, only two nominations were shortlisted because the others had not yet been accepted for publication. Publishing an innovative paper in a high-ranking journal is no easy matter. It is therefore with great pleasure that I can announce that the ITC Research Award 2008 goes to Ms Xia Li."

"This year's jury was composed of Professor Freek van der Meer, Professor Alfred Stein and Professor Bob Su, as well as last year's winner, Dr Wu Guofeng. The three most important criteria applying to the award are scientific level, innovation and practical significance, and, as last year, a telling consideration was that the winning paper presented a new concept that triggers research in a new direction. After elaborate electronic communication and discussion, the jury decided to present the Research Award 2008 to Ms Xia Li for the paper *The time wave: a new method of visual exploration of geo-data in time-space*, published this year in the *Cartographic Journal*."

Professor Molenaar went on to say that the jury had commented that it would be inter-

The ITC Research Award 2008 goes to Ms Xia Li

esting to see how the conceptual model could be further developed in greater depth, for example, by linking the time wave to a mathematical function. Furthermore, it would be interesting to see fully worked-out case studies showing a comparison between the newly presented concept and existing ways of visualisation. That it triggers many new research questions illustrates the remarkable merit of this paper.

Professor Molenaar then called on Ms Xia Li to step up and receive the ITC Research Award 2008 - which she did to enthusiastic applause and quite a barrage of flash photography.

Fellow of ITC

Official Installation of Dr Gilberto Câmara

Article 24 of the ITC statutes governs the appointment of Fellows of ITC and reads as follows:
Persons who have distinguished themselves through their outstanding contributions to the development of the Institute and more specifically to the realisation of its objectives and/or the development of the scientific domain of the Institute can be appointed by the Board of ITC as Fellow of the Institute.
According to the rules, such an appointment requires the positive advice of the Scientific Council and the approval of ITC's Board of Supervisors. Consequently, the threshold is high and installations are few, but today was one such special occasion.

"It is now my honour to announce a new Fellow of the Institute," declared Professor Molenaar. "Dr Gilberto Câmara is presently director-general of the National Institute for Space Research in Brazil and an outspoken champion of open data policies for the civil and scientific use of earth observation in Brazil and abroad. In this position, he can claim some important achievements:

- he was responsible for specifying the first supercomputer installed in INPE's Center for Weather Forecasts and Climate Studies
- he was responsible for creating INPE's Remote Sensing Data Center, which has put 30 years of imagery on line
- he has been one of the important drivers of the further development of the China-Brazil Earth Resources Satellite (CBERS)
- he is responsible for setting up data policies for CBERS images in Brazil and abroad
- and under his leadership, INPE together with the Chinese Academy of Space Technology developed a programme for CBERS to make these data freely available for users in Africa."

"That he has a great personal interest in the use of earth observation data in civil society, particularly for the protection of our living environment, is evident from his involvement in various instances, both now and in the past:

- he is deputy coordinator of the GEOMA research network for environmental modelling of Amazonia
- he is the principal investigator of spatial databases and spatial environmental models in GEOMA
- he was responsible for setting up a system for the real-time detection of deforestation in Amazonia and for making deforestation maps available on the internet.

Dr Gilberto Câmara has long been a leader in GIS and image processing technology in Brazil, being responsible for the development of the SPRING and TerraLib systems - systems now freely available on the internet. Furthermore, the aim of the CBERS data policy for Africa is to increase the access of African governments and organisations to satellite imagery, thereby increasing their capacity to use such imagery to help to monitor natural disasters, drought, desertification, deforestation, and threats to agricultural production and public health."

"Despite his heavy administrative and management duties, Dr Câmara is still very active in science and research (with more than 120 published papers to his credit) and in international research cooperation with leading groups and scientists in his field of expertise."

Summarising, Professor Molenaar said that Dr Câmara had made major contributions to geo-information and earth observation, the academic and professional domain of ITC, which included:

- the scientific development of this field

Schermerhorn Lecture

Opening Academic Year 2008-2009

through his research and publications
- the operational use of the technology through the development of software systems that are freely available on the Web
- the application of earth observation data in important domains such as environmental modelling and the monitoring of deforestation
- making remote sensing data freely available through the satellite programmes and related data policy of INPE
- and last but not least the advocacy and realisation of free access to data, especially for countries with weak economies."

With that, Professor Molenaar said it was a great honour to announce the appointment of Dr Gilberto Câmara as Fellow of ITC, and he invited Professor Jaap Besemer, chairman of the ITC Board of Supervisors, to present the diploma. "After hearing the laudation just read by the rector," said Professor Besemer, "it is my privilege to hand over this diploma and congratulate Dr Câmara on behalf of the Board of Supervisors." And those attending the ceremony were not slow in adding their own congratulations in the customary manner.

Prof Jaap Besemer (left) and Dr Gilberto Câmara (right)

Then Professor Molenaar duly declared the ITC academic year officially open and invited the young Fellow of the Institute, *noblesse oblige*, to give the first lecture of the year.

Schermerhorn Lecture

Dr Gilberto Câmara

"Monitoring and modelling deforestation in Amazonia"

In a presentation liberally illustrated with striking photographs, graphs and statistics, Dr Gilberto Câmara shared with his audience some experiences in monitoring deforestation in Amazonia. "Of course, we know that our tropical forests play an extremely important part not only in the whole climate balance but also in the livelihood and future livelihood of the world's generations." He went on to say that the last 30 years had seen an enormous change in the planet's tropical forests and that this had led to scientists being confronted with five main questions:

1. How much land change is happening?
2. Where are land changes taking place?
3. Who is causing the change?
4. What are the impacts of public policies?
5. What will happen in the future?

Whereas Dr Câmara felt that the earth observation and geoinformatics communities could already provide immediate answers to questions 1 and 2, he proposed that the skills of the research community be harnessed to help in dealing with the three remaining questions. Furthermore, when moving in political circles, it was more or less certain that a scientist would be faced with a question to which the answer was still lacking (an observation with which many in the audience could identify).

"Now we know that part of the land change worldwide is being caused by a positive thing in general: the growth of the Southern economies. And Brazil is a case in point. We have had an enormous growth in agriculture and it is now a major agricultural power. Moreover, Brazil is currently one of the world's largest exporters of beef, with cattle claiming an increasing area of Amazonia. In 1992 Amazonia accounted for a fifth of the Brazilian production in this sector; in 2007 this had jumped to a third. And of course you don't have changes of such magnitude without causing an imbalance in the environment."

"But," continued Dr Câmara, "the first thing is to recognise that deforestation is not a single beast. There are different types that take

different forms." However, for the purposes of this lecture and for the sake of simplicity, he dealt with just two:

- slash and burn, a method typical of Brazil in the 1980s and favoured at new frontiers, where there are plenty of trees and little concern for ecological preservation. Within a three- to four-month season, an extensive area of forest could be wiped out.
- progressive degradation, a more systematic method that runs from selective logging (marketable trees), to wood extraction and burning, to further burning and pasture, and finally to clear cut. Unlike the African savanna, which burns each year but grows back, tropical forests are unaccustomed to fire and can easily be wiped out.

From the remote sensing point of view, slash and burn can be easily identified "because the contrast between what existed as pristine forest and what is left is far too great to ignore in a remote sensing image." However, progressive degradation is very bad news because the changing "signatures are subtle and difficult to distinguish. But distinguish we must, because if we want to fight deforestation we should not wait. We need to intervene as early as possible."

Still, technology is advancing rapidly, bringing vast improvements to the two key elements of remote sensing: resolution in metres and revisit time in days. MODIS, for example, now provides 250m images every day. "Whereas earth observation and remote sensing used to be a tool for producing maps," explained Dr Câmara, "it is now a tool for measuring processes. And deforestation is not an event, it is a process - something that happens step by step, each significant step requiring an alert. "Such giant technological strides combined with the unprecedented open access to data "will provide ways of examining our planet that were simply not possible before."

And this availability of data is increasingly bringing a national response. For example, the major television network in Brazil has an interactive website, enabling viewers to keep a watch on Amazonia and protest against its destruction. Millions of people look at this every day, flagging events in their own "backyard". The power of earth observation is being brought to the people. But, of

The first lecture of the year given by Dr Gilberto Câmara

Gilberto Câmara

Gilberto Câmara is general director of Brazil's National Institute for Space Research (INPE), his term of office running from 2006 to 2010. He is responsible for the administration of INPE's research and development groups in space science, space engineering, earth observation, and weather and climate studies. Previously, he was head of INPE's Image Processing Division (1991-1996) and director for earth observation (2001-2005).

He established the free and open data policy for remote sensing images from CBERS (China-Brazil Earth Resources Satellite) worldwide, and for creating INPE's Remote Sensing Data Center, which has put 30 years of imagery on line. He was also responsible for setting up a system for real-time detection of deforestation in Amazonia and for making Amazonia deforestation maps available on the internet. He also created INPE's Earth System Science Center.

His research interests lie in geoinformatics and environmental modelling. He has published more than 150 full peer-reviewed papers in journals and at conferences, and he led the development of SPRING, a free object-oriented GIS, and TerraLib, an open-source GIS library. According to Google Scholar, as of July 2008 his h-index is 18 and his number of citations is 1900. Based on these data, he is currently one of the five most cited researchers at INPE.

course, not everyone is pleased. Where widespread deforestation coincides with significant agricultural production, commercial interests are quick to defend their corner. Scientists are not shamans, consequently science has errors. "But," said Dr Câmara, speaking more directly to the students in the audience, "you have to face the fact that all scientific experiments are fraught with error and you must not be afraid of saying that there was an error of so much percent last month and so much percent this month. Publish the data! Moreover, scenarios are a powerful tool for modelling the future. They are not predictions, they are scenarios of what might happen if you take the wrong actions, and therefore can be used to exert pressure on the government: if no protection policies are in place, increasing deforestation can be expected."

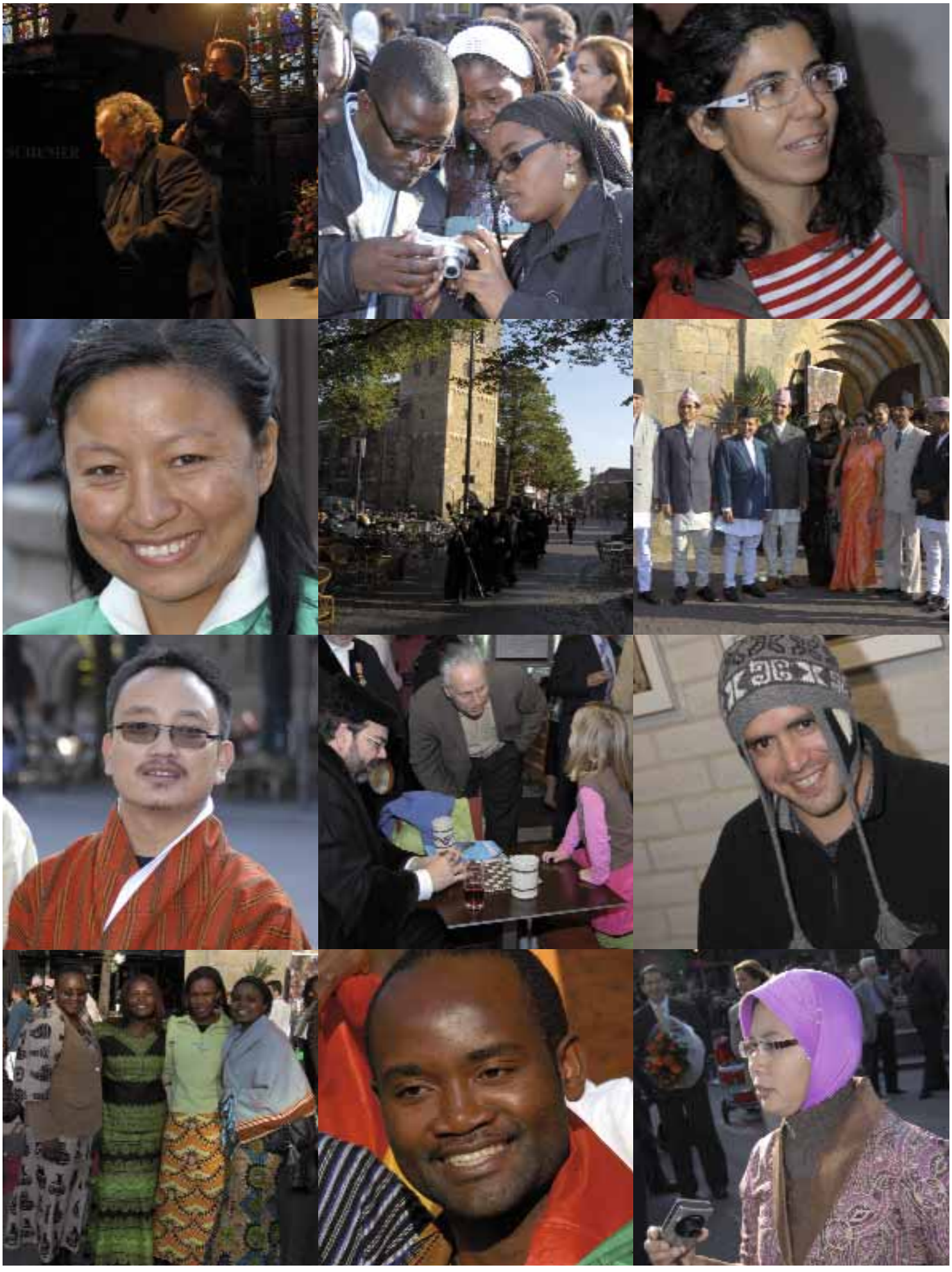
All in all, the world is on the verge of a major revolution in earth observation and remote sensing and "you [the students] are lucky to consider yourselves at a threshold in our profession. How I wish I could be in your place! But of course there's not only regret, there's also happiness. Norway is giving up to US$ 1 billion in yearly instalments until 2015 to protect the Amazon. Now that money will depend on how successful we are in Brazil in reducing deforestation, and Norway will rely on the Brazilian system to provide the requisite data in this respect. So this is the ultimate expression of trust. And we will continue to do good science and continue to recognise our errors - even more so with this sort of international recognition - always remembering that we are in it for the long term. We have an Earth to protect and it's only good sound sense to do so!"

Conclusion

With the varied official programme now at an end, it only remained for Professor Molenaar to invite those present to join him at the reception in the foyer of the Muziekcentrum. Located in Noorderhagen, this venue is just a short walk from the imposing Grote Kerk. Nevertheless, it is a walk that can give newcomers both a glimpse of the city's quaint nooks and crannies and a practical lesson in dodging careering cyclists. No unfortunate events to report, no unfortunate processes incurred. All guests, students and staff arrived safely at the Muziekcentrum to enjoy the refreshments and compare notes on the afternoon's proceedings.

Gilberto Câmara is a professor in INPE's graduate programmes in remote sensing and computer science, and in this capacity has advised 21 Master and 11 PhD students and is presently advising another 11 PhD students. He was a keynote speaker at the conference Geographical Information Science 2006 held in Münster, Germany. He is the main organiser of the Brazilian Symposiums of Geoinformatics, which have been held yearly since 1999. He acts as consultant to the main Brazilian funding agencies, and from 2001 to 2004 sat on the national committee for evaluating graduate programmes for the multidisciplinary area. He is a member of the Scientific Steering Committee of the Global Land Project, a research initiative of the International Geosphere-Biosphere Programme and the International Human Dimensions Programme. He is a member of the editorial board of the *Journal of Earth Science Informatics* and of the programme committee of the most prestigious conferences in his area of research, including the Conference on Geographical Information Science (GIScience), the Conference on Spatial Information Theory and the International GeoSemantics Conference

Opening Academic Year 2008-2009



Executive Seminar on Earth Observation for Improving Water Management in Africa

Arno van Lieshout lieshout@itc.nl

Water managers in Africa urgently need reliable information on the use and availability of water. Data acquired from space can contribute to supplying this need.

To satisfy the demand for information, good synchronisation is required between water managers, who must indicate their specific information needs; developers of the data gathering-monitoring satellite systems; and the knowledge institutes that must transfer their knowledge on collection and dissemination to users. During the seminar Earth Observation for Improving Water Management in Africa: Developing Human, Technical and Institutional Capacity, scientists, water managers from Africa, and staff from knowledge centres addressed the question: "How can the knowledge available in the area of satellite data use for water management purposes be strengthened in Africa?" The seminar, which was held from 23 to 25 September 2008 at ITC, Enschede, was jointly organised by the Group on Earth Observation (GEO) and ITC's Department of Water Resources

The Seminar

Many initiatives dealing with earth observation and water management are ongoing in Africa. All these activities require knowledgeable resource persons for their execution and implementation. Recurrent issues in these initiatives relate to the shortage of existing human resources and absorption capacity needed for the efficient application of earth observation for improved water management. To further develop human capacity building activities with partners in Africa, the seminar addressed three themes:

- the emerging water resources management issues over the coming years and their information needs
- developments in earth-observation-based data and information systems and the impact of water resources management decision-making processes that can be expected
- capacity building strategies for earth observation and water in and for Africa.

Senior speakers from African governments, regional and international organisations, capacity building providers, space agencies and policy-making bodies elaborated on these themes. Emerging water resources management issues and needs were addressed from the perspectives of the Nile Basin Initiative, the Water Resources Management Authority of Kenya, the Department of Environment of the Democratic Republic Congo and the SADC Secretariat, addressing the Southern African region. Information on earth observation developments for water resources

management, the second theme, was provided by representatives from the European and Brazilian space agencies (ESA and INPE), the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the Flemish Institute for Technological Development (VITO), and the Global Energy and Water Cycle Experiment (GEWEX), as well as by GEO and ITC. Capacity building strategies for earth observation and water were presented by African knowledge centres (e.g. universities and technical institutes of Ethiopia, Ghana and Senegal), regional centres (AGRHYMET, Niamey, Niger, and the Regional Centre for Mapping and Resource Development, Nairobi, Kenya) and WaterNet (an academic affiliated regional Southern African water education network), supplemented by presentations from UNESCO and ITC. These presentations provided a clear picture of the challenges ahead for capacity building in earth observation for the water management sector in Africa from different perspectives.

Seminar Outcome

At the end of each theme, round-table discussions took place, and during the final session representatives from the three thematic groups formulated recommendations to GEO, policy makers, space agencies and funding organisations on capacity building in earth observation for improving water management. Recommendations were made in relation to providing freeware (open source), improving data availability, developing and standardising earth observation water curricula for universities, building on existing knowledge centres and networks (such as WaterNet) to introduce advances in earth observation for water resources management, and the need for concrete actions to inform policy makers in a forum such as the African Ministers' Council on Water (AMCOW). Initiatives such as Tiger, GEONETCast for and by Developing Countries (DevCoCast), the proposed continuation of TIGER, and the Europe-Africa-Land-Network (EALNet) are excellent vehicles for implementing these recommendations in conjunction with the ongoing developments within the framework of GEO related to the construction of the Global Earth Observation System of Systems (GEOSS).

Dissemination

The final report, providing full details of the executive seminar and its outcome, is under preparation and will be available soon. This report will guide the capacity building effort in Africa of ITC's Water Resources department. Soft copies of the report and the presentations given during the seminar can be downloaded from the ITC website (http://www.itc.nl). Requests for hard copies can be addressed to pr@itc.nl.

ITC's (E)mission: Compensating CO_2 Emissions from ITC Activities

Alfred de Gier degier@itc.nl

The problem of climate change is affecting our life more and more. We have come to realise that the occurrence of recent extreme events, such as flooding and droughts, and the almost annual breaking of weather records go beyond normal variability.

The main cause is sought in the increase of greenhouse gases in the atmosphere, particularly carbon dioxide (CO_2), largely as a consequence of the accelerating use of fossil fuels. These atmospheric greenhouse gases cause the so-called greenhouse effect, where longwave heat radiation from the Earth is reflected back to it. This causes a gradual increase in the earth surface temperature. The first main step forward was made in 1992, when the United Framework Convention on Climate Change (UNFCCC) was adopted at the Rio Conference, later augmented by the Kyoto Protocol, and the Clean Development Mechanism, which is part of it.

ITC, both as a scientific institute and as an operational organisation, has been active in addressing climate change since the early nineties. The research theme "Carbon cycle and climate change" (C-Cycle) is a case in point. Another initiative is the working group Strategic Environmental Capacity Building, set up to identify ways in which ITC can best contribute to implementing environmental UN conventions such as the UNFCCC.

As an operational organisation, ITC is also active in conserving energy in its everyday activities: for example (just to mention few initiatives in the main building), an energy use mirror in the entrance hall, energy-saving messages at the light switches, energy-efficient lighting, light sensors that automatically dim lights, top cooling rather than full air-conditioning, and evening checks on unnecessary lighting. Also, ITC is active in recycling its waste paper. ITC's mandate, however, naturally brings with it activities such as international air travel and extensive computer usage in education and research, without which the Institute simply could not do its work.

The UNFCCC and particularly the Kyoto Protocol have made provisions to compensate for CO_2 emissions through additional tree planting, because growing trees absorb (sequester) large quantities of CO_2 and store them for long periods of time in the form of biomass, particularly wood.

We used the new Module 14 opportunity to engage MSc students in obtaining a clear picture of ITC's main CO_2-generating activities and in assessing the options for CO_2 sequestering. The students concerned were Francis Kwabena Dwomoh, Job Arabason Karenget, Lelyana Midora, Seleboni Mushi, Maureen Epole Njume and Sigit Rustanto. Their research was linked to the C-Cycle research theme. In a two-week group research project, they analysed ITC's principal CO_2 emission activities for the year 2007, quantified the ensuing CO_2 emission, and assessed the amount of land that must be planted with trees to sequester this emitted CO_2. This was done for ITC's main building and included the following activities: (1) heating of the building by burning natural gas, (2) use of electricity by electrical and electronic equipment, (3) air travel and (4) production of waste materials (paper and garbage). The necessary data were kindly supplied by the appropriate ITC offices. All data were converted to their equivalent CO_2 quantities by using published conversion values, taking into consideration the limited life cycle of most paper and the abiotic part of garbage.

The following table shows the calculated CO_2 emission values for ITC's main activities.

Table 1 ITC's CO_2 emission in 2007

	Quantities		Tons CO_2	%
Natural gas	134,363	m^3	202	21.1
Electricity	1,324,590	kWh	662	69.2
Paper waste	14	tons	41	4.3
Garbage	113	tons	45	4.7
Staff air travel	4,171,142	km	3	0.3
Student air travel	6,589,421	km	4	0.4
		Total	957	100.0

Electricity consumption is by far the most important ITC source of CO_2. Natural gas consumption comes second, and waste production comes third. Almost 90% of ITC's CO_2 emission is thus related to what happens inside its main building. Air travel by both staff and students, despite the large total distance flown, is of relatively minor importance from the point of view of CO_2 production. Probably this result comes as unexpected to most ITC staff.

When considering the calculated emission values as unavoidable, a number of tree planting scenarios were appraised for sequestering the emitted CO_2 (see Table 2). The first scenario uses field-measured growth data for the trees in a 16-year-old wood strip *(houtwal)* near Enschede on prime agricultural land. The second scenario assumes tree planting on Dutch non-agricultural land, also using field-measured data for such land. The third scenario uses the calculation procedure of Trees for Travel. In matching emission with sequestration, we followed the conventional way of working, in that the CO_2 emitted in one year must also be sequestered in one year.

The first scenario contrasts strongly with the second. The former has a high soil quality, whereas the non-agricultural land in the second scenario has relatively poor soils. Soil quality apparently has a very important influence on tree growth, and thus on carbon sequestration. The last scenario (Trees for Travel) gives an area that is comparable to the Dutch non-agricultural land scenario, although the values refer to tropical tree plantations, which are expected to grow faster and thus sequester more CO_2 per ha and per year. This was not confirmed by our findings. All in all, a considerable amount of

Table 2 Matching CO_2 emission with tree planting (year 2007)

			Tree planting areas required		
			Dutch prime agricultural land	Dutch non-agricultural land	Trees for Travel
	Tons CO_2	%	ha	ha	ha
Natural gas	202	21.1	6.5	24.2	25.2
Electricity	662	69.2	21.2	79.6	82.8
Paper waste	41	4.3	1.3	4.9	5.1
Kitchen waste	45	4.7	1.4	5.4	5.7
Staff travel	3	0.3	0.1	0.3	0.3
Student travel	4	0.4	0.1	0.5	0.5
	957	100.0	30.6	114.9	119.6

land is needed. An area of 110 ha, for instance, would mean the equivalent of 220 football fields, or a distance of some 110 km, when planted as one long row.

These findings are interesting in themselves, but also provide a foundation for ITC's continuing efforts to further reduce CO_2 emission and find possible avenues to address sequestration. Besides looking into additional energy-saving solutions related to computer use, lighting and heating, ITC could consider involvement in tree planting in the Netherlands. This would have a strong visibility element for ITC staff and students, as well as for the outside world, and would generate personal involvement where staff and students would participate in actual tree planting and maintenance. Tree planting opportunities in the Netherlands do exist, even nearby in Twente, for instance by integrating trees in the landscape (e.g. along streams). These opportunities merit exploration.

The above is based on the conventional way of working, in that the CO_2 emitted should be sequestered in the same year. In this way, the areas to be planted were calculated. Because trees continue to grow year after year, and thus continue to sequester CO_2, the area of land required is a one-time requirement only, as long as there is no change in CO_2 emission.

The full report can be downloaded from
www.itc.nl/news_events/archive/general/compensating_for_co2.asp

Growth rings indicating annual wood accumulation, of which some 50% is carbon (photo A.de Gier)

Stream banks offer suitable locations for tree growing: the trees accumulate carbon and the water can flow more freely (ITC CIR aerial photograph)

Plant growth hampering water flow in sunlit conditions (photo A. de Gier)

Limited plant growth when tree crowns shade the stream (photo A. de Gier)

research news

CAN Scientific Workshop on Cycling-Inclusive Planning at ITC

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As reported in an earlier edition of *ITC News,* staff of the department of Urban and Regional Planning and Geo-Information Management, together with colleagues from the Centre for Transport Studies of the University of Twente (UT), are coordinating the international Cycling Academic Network (CAN).

CAN is concerned with studying the role of cycling in sustainable urban development and currently supports six PhD students from India, Brazil, South Africa and Rwanda. The first CAN scientific workshop was organised at ITC from 1 to 4 July, and was attended by the CAN PhD students, their supervisors from India, Brazil and South Africa, ITC and UT staff, and professionals from the Dutch Cycling.nl network and the Interface for Cycling Expertise (I-CE).

Being renowned worldwide for its high proportion of bicycle transport, its bicycle-train transport integration, and a cycling culture (independent of personal status) and awareness in civil and professional society, the Netherlands is obviously a perfect location to host an international scientific workshop on cycling-inclusive urban planning. So scientists gathered in Enschede in July to discuss such issues as bicycle infrastructure level-of-service, cycling potential in developing cities, the role of marketing cycling, urban form and cycling in megacities, bicycle–bus integration, bicycle network design, and remotely sensed urban indicators for bicycle studies. Among the international workshop participants were Professor Toni Lindau, Professor Suely Sanchez and Professor Milena Bodmer from Brazil; Dr Marianne Vanderschuren from South Africa; and Dr Anvita Arora and Professor Geetam Tiwari from India; as well as the six PhD students, who spend part of their time at ITC and part at the partner universities.

The workshop was launched with a mini-seminar opened by Director External Affairs Sjaak Beerens, Head of Research Professor Martin Hale and Director I-CE Roelof Wittink. Keynote lectures were then given by the international visitors. As CAN is still in its first year, most of the workshop time was dedicated to presenting and discussing the initial project ideas (based on peer-reviewed pre-proposals) of all the young researchers. The individual PhD projects were discussed in great detail in 2.5-hour sessions, while attempts were made to establish linkages between the projects and project partners in several plenary sessions.

Strengthening Partnerships

An important workshop goal was to strengthen the network and create further partnerships between the professors, scientists and institutions involved in CAN (most of us were meeting for the first time). For this reason, an ice-breaker reception open to all those interested, a couple of dinners, and a social event were organised.

As it was a question of cycling academics, there was no option but to choose cycling for the social event. On 2 July, one of the warmest days of 2008, with temperatures reaching

PhD students and their CAN supervisors meet at ITC: (left to right) Professor Martin van Maarseveen, Dr Anvita Arora, Professor Geetam Tiwari, Dr Mark Zuidgeest, Ms Himani Jain, Professor Milena Bodmer, Mr Alphonse Nkurunziza, Professor Suely Sanchez, Professor Toni Lindau, Ms Janice Kirner, Mr Mark Brussel, Ms Flavia de Souza, Mr Eddie Beukes and Dr Marianne Vanderschuren

32°C, all workshop participants went cycling in the beautiful Twente countryside. Since ITC was organising the event, it also made sense to mount GPS route navigation systems on the bicycles. A local travel agent rents out special route navigation systems for this purpose. The so-called Abel system displays a route map, indicates directions, and provides tourist information for points of interest along the route. A route of 28.9 km in total, starting and ending in the city of Delden and passing through Boekelo, was covered by bicycle (by almost everyone).

The next CAN event (a regular CAN network meeting) will be held at IIT Delhi in New Delhi in conjunction with the 18th International Course on Transportation Planning and Safety (6 to 13 December 2008), which will be attended by the CAN PhDs.

Bicycles equipped with the Abel route navigation system

A tandem was available for those less comfortable with cycling long distances

Highlights
Student introduction week 200

International Student Meet Enschede
On Thursday, 18 September 2008, the four institutes for higher education in Enschede - Artez, ITC, Saxion and the University of Twente - jointly organised a festive event for the newly arrived international students. The event was supported by the municipality of Enschede.

Together, the four institutes welcomed the 1,200 new students for the academic year that started this September. Through this unique event, the newly arrived students were given the opportunity to meet fellow students from the other institutes.

Programme highlights included the opening by the mayor of Enschede, Peter den Oudsten. A tour through Enschede with various activities along the way. An information market and entertainment.

08

Opening Academic Year 2008-2009
The Opening of the Academic Year officially marks the start of the new academic year. The Grote Kerk in the old market square was scene of this year's official ceremony. The article about this year's opening ceremony can be found on page 2.

Dutch Dinner
As indicated in De Aardappeleters (potato eaters), the famous painting by Vincent van Gogh, the main ingredient in old-fashioned Dutch dinners is potatoes, usually accompanied by meat and boiled vegetables. To give them a first impression of Dutch food and eating habits, traditionally ITC staff help to prepare and serve a Dutch meal to all the new students.

events

ESRI User Conference 2008

Lyande Eelderink eelderink@itc.nl
Rolf de By deby@itc.nl

The theme of the ESRI International User Conference of 2008 was "GIS in Action". The works of GIS users around the world were highlighted by ESRI president Jack Dangermond in the opening plenary. Dangermond talked about the importance of GIS as part of the solution to the challenge of living in a sustainable world.

ITC received a Special Achievement Award during the user conference. This award is given to organisations that have made extraordinary contributions to society and have set new precedents throughout the GIS community. ITC's rector, Professor Molenaar, proudly received this award during the conference. "At ESRI, we are always deeply impressed by the innovation of our users," said Jack Dangermond. "We want to recognise the efforts of these individuals with our Special Achievement in GIS Award. This recognition is well deserved for how they've applied geospatial technology to address the needs of their industries and communities. They are defining GIS best practices."

ITC was present in information booths at both the Education Fair and the Show Case. Two of our alumni, Ms Sibonile Sibanda from Zimbabwe and Mr Ron Dalumpines from the Philippines, who are currently carrying out internships at ESRI Inc., assisted us in the information booths.

We also organised an ITC alumni reception, which was enjoyed by some 30 alumni attending the conference. During the alumni reception, Jack Dangermond paid us a visit, which was very much appreciated by the ITC alumni and staff.

From: Ron Dalumpines
To: Lyande Eelderink
Date: 10/2/2008 6:05
Subject: RE: ITC news

Hi Lyande,

Defining a new horizon: that's a simple generalisation of my experience working here as part of the local government team under Consulting Services, part of the Professional Services Division at ESRI. Currently, we're involved in the development and deployment of a forestry management system for New York City's Department of Parks and Recreation (DPR). This project employs the latest ESRI ArcGIS Server 9.3, leveraging DPR's business processes in an enterprise-wide environment and support for mobile computing. Projects like this at Professional Services bring ESRI's products to their full potential and help shape future products by working closely with clients. I'm really lucky to be an intern at ESRI, to be working at the bleeding edge of GIS software development and deployment. So, I've been involved here in software testing and software integration, and have attended training courses in enterprise GIS maintenance and development. Like ITC, ESRI's an international community with smart, nice, and committed people from different parts of the globe. It's great! Now I'm excited to be involved in a new mobile solution project!

Regards, Ron

About ESRI

Since 1969, ESRI has been giving customers around the world the power to think and plan geographically. Market leader in GIS, ESRI software is used in more than 300,000 organisations worldwide, including each of the 200 largest cities in the United States, most national governments, more than two-thirds of Fortune 500 companies, and more than 7,000 colleges and universities. ESRI applications, running on more than one million desktops and thousands of Web and enterprise servers, constitute the backbone of the world's mapping and spatial analysis. ESRI is the only vendor that provides complete technical solutions for desktop, mobile, server and Internet platforms. Visit www.esri.com.

Jack Dangermond attending the alumni gathering

Alumni reception: Layi Taylor and family enjoying the occasion

The ITC booth at the ESRI conference

The Convention Center: venue of the 28th Annual ESRI International User Conference

The presentation ceremony for the Special Achievement Award (Jack Dangermond and Roger Tomlinson)

At the ESRI party: the ITC team meeting Dr Roger Tomlinson, generally recognised as the "father of GIS"

staff news

ITC Professor Appointed Academician

Professor Vladimir Tikunov

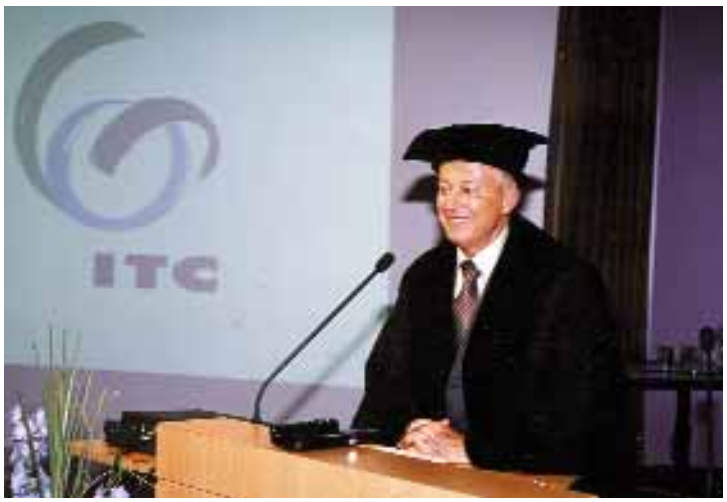
Professor John van Genderen of ITC's Department of Earth Observation Science has recently been elected academician of the International Eurasian Academy of Sciences.

This Academy has elected members from both Europe and Asia.
In Europe, the Russian Academy of Sciences and the UK Royal Society are particularly active, while in Asia the Chinese Academy of Sciences has many academicians, as does Japan.

In presenting the award to Professor van Genderen, Professor Vladimir

Tikunov, vice-president of the Academy, stressed his unique contribution to the development of remote sensing in both Europe and Asia.

On accepting this position as academician, Professor van Genderen stated that, as he is soon to take compulsory retirement from ITC, he hopes to have more time to contribute to the work of the Academy by promoting science to younger students



Professor John van Genderen

For more information:
IEAS in Europe:
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(jbhe@lreis.ac.cn)

Staff

Welcome to ITC	Ms. R.J.M. Spaan	Administration Officer Financial and Economic Affairs department	1 July 2008
	Ms. A.T.A.M. Holtkamp	Administration Officer Lot 7 Bureau Marketing and Project Services	21 July 2008
	M.R. Winters	Support Officer Information Technology department	1 August 2008
	Drs. A.P. Neher	Project Officer Bureau Marketing and Project Services	1 August 2008
	W.H.J. ter Bekke	Project Administration Officer Bureau Marketing and Project Services	1 August 2008
	Prof.dr.ir. M.F.A.M. van Maarseveen	Chairman department of Urban and Regional Planning and Geo-Information Management and Professor in Management of Urban-Regional Dynamics	1 September 2008
	S.J.T. Engelberts	Procesmanager Application Management Information Technology department	1 September 2008
	Ms. J.M. Mol	Course Secretary Land Administration Bureau Education Affairs	1 September 2008
	Ms. H.K. Heenkenda MSc.	Lecturer department of Earth Observation Science	8 September 2008
	Dr. M. Rutzinger	Lecturer department of Earth Observation Science	15 September 2008
Staff leaving	Dr.ing. W.H. de Man	Department of Urban and Regional Planning and Geo-Information Management	1 July 2008
	A. Menning	Communication department	1 August 2008
	Dr. M.K. Hazarika	Department of Earth Systems Analyses	25 August 2008
	Ms. Ir. H.A. van Aken	Department of Water Resources	1 September 2008

In memoriam

Prof. Dr. Dipl-Ing. Hans Georg Jerie (1929-2008)

On 30 July 2008, Hans Georg Jerie died at the age of 79, leaving a daughter Helga and a son Mischa. Hans Jerie was born on 2 July 1929 in Bludenz, Austria.

He graduated from the Fakultät für Angewandte Mathematik und Physik, Abteilung für Vermessungswesen, of the Technische Hochschule in Vienna in 1951. After graduation, he joined the Photogrammetric Division of the Federal Survey Department of Austria, headed by Professor Karl Neumaier. His first contact with ITC came when he joined the Institute for the brief period 1953-1954, during which time he distinguished himself by writing a brilliant article on numerical relative orientation in mountainous terrain.

After successfully defending his doctor's thesis at the Technische Hochschule of Vienna in March 1954, he was assigned in 1955 and 1956 to Wild, Heerbrugg, Switzerland, where he was involved in the technical training of staff from the survey departments in Egypt and Iran.

He rejoined ITC briefly from 1956 to 1958, and then on a permanent basis in 1963. He developed the ITC-Jerie analogue computer for block adjustment and spent two years demonstrating it in various countries. One student, after having used this analogue computer, said, "Jerie is a genius but how can I convince my country to spend so much money for what seems to be nothing else but parts of a Meccano set and some rubber bands." In August 1967, he was appointed the first professor of photogrammetry and head of ITC's Photogrammetry department. His inaugural address, entitled *From Photogrammetry to Photogrammetric Systems*, emphasised the necessity of a systematic approach to the scientific problems confronting photogrammetry.

He had a quick active mind and a keen interest in models and problem solving, creating many new ideas. As head of Photogrammetry, he established consulting and research units. In the 1970s, he was an initiator of the *ITC Journal* (now the *International Journal of Applied Earth Observation and Geoinformatics*). The aim of this journal was to keep in touch with ITC alumni and inform them of the latest advances in their respective fields of interest.

Professor Jerie's interests were not limited to ITC. They extended to ISPRS and the European Organisation of Experimental Photogrammetric Research (OEEPE, now called EuroSDR). He served ISPRS in various functions: he was secretary of Commission IV from 1968 to 1972; co-organised the committee's symposium in Delft in 1970; served as the ISPRS council treasurer from 1980 to 1984; was chairman of the Working Group IV/1 on Cost Models of Mapping Processes; and was chairman of the financial committee from 1984 to 1988. He was also instrumental in introducing the post-congress seminars at the ITC.

Professor Jerie also held various positions within the OEEPE and produced many reports and proposals. He became a member of the Executive Bureau of the OEEPE in 1971 and was involved in the reorganisation of the OEEPE itself and its research activities. He became president of the commission dealing with fundamental problems in photogrammetry in 1979.

After retirement from ITC in August 1989, Professor Jerie's fertile and active mind enthusiastically pursued other problems, for example, in-car navigation systems. (These efforts have since been overtaken, however, by recent commercial developments.) He was also busy in many other fields and had patents for many designs.

Professor Jerie will be affectionately remembered as a modest man who was very highly respected internationally by his friends and colleagues and by his students at ITC.

announcements

Professor (Emeritus) Herman Verstappen Awarded IGU Lauréat d'Honneur

Sjaak Beerens beerens@itc.nl

The International Geographical Union (IGU) Executive Committee recently selected Professor (Emeritus) Herman Verstappen for the highest IGU award: *the Lauréat d'honneur*. Created by the IGU in 1976, this award honours those who have achieved particular distinction or rendered outstanding service in the world of the IGU or in international geography and environmental research.

In the case of Professor Verstappen, the *Lauréat d'honneur* was awarded to specifically recognise his tireless and distinguished work on behalf of geography within the IGU and the solid body of geographical research conducted over the course of a long and productive career.

Professor Verstappen has played a leading role in promoting the mission and standing of the IGU. He can be regarded as a prominent geographer who has dedicated his entire career to geography and to furthering the interest of the world in general and the developing world in particular in this field.

In terms of his dedication to the IGU, his commitment is illustrated by the range of positions that he has held:

- vice-president/president of the Netherlands Chapter of IGU (1968-1976)
- initiator, member and secretary of the IGU Commission of Applied Geomorphology (1956-1968)
- secretary/chairman of the IGU Commission of Geomorphological Mapping (1968-1984)
- member of the IGU Executive Committee (1984-2000)
- vice-president of the IGU (1984-1988)
- first vice-president (1988-1992)
- president (1992-1996)
- past-president 1996-2000.

Among his major accomplishments during his term as IGU president, the following can mentioned:

- IGU involvement in international/global research programmes
- renaissance of geographical thinking: improving the links between physical and human geography
- affiliation with the IGU of the International Association of Geomorphologists (IAG), the International Permafrost Association (IPA) and the International Union for Speleology (UIS)

Pofessor Herman Verstappen being congratulated by Professor Hans van Ginkel, former Rector Magnificus of Utrecht University, former rector of the United Nations University and former chair of the ITC Board

- improvement of contacts with the International Cartographic Association
- establishment of contacts with regional geographical organisations in various parts of the world
- stimulation of IGU membership in new "countries in transition" in central and eastern Europe and in other countries in Africa, Asia and Latin America
- revitalisation of the IGU in various ways.

Professor Verstappen was born on 30 July 1925 in The Hague. He studied

Receiving congratulations from Professor Hans Ottens, former ITC Supervisory Board member

With Professor Ton Ditez, IGU-Netherlands delegate

Professor Herman Verstappen, together with his wife and acting IGU president, Dr José Luis Palacio

physical geography at the State University of Utrecht, where he graduated in 1949. From 1949 until 1957, he worked as a geomorphologist/ cartographer for the Geographical Institute of the Indonesian Topographical Survey in Jakarta. He joined ITC in 1957 as a lecturer, and was a full professor at the Institute from 1968 until his retirement in 1989.

He has played a leading role in the development and application of geomorphology, with emphasis on the use of this science in projects in developing countries. During his whole career, he has shared his extensive knowledge in this field with generations of students and colleagues. His long list of publications and his open eye for new methods and techniques has won him international recognition in the world of geomorphology and its applications, in the use of remote sensing in landform studies and, in later years, in the study of natural hazards and disaster mitigation.

The *Lauréat d'honneur* was conferred during the closing ceremony of the International Geographical Congress on 15 August 2008 in Tunis, Tunisia, by the acting IGU president and ITC alumnus and former student of Professor Verstappen, Dr José Luis Palacio.

ITC would like to add its own congratulations to Professor Herman Verstappen on this prestigious award to those he received from the many dignitaries present at the event in August.

Papers sought for a Special Issue in Spatial Ecology for the International Journal of GIS

Special Issue Editor: Prof Andrew Skidmore, ITC, The Netherlands

A special issue on spatial ecology has been approved by the Editors and Publisher of the International Journal of GIS. You are encouraged to submit relevant and high quality manuscripts for this special issue (see details below).

Spatial Ecology is a rapidly developing field, but remains rather diffuse across a wide range of international journals, including disciplines devoted to the spatial sciences, as well as ecology, forestry, agriculture, environmental management, geography, global change, etc. According to data presented at the last IJGIS Board meeting in Beijing (June 2008), there appears to be an increasing number of submissions in spatial ecology. The published articles attract high average citation rates.

For this special issue, we are seeking the submission of papers from ecological and related environmental studies, as well as more technical articles including topics such as spatial data infrastructure relevant to ecological applications. We are especially interested in special and unusual (new) ways of thinking about, and processing, spatial ecological data.

Key words and topics for this special issue include scale, forage quality and quantity, trophic layers, visualization, spatial data infrastructure for ecological (biodiversity) data, methods to derive ancillary data required for ecological modeling (climate, terrain, soils etc), animal movement including both spatial and temporal analysis, phenology, global databases for ecological studies (biodiversity, NPP, carbon etc), fragmentation and connectivity, biodiversity hotspots and endemism, physical vegetation structure for biomass assessment, paleoecology and reconstructing past environments with respect to climate change, innovative methods and algorithms for spatial ecological analysis such as ES and NN, terrestial marine and atmospheric ecology will be considered, etc. Relevant cross-over papers between GIS and remote sensing will also be highly relevant.

A condition of submission and acceptance will be that papers must pass the usual IJGIS review process, where we expect a 50% rejection rate. In addition, authors will be asked to link and cross-reference papers from the special issue, and these links and cross-references will then be subject to a second review by the editor. Articles which do not adequately link and cross-reference with other articles from the Special Issue, will be rejected.

The special issue will be about 134 pages in length, with a minimum and maximum length respectively of about 120 and 145 pages. Each paper will be about 10 pages in length. Color will be available if justified.

The deadline for submission of papers is July 1st 2009.

When you submit your special issue paper online to the International Journal of GIS http://mc.manuscriptcentral.com/ijgis, please choose 'Special Issue Paper' from the Manuscript Types field.

For more information please contact the special issue editor Prof. Andrew Skidmore of ITC, The Netherlands, email: skidmore@itc.nl.

ITC Co-founds EARSeL Special Interest Group on Thermal Remote Sensing

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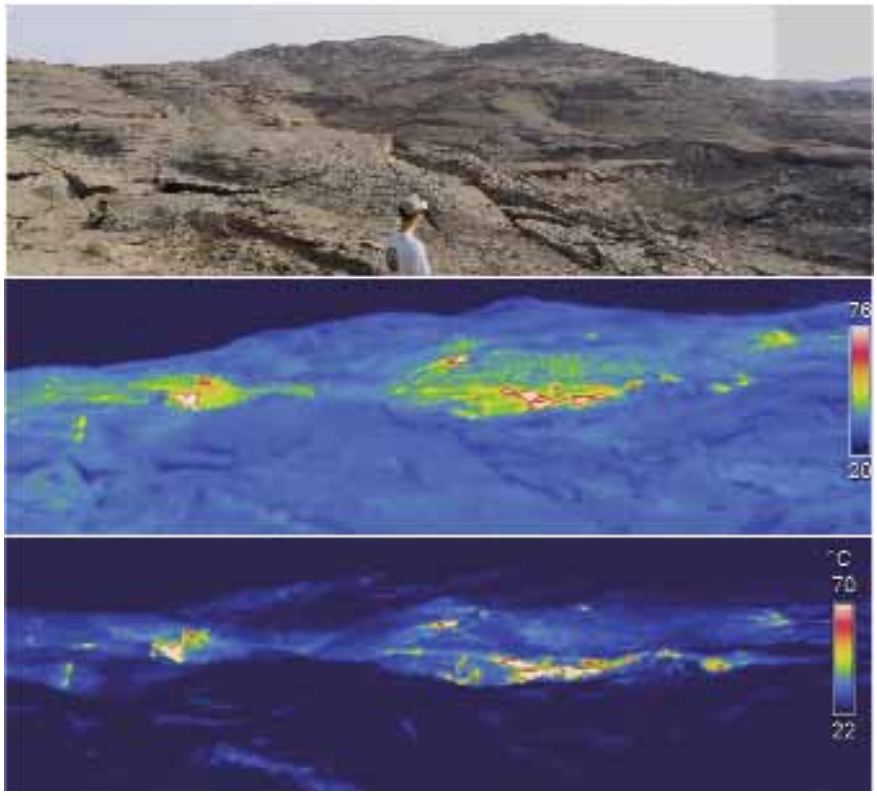
The European Association of Remote Sensing Laboratories (EARSeL) is a scientific network of European remote sensing institutes coming from both academia and the commercial/industrial sector. ITC, as well as our partner universities in Utrecht and Wageningen, are among its member organisations.
The main scientific efforts of EARSeL are concentrated in special interest groups (SIGs), which form the foundation of the EARSeL activities. In June 2008, EARSeL's Special Interest Group on Thermal Remote Sensing (SIG-TRS) was launched. It is jointly chaired by Dr Claudia Kuenzer of the German Aerospace Center (DLR-DFD) and Chris Hecker of ITC. This initiative is part of ITC's effort to expand its expertise in thermal remote sensing and invest in this rapidly emerging field of science. ITC is also in the process of acquiring thermal infrared spectrometers for field and laboratory, as well as a thermal imaging camera.

The main objectives of the new SIG-TRS are manifold. It is envisaged that SIG-TRS will bring together European thermal remote sensing scientists from different disciplines; that it will encourage the international exchange of knowledge and data common to all thermal research groups, independent of application; and that it will lead to an overall increased awareness of the thermal remote sensing community. A strategic long-term benefit of the joining of forces under SIG-TRS should be increased visibility, with a view to positioning TRS higher on the agenda for new sensor development in Europe. Even though EARSeL's target group is organisations within Europe, this SIG is also open to interested individuals and contributions from other parts of the world.

As a first technical event, SIG-TRS is organising a dedicated one-day session on thermal remote sensing at the June 2009 EARSeL Symposium in Chania, Crete. It will be followed by a half-day trip into the Chania countryside to give SIG-TRS participants possibilities for hands-on experiments with a thermal camera, thermal radiometers, and possibly a thermal field spectrometer. Part of ITC's new thermal equipment will be available for hands-on training as well. To register for this symposium and submit abstracts for the thermal remote sensing session, please visit http://earsel29.maich.gr/. The deadline for abstract submission for the Chania conference is 14 November 2008.

Apart from organising events and workshops, SIG-TRS also maintains a mailing list to keep its members up to date on relevant developments. To sign up for the mailing list or for more information on the SIG, please visit www.itc.nl/sigtrs or send an e-mail to hecker@itc.nl



Coal fire area in China: cracked bedrock due to volume loss underground. Top: normal camera image; bottom: thermal camera image revealing distinct hot spots where the fires are raging underground (source: DLR-DFD).

Former ITC Journal Achieves High Impact Factor

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The *International Journal of Applied Earth Observation and Geoinformation* (JAG for short) has been published by Elsevier since 2002 and is the successor of the former ITC Journal. Editor-in-chief is Professor Alfred Stein, head of the Earth Observation Science department.

It publishes original papers that apply earth observation data to the inventarisation and management of natural resources and the environment. Since the scope is large, contributions must be of the highest quality. Papers addressing these topics within the context of the social fabric and economic constraints of developing countries are particularly welcome. The aim to include contributions of the highest quality has resulted in an impact factor of 1.534 (2007, © Journal Citation Reports 2008, published by Thomson Reuters). The impact factor is a measure of how often an arbitrary article in a journal is cited, not by the same author. It is a general global measure of the quality of the papers published by the journal. This figure puts the journal immediately at fourth position among the remote sensing journals. Plans for the next year include an extension from four to six issues, a new cover, and a larger page size so that many more papers can be published.

Presently a supplement is being prepared entitled *Remote Sensing for Africa*, with Dr Tsehaie Woldai as managing guest editor and Professor Harold Annegarn as guest editor.

For more information on the journal:
http://www.elsevier.com/wps/find/journaldescription.cws_home/622741/description#description
For online submissions, please see http://ees.elsevier.com/jag/default.asp

life after itc

Alumni Gatherings in Canada

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The ITC Alumni Canada organised a reunion-cum-meeting with fellow members throughout Canada via satellite venues of Woodbine Park, Toronto (Ontario), Stanley Park, Vancouver (British Columbia), and Weaselhead Park, Calgary (Alberta), areas where alumni members have mostly increased in numbers over the years. The Toronto and Calgary groups staged their gathering on 20 July 2008, while the Vancouver group held theirs on 3 August 2008.

This reunion-cum-meeting at the strategic core venues mentioned above was necessary to attract the participation of fellow alumni as they are accessible to other Canadian provinces (e.g. Manitoba, Saskatchewan, Quebec). The weather in Canada on the two days concerned was generally warm and sunny, but the Toronto group, undaunted, braved isolated rain showers in the late afternoon.

The reunion-cum-meeting was mainly to discuss and establish plans for registering the ITC Alumni Association (IAA) of Canada, once and for all, with the national/federal-based Canadian corporations. The initial drafting of the charter and bylaws is currently being reviewed by the members in preparation for its final submission. Using electronic voting, the general membership (active voting Yahoo group members initially totalling 13) recently selected the following interim members to serve on the IAA of Canada's executive committee:

- Mr Rex Camit (Geological Survey Course, Postgraduate Diploma Geo3-1997 and MSc Geo2-1998) was elected president
- Mr Mosharef Ali Mir (Applied Geomorphology Course, Postgraduate Diploma AGS3-1997) was elected vice-president
- Ms Sumana Indrasiri (Geo-information for Urban Application Course, Postgraduate Diploma GIU-1997) was elected general secretary
- Ms Mercy Mandanas (Water Resources Management Course,

Postgraduate Diploma WRS3-1997) was elected treasurer
- Mr Nicola Nur (Photogrammetry Course, Postgraduate Diploma P1-1968) was appointed executive adviser/consultant.

The above members have expressed their full commitment, interest and support in establishing and organising the IAA of Canada, where Canadian alumni, ITC and the Netherlands will eventually develop a binding relationship promoting academe, professionalism, multiculturalism and camaraderie among alumni locally and abroad.

If you would like to express your interest and support, please feel free to contact the IAA of Canada general secretary (Sumana Indrasiri, IAA of Canada: association-canada@alumni.itc.nl)

Alumni Meet in Cuba

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During the week of 22-26 September, the XIII SELPER conference (Simposio Internacional de la Sociedad Latinoamericana en Percepcion Remota y Sistemas de Informacion Espacial) was held in Havana, Cuba.

ITC, represented by John Horn, was delighted to host an alumni gathering on Wednesday, 22 September, at the Hotel Nacional, Havana. In a very large turnout, nearly 50 ITC alumni from Cuba and other Latin American countries gathered together to renew old acquaintances and to hear of the recent developments and trends at ITC. This was thought to be the first time that such a gathering had taken place in Cuba, and the possibility of establishing an alumni association was discussed.

After a short break over the last few years due to political "differences", there are now signs that the relationship between Cuba and the European Union is returning to normal, and it is hoped that shortly Cuban students will once again be able to accept and receive study fellowships from the Netherlands Fellowship Programme.

Despite the difficulties caused by the recent hurricanes that had devastated parts of Cuba, the SELPER conference was well attended and ITC's exhibition stand attracted a lot of interest, not surprisingly in topics related to disaster management. Plans were discussed to investigate the possibilities of closer links between Cuban disaster programmes and the United Nations University School for Disaster Geo-Information Management at ITC.

Hotel Nacional, Havana, venue of the alumni gathering

Dr C. Eloy Perez Garcia, director Agencia de Teledetección, Geocuba, and president of SELPER, visiting John Horn at the ITC exhibition stand

Reminders of the recent hurricanes that had devastated parts of Cuba only a few days before the conference

Some of the ITC alumni that gathered at the Hotel Nacional

ITC Alumni Party, Ulaanbaatar, Mongolia

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On the evening of 27 June 2008, an alumni gathering was hosted by ITC at Seoul restaurant, Ulaanbaatar, on the occasion of the visit of the ITC rector, Professor Martien Molenaar. The gathering was officially opened by Professor John van Genderen, and this was followed by a speech by Ms Mongontsetseg, executive director of the ITC Alumni Association, an NGO formally established in Mongolia.

Over 40 ITC alumni enjoyed a pleasant meal together. They were happy to meet Martien Molenaar and his wife Juleke, and to talk to their old friend John. This party was valuable to all alumni as an opportunity to get to know one another better, refresh contacts, and exchange news and experiences.

During his trip to Mongolia, Professor Molenaar paid visits to several organisations and institutes, including the National University of Mongolia; the Institute of Geography; the Forest and Water Research Center; the Mineral Resources and Petroleum Authority of Mongolia; the Agency for Land Administration, Geodesy and Cartography; the Mongolian Ministry of Nature and Environment; and the Dutch-funded project National Geo-Information Center for Natural Resources Management, which is implemented by the Ministry of Nature and Environment.

Rector Martien Molenaar paid visits to several organisations

ITC Alumni Nepal: A Proactive Body Promoting Geo-Information and Earth Observation Science in Nepal

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On 30 July, the ITC Alumni Association Nepal organised an alumni gathering in Kathmandu.

Basically, the agenda was to make the association a proactive body promoting geo-information and earth observation science in Nepal. We had a very successful meeting, with about 80 alumni present. The new executive committee, with Anish Joshi as general secretary and Dr Chudamani Joshi as president, has already started working.

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ITC develops and transfers knowledge on geo-information science and earth observation

ITC is the largest institute for international higher education in the Netherlands, providing international education, research and project services. The aim of ITC's activities is the international exchange of knowledge, focusing on capacity building and institutional development in developing countries and countries in transition.

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