

ISPRS DAILY

The XXI Congress

The International Society
for Photogrammetry and Remote Sensing

3-11 July 2008 Beijing, China

Thursday 10 July 2008

Congress Success Quantified

How do you measure success?

Congress Director Prof. Chen Jun delivered a report on XXI ISPRS Congress statistics yesterday afternoon.

- More than 2700 individuals registered, with more than 1500 international registrations coming from 76 countries
- More than 2600 technical presentations were given
- The General Assembly gathered 120 delegates from 41 countries
- Over 150 participants joined tutorial sessions and 411 attended workshops
- 17 presentations were given at the User Forum, gathering more than 480 participants over three half-day sessions
- CATCON5 attracted eight software companies and more than 80 participants
- The first congress book was published, collecting 34 contributions from 62 active researchers within the ISPRS.
- The youth forum heard more than 15 presentations and close to 500 people attended.
- Between the eight technical commissions, more than 2800 abstracts were submitted
- 40 local students and 37 foreign students from 12 different countries attended the four-day summer school in Nanjing.
- Seven of eight issues of *ISPRS Congress Daily* have been published, keeping participants up to date with Congress events.



The Road Ahead

ISPRS President Elect, Orhan Altan, shares his vision for the ISPRS.

The ISPRS is a non-governmental international organisation, devoted to the development of international co-operation for the advancement of the photogrammetry, remote sensing and spatial information sciences. The ISPRS works to advance these fields for the well-being of humanity and the sustainability of the environment.



Orhan Altan, President Elect (July 2008, Beijing)

In my opinion, the ISPRS should give environmental monitoring and sustainable development, disaster management and food security high priority in its activities. I believe that our sciences and technologies can contribute greatly to the environmental issues confronting the globe. We should be involved in the actions discussed in the report by the World Business Council for Sustainable Development, *Powering a Sustainable Future: Policies and Measures to Make it Happen*. We should be one of the international scientific societies contributing to the achievement of the UN Millennium Development Goals.

I hope that we will serve society not only with Earth observation, but also with our other sciences and technology. The spatial information sciences can offer a solution to many of the different problems of people living on this planet, such as preservation of cultural heritage, improving human health and easing the stresses of daily life.

This brings me to another point that I believe should rank highly in ISPRS activities: ISPRS Outreach. Publicising our science and technology to the general

population is vital. We must be prepared not only with scientific papers, but also with documents that describe in plain language the scientific achievements of the ISPRS. These documents can also help us to collaborate with, and elicit feedback from, other NGOs. We should take every opportunity (for example, the centenary celebrations) to publicise our sciences.

CONTENTS

Page 1 • Congress Success Quantified
Page 2 • White Elephant Club
Page 3 • In the Spotlight
Page 4 • Technical Visit
Page 5 • Technical Visit
Page 6 • Technical Commission Vision
Page 7 • Technical Commission Report
Page 8 • Chinese National Exhibitions

3-11 July 2008 Beijing, China

Looking Ahead

Technical Commission VII: Thematic Processing, Modelling and Analysis of Remotely Sensed Data

Remote sensing is a rapidly evolving discipline. Its progress is driven by advances in space technology and increasing demand for up-to-date geospatial information.

This demand has in recent years been fuelled by major natural disasters and the predicted consequences of climate change and natural resource shortages. However, many Earth observation satellites have been designed as multi-purpose missions. This means that while these missions provide data for diverse applications, they often do not serve any of them particularly well. As a result, there is a move toward specialised satellite missions, designed to meet the requirements of only one or two applications. This trend is accompanied by a specialisation in algorithm development and intensified efforts to develop interfaces to ingest the remotely sensed data into models.

The retrieval of geospatial data from satellite measurements is complicated by atmospheric influences and the complexity of the Earth's surface. For a successful retrieval, one must ideally employ remote sensing techniques that exhibit a high sensitivity to the parameters and classes of interest while minimising instrument noise and the perturbing impacts of other variables. Also important is the choice of the retrieval algorithms. They must describe the physical and geometric aspects of the measurement process with sufficient detail, yet also be simple enough to allow a robust inversion of the measurements. Classification and data fusion techniques must take the characteristics of the remote sensing measurements into account, so results are reproducible and transferable.

These fundamental remote sensing issues are at the heart of ISPRS Technical Commission VII. The vision is to make new remotely sensed geospatial datasets available to users by exploiting existing satellite data archives and making efficient use of new remote sensing capabilities such as those provided by new SAR satellites and full-waveform airborne laser scanners.

Wolfgang Wagner
Vienna University of Technology
AUSTRIA

White Elephant Club

Senior officers in support of the ISPRS



Members of the White Elephant Club

The White Elephant Club was founded in conjunction with the XX ISPRS Congress, at the 60th birthday party of Professor Armin Gruen, held at Yildiz Hisai Club, Istanbul, Turkey on 18 July 2004.

The philosophy behind the idea is that 'elephants' (those who obtain food by working hard) should defend and maintain the well-being of those in the field of photogrammetry, remote sensing and spatial information sciences against 'crocodiles' (those who try to get food without working hard). The White Elephant symbolises a rare and noble person, who has a with highly motivated and honorable spirit. In Thailand, if a White Elephant is found it must be donated to the King.

The aims of the White Elephant Club are to support the mission and goals of the ISPRS and encourage young generations to grow into potential 'elephants' by striving for excellence through their own

activities. This is based on friendship among the members, close co-operation and the sharing of commemorative events.

Current members of the Club are: Gottfried Konecny (Honorary President), Armin Gruen (President), Shunji Murai (Secretary), Orhan Altan, Ayhan Alkis, Ivan Antipov, Klaas Jan Beek, Ian Dowman, Clive Fraser, Dieter Fritsch, Lawrence Fritz, Wicha Jiwalai, Deren Li, Petros Patias, Klaus Szangolies, Kennert Torlegard, John Trinder, Suvit Vibulsresth, Sherman Wu and Zuxun Zhang.

In the past, the White Elephant Club has conducted successful sessions on thesis writing, proposal preparation and presentation techniques. It is aiming to extend its activities into other domains, such as compiling the more recent history of photogrammetry, remote sensing and spatial information sciences.

ISPRS Congress Gala Dinner

The ISPRS is hosting a Gala Dinner to celebrate the conclusion of a successful XXI Congress. Members are encouraged to purchase tickets at the Registration Booth on Level 2. Details are as follows:

Date: Thursday, 10 July 2008
Time: 17:30-18:00 Gather at the gate of BICC and depart to Jiuha Spa & Resort
19:00-22:00 Enjoy Chinese cuisine and cultural art performances
Venue: Jiuha Spa & Resort
Cost: RMB 800 (including entrance ticket to Jiuha Spa & Resort)

Thursday 10 July 2008

Cameras, Cameras, Cameras

Movement in the medium format camera market may indicate that a digital market boom is on the horizon.

The first day of the ISPRS Congress Exhibition was dominated by news from the camera suppliers. Not only did Franz Leberl – the founder of Vexcel Imaging and therefore, one of the people most responsible for the new world of digital imaging – give a rousing speech to the plenary assembly, but all the large format vendors released new products.

Vexcel itself released the UltraCamXp (Prime), an incremental upgrade of the UltraCam-X. It features a 17,310 x 11,310 pixel (196 Mpixel) CCD to replace the 130 Mpixels of the X. It also offers more storage and better radiometrics. The first two of the new cameras have been sold to AeroData in Europe. The contract was signed during the Congress.

Leica Geosystems has replaced the ADS40 with the ADS80. It has improved radiometry and a new processing workflow designed to improve productivity.

But the real news from the conference has been movement in the medium format market. This is an attractive segment because all indications are that it will be at least twice the size of the large format market. Current wisdom seems to be that around 300 large format digital cameras have been sold since 2001. There were about 2500 film cameras in existence at the turn of the century, and around 600 of them are still in operation.

If those film operators can be convinced to switch, the digital market will clearly boom. Mostafa Madani, ZI Imaging's chief photogrammetrist, is even more optimistic. He says the digital camera market will likely be twice as large as the market for analogue sensors.

The main driver in modern photography, according to Madani, is the ability to create 3D data. The basic science of this process is well understood, but as coverage increases and the time available to turn out products decreases, the real issue is automation. How can one use automatic processes to turn images into 3D models reliably?

Intergraph, for one, will be hoping that a satisfactory solution emerges soon. The company introduced the RMK D at the conference. Intergraph has taken the



The first of two new Vexcel UltraCamXp (Prime) cameras has been sold to AeroData in Europe.

specification and accuracy of its existing large format DMC camera and scaled it down to half the footprint.

Klaus Neumann, from Intergraph GmbH in Germany and the product manager for the new product, said they were still negotiating costs with various suppliers. He says it is too early to declare a price on the product, but it is expected to be about half the price of the DMC.

Vexcel announced that it would release a competitive version of the UltraCam, called UltraCam L, later in the year.

A number of other companies were exhibiting at the show. Wehrli Geosystems from the Ukraine displayed its new 4-DAS-1 and announced the 3-DAS-2 large format camera for next year.

Applanix exhibited an enhanced version of its Digital Sensor System DS 439 RapidOrtho airborne mapping solution, which offers full LiDAR integration and a dual camera option.

The Belgian company Dimac has introduced a three camera line-up with its wide, light and ultrawide models. The light model will compete head to head with the RMK D.

Is there space for all these suppliers? Probably. All the suppliers had new improved software on display, all offering improved productivity. It looks like a market spoilt for choice.

This article was written by Jon Fairall, editor of ISPRS Congress media partner, Asian Surveying and Mapping in Sydney, Australia.

Editorial Team

The local organising committee will publish eight issues of ISPRS Daily: Thursday, Friday, Saturday, Monday (7th July), Tuesday, Wednesday, Thursday and Friday.

If you would like to contribute editorial, please submit material to Inga or Vienna no later than noon each day.

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3-11 July 2008 Beijing, China

Today's Highlights

10 July 2008 - Thursday

Plenary Session 3

Time: 08:30-10:00

Room: Convention Hall No.1

Exhibition

◆ Show Hours

Time: 09:00-17:00

First Floor

Technical Visits

◆ TV-3: Institute of Remote Sensing Applications (IRSA) & Institute of Geographic Sciences and Natural Resources Research (IGSNRR)

13:00 Depart from BICC for IRSA and IGSNRR

15:00 Leave IGSNRR for BICC

◆ TV-7: NavInfo Co., Ltd. (NavInfo)

08:30 Depart from BICC for NavInfo

11:00 Leave NavInfo for BICC

◆ TV-8: National Satellite Meteorological Centre (NSMC)

13:00 Depart from BICC for NSMC

15:00 Leave NSMC for BICC

◆ TV-9: Twenty First Century Aerospace Technology Co., Ltd. (TFCAT)

13:00 Depart from BICC for TFCAT

15:00 Leave TFCAT for BICC

Social Program

◆ SE-7: Gala Dinner

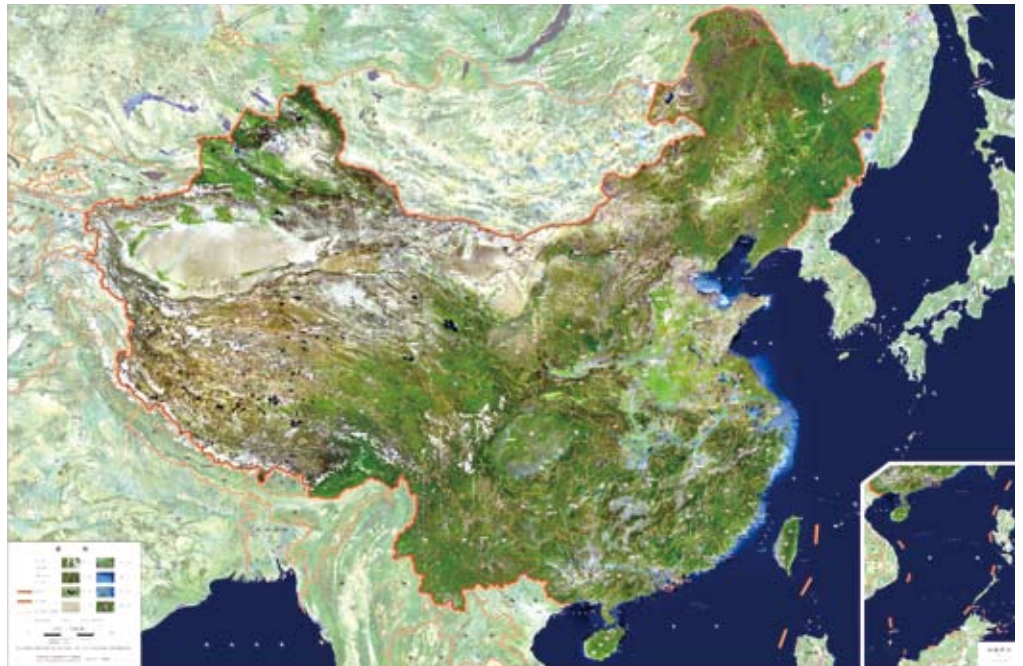
Time: 19:00-22:00

Depart from BICC at 18:00

Place: Jiuhua Spa & Resort

Visiting Beijing-1 Control

Twenty First Century Aerospace Technology celebrated ISPRS by inviting delegates into the control centre for the Beijing-1 satellite.



A photo of China, taken by Beijing-1 MiniSatellite, built by Surrey Satellite Technology Ltd.

Twenty First Century Aerospace Technology is the only enterprise in China that owns and operates a satellite, and supplies data. As part of the Congress, the ISPRS organised a technical visit to its subsidiary company, Beijing Landview Mapping Information Technology (BLMIT). BLMIT was established to manage the acquisition and operation of the Beijing-1 satellite.

The Chinese government paid for the acquisition of Beijing-1. Over the next five years however, the operation of the downstation and the satellite is expected to be self-funding. Cash flow is generated from the sale of data, either fresh tasking or from the data archive. The exercise is part of a government experiment to see whether such a funding arrangement can be made to work in the Chinese context.

The satellite itself is about a metre cube (a model is on display in the control centre). It has solar panels on three sides, with a telescope mounted on top of the main assembly. It weighs 166 kg, and swings around the Earth, 686 km up. Each orbit takes about 100 minutes.

The pan sensor yields four-metre pixels, which can be geo-referenced to within two pixels. The multi-spectral sensor has a green, red and near infrared sensor about equal to Landsat bands 2, 3 and 4. It has a spatial resolution of 32 metres.

The prime contractor for the construction of Beijing-1 was Surrey Satellite Technology Ltd (SSTL) in the UK. It works as part of SSTL's Disaster Managing constellation, which is owned by Algeria, Nigeria, Spain, Turkey, China and the UK. Each satellite is owned and controlled by an agency in its respective country.

The system is designed so that national agencies can gain experience in operating a downstation, controlling a satellite, and distributing and using the data in-country. However, the satellites also make a contribution to emergency data supply during a natural disaster, as occurred in the forest fires in Greece, flooding around the world and many other incidents.

The number of satellites makes it possible to guarantee at least daily revisits anywhere on Earth. Cloud cover aside, this means that during a disaster, emergency managers get a guaranteed daily report.

A BLMIT spokesman said that so far, the experiment seems to be working well. Revenue has doubled in the last 12 months compared to the previous year, when the company was founded, even though all the Sichuan earthquake data was supplied for free.

This article was written by Jon Fairall, editor of ISPRS Congress media partner, Asian Surveying and Mapping in Sydney, Australia.



Thursday 10 July 2008

National Geomatics Centre of China

Lots of metrics confirm that China is expanding at an impressive rate. ISPRS participants on a technical visit to the the National Geomatics Centre of China were given more to ponder: when NGCC's 1:1 million coverage was updated in 2003, cartographers discovered they had to change 8 per cent of the political boundaries, 14 per cent of the railways, 23 per cent of the residential areas and 37 per cent of the roads.

The NGCC was established in 1993 with a mission to create a digital map of China. It responded with a series of mapping programs at scales of 4 million, 1 million, 250,000 and 50,000. Larger scale mapping, all the way down to 1:500 scale, exists for certain areas, but is undertaken by provincial or municipal authorities.

The databases were originally no more than digitised maps. However, over the years, they have all been updated using a variety of technologies, especially satellite imagery. This imagery is mainly sourced from Landsat's Thematic Mapper and the Spot satellites.

The 1:1 million map series was completed in 1993. It was used to generate a digital elevation model with 600 metre postings.

The 1:250,000 series was completed in 1998. An update program was completed in 2002.

The 1:50,000 series was finished in 2005. It is composed of 24,322 map sheets. An update program started in 2006 was used to derive a digital elevation model with 25 metre postings, the best available for China.

Each database is organised into five themes: geodetics, topographic, imagery

and thematic. The thematic theme contains datasets covering administrative boundaries and transport routes.

Apart from the map databases, NGCC also maintains the National Geodetic Database, with its origin in Xi'an. There is a national high precision network consisting of 300 Level A points and 2500 Level B points.

NGCC also runs the National Gravity Network and the Crustal Movement Monitoring Network. The latter is based on 1200 GPS stations.

Data from these sources is available for the cost of distribution. However, potential users require a certificate before NGCC will accept an order for anything larger than 1:1 million scale. For Chinese citizens, this is evidently not much of a problem. Senior engineer Li told the group that school teachers, for instance, could obtain the data for educational purposes.

NGCC also has plans for an English language website, although no date has been established for its completion. The plan is that all annotation on the maps will use Western lettering.

In the immediate future, NGCC will devote considerable resources to supporting plans for the development of China's set. It is currently undertaking the mapping for an ambitious scheme to pump water from the south up to the deserts of the north.

The organisation is also developing programs to better understand the desert environment so new development can occur with minimal ecological damage.

This article was written by Jon Fairall, editor of ISPRS Congress media partner, Asian Surveying and Mapping in Sydney, Australia.



ISPRS participants visited the National Geomatics Centre of China on a technical visit.

What's on the Menu

11 July 2008 - Friday

Closing Ceremony

Time: 15:30-17:30

Room: Convention Hall No.1

Important Notice

ISPRS 2008 Congress Book

First authors of each of the chapters of the ISPRS 2008 Congress Book are invited to pick up a complimentary copy of the book from Conference Room 303. Copies may be collected any time before the end of the Congress.

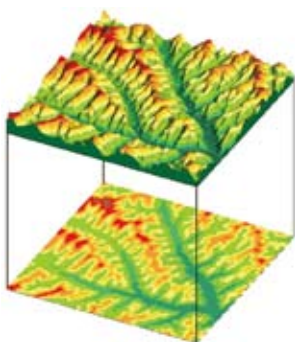


Technical Visit

3-11 July 2008 Beijing, China

Technical Commission Vision

Technical Commission II: Theory and Concepts of Spatio-Temporal Data Handling



TC II aims to contribute to the advancement of spatial information science by addressing fundamental issues and cutting-edge research initiatives. The following eight fundamental scientific areas have been preliminarily identified for the period 2008-2012:

- Cognition and modelling of space and time

- Multiple representation of spatial data
- Spatial analysis and data mining
- Uncertainty modelling and quality control for spatial data
- Multi-dimensional and mobile data models
- Geo-GRID and computational geometry
- Geovisualisation and communication
- Semantic interoperability and ontology of spatial information.

The working groups of TC II will focus research on these areas with an emphasis on new trends and the technological demands of emerging applications.

Program of the Day

- | | |
|--|--|
| <ul style="list-style-type: none"> ◆ Plenary Session 3 (PTS-3)
Time: 08:30-10:00
Room: (Convention Hall No.1) ◆ TS WG VII/3: Information Extraction from Hyperspectral Data
Time: 10:30-12:00
Room: (Convention Hall No.2A) ◆ TS WG VI/4: Internet Resources and Datasets
Time: 10:30-12:00
Room: (Convention Hall No.2B) ◆ TS SS-8 (2): From National Mapping to a European Spatial Data Infrastructure
Time: 10:30-12:00
Room: (Convention Hall No.2C) ◆ TS WG V/6: Medical Image Analysis, Human Motion and Body Measurement
Time: 10:30-12:00
Room: (201A Conference Room) ◆ TS ThS-20: Public Health
Time: 10:30-12:00
Room: (201B Conference Room) ◆ TS WG III/5: Road Extraction and Traffic Monitoring
Time: 10:30-12:00
Room: (201C Conference Room) ◆ TS WG II/3 (2): Multiple Representations of Image and Vector Data
Time: 10:30-12:00
Room: (305C Conference Room) ◆ TS ThS-21: 3D Modelling in Forestry Applications
Time: 10:30-12:00
Room: (305B Conference Room) ◆ PS WG I/5: Geometric Modeling of Optical Spaceborne Sensors and DEM Generation
Time: 13:30-15:30 ◆ PS ThS-7: 3D City Modeling from Image and Laser Range Data
Time: 13:30-15:30 ◆ PS ThS-9: Realtime and Incremental Updating of Core Databases
Time: 13:30-15:30 ◆ PS ThS-11: Early Warning Systems for Natural Hazards
Time: 13:30-15:30 ◆ PS ThS-17: Geo-Information Contribution to Sustainability Indicators
Time: 13:30-15:30 | <ul style="list-style-type: none"> ◆ PS ThS-18: Change Detection
Time: 13:30-15:30 ◆ PS ThS-19: Integrated Coastal Zone management
Time: 13:30-15:30 ◆ PS WG VIII/6: Coastal Management Ocean Colour and Ocean State Forecasting
Time: 13:30-15:30 ◆ PS WG VIII/7: Water Resources Security and Management
Time: 13:30-15:30 ◆ PS WG VIII/8: Polar and Alpine Research
Time: 13:30-15:30 ◆ PS WG VIII/9: Arid Lands, Land Degradation and Desertification
Time: 13:30-15:30 ◆ PS WG VIII/10: Precision Farming and Sustainable Food Production
Time: 13:30-15:30 ◆ PS WG VIII/11: Sustainable Forest and Landscape Management
Time: 13:30-15:30 ◆ TS WG II/6: System Integration and Interoperability
Time: 16:00-17:30
Room: (Convention Hall No.2A) ◆ TS ThS-2: Medium Format Cameras
Time: 16:00-17:30
Room: (Convention Hall No.2B) ◆ TS WG I/2 (4): New Commercial Systems and Technologies
Time: 16:00-17:30
Room: (Convention Hall No.2C) ◆ TS SS-18: Global DEM Interoperability
Time: 16:00-17:30
Room: (201A Conference Room) ◆ TS ThS-16: New Approaches and Tools for Education and Capacity Building
Time: 16:00-17:30
Room: (201B Conference Room) ◆ TS WG VIII/2 (3): Floods and Drought
Time: 16:00-17:30
Room: (305C Conference Room) ◆ TS WG V/1 & ThS 12: Industrial Vision Metrology - Systems & Design
Time: 16:00-17:30
Room: (305B Conference Room) |
|--|--|

Technical Commission Report

Technical Commission III: Photogrammetric Computer Vision and Image Analysis

Curious about how 3D city models are generated from laser point clouds? Interested to know how roads can be identified from videos? Want to get your hands on algorithms you always found were not working well enough? Then you are in the middle of the research being undertaken by TC III. As photogrammetrists, we are among the few thousand researchers in the fast-growing field of computer vision, that is, the field concerned with making computers see.

The efforts of TC III's six working groups have yielded interesting results. Automation of close range bundle adjustments, where only control points require manual interaction, was developed. The generation of highly detailed surface models constructed from images has advanced to a point where images are becoming an interesting alternative to LiDAR. The direct access to 3D information from LiDAR systems has triggered a large amount of research, including research into increased morphological quality for digital elevation models, ease of 3D-reconstruction for large build-up areas, and detailed analysis of forest areas.

TC III found that information density can be increased by the availability of intensity and waveform, enabling more detailed classifications. Also, the interpretation of aerial and terrestrial images successfully grasped techniques from pattern recognition and machine learning, especially for the modelling of road networks and façade structures.



Finally, the analysis of video sequences is becoming a hot topic, especially for the highly challenging and relevant task of so-called 'simultaneous localisation and mapping', both from the ground and air, using UAVs.

You can expect fascinating developments from Commission III in the near future.

Wolfgang Förstner
University of Bonn
GERMANY



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