

No.1



Silk Road for Information from Imagery



ISPRS DAILY

The XXI Congress

The International Society
for Photogrammetry and Remote Sensing

3-11 July 2008 Beijing, China

Thursday 03 July 2008

Welcome to Beijing

In the summer of 2004, when the ISPRS General Assembly made its decision to elect Beijing as the host city for the XXI ISPRS Congress, we had made a promise: we will make this congress special! Over the past four years, with the full support from the ISPRS community, the Chinese Society of Geodesy, Photogrammetry and Cartography and the State Bureau of Surveying and Mapping, we have done our best to prepare the ISPRS Congress in its literal sense - to create an Informative, Special, Progressive, Relaxed and Successful Congress.

We have added some new features to the scientific and technical programs. To the traditional plenary sessions, workshops, working group sessions (oral and poster), theme sessions and youth forums, we have also added user forums and special sessions. The user forums provide a platform to demonstrate successful solutions. They also provide a forum for end users to voice demands and an opportunity for manufacturers to work with practitioners. The special sessions include multi-disciplinary sessions organised with sister institutions and those covering topics not directly addressed by ISPRS working groups.

Two special sessions with a local focus have been organised. One is on mapping in western China - a region with a very harsh natural environment - and the other is on Digital Olympics. To help Congress participants write good technical papers, we have also organised the Elsevier Workshop on How to Write Good Journal Papers.

In addition to the traditional proceedings, we have produced some special publications for this Congress. For the first time in ISPRS history, an ISPRS Congress Book has been published. This book contains 34 chapters contributed by more than 60 active researchers. It provides an overview of developments in science and technology. We have also published a monograph entitled *Photogrammetry and Remote Sensing in China*, which is written in both Chinese and English. It has been included in the registration package. This book provides a brief review of the development of photogrammetry and remote sensing in China and it has contributions from over 50 scholars.

A variety of technical tours have been organised for you to visit organisations in Beijing, including government agencies, research institutions and commercial companies for photogrammetry, remote sensing and spatial information technology. An exciting and enjoyable program has been made for social activities including traditional Peking opera, an acrobatic show, Beijing Night show and a night at Laoshe Tea House. We hope you will enjoy this program and appreciate the rich culture of Beijing.

CONTENTS

- Page 1 • Welcome to Beijing
- Page 2 • Special Publications
- Page 3 • President's Message
- Page 4 • Congress Highlights
- Page 5 • In the Spotlight
- Page 6 • Workshop Highlights
- Page 7 • Souvenirs and Books
- Page 8 • The Past and Future

We trust that we will see an almost brand new Beijing, emerging from its traditional charm with perhaps the largest variety of architectural masterpieces among world mega-cities. Last year, millions voted for the city as the most beautiful in China for its perfect harmony of past and present. The architectural masterpieces include the new Olympic Stadium (nicknamed the Bird's Nest), which can be seen from the conference venue, the new National Grand Theater (nicknamed The Egg), the National Swimming Centre (nicknamed the Water Cube) and the CCTV headquarters (nicknamed the Z Criss-cross).

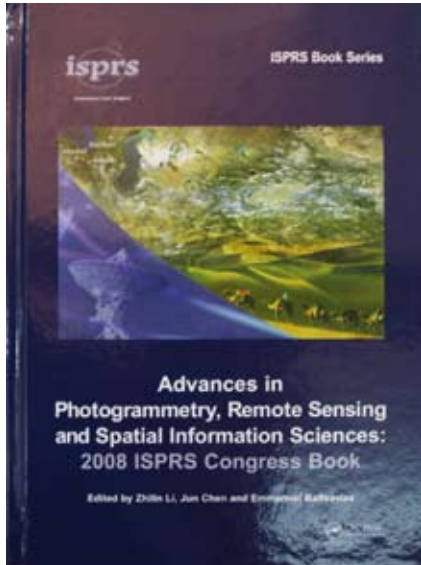
All in all, the platform has been set and the conference is about to open. We call for your active participation in the programs and wish you an enjoyable stay in Beijing.

Welcome to Beijing! Welcome to the XXI ISPRS Congress!

Local Organizing Committee
ISPRS 2008 Beijing



Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences: 2008 ISPRS Congress Book



Published on the occasion of the XXI Congress of the International Society for Photogrammetry and Remote Sensing (ISPRS) in Beijing, China in 2008, *Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences: 2008 ISPRS Congress Book* is a compilation of 34 contributions from 62 researchers active within the ISPRS. The book covers state-of-the-art developments in photogrammetry, remote sensing and spatial information sciences. It is divided into six parts:

- Introduction
- Sensors, Platforms and Data Acquisition Systems
- Data Processing and Analysis
- Data Modelling, Management and Visualisation
- Applications
- Education and Co-operation



Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences: 2008 ISPRS Congress Book provides a comprehensive overview of the progress made in these areas since the XX ISPRS Congress held in 2004 in Istanbul, Turkey. The volume will be invaluable not only to scientists and researchers, but also university students and practitioners.

Photogrammetry and Remote Sensing in China



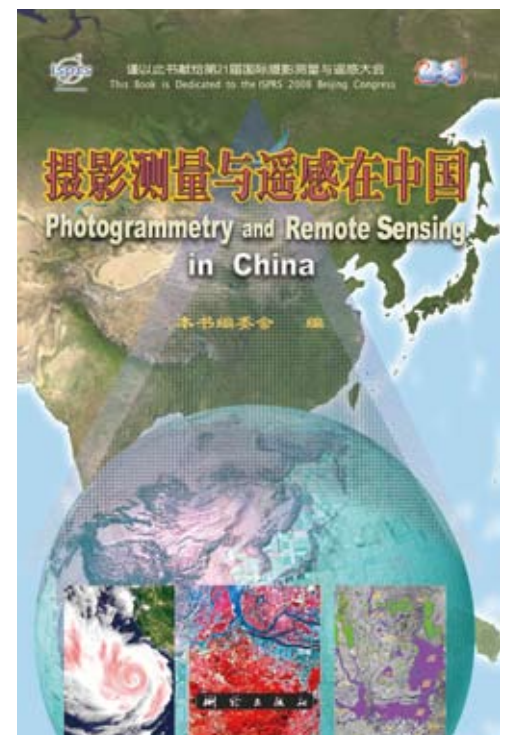
Since its reform and opening up to the world, China has made great progress in photogrammetry, remote sensing and spatial information science. It has made advancements in socio-economic development, resource investigation, environmental protection, disaster prevention and reduction, national security and living standards. China has also been active in academic exchange and international cooperation. The book provides an overview in both Chinese and English of the country's major achievements in this field.

This book has nine chapters. Chapter 1 introduces the long history of surveying and mapping. Chapter 2 summarises civil applications of air-borne and space-borne remote sensing systems for Earth observation. Chapter 3 describes key technological achievements in analytical photogrammetry, digital photogrammetry, remote sensing image processing, digital mapping and data updating. Chapter 4 presents the research on

spatial information science, such as multi-dimensional spatio-temporal data modelling, uncertainty in spatial data and analysis and GIS-based process analysis and simulation. Chapter 5 reviews key applications of photogrammetry and remote sensing in topographic mapping. Chapter 6 describes the industrialisation of mapping, remote sensing, GIS and satellite-based navigation.

An introduction is given to the scale, distribution, products, and services of photogrammetry and remote sensing. The education and international co-operation in this field are briefly summarised in Chapters 7 and 8. An outlook about the future developments in photogrammetry and remote sensing in China is given in Chapter 9.

This is a rich and informative book for domestic and foreign counterparts wanting to know about China's progress and accomplishments in peacefully applying spatial information technology.



Following the Silk Road Back to Asia

IAN DOWMAN, ISPRS PRESIDENT

Finally, the Silk Road has led back to Asia. What are treasures have we picked up along the way?



The first ISPRS Congress to be hosted in Asia was twenty years ago, in Kyoto. In the intervening time, we have circumnavigated the globe and, after Istanbul, have followed the Silk Road back to Asia.

China is a very appropriate venue for the Congress. It is country whose rapid expansion is having an immense impact on the world. We look forward to learning more about these developments and experiencing the juxtaposition of the ancient and modern culture of one of the oldest civilisations in the world.

China is now a major force in the scientific world. It has also recently pioneered significant developments in sensor technology. There has always been a strong educational component in China, at what is now known as Wuhan University (previously the Wuhan Technical University for Surveying and Mapping). Professor Wang Zhizhou was a distinguished photogrammetrist and an Honorary Member of the ISPRS. The *Virtuozo* software, which originated in Wuhan, is used all over the world. Academics from universities around the world have lectured at Wuhan from as long ago as 1964, when Professor E. H. Thompson of University College London visited.

The recent earthquake in Wenchuan has demonstrated the immense importance of photogrammetry and remote sensing in disaster management. Geospatial information has become a key component of prediction, emergency response and recovery. Satellite data and GIS technology has been used to very good effect in China, proving invaluable to decision-makers and workers on the ground.

One of the missions of the ISPRS is to promote international co-operation on the use of image data. This co-operation is essential for the advancement of knowledge, research, development and education in the photogrammetry, remote

sensing and spatial information sciences. Armed with this knowledge, we strive to contribute to the well-being of humanity and the sustainability of the environment.

What does the future hold for the world of photogrammetry and remote sensing? Perhaps the question is best answered by looking to some of the key developments influencing our work today.

The launch of new Earth observation satellites and the processing and application of the data which they produce is significant. Satellites are smaller and more agile, allowing accurate DEM generation to become operational. Digital aerial cameras are reaching full maturity; the number on the market is proof of this. They also collect multi-spectral data, which is bridging the gap between photogrammetry and remote sensing.

Geo-visualisation is providing new opportunities to present information to a wider audience. The development of new algorithms for feature extraction is helping to advance 3D city modelling and the use of image data for documenting cultural heritage. Multi-temporal data and change detection is becoming a critical field of research for disaster monitoring, security applications and global change studies.

Server-based GIS is becoming available to more and more people, with wide implications for the important issue of data delivery. A number of significant developments support this: open source software, research into ontologies, content-based indexing, querying, data mining and information retrieval, for example.

Since the end of the Congress in Istanbul, our people have been working on new research, pioneering new projects, making new contacts and forging new partnerships. Now, we meet to review their achievements.

The Congress is also, of course, an occasion to meet old friends and make new ones. I have visited Beijing several times and am very familiar with its urban landscape and many fascinating cultural activities. It is always a pleasure to revisit interesting places - Beijing is no exception.

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.

Editor-in-chief:

SUN Baowu

Advisor:

Prof. LI Zhilin

Editor/journalist:

Vienna LEE

Inga TING

Layout Team:

SUN Wenting

PAN Fen

Photographer:

WU Xiaogan

ZHAO Jianguo

WU Jiang

Local Co-ordinator:

YAN Ronghua

Local Co-ordinator Assistant:

MEI Yang

Contact:

No.3 VIP Room, Convention Hall, LEVEL 1

Beijing International Convention Centre

TEL: (010)84979744

Supported By:



3-11 July 2008 Beijing, China

Opening Ceremony

- ◆ **Silk Road for Information from Imagery**
Video Show
- ◆ **Opening Address by Congress Director**
Prof. Chen Jun
- ◆ **Welcome Address by Vice Minister, Ministry of Land and Resources, Director General, State Bureau of Surveying and Mapping**
Mr. Lu Xinshe
- ◆ **Welcome Address by ISPRS President**
Prof. Ian Dowman
- ◆ **Presentation of Brock Gold Medal Award**
ISPRS President Prof. Ian Dowman
ASPRS President Ms. Kass Green
- ◆ **Presentation of Otto von Gruber Award**
ISPRS Secretary General Prof. Orhan Altan
ITC Rector Prof. Martien Molenaar
- ◆ **Presentation of U.V. Heleva Award**
Mr. Guy Perkins of ERDAS
Mr. Arnout Jacobs of Elsevier
- ◆ **Presentation of Wang Zhizhuo Award**
ISPRS First Vice President Prof. John Trinder
CSGPC President Prof. Yang Kai
- ◆ **Proposal for ISPRS Honorary Membership**
ISPRS President Prof. Ian Dowman
- ◆ **Cultural Show**
- ◆ **Opening of the XXI ISPRS Congress**
Prof. CHEN Jun

Winning the Numbers Game

Here's why the XXI ISPRS Congress is already off to a strong start.

If it's a numbers game, the XXI ISPRS Congress is already off to an excellent start. The 2008 Congress received the largest number of submissions of any congress held in its 98-year history. In seven days, it will host 150 oral sessions featuring more than 600 speakers, 1700 poster sessions and nine technical streams covering more than 2,800 abstracts and 1,800 papers from around 90 countries around the world.

The Congress will host two major exhibitions from 7-10 July: the Congress will host both the *International Technical Exhibition for Surveying and Mapping* and the *National Achievement Exhibition*.

Among this year's highlights are the Beijing Declaration, which aims to guide the peaceful use of geo-spatial technology. This world-first document will be presented by Xu Guanhua as part of international discussions among Congress participants.

There's also the Wang Zhizhuo Award, which makes its debut this year. Sponsored by the Chinese Society of Geodesy, Photogrammetry and Cartography, it will be granted at each Congress to a person who has made a significant achievement or innovation in the spatial information sciences.

And don't forget to pick up your ISPRS' Congress publications, including 23 volumes of Congress proceedings (maybe save these for the flight home) and the comprehensive ISPRS book, *Photogrammetry and Remote Sensing in China*. And you're already reading *ISPRS Daily* - which means you're off to a strong start too.

Towards International Data Standards

Military operations may be one of the key forces behind the current demand for standards.

The demand for a unified system for standardised geo-spatial formats, land cover classifications and tolerances for data accuracy is increasing, say experts from the workshop on ISO/TC211 and CEN/TC281 Standardisation.

Olaf Ostensen of the International Standards Organisation and Hans Knoop of Outreach - a program to promote the adoption of ISO/TC211 standards in user communities - believe the current push for data standardization is in part due to recent the military incursions in Iraq and Afghanistan.

"The demand for standards has been growing over the last ten years," says Ostensen. "International military operations have been a major driver. We are also seeing the UN working on their own strategy of spatial data infrastructure because they realise the seriousness of the problem of not being able to get the available information when they really need it."

At present, different countries have different tolerances for data accuracy. These data variations have made it difficult to carry out international projects.

"Right now, every country has its own system. In one area, the definition for forest means a land cover of many trees, while it can also mean three palm trees for someone living in the desert," says Knoop.

"With standardized data infrastructure, incompatibility will no longer be a concern. We will be able to analyse global data efficiently and enhance spatial data exchange regionally and internationally."



Forging a Global Geomatics Network



Nicholas Chrisman from Geoide in Canada and Byung-Guk Kim of the Korean Land Spatialisation Group co-chaired the workshop, Networks for Networks 2008: Leveraging Global Partnerships in Geomatic Science and Engineering.

Scientists from all over the world are uniting to tackle new technology challenges.

Representatives from national geomatics and geoinformation networks met yesterday to work out an international approach to overcoming technology challenges in the field.

At the time of writing, Byung-Guk Kim, co-chair and director of the Korean Land Spatialisation Group (KLSG), which convened the meeting as part of the Congress, anticipated that all nine groups represented at the workshop would sign a memorandum of understanding by the end of the day.

"This meeting is about the next level of collaboration – how we make these national networks talk to each other and build something on a worldwide scale," said Nicholas Chrisman, co-chair of the workshop and scientific director at Geoide in Canada.

"Geomatics covers everything and anything related to geographic location. What brings us together today are the technological challenges confronting those in the field."

"There are new positioning technologies that allow us to handle mobility in time and space. There are challenges with models of environmental change. There are new technologies coming along in the distributed sensor world that are going to make our old ideas of centralised databases look foolish.

"Our groups are the technological innovators. We see this as a critical combination of technologies that is going to make a difference in decision-making and management of cities," said Chrisman.

While some networks, including the Canadian, French, Dutch and Australian networks, have long-standing partnerships, the workshop has succeeded in reaching several new groups. Geoide's collaboration with KLSG, for example, began around 18 months ago.

"We issued 13 invitations and nine networks are represented at the workshop. I didn't know there were this many organisations in GIS and geomatics. I realise now that they are doing the same things we are doing in Korea," said Kim.

"We're finding new partners here. There's a group from Iran that no-one had heard from before and a guy from Finland here saying, 'well, we're wondering why we don't have one!'" said Chrisman.

“

We see this as a critical combination of technologies...

What's on the Menu

4 July 2008 - Friday

◆ Plenary Session 1 (PTS-1)

Time: 08:30-10:00

Room: Convention Hall No.1

International Cooperation to Build a Global Earth Observation System of Systems, GEOSS;

by Jose Achache, Director, GEO Secretariat, SWITZERLAND

The Evolution of Lidar Systems in the Geospatial and Surveying Market;

by Juergen Dold, Leica Geosystems AG, SWITZERLAND

Rapid Response System of Photogrammetry and Remote Sensing for Wenchuan Earthquake;

by LI Deren, Wuhan University, THE PEOPLE'S REPUBLIC OF CHINA

◆ Workshop 5 (WS-5)

Elsevier Workshop on How to Write Good Journal Papers

Time: 19:00-21:00

Room: Convention Hall No.2A

◆ Social Program: SE-2: Peking Opera

Time: 19:30-20:40

Depart from BICC at 18:20

(a light dinner will be provided)

Place: Li Yuan Theater

Cost: RMB 360

Peking Opera has entertained Beijingers for over 200 years with its elaborate costumes, dulcet arias, dazzling martial arts and musical dialogues. They are usually based on folk tales, famous novels and fairy tales. The theater has a subtitle message board in English and Chinese.

Enjoying the Congress?
Purchase your raffle tickets to support future ISPRS activities. Raffle tickets are on sale at the TIF Registration Booth on BICC Level 1.

3-11 July 2008 Beijing, China

Program of the Day

Thursday 3 July 2008

TUTORIALS

- ◆ **TU-6: Spatio-temporal Modelling, Analysis, and Data Mining**
Time: 08:30-12:00
Room: 308 Conference Room
- ◆ **TU-7: GIS Updating from Imagery and Collateral Data Sources**
Time: 08:30-12:00
Room: 307 Conference Room
- ◆ **TU-9: Introduction to Sensor Web and its Geospatial Applications**
Time: 08:30-12:00
Room: 305C Conference Room
- ◆ **TU-10: Information Extraction from High Resolution Optical Satellite Sensor**
Time: 08:30-15:30
Room: 305B Conference Room

MEETINGS

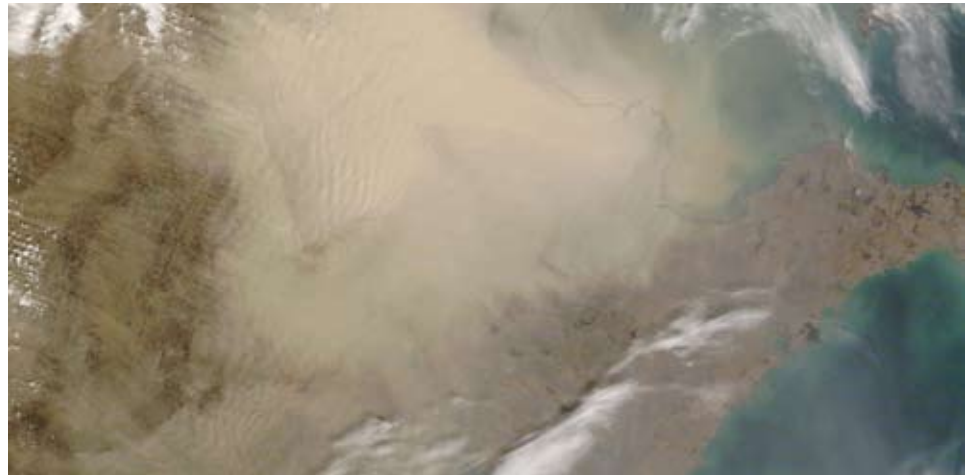
- ◆ **GA-1: General Assembly 1**
Time: 10:00-12:30
Room: Convention Hall No.2
- ◆ **GA-2: General Assembly 2**
Time: 13:30-15:30
Room: Convention Hall No.2
- ◆ **OPENING CEREMONY**
Time: 17:00-18:30
Room: Convention Hall No.1

SOCIAL EVENT

- ◆ **SE-1: Welcome Reception**
Time: 19:00-21:00
Room: Yayuncun Central Garden

From Dust to Dust

Never let anyone tell you that chasing dust is a waste of time.



Sand from Mongolia's Gobi Desert swept across China and over South Korea and Japan in March this year. The fine sand from this region is believed to carry toxic chemicals that cause respiratory distress.

Masao Mikami of the Meteorological Research Institute in Japan has been chasing dust storms across the globe for the past ten years. The results are a breakthrough for areas as seemingly disparate as road safety and respiratory illness.

His work uses remote sensing data from the US-operated National Oceanic and Atmospheric Administration (NOAA) satellite and the Japanese GMS satellite to compare dust forecasts with observations. The results are being used to develop a model that can accurately depict the movement of dust around the world.

William Sprigg, research professor at the University of Arizona, believes Mikami's work is a breakthrough for scientists struggling to understand a phenomenon that until now, has been very difficult to depict.

"These are dynamic, numerical models using the best technology for weather forecasting," says Sprigg. "These models actually calculate how dust is mobilised by wind and then carried such great distances."

Understanding the movement of dust - where it goes and how it is getting there - gives us valuable clues to other important questions. It allows us to investigate where dust comes from, what it will do when it gets there, and critically, when it will arrive.

"When we combine this data with satellite observations, we get two

things. Firstly, we get far more accurate maps of the Earth's surface, which lets us see where dust sources lie. Secondly, we are observing the dust after it gets up off the ground, so we can tell whether our models are actually doing a good job," says Sprigg.

"We believe this model will have a strong impact for understanding variations in the atmospheric environment and for predicting the effect of dust distribution on the climate," says Mikami. "At present, the impact of dust on the planet remains largely unknown, which is why we need some kind of processed study of these events."

"In future model forecasts, we would like to introduce cross-sectional LiDAR images from NASA's Cloud-Aerosol LiDAR and Infrared Pathfinder Satellite Observations (CALIPSO) satellite," adds Mikami.

This research has potentially tremendous implications. Mikami's work has already been used to increase the accuracy of weather forecasts in the US, Europe and Japan. However, it could also be used, says Mikami, to help people with respiratory illnesses. Furthermore, the ability to accurately model the beginning of a dust storm opens up real possibilities for the development of an early warning system.

"In Arizona, we have fatalities every year from dust storms. With this kind of technology, we will be able to improve safety on our roads," says Sprigg.



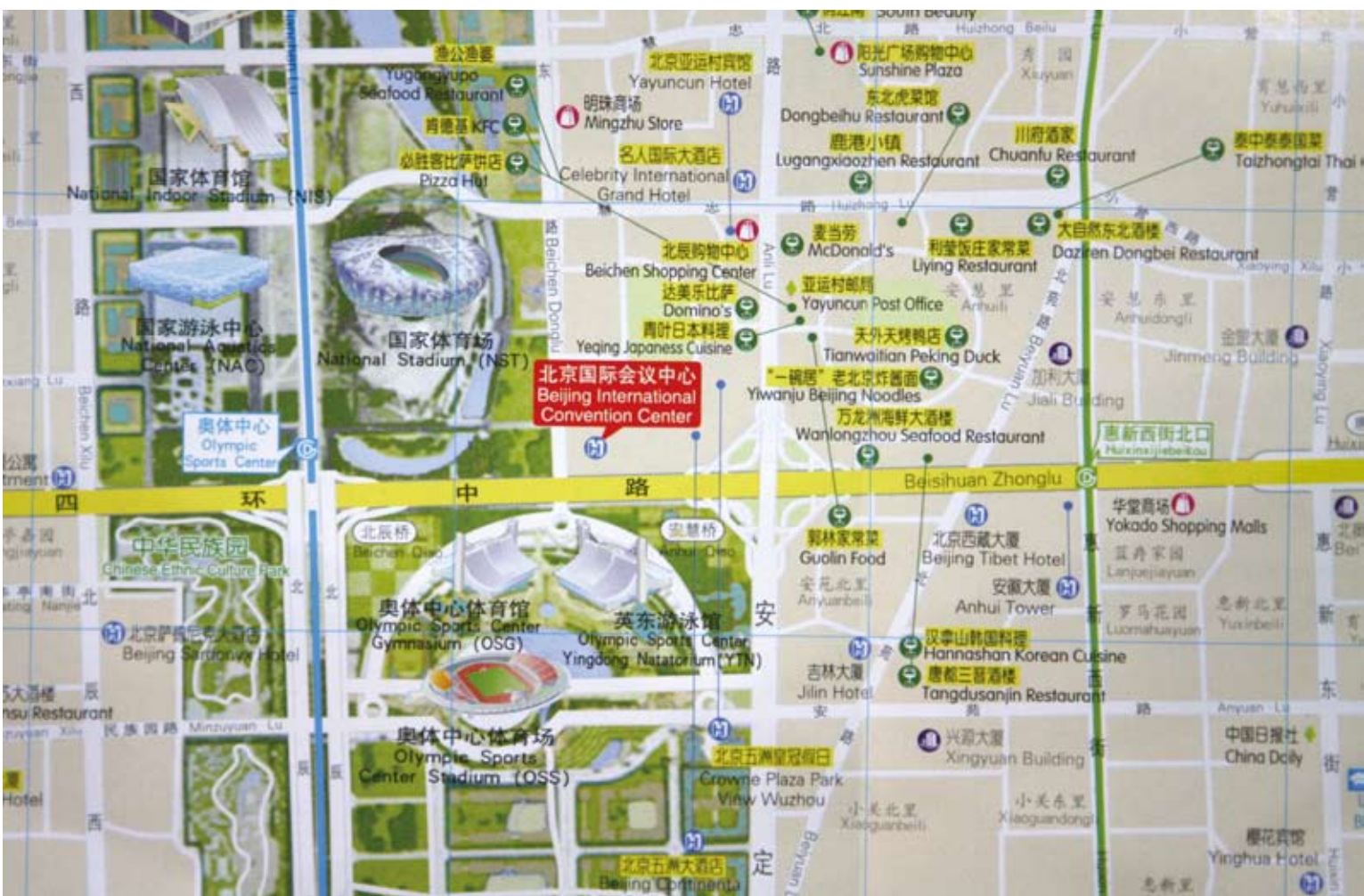
These models actually calculate how dust is mobilised...

Souvenirs and Books are Available at Booth 112



Souvenirs and Books

Map of the Congress Venue



3-11 July 2008 Beijing, China

The Past and Future



Melbourne is a vibrant, cosmopolitan city.



Students relax with new friends (including local Chinese beer, Tsing Tao) after a hard day of lectures.



Participants of Summer School and the Chinese Doctoral Students Forum in GIS.

What's so great about Melbourne, anyway?

The ISPRS Congress may be heading down under in 2012.

Why choose Melbourne, Australia, for the next ISPRS Congress? If you ask the team putting together Melbourne's bid, they'd simply fire back another question: "How many reasons do you need?"

To start, Melbourne is an exciting, vibrant and cosmopolitan city, with a long history of hosting successful international conferences, says the team. What's more - the conference will be held in a brand new building boasting the most up-to-date and environmentally-friendly facilities of any convention centre in the world.

Melbourne is a great place for tourists, with fabulous food and exciting entertainment venues, they add. Plus, Australia has a world renowned natural environment just waiting for you to explore.

And on the scientific front (notice how this comes after food and entertainment?), the Australian photogrammetry and remote sensing community is at the forefront in many fields of research and practice. Australia has a long and proud history in the field and a particularly strong presence in close-range photogrammetry.

Australia has also been an active contributor to the ISPRS for many years and is the home of former ISPRS President, John Trinder.

The Melbourne bid, led by Cliff Ogleby of The University of Melbourne, has strong support from the Spatial Sciences Institute in Australia and all levels of government.

To find out more about the bid and what Australia has to offer, visit the bid team at booth 311 on the 2nd floor of the Congress.

A student cocktail of learning and laughter

Report from the Summer School in Nanjing, China

The 3rd ISPRS Student Consortium Summer School, themed *Acquisition, Processing and Representation of 3D Geospatial Information* was held at Nanjing Normal University (26 June-1 July). Jointly hosted by the Biannual Chinese Doctoral Students Forum in GIS, the two events gathered over 200 lecturers and participants from around the world.

The five-day program included theoretical lectures on 3D geospatial information, a Young Author session, and a technical visit to the Jiangsu provincial Bureau of Surveying and Mapping. The program was organised by the Key Laboratory of Virtual Geographical Environment at the School of Geographical Science.

Scientific learning aside, participants cited the reception party as a highlight of the program. Participants were greeted with a warm reception from students of the Nanjing Normal University and enjoyed cultural performances, folk songs and an evening of laughter.

The summer school has been a great success. Participants, organisers, lecturers and students had fruitful discussions on scientific research and the future of the profession. Many great friendships were built and research ideas were exchanged, giving prospects to fruitful international cooperation in the future.

Visit www.njss2008.net for further information.