Annual Report 2003

Introduction

The Annual Report of ISPRS contains both a record of activities and a review of the state of the art and science of photogrammetry and remote sensing. It is compiled from the contributions of many people who are active in ISPRS. The efforts and contributions are extremely important to the welfare and sustainability of ISPRS and ISPRS Council is very grateful for their work.
The major activity of 2004 will be the XX ISPRS Congress in Istanbul. All Commissions and Working Groups are involved in the preparation of the Congress and to avoid repetition activities relating to this have been omitted from the working group reports.
Any questions or comments relating to the annual report should be addressed to the Secretary General.

Ian Dowman, Secretary General

Report from Council

1. Society Activities

The past year has been an active and productive one for ISPRS. Besides the many Working Group meetings, reported in section II of this report, Council has been dealing with many important routine and new issues. Council has met formally on two occasions. In April we met in Sydney, Australia, and in August we met with the Technical Commission Presidents in Istanbul and also inspected the Congress Centre. Congress Director Altan also organized a meeting of the International Advisory Committee, comprising past Congress Directors, past Presidents and Honorary Members. Council members have also met informally, notably at the International Symposium on Remote Sensing of the Environment, (ISRSE), where three members of Council attended the meeting of the International Committee on Remote Sensing of the Environment (ICORSE).

The two most important activities have been the setting up of the ISPRS Foundation and new Terms of Reference of the Technical Commissions.

The development of the Foundation has taken many hundreds of hours of work, particularly by First Vice President Fritz, to develop the documentation to satisfy the legal issues, and the financial and administrative procedures. It has involved, in the first instance, the registration of ISPRS in Maryland USA as a not for profit corporation, which was achieved in April 2002, and then the development of the Foundation Bylaws, Articles of Incorporation and the operating procedures. The linking of the registration of ISPRS and the Foundation was a requirement of the legal system in USA. The Foundation was registered in Maryland USA in August 2003 as a not for profit corporation. The ISPRS Foundation has been established soley for providing financial assistance to advance the benevolent purposes of ISPRS. It is designed to foster linked relationships with other foundations and trusts established in the ISPRS Member countries and regions, and will enable international sharing and administration for the common good of the sciences and disciplines represented by ISPRS.

New Terms of reference of the Technical Commissions were discussed at the mid term Symposia in 2002 and proposals resulting from these discussions have been widely discussed. A final version was put to a vote of members in 2004 and overwhelmingly approved. The result of this is that there will be eight Technical Commissions in 2004-2008 and the new Commission presidents, elected in 2004, will work to these new Terms of Reference.

Another important new initiative has been the establishment of an ISPRS Book Series. This will be published by Swets & Zeitlinger B.V., (now part of Taylor and Francis), and will be devoted mainly to publishing high quality papers from ISPRS meetings in book form. Maxim Shoshani from Israel is the first editor. The first volume was published in December and is the proceedings of the workshop on Spatial Analysis and Decision Making.

One item in the ISPRS Strategic Plan, approved at the General Assembly in Amsterdam, was the appointment of a Marketing Manager. Tina Cary, of Cary and Associates, has been advising Council on issues relating to marketing and publicity. One result of this has been a series of press

releases to journals and trade publications, to promote ISPRS activities. In 2003 there have been press releases including the SPOT HRS Assessment, the Congress, the ISPRS Foundation and new Terms of Reference for the Commissions.

Council has been very busy preparing for the Congress in Istanbul in 2004, Congress Director Altan reports on the general preparations in the next section. Council has been concerned with preparation for the General Assembly, in particular changes to the Statutes and Bylaws required to deal with the registration of ISPRS and the Foundation.

Other issues which have been under consideration are new contracts for the ISPRS Journal and for ISPRS Highlights. The ISPRS database has been modified and updated. Council has also been active in other international bodies as reported in section 5 below.

Council has been advised by the International Policy Advisory Committee (IPAC) and International Science Advisory Committee (ISAC). These groups have been extremely useful in assisting Council in formulating policy on sustainable development and access to data; and in formulating guidelines for peer review of published papers.

The President and Secretary General have visited a number of Members this year including AARS (at their annual conference in Korea), Bulgaria, Croatia (for the workshop on Geoinformation for Practice), EARSeL, EuroSDR (to celebrate the 50th anniversary of OEEPE/EuroSDR), Switzerland (to celebrate the 75th anniversary of the Swiss Society), and USA. President Trinder also attended meetings of the United Nations, CODI-3 and COPUOS, CIPA and CEOS.

Ian Dowman, Secretary General

2. Congress

The Scientific Programme

A record number of abstracts (1802) have been received. The abstracts were sent to the related Technical Commissions and Working Groups to be evaluated and according to the response received, the scientific programme will be finalized. Prof. Altan sent a concept letter to all the Technical Commission Presidents and Working Groups Presidents explaining the procedure to be followed during evaluation. At the end of January 2004, the results of the evaluations will be sent to the probable participants.

The Website of the Congress

The website of the congress has been the main media through which 1802 abstracts were received. Although some participants met some difficulties in sending their abstracts at first, information was given to everybody by correspondence on how to upload their abstracts and all the senders were successful as proven by the number of abstracts received. It was seen that our website was visited 29,512 times.

Meetings

The Congress Director Prof. Dr. M. Orhan Altan attended the following events and promoted XX. ISPRS Istanbul Congress by means of speeches and short shows:

- American Society for Photogrammetry and Remote Sensing Annual Convention, Anchorage, Alaska, 5 - 8 May 2003
- Council, Joint Meeting with Technical Commission Presidents and International Advisory Board Meeting, Istanbul, Turkey, 16 – 23 August 2003
- Photogrammetric Week, Stuttgart, Germany, 1 – 5 September 2003
- Annual Meeting of German Society of Photogrammetry and Remote Sensing, Bochum, Germany, 9 – 11 September 2003
- 75th Anniversary of Swiss Society of Photogrammetry and Remote Sensing, and Optical 3D Measurement Techniques, Zurich, Switzerland, 22 – 26 September 2003
- XIXth International Symposium of CIPA, The International Committee on Documentation of Cultural Heritages, Antalya, Turkey, 29 September – 04 October 2003
- 50th Anniversary of EuroSDR (OEEPE) and its 101 Annual Meeting, Munich, Germany, 15 – 17 October 2003
- Annual Meeting of the German Geodetic Commission at the Bavarian Academy of Sciences, Munich, Germany, 26 – 28 November 2003

Exhibition

50 stands out of 69 stands have been reserved up to date. However there are still 19 stands pending sale. A member of the Organising Committee participated in the Intergeo in September 2003 and hired an ISPRS booth to promote ISPRS and the 2004 congress. In Intergeo, he distributed the pamphlets "Invitation to Exhibit" and "Sponsorship Prospectus" to the companies present.

CIPA Symposium

The CIPA Symposium held in Antalya during the dates 29 September – 04 October 2003 has been successfully executed. The scientific programme as well as the social program met with the satisfaction of the participants. A report on the activities of the symposium was sent to Highlights by the CIPA Treasurer Dr. Pierre Grussenmeyer together with some photos of the symposium to be printed in the December issue.

Highlights

Information about the congress and country have been sent out to Highlights continuously. The last one being a quiz on the information given in the previous pieces on Turkey with some prizes to the winners.

Orhan Altan, Congress Director

3. Membership

There are no changes to the Ordinary Members or Associate Members. CRTEAN has been admitted as a Regional Member.
The following new Sustaining Members have been admitted:
- Istanbul Technical University, Turkey (Category D)
- Yildiz University, Turkey (Category D)
- Technological University of Malaysia (Category C)

The current numbers of members are as follows:

Ordinary Members	103
Associate Members	8
Regional Members	11
Sustaining members	53

Members who have not paid within the last four years will be put up for elimination at the GA.
A revised version of the Blue Book was published in December 2003.

An ISPRS pennant has been produced for Sustaining Members, and will be given to Sustaining Members each year when their subscription is paid.

Ian Dowman, Secretary General

4. Intersociety Activities

International Council for Science (ICSU)

ICSU is a non-governmental organization founded in 1931 to bring together natural scientists in international scientific endeavour. It comprises 98 multi-disciplinary National Scientific Members, Associates and Observers (scientific research councils or science academies) and 27 international, single-discipline Scientific Unions to provide a wide spectrum of scientific expertise, enabling members to address major international, interdisciplinary issues which none can handle alone. ISPRS became a full Union Member of ICSU in 2002.

Membership of ICSU has enabled ISPRS to play a greater role in a number of areas of ICSU. ISPRS President and Secretary General make regular contributions to the ICSU Secretariat on relevant scientific matters. Professor Ray Harris is representing ISPRS on the Priority Area Assessment committee on Data and Information, and thus is in a position to present the case for ISPRS on access and availability of data. As well, Secretary General Ian Dowman is the contact person for the group of Unions with interests in Health and Well-being. President Trinder has been liaising with researchers in the International Union of Biological Science (IUBS) with a view to collaborating on environmental issues. Membership of ICSU facilitates communication with the ICSU Advisory Committee on the Environment as well as interaction with IGBP, DIVERSITAS, and Unions which can contribute to multi-disciplinary research projects on the environment. The development of a collaborative project on sustainability indicators using remote sensing, which are intended to provide early warning indicators of unsustainable development practices, is still being investigated. This is an important issue that can only be addressed with the assistance of experts in such areas as soil science, plant biology, ecology and geomorphology and remote sensing.

John Trinder, President

Committee on Earth Observing Satellites (CEOS)

CEOS Plenary

ISPRS is a CEOS Associate and so is represented at the CEOS Plenary. ISPRS is also involved in the three CEOS Working Groups: Information Systems and Services, Cal/Val and Education. During the past year ISPRS has made input to the Utilisation Team and to all of the Working Groups. President Trinder and Secretary General Dowman attended the CEOS Plenary in Colorado Springs, USA in November.

The main topics discussed at the Plenary were:
- The utilisation team had investigated case studies which demonstrated the usefulness of space data and had drawn a number of lessons from these. These had been formalised into principles to encourage adoption and recommendations. CEOS Plenary highly recommended the report and agreed the principles to encourage adoption which include assurance of continuity, need for adequate information systems and spatial data infrastructure, enhancing data delivery systems, the role of research, improved cooperation between space agencies and sustained capacity building. Recommendations were accepted to take forward certain aspects in the working groups and to continue activity as a priority for the next year.
- The follow up to the World Summit on Sustainable Development had concentrated on Africa, which arose from a meeting in Stellenbosch in October. An African Advisory Group had been set up to concentrate on African needs. Draft principles for capacity building were presented and accepted by the Plenary. These were based largely on collaboration between agencies and with local organisations. The WGEdu would take on actions relating to this.
- Proposals were made for the harmonisation of International Earth Observation groups.
- GEO (Group on Earth Observations) is a working group arising out of the Earth Observation Summit. CEOS is very involved with GEO and has representatives on all sub groups.
- The CEOS Plenary passed 6 recommendations, involving standardisation of use of solar reference spectrum and further studies on onboard calibration diffusers.

Ian Dowman, Secretary General

CEOS WGCV

WGCV has, jointly with WGISS completed phase I of the core test sites with 5 test sites in UK, USA, Canada, Zambia and Australia, and more to follow in 2004 and 2005. These cover a range of land cover types and imagery. The joint ISPRS/WGCV task force has been set up held its first working meeting at the International Workshop on Radiometric and Geometric Calibration in Gulfport, Miss, December 2003. The Atmospheric Chemistry sub group is carrying out intercomparisons amongst network ozone ground stations. The Terrain Mapping sub group has been working on validation of SRTM DEM data and held a meeting prior to the ISPRS Workshop on Three Dimensional Mapping from InSAR and LiDAR workshop in Portland, Or, 17 – 19 June 2003 . There will be SAR subgroup meeting in Ulm, Germany 27-28th May 2004, and the Microwave sub group is working on a document on terminology.

Dr Stephen Ungar from NASA is taking over a chair of the working group.

Ian Dowman, Secretary General

CEOS WGISS

ISPRS WG II/3 is the contact point to CEOS-WGISS, the Working Group on Information Systems and Services. CEOS is the Committee on Earth Observation Satellite and WGISS is one of its permanent working groups. Two subgroups are active under WGISS, i.e. the subgroup for Technology and Services and the subgroup for Projects and Applications. Both subgroups are subdivided into Task Teams. The detailed structure is described on the CEOS/WGISS home page (www.ceos.org) and in ISPRS-Highlights, Vol. 8, no. 3, September 2003.

In August 2002 the chair of the Technology and Services subgroup participated in the ISPRS Commission II Symposium in Xi'an, China and gave an overview of WGISS activities.

In 2003 the 15th CEOS-WGISS & WGISS subgroups meeting took place in Toulouse, France, May 12-16. The WG II/3 chair attended the meeting as ISPRS representative and presented the structure and activities of WG II/3. Some 35 members of the various WGISS Task Teams attended the meeting. The meeting was hosted by the French Space Agency, CNES.

The 16th CEOS-WGISS plenary and subgroups meeting took place in Chiang Mai, Thailand, September 15-19, hosted by the Geo-Informatics and Space Technology Development Agency (GISTDA) of Thailand and National Space Development Agency of Japan (NASDA). 36 members of the CEOS-WGISS from 13 organizations attended the meeting. The ISPRS representative was the co-chair of WG II/3 who gave a presentation titled "Interoperability of spatial data service".

WGISS has developed a number of tools, standards and services to assist access to and use of Earth observation data. The focus is on GRID computing and the uses of OGC standards like WMS and WCS.

A closer relationship between ISPRS and WGISS could be established through EOGEO that is a series of workshops for developers of geo-spatial data services over the Web. It covers a wide field of applications from Earth Observation and GIS to Internet standards. The common themes are Web based solutions to resource discovery, interoperable data access, distributed data services and data fusion.

Poul Frederiksen, Chair WG II/3

WGEdu

CEOS will play a key role in establishing a resource library of information regarding Earth observation training and education together with an interactive, user-driven, web-based access mechanism. The WGEdu continued to develop a web portal site (Discovery Web Site) that will allow systematic access to information and web links on a broad range of educational resources available from CEOS and others.

While recognizing that CEOS Agencies have their own data policies and data distribution principles, CEOS will draft and adopt a set of general data principles for education and training use. The new set of data principles will enable timely and affordable access to data for Earth observation education and training efforts and encourage CEOS Agencies to incorporate the general CEOS principles into their own policies as far as possible and practical.

Ian Dowman, Secretary General

UN Committee on the Peaceful Uses of Outer Space (COPUOS)

COPUOS is organised by the Office of Outer Space Affairs (OOSA) from the UN Office in Vienna. ISPRS has attended and presented technical reports and statements at the annual Science and Technology meetings of COPUOS in February and the COPUOS Full Annual meetings in June, since 1989. At the annual June 2003 meeting, President Trinder made policy statements on topics developed by the ISPRS IPAC (International Policy Advisory Committee), covering the benefits of remote sensing, and economic issues of access to commercial satellite remote sensing data. ISPRS has also provided advice to the Action Teams considering the follow-up actions developed from the 1999 UNISPACE III conference.

President Trinder signed a Memorandum of Understanding (MoU) with the Director of the Office of Outer Space

Affairs, Dr Sergio Comacho on co-operation between the two organizations. Items in the MoU include: joint co-sponsorship annually of an event (workshop, seminar, tutorial. etc.); co-ordination of schedules, events, topics and/or specialist needs in pre-planning related activities; jointly seeking financial support and identification of relevant high-quality specialists and lecturers for United Nations led events that require photogrammetric, remote sensing and Geographic Information Systems expertise; inclusion of joint events in the quadrennial ISPRS Congress, and in relevant quadrennial ISPRS Commission Symposia and Working Group activities; the provision by ISPRS of scientific and technological expertise through reviews, evaluations or recommendations on space matters related to remote sensing; and facilitation and initiation of opportunities for fellowships, grants and awards in remote sensing, photogrammetry and geo-spatial information sciences.

Secretary General Dowman attended the Science and Technology Sub Committee Meeting in February and reported on ISPRS activities. He also met with Dr Sergio Comacho and Dr Hans Haubold to discuss joint activities and to finalise the drafting of the MoU.

Council have agreed to support OOSA activities as far as is possible within the constraints of the ISPRS budget.

John Trinder, President

5. Treasurer's Report

The year 2003 marked another transition in ISPRS financial affairs. One major event was the change of ISPRS Fiscal Year to coincide with the Calendar Year. This was suggested by Council and approved by ISPRS Members by a postal ballot. Thus, FY2003 will end on December 31, 2003 rather than March 31, 2004 and the new FY2004 will start on January 1, 2004. We hope the transition will go on smoothly and it seems that it will simplify the financial monitoring of ISPRS accounts.

Another change was the establishment of an Euro sub-account in our UBS-AG branch in Zurich on January 24, 2003. The major reason was to diversify our asset holdings and to accommodate ISPRS liabilities that were stricken in the European currency. We already offer fixed annual contribution rates, both in SFr and $US to help members to choose between these currencies for their subscription payment more effectively. I intend to propose that Council offer this service also in Euros. Due to the change of the Fiscal Year, this change might be approved only in FY2004. Thus, it might be the privilege of the incoming ISPRS Treasurer to "inaugurate" this service.

The financial changes of the last eighteen months affected ISPRS investments as well. This was the reason for the diversification mentioned above. This diversification proved itself by helping to recover some of our more affected assets. Thus a more effective improvement is envisaged this year. Another issue to be considered is the change of rate between the Swiss Franc and other Currencies, such as the US Dollar. Traditionally, our accounts are audited in Swiss Francs. Thus, a most profitable holding in $US may loose its actuary value when shown on our records in Swiss Francs. Yet, as many of our service contracts are stricken in $US it is important to compliment these liabilities with the matching currency. As mentioned earlier, the diversification in our holdings is crucial for our good standing in the long run. Our investments are made to secure ISPRS financial status for the future and our long term continuity.

As always it is the major task of the Treasurer and the Council to keep ISPRS in continuing good financial standing. Mentioned also in last reports, the participation of Members is crucial to our Society both in terms of scientific and technological activities and in terms of financial support. This was, and will be, implemented by seeking new Members, of course, but also by encouraging all members for prompt payment of subscriptions. Again, this year we had some luck to bring back some three long missing Ordinary Members. It will be my personal pleasure to welcome their representatives at the General Assembly and Congress in Istanbul, Turkey, next July.

Yet, at this moment we still have some members who have outstanding dues. Before eliminating members, as ordered by the XIX General Assembly, I encourage all Member Organizations who may have outstanding dues to please contact President Trinder or myself and make arrangements for payment prior to April 2004. At that time this issue will be discussed by Council as a preliminary step to expulsion to be ratified by the next General Assembly in Istanbul.

In spite of these some overdue payments, it can be stated again, that the Society is in good financial health with a sound and secure investments. I'm most confident that, with members help, we will continue to keep it in such excellent manner.

The balance sheet of FY2003 will be available, for any member who requests it, from the Secretary General.

Ammatzia Peled, Treasurer

Technical Commission Reports

TECHNICAL COMMISSION I
SENSORS, PLATFORMS, AND IMAGERY

President: Stanley Morain (USA)
Scientific Secretary: Amy Budge (USA)

State of Science and Technology of Commission Topics

Since the beginning of the Congressional quadrennial in 2000, several developments have emerged in the realm of Commission-I's science and technology topics. Some were anticipated by the Commission's terms-of-reference for the period, while others are new. Technologies for DEM data acquisition and production were anticipated, but the rapid growth and increasing interest in using airborne LiDAR to acquire bald-earth digital elevation data is remarkable. Another anticipated area was the rapid evolution of small satellites capable of formation flying to augment the concept of an Earth sensor web. Less expected was the emergence of small, intelligent satellites capable of onboard data processing and independent data acquisition management.

As a result of world events, there has been an unanticipated interest in using unpiloted (unmanned) aerial vehicles (UAVs) for a variety of short-term, quick turnaround applications ranging from transportation incidents to natural hazards and public health issues. Other unexpected turns of events have been announced recently: the first by EROS Data Center regarding the functional demise of Landsat 7 (due to scan line problems) and the reactivation Landsat 5 to assist data continuity; and, the second by NASA being unable to award a contract for its Long Term Data Continuity Mission (LDCM). The loss of Japan's ADEOS II is also noted along with the temporary but periodic safehold mode of Terra. On the brighter side, there have been several new systems placed in service, among them SPOT-5, and QuickBird-II.

Accomplishments of the Commission

The Commission offered five international workshops during the year, as reported by the working groups in sections below. One workshop has been postponed to early 2004 due to world events. Significant progress has been made by the CEOS-WGCV / ISPRS joint task force on radiometric and geometric calibration (see report from WG I/2). In support of their efforts, a peer-reviewed book in the ISPRS book series, tentatively titled Post-launch Calibration of Satellite Sensors, is scheduled for publication and distribution at the XXth International Congress in Istanbul. Another major activity (I-1) focuses on developing a white paper characterizing sources of information on sensor parameters.

Working Group Activities during the Current Year

WG I/1: DEFINE STANDARDS FOR SENSOR PARAMETERS

Chair: Charles Mondello (USA)
Co-Chair: John C. Baker (USA)

State of Science and Technology of Working Group Topics

The technology for digital aerial cameras has made rapid advances in spatial and spectral resolution. A Digital Imagery Guideline is being produced by the American Society for Photogrammetry and Remote Sensing (ASPRS) to suggest common camera system and image quality parameters. Both data providers and image users are involved in this activity. The Guideline was introduced at the joint ISPRS / CEOS-WGCV task force meeting convened as part of the International Workshop on Radiometric and Geometric Calibration (IWRGC).

There has been a surge of Internet websites describing platform and sensor attributes, and the numbers of these are increasing so rapidly that the WG re-assessed its ability to produce a platform and sensor data model for use in developing an online electronic database of information. Rather, it is important to assess the variety of source materials and data formats. This will better assist the WG to identify and define parameters, as well as promote the adoption of common terms within the sensor and platform communities.

Accomplishments of the Working Group

The IWRGC held in December, 2003 (see WG I/2) included technical sessions on identifying and defining a common set of sensor parameters for both satellite scanners and aerial digital cameras. A white paper is being prepared for the Congress in Istanbul.

WG I/2: SENSOR CALIBRATION AND TESTING

Chair: Manfred Schroeder (Germany)
Co-Chair: Veljko M. Jovanovic (USA)

State of Science and Technology of Working Group Topics

At the Commission I – mid term symposium in Denver, Colorado in October 2002 a joint ISPRS/CNES initiative

was started to test the topographic mapping capability of SPOT-5/HRS data. WG I/2 is actively involved in co-operation with CNES to establish a scientific assessment program for this purpose. Nine Principal Investigators (PIs) for nine test sites in different regions of the world were selected. In addition to these PIs, 19 Co-investigators were selected and assigned to one or two of the test sites. SPOT-5/HRS image data were distributed to PIs and Co-investigators at the end of July 2003. Preliminary results were presented at the Hannover workshop. The presentation of final results is foreseen for the Istanbul Congress in 2004.

Accomplishments of the Working Group

WG I/2, WG I/5, and IC WG II/IV held a joint workshop entitled High Resolution Mapping from Space 2003 on 6–8 October 2003 in Hannover, Germany during International Space Week. ISPRS and EARSel co-sponsored the workshop, supported by Spaceweek International. Approximately 75 registrants representing 20 countries attended the workshop. One third of the sessions were devoted to topics of WG I/2. The robust program included discussions on sensor orientation; DEMs and orthophotos; new sensors; SPOT 5 HRS assessment and DEM generation; arid areas and extraterrestrial mapping; mapping; object recognition; radar; and data fusion, classification, and visualization.

WG I/2 and CEOS WGCV collaborated to conduct the International Workshop on Radiometric and Geometric Calibration that was held in Gulfport, Mississippi USA 2–5 December 2003. NASA and the U.S. Geological Survey co-sponsored the event, which included a tour to the calibration site at Stennis Space Center. Two days of technical presentations were followed by a half-day meeting of the Joint ISPRS/CEOS Cal/Val Task Force. Products stemming from this event include a Task Force report that will be presented at the 2004 ISPRS Congress in Istanbul in July 2004, and a published, peer-reviewed book of the manuscripts presented at the workshop. The book will be published by Balkema and is expected to be available for the 2004 Congress.

Working Group News and Future Plans

A workshop, DEM Generation from SPOT-5/HRS Data will be conducted at the Congress, and the working group also will co-ordinate three technical sessions and one poster session addressing DEM Generation from SPOT-5/HRS Data. Additionally, a Special Session on the Result of the International SPOT-5 Validation Program and a Theme Session on the ISPRS/CEOS Cal/Val Task Force are planned for the Congress.

WG I/3: ACTIVE SENSOR SYSTEMS

Chair: Mike Renslow (USA)
Co-Chair: Anthony Lewis (USA) (New Working Group Co-chair)

State of Science and Technology of Working Group Topics

The Binary LiDAR Data File Format Standard (LAS) is a proposed public file format for exchanging LiDAR data. Originally developed by a consortium of industry partners, it is being considered for adoption as an ASPRS standard. LAS has been reviewed and discussed informally at industry forums and conferences during the past 18 months. WGI/3 in co-ordination with ASPRS introduced the LAS LIDAR Data Transfer Standard to the international community via Highlights with a request for comments. After a public review period, the standard was approved by the ASPRS Board of Directors at the ASPRS Annual Meeting in May 2003.

Accomplishments of the Working Group

WG I/3 hosted a CEOS Workshop on June 16th in Portland, OR, the day before the Joint Workshop. There were 11 attendees and a full day of presentations. The CEOS Chair, Professor Jan-Peter Muller, is preparing a summary and recommendations.

WG I/3 and WG II/2 jointly conducted the Three Dimensional Mapping from InSAR and LiDAR workshop in Portland, OR, 17 – 19 June 2003. Sixty people attended, representing eight countries. During the 2-1/2 days, 31 papers were presented covering a wide range of LiDAR/InSAR topics on instrumentation, calibration, data processing, specialized algorithm for feature extraction, and development of GIS databases. The Workshop afforded an opportunity for 6 student volunteers to provide support and participate in this international event. The papers and slides are being prepared for distribution on CD.

Working Group News and Future Plans

WG I/3 will conduct two tutorials during the ISPRS 2004 Congress. TU14 focuses on LiDAR Technology: Systems, Collection, and Data Processing. TU15 concentrates on RADAR Technology: New Developments for Land Information Extraction.

WG I/4: ADVANCED SENSOR SYSTEMS

Chair: Masanobu Shimada (Japan)
Co-Chair: Janio Kono (Brazil)

Working Group News and Future Plans

The International Conference on Advanced Remote Sensing for Earth Observation: Systems, Techniques, and Applications is planned for December 2004 in Riyadh, Saudi Arabia. This workshop was originally scheduled for 15 – 16 December 2003.

The working group will conduct two tutorials at the ISPRS 2004 Congress in July. TU9 focuses on Image Acquisition Technologies for Earth Surface Observation and Generation: Reliability, Accuracy, and Comparative Costs. TU10 addresses Performance of High Resolution, Multispectral

and Hyperspectral Imaging Systems for Earth Surface Observation. Additionally, a Special Session on Future Intelligent Earth Observing Satellite (FIEOS) is planned for the Congress.

WG I/5: PLATFORM AND SENSOR INTEGRATION

Chair: Karsten Jacobsen (Germany)
Co-Chair: Ismael Colomina (Spain)

State of Science and Technology of Working Group Topics

Direct sensor orientation: Direct sensor orientation is in use for aerial and space sensors. The combination of projection center coordinates determined by relative kinematic GPS-positioning together with image coordinates in a combined block adjustment became a standard application. The practical use depends upon the availability of permanent GPS reference stations, which are installed in many countries.

The direct sensor orientation by a combination of GPS and inertial measurement systems is showing good progress in the medium and low accuracy range, but it is less often than it could be. This is due in part to required experience. Very often the first test fails; this is similar to the introduction to using projection centres. In addition, the missing reliability is sometimes not accepted and problems of the y-parallaxes caused by the model set up are requiring an improvement by an integrated sensor orientation using image coordinates of tie points. This reduces the economic advantage of the direct sensor orientation. For the limited accuracy requirement of orthoimages the direct sensor orientation includes economic advantages against the traditional method of block adjustment based on control points. The time interval acceptable for the determination of the boresight misalignment is debatable. In general, a strict mathematical model for handling data is required and the stable inner orientation must be respected.

Laser scanning (LiDAR) and the orientation of airborne line scanner images are directly based on the direct sensor orientation.

The very high resolution space sensors are equipped with satellite positioning systems, inertial measurement systems and star sensors. They are reaching an astonishing positioning accuracy. IKONOS is specified with a standard deviation of 12m for the ground positions with known height, but the achieved accuracy is usually better, so problems of the quality and datum of the national net is very often dominating.

Accomplishments of the Working Group

WG I/5 focused much of its attention on conducting two workshops in 2003. The first was the Theory, Technologies and Realities of Inertial/GPS Sensor Orientation held in Castelldefels, Spain 22 – 23 September 2003. The second workshop was the High Resolution Mapping From Space 2003 held jointly with WG I/2 and IC WG II/IV. The report is provided in WG I/2 above.

Working Group News and Future Plans

Two tutorials will be presented at the Congress: TU1: K. Jacobsen, Capability of High Resolution Earth Observation Systems for Mapping and TU2: I. Columina, C. Heipke, K. Jacobsen: Direct and Integrated Sensor Orientation.

WGI/6: AIRBORNE OPTICAL SENSOR SYSTEMS

Chair: Brian Huberty (USA)
Co-Chair: Brian Gorin (USA)

State of Science and Technology of Working Group Topics

There is increasing interest in using UAVs for peaceful and humanitarian purposes. These platforms are typically small, economical to operate, versatile in their range of applications, and timely in terms of data acquisition. Combined with digital aerial cameras, video cameras, and related miniaturized, but technically robust, components, complete sensing systems are emerging. They are most often used for surveillance of short-lived phenomena such as traffic accidents, acquiring images and data in difficult-to-access areas such as archaeological sites, data and environmental hazards. In these applications image clarity and quality are often more critical than system calibration, because the intention is to acquire real-time data for incident management or to acquire data unobtainable by more conventional means.

Accomplishments of the Working Group

One workshop was conducted in conjunction with the ASPRS 2003 Annual Conference in Anchorage, Alaska USA on May 5, 2003. The workshop, entitled Professional Airborne Digital Mapping Systems – An Overview, focused on all systems and their technical aspects to provide a better understanding of what is needed to acquire the appropriate system for a given application.

Working Group News and Future Plans

The working group will organize a workshop on Professional Airborne Digital Mapping Systems – An Overview, for the ISPRS 2004 Congress in July.

TECHNICAL COMMISSION II
INTEGRATED SYSTEM FOR SPATIAL DATA PRODUCTION, CUSTODIAN AND DECISION SUPPORT

President: Jun Chen (China)
Scientific Secretary: Jie Jiang (China)

State of Science and Technology of Commission Topics

Technical Commission II of ISPRS is traditionally a commission on instrumentation. It has also undergone the expansion experienced by the ISPRS. It evolves from traditional analogue plotters to systems for Systems for Data Processing, Analysis and Representation. The current status of the science and technology of the Commission is shown in the Working Group reports.

Accomplishments of the Commission

Communications:
The Chairman and/or Co-Chairman of WGs attended and made presentations at a number of workshops and conferences including:

- International LiDAR Mapping Forum 2002, New Orleans, LA, January 27-28
- ASPRS 2003 Annual Convention, Anchorage, AK, May 5-9
- IGARSS2003, Toulouse, France, July 21-25
- ASAR/CEOS, St. Hubert, Qc,Canada, June 25-27
- ISPRS WG III/3 meeting on 3-D reconstruction from airborne laserscanner and InSAR data, Dresden, Germany, October 8-10
- ASPRS/MAPPS Fall Convention, Charleston, October 27-31
- International Workshop on Radiometric and Geometric Calibration jointly organized by ISPRS WG I/2 and CEOS, Gulfport, MS, December 2-5
- The 15th CEOS-WGISS & WGISS-Subgroups Meeting in Toulouse, France 12 – 16 May 2003
- The 16th CEOS-WGISS plenary and subgroups meeting held in Chiang Mai,Thailand during September 15-19, 2003

Other Activities

Special publications:

- WG II/5 and WG II/6 co-organized the ISPRS Workshop on Spatial Analysis and Decision Making during 3-5 December 2002, at Hong Kong. The papers to this conference were fully peer-reviewed. A selection of 30 papers out of the 45 submissions has been edited into a book and it is been published by Balkema (Swets and Zeitlinger Publisher). It became the first of this book in the ISPRS book series. Prof. Trinder has kindly written a preface for this book.
- Theme issue: "Integration of geodata and imagery for automated refinement and update of spatial databases", ISPRS Journal for Photogrammetry and Remote Sensing, Planned publication date: Winter 2003/04, Guest editors: C. Heipke, K. Pakzad, F. Willrich (University of Hannover, Germany), A. Peled (University of Haifa, Israel)
- A special Commission II issue for Photogrammetric Engineering and Remote Sensing have been edited jointly by the Commission president and the chair of the WG II/6. Six papers have been selected for inclusion in this special issue after a peer-review process. The current status of ISPRS Commission II is introduced by an editorial. This special issue will be published in the February Issue of PE&RS, 2003.

A joint workshop between WG IV/2, WG IV/4, WG II/3 named "Advances in Spatial Data Infrastructure and Database Interoperability" was planned for July 9 – 11, 2003 at Ordnance Survey, Southampton in England. Unfortunately, it was abandoned because of the outbreak of SARS and some other reasons.

WG II/5 and WG II/6 were involved in the organization of the 4th Dynamic and Multi-dimensional GIS at ITC, the Netherlands. However, due to the outbreak of SARS, the response to this event was cancelled due to too few participants.

WG II/1: REAL-TIME MAPPING TECHNOLOGIES

Chair: Rongxing (Ron) Li (USA)
Co-Chair: Norbert Haala (Germany)

State of Science and Technology of Working Group Topics

In the area of real time mapping covered by the WG II/1, continued research efforts in advancing direct geo-referencing techniques have been made in the community and used in many applications where fast geo-referencing is required. The challenge is still in the area of rapid direct geo-referencing with high accuracy for real-time and near real-time application in a cost effective way. Cost effectiveness and production capability of mobile mapping technology, compared to other technologies, have demonstrated its advantage through, for example, some mapping projects at county and state level. However, it generated much less impact in the overall mapping industry as people expected. Marketing of the technology may have to be an issue as well. As always, research, both theoretical and application oriented, on automation of mobile and real-time mapping data processing to combat the vast amount of data has been carried out. The problem of required manual object extraction work is still affecting the applicability and cost effectiveness of the technology. Emerging areas include the extension of mobile mapping to telegeoinformation appli-

cations and location-based services (LBS) where we require the integration of real-time mapping technologies with wireless communication, distributed and web-based databases, sensor networking, and other technologies. We expect to see more rapid development in this direction.

Plans for the Future
The 4th Mobile Mapping Conference will be held in Kunming, China, on March 29-31, 2004. It was planned to take place in August 2003. But postponed due to the SARS event in China.
The 5th Mobile Mapping Conference is planned to be held in France, 2005 with WG II/1

WG II/2: SYSTEMS FOR SAR AND LIDAR PROCESSING

Chair: Bryan Mercer (Canada)
Co-Chair: Charles Toth (USA)

State of Science and Technology on Working Group Topics
For WG II/2, the Lidar and InSAR fields continue to exhibit aggressive growth in terms of interest, development and operational use. In the lidar area, the major vendors are improving or incorporating system performance parameters such as pulse repetition rates, laser power, reflectance measurement, and multiple-return measurements. New systems with 50 KHz and higher pulse rates support higher ground point densities. At this time more than 70 lidar systems are believed to exist worldwide and the number is increasing. Validation studies by different entities are documenting lidar performance under a variety of conditions which generally show vertical accuracies in operational context at less than 20 cm (RMSE). Processing software is improving and applications cover a broad gamut. A vigorous effort is underway by the lidar sub-committee of ASPRS to create a set of operational guidelines for lidar. On the InSAR side, commercial airborne systems are also improving, particularly with respect to vertical accuracy, where sub-meter (RMSE) vertical results have been demonstrated over national-scale areas at 5 meter post spacing. While software has been successfully developed for extracting bare-earth DEMs in many types of coverage (low density urban areas, patchy forests), the challenge is to obtain ground elevations in heavily forested areas. Considerable development effort is currently focused on the potential of longer-wavelength, multi-polarization InSAR because of its greater forest penetration properties. Both L- and P-Band projects have been conducted (by R&D and commercial entities) over the past year with ground accuracy results in heavy forest reported at the 2-3 meter (RMSE) level. Satellite-based repeat-pass InSAR has made significant progress with the increased demonstration of permanent targets for differential topography measurements over long temporal baselines. Current plans indicate several new radar satellites to be launched in the next two years, the number in orbit eventually reaching 10 or so by decade end.

Accomplishments of the Working Group
Joint Workshop of ISPRS WG I/3 and WG II/2, held in Portland, Oregon, USA from June 17-19, 2003. There were 60 attendees from five countries.

WG II/3: INTEGRATED SYSTEMS FOR INFORMATION SERVICES

Chair: Poul Frederiksen (Denmark)
Co-Chair: Chongjun Yang (China)

State of Science and Technology of Working Group Topics
The most important and latest advance in technology related to "Integrated Systems for Information Services" (WG II/3) is the GRID computing. The GRID technology provides basic middleware services for seamless and secure distributed computing and data management, making it much easier for geo-spatial data providers and users to implement and operate distributed enterprises. Especially, the GRID technology addresses enterprises managing large amounts of distributed data and systems where user friendly but agency controlled support for access to multiple distributed computer models and computer processing power is needed. The multi-discipline nature of geo-spatial research and applications requires integrated analysis of huge volumes of data from multiple data centres. Most geo-spatial modelling and applications are both data and computational intensive, so sharing both data and computing powers among data centres are the key issues. Combined with OGC specifications for web pricing, ordering and accounting the GRID is an ideal technology for the geo-spatial community.

Accomplishments of the Working Group
WGII/3 co-sponsored a special workshop on spatial information grid held in Hangzhou, China September 26-29, 2003. More than 50 persons attended the meeting.

The WG II/3 website provides news related to spatial data services and geo-spatial technology with some supporting technologies such as hyper linking and searching tools. On the website a global SARS information system (http://www. digitalearth.cn/wgii-3) was developed under support of ISPRS WG II/3. The system is hyperlinked by 3 English international websites and 48 Chinese websites.

WG II/4: IMAGE DATA STANDARDS

Chair: Wolfgang Kresse (Germany)
Co-Chair: Liping Di (USA)

State of Science and Technology of Working Group Topics
The activities of the WG II/4 in 2003 were dominated by the developments of the ISO standards and by the emerging cooperation with the CEOS-ISPRS Joint Task Force on calibration. The WG 6 "Imagery" of the ISO/TC 211 "Geo-

graphic information / Geomatics" leads the development of the ISO standards that are relevent for photogrammetry and remote sensing. The recent start of a number of new standardization projects in the field of imagery documents the increased interest of the GIS-community in photogrammetry and remote sensing. It can be expected that a suite of new ISO-standards will strongly influence these sciences within the next three years.

The Working Group Chair and Co-chair have been involved in ISO TC/211 meetings in Ottawa, Canada (January 2003), Thun, Switzerland (May 2003), Berlin, Germany (October 2003), Lanham, MD, U.S.A. (December 2003). The WG has cooperation with other groups and organizations:
- ISO TC/211, for projects ISO 19129 "Imagery, gridded data, and coverage framework",
- ISO 19130 "Sensor and data models for imagery and gridded data",
- ISO 19115-2 "Metadata – Part 2: Metadata for imagery and gridded data" ,
- ISO 19101-2 "Imagery – reference model".

WG II/5: DESIGN AND OPERATION OF SPATIAL DECISION SUPPORT SYSTEMS

Chair: Wolfgang Kainz (The Netherlands)
Co-Chair: Qiming Zhou (Hong Kong)

State of Science and Technology of Working Group Topics

For WG II/5, spatial decision-making based on a combination of image-based and vector data is an important activity in many application domains. The underlying paradigm of field versus object-based models has become an extensively researched area in many disciplines ranging from theoretical to application oriented. The support of decision making with knowledge-based techniques (rule-based systems) and artificial neural networks has found many useful applications reported in the literature. We observe an increased interest in combining standard GIS functionality with novel approaches taken from fuzzy logic and artificial neural network technology. The cooperation of producers of spatial decision support systems and users of these systems is increasingly recognized as an approach to provide better spatial decision support to real world problems. Moreover, the modularization of services leads to the design and development of component based systems. This means that in the future functional components of systems will be available on the Web for use. This poses new challenges for standards and interfaces not only on the data side but also for the functionality of the components.

Accomplishments of the Working Group

Joint Workshop of the WG II/5, II/6, IV/1 and IV/2 on "Spatial, Temporal and Multi-Dimensional Data Modeling and Analysis" at Laval University, Canada, October 2-3, 2003. Joint workshop WG II/5 and WG II/6 on Spatial Analysis and Decision Making, Hong Kong, December 3-5, 2003. Selected papers from the workshop proceedings have been peer reviewed and published in a monograph: Li, Z., Zhou, Q. and Kainz, W. (eds.), 2004, Advances in Spatial Analysis and Decision Making, Swats & Zeitlinger, Lisse.

WGII/6: SPATIAL ANALYSIS AND VISUALISATION SYSTEMS

Chair: Zhilin Li (Hong Kong)
Co-Chair: Menno-Jan Kraak (The Netherlands)

State of Science and Technology of Working Group Topics

With the spatial analysis and visualization systems (WG II/6), a noticeable trend is different types of integration. One type is the integration of visualization and analysis in web environment. Another is the integration of 3D and temporal data into visualization and spatial analysis systems.

Accomplishments of the Working Group

The WG co-organised the Joint Workshop of the WG II/5, IV/1 and IV/2 on October 2-3, 2003 and the Joint workshop with WG II/5 on December 3-5, 2003. See under WG II/5.

INTERCOMMISSION WG II/IV: AUTOMATED GEO-SPATIAL DATA PRODUCTION AND UPDATING FROM IMAGERY

Chair: Christian Heipke (Germany)
Co-Chair: Ammatzia Peled (Israel)

State of Science and Technology of ICWG II/IV Topics

The topic of IC WG II/IV is systems for automated goespatial data production and updating from imagery. There are many scientific groups doing research in automatic cartographic feature acquisition. One focus is on capturing of 3D objects. The use of sensors like laser scanners increasingly gains in importance, especially in combination with imaging sensors. The new digital sensors start to be interesting for automatic image interpretation and object extraction research. Automatic Aerial Triangulation reached a point where it became a standard component of a photogrammetric systems. New developments are characterized by comfortable handling of large blocks and tools for simplified error analysis during the processing chain. Concerning the automation of cartographic feature extraction the transition of experimental systems into practical solutions is very low. Presently the appropriate way to incorporate automatic image analysis into operational systems is by semi-automation, which is reflected by recent developments. Examples are developments by Inpho, Stuttgart, CC-Modeler, Zurich, and eCognition, Munich. Efforts have been undertaken to integrate new camera models into digital workstations in order to be

able to use new digital data material for photogrammetric analysis. Concerning updating of GIS, besides the data capture itself the management of the updating information in the database is a relevant topic itself. Automatic update including topological changes still is nearly unsolved. In some cases from the operational point of view the acquisition of the complete data set still seems to be easier than to incorporate acquired changes into an existing data set. Automatic DTM generation has been accepted by the practice some time ago, but interactive verification and editing is there to stay, especially in difficult terrain, and in large scales. Laser scanning and interferometric radar play an increasingly important role in DTM generation. Digital photogrammetric workstations more and more approach a GIS leading to integrated solutions which cover the complete process from data capture to data management, analysis, visualisation and dissemination. At present they are incorporating database and visualization functionalities, partly in 3D. In general the cooperation and exchange between GIS and Photogrammetry still is rather low, especially from the commercial point of view. There still is a lack in standardized exchange between the respective systems but the companies seem to have recognized the lack in integrated solutions for the end-user.

Working Group News and Future Plans

The Fifth ICA / ISPRS Workshop on "Incremental Updating and Versioning of Spatial Data Bases", July 12-14, 2004 in Istanbul, Turkey. (Prior to ISPRS 2004 Congress) and the Sixth ICA / ISPRS Workshop on "Incremental Updating and Versioning of Spatial Data Bases", July 8-10, 2005 in A Coruña, Spain. (Prior to ICA 2005 Congress).

Workshop: "High Resolution Mapping from Space 2003", October 6-8, 2003 in Hannover, Germany, Joint Workshop of ISPRS Working Groups I/2, I/5, IC WG II/IV and the EARSeL Special Interest Group 3D Remote Sensing; 76 participants from 21 countries; proceedings are available on CD-ROM.

TECHNICAL COMMISSION III
THEORY AND ALGORITHMS

President: Franz Leberl (Austria)
Scientific Secretary: Rainer Kalliany (Austria)

Accomplishments of the Commission

The year 2003 was defined by the actions to collect and sort through the abstracts submitted for the 2004-Congress in Istanbul. One workshop took place in Munich that addressed 3 working groups of the commission (see below, WG III/4,5 and 6). One additional inter-working-group-workshop was announced in Paris; it had to be cancelled due to a lack of abstract-submissions.

Working Group Activities during the Current Year

WG III/1: SENSOR POSE ESTIMATION

Chair: Henrik Haggrén (Finland)
Co-Chair: Ayman Habib (Canada)

The working group had no scheduled activities during the year.

WG III/2: SURFACE RECONSTRUCTION FROM IMAGES AS INFORMATION SOURCE

Chair: Michel Roux (France)
Co-Chair: Amnon Krupnik (Israel)

Accomplishments of the Working Group

A meeting planned for July 16-18 2003, in Paris: International Workshop 'From surface reconstruction to 3D scene analysis in digital imagery: theory, applications and evaluation' (in cooperation with WG III/8) had to be cancelled due to an insufficient number of submissions of abstracts.

WG III/3: 3-D RECONSTRUCTION FROM AIRBORNE LASERSCANNER AND INSAR DATA

Chair: George Vosselman Delft (The Netherlands)
Co-Chair: Hans-Gerd Maas (Germany)

State of Science and Technology of Working Group Topics

On the sensor side developments rapidly continued with further increasing pulse frequencies, higher flying altitudes, storage of multiple reflections per emitted pulses, and the integrated acquisition of optical digital imagery in laser scanner systems. Recently, the first commercial laser scanner with the option to digitise the complete waveform was introduced.

While the increased experience results in improved system calibrations and, consequently, less systematic errors in the data, procedures for quality control and error correction are still to be developed further. To improve the quality of derived digital elevation models, research is continued on filtering techniques and the automatic extraction of break lines. For high accuracy digital elevation models a better understanding is required of the interac-

tion between the laser pulse and a terrain surface with low vegetation. The complete waveform digitisation may play an important role in this analysis, as well as algorithms to register the time of the returning pulse.

Researchers from the forestry community show an active interest the laser scanning as a technique for forest stand inventory. Using high point density laser scanners analyses on single trees are progressing fast. The reconstruction of building models is expected to benefit from the increased resolution as well as from the integrated acquisition of point clouds and imagery offered by the newest sensor systems.

Accomplishments of the Working Group
The working group completed a test on the performance of various filter algorithms to retrieve bare Earth points from a laser scanning point cloud. Each of the eight participants in the test filtered eight datasets of urban and rural scenes with a variety of complex features. Two datasets were provided at three different resolutions. The results were analysed both qualitatively and quantitatively based on manually filtered reference datasets and aerial photograph interpretation. The full report of the filter test is available on the working group's web page http://www.commission3.isprs.org/wg3/.

The major event of the working group this year was the workshop "3D Reconstruction from Airborne Laser Scanner and InSAR Data", held in Dresden, October 8-10. This workshop was organised in cooperation with the EuroSDR Commission I. The workshop was attended by 110 participants. A total of 42 submitted full papers were peer reviewed. The final programme consisted of 25 oral and 12 poster presentations. With sessions on accuracy analysis, strip adjustment and calibration, filtering, data fusion, forestry, building reconstruction, and mapping, the workshop covered all active research topics. Together with the workshop an exhibition was organised on which 10 companies (system manufacturers, software developers and data providers in the field of airborne laser scanning) showed their latest developments. The proceedings of the workshop have been published in the ISPRS Archives and are available in book form, on CD-ROM, and online on the ISPRS server through http://www.commission3.isprs.org/wg3/workshop_laserscanning/. Reports on the workshop will appear in ISPRS Highlights, the German journal PFG and the Photogrammetric Record.

Working Group News and Future Pans
- The results of the conducted filter test will be summarised in a paper for the ISPRS journal.
- A special issue of the German journal PFG with several papers of the Dresden workshop will appear mid 2004.
- A half-day tutorial on Airborne Laser Altimetry: DEM Production and Automatic Feature Extraction will be organised at the ISPRS congress in Istanbul on Wednesday, July 14, 2004.

WG III/4: AUTOMATED OBJECT EXTRACTION

Chair: Helmut Mayer (Germany)
Co-Chair: James Bethel (USA)

State of Science and Technology of the Working Group Topics
Features can be extracted robustly with high sub-pixel precision. Yet, new approaches allow for a more detailed modelling of the image function and therefore even better results. Examples are the recent theoretical and practical improvements of the structure tensor, as used for instance by the Förstner operator. Grouping is essential because feature extraction alone cannot be expected to result directly into parts of objects. Grouping is now also done in three-dimensional object space using photogrammetric camera models and constraints on two or more images based on projective geometry including error propagation from probability theory. Direct measurement of distances via laser-scanning becomes more and more important. This is true for the detection, coarse approximation, and even detailed modeling of buildings and vegetation from aerial data as well as for applications in close range such as 3D video communication. In the high level the need for global models making use of the relations of all (important) objects in an image is important, yet there is few work going into this direction. By means of sound statistical methods such as Bayesian modeling or Markov Chain Monte Carlo (MCMC) the stochastic component and learning can be included.

Accomplishments of the Working Group
The WG participated in the workshop on Photogrammetric Image Analysis" in Munich, Germany in cooperation with WG II/IV, III/5 and III/6
September, 17-19: Conference on " http://www.remote-sensing-tum.de/pia03/

The WG is involved in a EuroSDR (formerly known as OEEPE) test on "Automated Extraction, Refinement, and Update of Road Databases from Imagery and Other Data".

Working Group News and Future Plans
Since November 2003, Stefan Hinz has followed Albert Baumgartner as secretary of the working group. We thank Albert for his excellent job and we are looking forward to working together with Stefan. Contact him under Stefan.Hinz@bv.tu-muenchen.de

WG III/5: ALGORITHMS FOR INDUSTRIAL VISION

Chair: Carsten Steger (Germany)
Co-Chair: Stefan Scherer (Austria)

The activities of the WG were modest because the two proponents both have left academia and moved on into commercial ventures with very little room to dedicate to a learned society. A proposal was made at the Council meetings both in 2002 and in 2003 to merge the WG with

WG V/1 on "Automation for Vision Metrology Systems and Industrial Applications", led by Stuart Robson and Thomas Luhmann. That merger was not pursued and therefore was not implemented.

Accomplishments of the Working Group
The WG participated in the Conference on "Photogrammetric Image Analysis" on September, 17-19, Munich.

WG III/6: MULTI-SOURCE VISION

Chair: Olaf Hellwich (Germany)
Co-Chair: Beata Csatho (USA)

The WG participated in the Conference on "Photogrammetric Image Analysis" on September, 17-19, Munich.

WG III/7: MODELING LARGE SCALE URBAN ENVIRONMENTS

Chair: David M. McKeown, Jr. (USA)
Co-Chair: Seth Teller (USA)

The working group had difficulties to get going and was dissolved by virtue of inactivity. Yet there were many submissions of abstracts to the Congress on the topic of the Working Group, and this indicates that the subject is relevant and lives in the ISPRS-community.

The co-chairmen of the WG, Dave McKeown and Prof. Seth Teller, resigned their positions in an email dated 18 August 2003.

WG III/8: RELIABILITY AND PERFORMANCE OF ALGORITHMS

Chair: Nicolas Paparoditis (France)
Co-Chair: Eberhard Guelch (Germany)

A workshop was planned for July 16-18, 2003 in Paris on "From surface reconstruction to 3D scene analysis in digital imagery: theory, applications and evaluation", in cooperation with WG III/2. This was canceled due to an insufficient number of abstract submissions.

The 3D geospatial imagery web-site (isprs.ign.fr) developed by WGIII/8 for algorithm evaluation and comparison purposes has gone through several modifications. The major one from the user's point of view is that all images accessible on the web-site are now distortion free thus easing the use of the data. This web-site is a compilation (multi-view digital frame imagery, LASER scanning data, large scale ground maps) of data on a test site which is the French city of Amiens developed in our 3D geospatial imagery community.

A second test site on the French city of Toulouse has just been acquired and will be available very soon on the web-site. This winter survey (light shadows) has a ground pixel size of 20 cm and has been acquired by a 4-head digital frame camera (R,G,B,IR).

IC WG III/V: IMAGE SEQUENCES

Chair: Marc Pollefeys (USA)
Co-Chair: Guoqing Zhou (USA)

This working group was to operate between Commissions III and V. A change in employment by Prof. Pollefeys and a transition from a Belgian group on Computer Vision to a US team on Computer Graphics compromised the activities of this WG. The co-chair had been uninvolved from the beginning and could not compensate for the vacuum caused by the transition of Prof. Pollefeys.

The year 2003 did therefore not see any activity of the WG.

TECHNICAL COMMISSION IV
SPATIAL INFORMATION SYSTEMS AND DIGITAL MAPPING

President: Costas Armenakis (Canada)
Scientific Secretary: Yuk-Cheung Lee (Canada)

State of Science and Technology of Commission Topics
We are fast moving towards the integration of computing, communications and geospatial information. In computing the emphasis is placed on predicting modeling; in communications the developments are on the improvement of the flow of information, wireless operations, nano-satellites and nano-sensors; and in the geospatial domain the move is towards decision support systems. The proliferation of data collection tools, from satellite sensors and GPS receivers to camera-equipped mobile phones, and the resulting availability of huge amounts of geospatial data, together with heightened consumer expectations (e.g. reliable car navigation systems) and recent unforeseen geopolitical events, have created a rapidly increasing demand and need for timely and accurate geospatial information.

In the area of spatial and temporal data modeling and analysis work focused in the topics of modeling spatial uncertainty, multi-dimensionality (3rd and the time dimensions),

data integration, distributed geo-computation, and exploratory analysis. In the integration of heterogeneous data both from the geometric and semantic point of view we see a trend of mapping from one database to another using the ontology concept trying to solve semantic interoperability and solve schematic and semantic heterogeneity. The field of spatial data mining has not yet been explored.

For the spatial data sharing and interoperability, Feature Geometry, and abstract specification for open spatial data model that supports spatial data sharing and interoperability, has been released by OGC and is now a standard of ISO19107: Spatial Schema. Two technologies are used to integrate image, DEM, attribute and vector data: the Component API and the web based geo-spatial data service technology. The web-based GIS developments are in three directions. One is towards the web based geo-spatial data service specifications, the second is on Web 3D GIS and the third is to expand Internet GIS to Location Based Service (LBS).

The location based services and mobile computing applications are extended using wireless operations. An emerging trend is that of Mobile Commerce (M-Commerce) were customers of certain profiles are targeted when they are in the proximity cell of a business. Ideas such as of roaming database (DB on the road) are emerging where the vehicles carry the database and the information is updated/transmitted either from sensors or from other vehicles. Continuous generalization from small mobile displays is investigated, while the creation of Multiple Representation Databases (MRDB) will facilitate the updating of spatial data through various scales.

The implementation of geospatial data infrastructures still continues at national levels but we see it expanding at global and regional scales to address specific environmental and socio-economic issues. Closer cooperation with other international organizations is required for better development/use of global environmental databases.

The use of image-base databases for geo-spatial applications requires interdisciplinary approach involving expertise from photogrammetry, image analysis, GIS, database systems, very large databases, and expert systems. Landscape visualization work continues on 3D city modeling, terrain modeling, web-based visualization and its use grows in areas such as the use of spectral imagery to recreate historical battlefields, computer visualization of forest cover change and animated three dimensional maps.

Digital mapping, DEM generation and orthophoto production have been enhanced with the addition of new sensors, such as the OrbView-3 and the IRS P6 ResourceSat, and the increased use of data from SPOT 5 and the airborne digital cameras (ADS40, DMC 2002, UltraCam D). The new small satellites are also expected to have impact on this field.

For the geospatial information extraction and change detection from imagery the emphasis continues to be on semi-automated and automated approaches. The development of algorithms for data fusion on pixel level, feature level and decision level will continue for sometime in the future, including the use of object-oriented and fuzzy reasoning for image segmentation. The work on the integration of LIDAR data with imager continues.

Finally, significant advancements are expected in the area of extra-terrestrial mapping because of the ESA Mars Express (MEX) orbiter and the two NASA Mars Exploration Rovers (MER) missions to Mars.

Accomplishments of Commission

During 2003 the Working Groups of the Commission IV organized or sponsored nine scientific events. One planned event had to be cancelled, while another one was rescheduled and held jointly with another event. Details of the events are provided in the WGs reporting section. Two special issues of the ISPRS Journal of P&RS were guest edited, one by WG IV/6 (published) and one WG IV/1 jointly with Commission II (in progress). The proceedings of the WG IV/5 workshop will be published as book in the ISPRS book series.

In working with others, there was cooperation among the WGs, with Commission II, with ICA (WG IV/3) and with the Global Mapping project (WG IV/8). It has been suggested by WG IV/2 that ISPRS should consider participating to the ISO/TC211 meetings.

Working Group Activities during the Current Year

WG IV/1: SPATIAL AND TEMPORAL DATA MODELLING AND ANALYSIS

Chair: Wenzhong (John) Shi (Hong Kong)
Co-Chair:

State of Science and Technology of Working Group Topics

Modeling uncertainties in spatial data and analysis

There are a number issues need to be further investigated for modeling uncertainties in spatial data and analysis. These include (a) theoretical studies, (b) methods development, and (c) application issues. We may need to develop a more comprehensive theory of uncertainties in spatial data and analysis. There are two alternative solutions, to adopt and integrate relevant theories from other disciplines, or alternatively to develop a totally new theory. In terms of method development, we need to consider error indicators for spatial data, error propagation and accumulation in spatial analysis and GIS, spatial and topological relationships of uncertainty, formalization of the existing models and algorithms and others. Other issues are analysis of errors from imagery and classifications, and the management of metadata and standardization.

Spatial analysis based on 3D and high resolution geo-spatial data
Multidimensional approach to spatial data poses several challenges, one of them being the introduction of a spatio-temporal topological operators dimension. The integration of a "dimension" for topological operators in space and time, at different levels of granularity of definition, allows for very fast and intuitive spatio-temporal querying, even for very large databases. The full potential for spatio-temporal analysis as well as spatio-temporal data mining is just starting to unveil. The recent technologies in 3D data capture (such as airborne or terrestrial laser scanning, high resolution stereo satellite images, or digital photogrammetry), and 3D GIS data management make it possible to provide manageable 3D geo-spatial data for spatial analysis. This adds one more dimension to the traditional 2D geo-spatial data-based spatial analysis. The third dimensional data (such as elevation of the terrain and height of objects, e.g., building) enrich the information can be used for spatial analysis. However, techniques for analysis the 3D geo-spatial data are still need to be developed, such as 3D overlay or buffer analysis. Furthermore, it is also essential to include the third dimensional information into the spatial analysis models.

Concepts of spatial analysis
Algorithms for spatial data processing cover spatial, temporal, topological and attribute analysis of geo-spatial data related to data capturing, processing, assessment, information and knowledge derivation change and time series analysis methods, such as Markov fields, cellular automata. The concept "analysis" to be broadened to include some of modeling, optimization functions, and other computational methods; and the concept "space" to be broadened to include social space, perceptual space, topological space, scale space and frequency space, etc. With such a development, two popular new terminologies come into use, i.e. geo-computation and exploratory spatial analysis. Currently only geometric features are used for similarity comparison and matching. A further research along this direction would be to develop methods based on integrated geometric, attributes and other related information from counterparts of two networks at the level of node, link and segment.

Integrated with recent computing technologies
There are many recent developed computing technologies, which can be adopted as support techniques for analysis of geo-spatial data. For instance, we may use integrated of 3D GIS, virtual reality and simulation techniques for spatial analysis, integrated virtual reality with environmental modeling for spatial analysis, Geo-GRID computing-based global analysis, application of spatial data mining technologies and others.

Accomplishments of the Working Group
In this year ISPRS Working Group IV/1 has organized or sponsored the following events:

The Second International Symposium on Spatial Data Quality was held from 19th to 20th March 2003 in The Hong Kong Polytechnic University. Over 100 scholars from 18 different countries and regions registered to this Symposium. In total 63 papers were presented at the Symposium. The keynote session covered 'Models for uncertainty in area-class maps' by Michael F. Goodchild, 'Spatial data modeling and the specification of semantics and its uncertainty aspects' by Martien Molenaar, 'How to measure data quality' by Andrew U. Frank, 'Data quality and uncertainty: ships passing in the night' by Peter F. Fisher, and 'A general framework for error analysis in measurement-based GIS - A Summary' by Yee Leung.

A Joint workshop with Com II on "Spatial, Temporal and Multi-Dimensional Data Modelling and Analysis was held on 2nd and 3rd October 2003 in Quebec City, Canada. The ISPRS WG IV/1 group was responsible for the spatial and temporal data modeling and analysis. In the context of data modeling and analysis, the topics for the Workshop were spatio-temporal relations and reasoning, multi-dimensional and multi-scale modeling, three-dimensional GIS modeling, (heterogeneous) spatio-temporal database design and development, spatial database revision, multi-source data fusion, spatio-temporal data mining, multi-scale and multi-media representation, multi-dimensional decision support systems, and related topics. 33 participants gathered in the workshop. There were 17 interesting presentations and 3 demonstrations. The presentations have been made available on the web site of the WG.

Jointly with Com II, the WG has organized a special issue in the ISPRS P&RS journal on "Advances in techniques for analysis of geo-spatial data". Also, two special issues will be published: one for Photogrammetric Engineering & Remote Sensing with emphasis on the uncertainties in GIS and another one for International Journal of Remote Sensing with emphasis on uncertainties in remote sensing.

Working Group News and Future Plans
As Dr Yvan Bédard has stepped down as WG Chair, the WG Co-Chair Dr Wenzhong (John) Shi has accepted to chair the WG.

WG IV/2: FEDERATED DATABASES AND INTEROPERABILITY

Chair: Jianya Gong (China)
Co-Chair: Rolf de By (The Netherlands)

State of Science and Technology of Working Group Topics
With the development of computer science, network technology, database technology and geospatial information technology, the technology of federated database and interoperability has achieved great progress for the recent four years. The progress of relevant technologies is as follows:

Distributed Spatial Data Models
For the implementation of spatial data sharing and interoperability, an open spatial data model that supports spatial data sharing and interoperability is required. With years of efforts, OGC and ISO/TC211 have constituted a spatial data model. Feature Geometry is an abstract specification released by OGC, which has been submitted to ISO/TC211 for discussion and rectification and is now a standard of ISO19107: Spatial Schema. This standard defines the data expression, content and relationship of geometric elements, including zero-dimensional objects, one-dimensional objects, two-dimensional objects and three-dimensional objects. The model can be used as a basic model for data transfer format (or GML) and one for interoperability specification.

Link and Integration of Imagery, DEM, Attribute and Vector Data from Federated Database
There are two technologies that can be used to realize the integration of image, DEM, attribute and vector data. One is based on API. Databases of image, DEM, vector and attribute data are built separately. The Component API is provided then to establish the integrated system. By transferring different Component APIs, image, DEM, vector and attribute data can be acquired and be displayed, queried, analyzed and mapped in an integrated geographic information system. All data can be stored in file or relational database management systems, such as Oracle. The second technology is web based geo-spatial data service technology. Raster map, vector data, attribute data, image and DEM data can be acquired by using WMS, WFS and WCS. Similarly, by using the information integration technology, different types of data can be integrated for applications.

Internet GIS Technology
The Internet (Web) GIS is developing very fast. It is widely applied in many countries and has become a kernel technology for geographic information service. There are several web GIS technologies such as CGI based, plug-in based, ActiveX based, ASP based, Java based and so on. Currently, web GIS is developing in three directions. One is to support the web based geo-spatial data service specifications. Many GIS software packages such as ArcIMS and GeoSurf are supporting WMS and WFS and acquire data from heterogeneous databases. One is to support Web 3D GIS. Integrate vector, attribute, DEM and image data in Web GIS and then expand into the city 3D model. GeoSurf 3D GIS developed by Wuhan University, China and GeoServNet developed by York University, Canada, are such systems. The third is to expand Internet GIS to Location Based Service (LBS). By using Internet GIS service platform and XML, it can directly support mobile service. When a mobile phone is connected into the GPRS or CDMA network, it may have an access to the Internet Web Site and obtain map service. In the year of 2000, WG IV/2 held an International Workshop on Mobile and Internet GIS in Wuhan, China. Scholars and experts attending the workshop shared their papers, technologies and ideas on the development of Internet and mobile GIS. The issue of LBS technology has been settled. The issue to be solved is standard and network transmission speed.

Accomplishments of the Working Group
The joint meeting with WG IV/4 in July, in the UK unfortunately had to be cancelled due to low participation. SARS, could be the reason of this. Dr. Rolf de By, Co-chair of WG IV/2, planned to have the 4th Dynamic and Multidimensional GIS in August at ITC. Again due to low participation, this event was jointly held with the WG IV/1 workshop in Quebec City, Canada.

In October 2003, Prof. Gong Jianya, Chair of WG IV/2 hosted Asia GIS 2003 Conference in Wuhan University, China. WG IV/2 is a sponsor. There are several sessions that relate to the distributed spatial database, multi-resource data integration, interoperability, Internet GIS, LBS and spatial web service.

From October 27th to November 2nd, 2003, Prof. Gong Jianya attended the 17th ISO/TC211 Plenary Meeting held in Berlin, Germany as a delegate of the Chinese delegation. He participated in the discussion held by WG 4 of ISO/TC211. The standards discussed include GML, WMS and WFS, which are related to the TOR of WG IV/2. Prof. Gong established contacts with those experts from ISO/TC211.

WG IV/3: DATA GENERALIZATION AND DATA MINING

Chair: Monika Sester (Germany)
Co-Chair: Dianne Richardson (Canada)

State of Science and Technology of Working Group Topics
The two topics of the WG (data generalization and data mining) are linked very closely considering the fact, that data generalization presumes a detailed information about spatial context of objects. In order to derive this context information, interpretation mechanisms are needed. Context can on the one hand be defined in terms of neighbourhood (e.g. objects in the vicinity), but on the other hand also in terms of objects exhibiting the same characteristics, i.e. thematic similarity. The idea is to make current generalization algorithms smarter by providing more rich context information. Concerning generalization, the current topics lie in the domain of location based services and the visualization of geodata on small displays. Another important issue concerns the set up of MRDB with the main focus of providing the ability to update spatial information through several scales. This issue is getting more and more important, especially as National Mapping Agencies (NMAs) do have these demands and look for solutions.

The integration of different distributed data sets – irrespective of their spatial resolution – also demands for new concepts: these relate on the one hand to the semantic integration and on the other hand to the adaptation of the

spatial resolution or scale. In the context of semantic integration, research in ontologies is of continuing importance. Another upcoming aspect is to apply generalization also on semantic concepts and link it to the spatial ones.

The field of spatial data mining has not yet been explored in the Working Group in the way it deserves. This important research direction is something to address with more focus in the near future.

Accomplishments of the Working Group
The Working group IV/3 co-organized the ISPRS-workshop in Stuttgart entitled "Challenges in Geospatial Analysis, Integration and Visualization II" (September, 8-9 2003). This workshop was jointly organized with two other Working Groups of Commission IV. The workshop brought together researchers in the domain of the handling of geodata. Of special interest for WG IV/3 were presentations concerning data interpretation and visual inspection. Members of the WG also participated in the Workshop of the ICA Commission on Generalization which was held in Paris (April, 28-30 2003). There, current research was presented on generalization of 2D and 3D-data, the design and establishment of Multiple Representation Databases (MRDB), mobile applications, as well as the interpretation of spatial data set with the focus on extracting meaningful information for later generalization processes (e.g. the alignment or grouping of buildings). To this end, model based approaches, as well as clustering techniques were presented.

WG IV/4: SPATIAL DATA INFRASTRUCTURES

Chair: Parth Sarathi Roy (India)
Co-Chair: David Holland (UK)

State of Science and Technology of Working Group Topics
In the recent years significant developments have being made in many countries towards the development of a National Spatial Data Infrastructure (NSDI). The Conceptual Framework for the development of National Spatial Data Infrastructure is being formulated and efforts are also made towards defining the Metadata standards and Data exchange standards.

A NSDI would enable towards a Spatial Society, that is synergy of information, technology and access of the spatial and non-spatial information will force the establishment of proper infrastructures, thus encompassing the environment for a better quality of life. One of the major components in an NSDI is the information related to urban centers. Around the world the problems faced by many countries is the rapid pace of urbanization and population explosion, which has resulted in increasing demand for land, shelter, and adequate infrastructure facilities etc. Hence, proper planning and management of urban regions is required to cope up with the complex urban problems and to make the optimum use of the resources, which in turn require accurate spatial information. Therefore, there is a need for the development of National Urban Information System (NUIS).

Accomplishments of the Working Group
A tutorial was organized on "Spatial data Infrastructure for Urban Planning and Management" at Indian Institute of Remote Sensing, Dehradun from 6th – 8th November 2003. 31 participants from India and Asia pacific countries attended the program. The tutorial was organized through invited lectures and case study demonstration. Prof. Martien Molenaar delivered the keynote address on Spatial Data Semantics in NSDI.

Unfortunately the originally planned meeting in July, in the UK had to be cancelled due to low participation. SARS, might be the reason of this.

Working Group News and Future Plans
A major event in this direction is the organization the seventh GSDI Conference in Bangalore, India in February, 2004 The Conference will focus on the various aspects and activities towards development of an SDI. The WG has proposed to organize a Pre-Conference Tutorial for providing an opportunity for key experts and professionals, especially from developing countries to be exposed to the SDI technologies and applications.

WG IV/5: IMAGE-BASED GEOSPATIAL DATABASES

Chair: Peggy Agouris (USA)
Co-Chair: Dimitris Papadias (Hong Kong)

State of Science and Technology of Working Group Topics
The advances in the fields of database systems, very large databases, and expert systems applications are integrated with the photogrammetric, image analysis and GIS work of the WG.

Relevant database research issues to geospatial applications include:
- Distributed databases, digital libraries, and web-based GIS environments.
- Content-based queries of geospatial datasets.
- Spatiotemporal analysis (especially image-based change detection).
- Modeling database content and communicating this information to multiple users in various modalities.

Accomplishments of the Working Group
This year WG IV-5 organized a very successful workshop on Next Generation Geospatial Information (NG2I). The workshop was held in Boston, Massachusetts, on October 19-21. Reflecting the rather interdisciplinary nature of our WG the workshop attracted experts in the key scientific

areas addressed by WG IV/5: image analysis, GIS, and databases. We had more than 40 participants, and a total of 25 presentations, complemented by 6 demos. The workshop proceedings will be published as book in the ISPRS book series, and we are currently in the process of editing this fully refereed volume. More information on the workshop can be found at http://dipa.spatial.maine.edu/NG2I03/

WG IV/6: LANDSCAPE MODELLING AND VISUALIZATION

Chair: Marguerite Madden (USA)
Co-Chair: Jochen Schiewe (Germany)

Accomplishments of the Working Group

Two joint ASPRS GIS Division/ISPRS WG IV/6 special sessions were organized at the Annual ASPRS Conference held in Anchorage, Alaska on May 4-9, 2003. These sessions featured a total of 8 presentations focused on landscape visualization such as the use of spectral imagery to recreate historical battlefields, computer visualization of forest cover change and animated three dimensional maps.

The co-chair of WG IV/6, along with the chair of WG IV/7, were the main organizers of the Commission IV Joint Workshop "Challenges in Geospatial Analysis, Integration and Visualization II" hosted by WG IV/7 in Stuttgart, Germany on September 8-9, 2003. Involving Working Groups IV/3, IV/6 and IV/7, the workshop was a follow-up event of the first Joint Workshop of the same name that took place at the University of Georgia, USA in October 2001. The goal of the 2003 workshop was to provide an international forum for in-depth presentation and discussion on new developments in the field of analyzing, integrating and visualizing geospatial data. For this purpose three speakers were invited to emphasize the three aspects of the workshop's goals: Toni Schenk (U.S.A) for geospatial analysis, Farhad Samadzadegan (Iran) for integration and Matt Dunbar (U.S.A) for visualization. All three invited speakers gave excellent presentations that highlighted the workshop events. A total of 78 participants from 28 countries contributed to the scientific discussions and enjoyed a field trip to the Black Forest of southern Germany. The digital proceedings were distributed on CD and are also posted on the Workshop web site at: http://www.iuw.uni-vechta.de/personal/geoinf/jochen/isprs03.htm.

In April of 2003, the WG IV/6 Guest Edited theme issue, "Challenges in Geospatial Analysis and Visualization" was published in a double issue of the ISPRS Journal of Photogrammetry and Remote Sensing (Vol 57 - Issues 5 and 6). Nine papers resulting from the 2001 Commission IV Joint Workshop held in Athens, Georgia, USA were included in this theme issue. As testimony to the quality of these papers, three are included in the list of the 25 most downloaded articles of the ISPRS Journal. This issue is available online at http://www.elsevier.nl/locate/isprsjprs.

Working Group News and Future Plans

Planned activities include a special ASPRS/ISPRS WG IV/6 oral session at the Annual ASPRS Conference to be held May 23-28, 2004 in Denver, Colorado, USA.

WG IV/7: DATA INTEGRATION AND DIGITAL MAPPING

Chair: Michael Hahn (Germany)
Co-Chair: Ryosuke Shibasaki (Japan)

State of Science and Technology of Working Group Topics

Scientific trends and technological progress related to the TOR of our working group became most obvious during a workshop co-organised by our working group in Sept. 2003 and with the WG IV/7 abstracts prepared for the ISPRS Congress in Istanbul 2004.

Spaceborne imagery collected by the new high resolution satellites during the last years has renewed the R&D interest in orthophoto generation, mapping and map update. Research papers from many countries indicate that mapping organisation worldwide are investigating quality and information content as well as cost-benefit aspects. To some extend the latest airborne digital camera systems are included in these investigations. Attention is also given to the true orthophoto production of urban areas.

Intensively studied are a broad variety of data integration issues. The development of algorithms for data fusion on pixel level, feature level and decision level will continue for sometime in the future. Pixel and feature level developments mainly serve subsequent applications, in particular, in the field of image interpretation. On the decision level fusion of data combined with ANNs or fuzzy reasoning concepts aims at improvements in scene segmentation up to first solutions for automated 3D object extraction. On the application side data integration more and more projects are emphasizing the benefit of integrating LIDAR with simultaneously recorded colour images.

Mapping based on data integration understood as a process to create, maintain and sustain an information infrastructure is considered to be a key to successful data production. Developments to streamline this process include automated transformations of recorded data from a variety of sources to a common geometry and time reference. Data integration related to methods and algorithms of photogrammetry, remote sensing, data visualization and GIS may lead to an integration of processes of all related disciplines. Progress in this area is to be expected in near future.

Accomplishments of the Working Group

In September 2003 our working group co-organised and hosted an International Workshop on "Challenges in

Geospatial Analysis, Integration and Visualization II" in Stuttgart, Germany in close cooperation with WG IV/3 and WG IV/6. During two days more than 40 papers have been presented in 10 sessions. About 70 delegates from 28 nations participated and contributed to this international and very successful workshop. In sessions on multi-sensor and multi-system integration, geospatial analysis, integration using elevation data and registrations aspects members of our WG have presented their work. All together our working group was very active at this workshop. The workshop proceedings are accessible to the public through the internet.

WG IV/8: GLOBAL ENVIRONMENTAL DATABASES

Chair: Tateishi Ryutaro (Japan)
Co-Chair: David Hastings (USA)

State of Science and Technology of Working Group Topics

The Working Group on Global Environmental Databases established in 1992 at Washington Congress. During three terms, the WG has continued its activities under the same chairman while Global Environmental Databases became more and more important issues and other international organizations such as ISCGM or Committee on Earth Observation Satellites (CEOS) have played active role in developing global data. It is the time we need more closer cooperation with other international organizations for seeking better development/use of global environmental data(bases).

Accomplishments of the Working Group

A three day workshop was held at United Nations Conference Centre, Bangkok, Thailand from 4th to 6th June 2003 entitled "Global Environmental Databases: Adaptation to Meet Current and Future Needs". The main themes for discussion were "how to make global/regional/local environmental data (bases) more useful to operational projects" and "what strategies for adapting global environmental data(bases) will help them to better meet current and future needs". The report of the workshop was on page 23 of ISPRS Highlights Vol. 8, No. 3, September 2003.

The Chairman attended the International Steering Committee for Global Mapping (ISCGM) at Okinawa, Japan on 11 July 2003 where the activities by ISPRS WG IV/8 was introduced and the WG's book products, "Global Environmental Databases", its Volume 2 and their summary were distributed to the committee members.

WG IV/9: EXTRATERRESTRIAL MAPPING

Chair: Randy L. Kirk (USA)
Co-Chair: Jan-Peter Muller (UK)

State of Science and Technology of Working Group Topics
The highlights of this year are the Mars missions: the ESA Mars Express (MEX) orbiter and the two NASA Mars Exploration Rovers (MER). Mars Express will carry (in addition to other instruments and the Beagle 2 lander) the High-Resolution Stereo Camera (HRSC), a 9-line pushbroom system that will obtain high resolution stereo and color coverage over a very large portion of the surface of the red planet. The MER rovers will carry multiple stereo imaging systems as well as a microscopic imager and several spectroscopic instruments, and will be capable of traveling hundreds of meters during a 90-day nominal mission.

Accomplishments of the Working Group

Previous workshops held at University College London in 1998 and Caltech in 1999 focused on "Mapping of Mars" but the many cartographic applications of data from recent missions to other bodies warrant broadening the scope of this meeting. The Planetary Mapping 2001 Virtual Workshop included abstracts on Venus, Earth's Moon, Mars, Galilean Satellites, and asteroid 433 Eros. This year the ISPRS-ET Working Group organized a Workshop/ Symposium "Advances in Planetary Mapping 2003" that was hosted by the Lunar and Planetary Institute (LPI) in Houston, on Saturday, March 22, 2003, immediately following the 34th LPSC.

Altogether, 15 talks on planetary topomapping and control, cartography, and GIS were presented, including a live photoclinometry (shape-from-shading) software demonstration and a grapefruit-based illustration of a new type of highly interrupted map projections. Nearly 60 people from North America, Europe, and Asia registered for and attended the workshop. About 15 posters were also presented, including several that expanded on the material presented orally. As has done in the past after previous workshops, slide presentations or posters contributed by the speakers will be posted in the WG's web site.

TECHNICAL COMMISSION V
CLOSE-RANGE VISION TECHNIQUES

President: Petros Patias (Greece)
Scientific Secretary: Alexandra Koussoulakou (Greece)

State of Science and Technology of Commission Topics

The wide spectrum of Commission's thematic interests, as summarized in the Terms of Reference were covered, to a broad extend, by the accomplishments of its groups, most of which have been active, during the last year. Detailed descriptions of the groups' activities follow below.

WG V/1: AUTOMATION FOR VISION METROLOGY SYSTEMS AND INDUSTRIAL APPLICATIONS

Chair: Stuart Robson (UK)
Co-Chair: Thomas Luhmann (Germany)

Accomplishments of the Working Group

The WG has not organised any specific events during the past year as there were already three established conferences underway, and a new event organised by the National Standards Laboratories of England, Germany and the USA. Each of these had significant overlap with working group activities.

- SPIE Videometrics (20-24 January, Santa Clara, California, USA) organised by Prof. S F. El-Hakim, NRC Canada; Prof. A. Gruen Swiss Federal Institute of Technology; and J Walton of 4D vision. Some 7 papers in the direct interest area of our activities.
- Traceability in large-scale metrology - state of the art and technical challenges (5-6th June 2003, UK), an international workshop jointly organised by NPL, PTB and NIST. This workshop included several key-note papers on the key metrology technologies each giving an overview of challenging applications in different areas and the accuracy and traceability issues involved. Workshop participants were invited by the organizing committee.
- CMSC 2003 (21-25 July, Greenville USA), co-ordinated by G Johanning CMSC 2003 Chairman which brought together companies and manufacturers working in Optical Metrology principally from the USA and Europe.
- Optical 3D Techniques (22-25 September, Zurich) organised by Prof. A. Gruen and Prof. H. Kahmen. The sixth incarnation of this very wide ranging and successful conference series had some two dozen papers in the working group's sector of interest.

Working Group News and Future Plans

A Panoramic Photogrammetry Workshop is being organised for the 19-21 February 2004 in Dresden by Prof Hans-Gerd Maas, Prof Ralf Reulke and Prof Thomas Luhmann. The workshop will address rotational and route panoramic terrestrial cameras and laser scanners. It aims to bringing together system manufacturers, algorithm and software developers, data providers and users of panoramic devices in photogrammetry to report on recent developments in sensor and system design, mathematical modelling as well as data acquisition, processing and visualization schemes.

WG V/2: SCENE MODELLING AND VIRTUAL REALITY

Chair: Sabry El-Hakim (Canada)
Co-Chair: George Karras (Greece)

State of Science and Technology of Working Group Topics

A great number of publications and research activities confirmed that the use and integration of multiple technologies is the solution to 3D reconstruction of relatively large and complex objects and sites. Laser scanning, Photogrammetry and other image-based techniques, surveying, and other records such as historical images, maps, and data are all needed to completely document such objects and environments. The main issues are how to perform the seamless integration and how to increase the level of automation in the whole processing pipeline. Photo-realism, while at the same time maintaining real-time speed, remains a research issue for large and highly textured models.

Accomplishments of the Working Group

The working group workshop was held in Santa Clara, California in January 21-22, 2003. The proceedings, SPIE Vol. 5013, Videometrics VII, included 30 papers and 270 pages. The group also collaborated in the Workshop on Visualization and Animation of Reality-Based 3D Models, which was organized by WG V/6 in Taras-Vulpera, Switzerland in February 24-28, 2003.

The working group has 52 members from 20 countries. It maintains a web site with links to the members web pages, extensive links to relevant sites, and important events. There are also 7 sets of test data each consists of a group of images of an object or site, and camera calibration information.

Working Group News and Future Plans

The group will organize a tutorial on virtual heritage, at the XXth Congress of ISPRS in July 2004.

WG V/3: MEDICAL IMAGE ANALYSIS AND HUMAN MOTION

Chair: Frank van den Heuvel (The Netherlands)
Co-Chair: Hans-Peter Meinzer (Germany)

Accomplishments of the Working Group

- Although the two oral sessions at the Commission V symposium in Corfu drew many participants, no new members registered for the working group. The number of photogrammetrists working on medical applications is limited. Furthermore, the range of applications is broad what makes them a heterogeneous group.
- Contact has been established with the technical group "3-D Analysis of Human Movement" (http://www.utc.edu/Human-Movement/) of the International Society of Biomechanics.

Working Group News and Future Plans

- A tutorial titled "Medical Imaging meets Photogrammetry" is organized for the ISPRS congress in Istanbul, Turkey. The tutorial is expected to bring together experts from the medical and the photogrammetric field. (see http://www.isprs2004-istanbul.com/tutorials/tutorials/tutorials.htm).
- The working group V/3 web page www.commission5.isprs.org/wg3 is maintained.

WG V/4: IMAGE ANALYSIS AND SPATIAL INFORMATION SYSTEMS FOR APPLICATIONS IN CULTURAL HERITAGE

Chair: Hirofumi Chikatsu (Japan)
Co-Chair: Gabriele Fangi (Italy)

State of Science and Technology of Working Group Topics

Recent innovations have spanned a broad area of applications in WG V/4, and WG V/4 covers a number of rapidly emerging research areas within cultural heritage. In particularly, digital archives for cultural heritage have recently received more attention.

In order to accomplish the terms of reference of WG V/4 including digital archives, WG V/4 have to become interdisciplinary WG co-operated with related disciplines such as computer vision, Internet and VR technology also will contribute to spatial information systems. Furthermore, consumer digital cameras and high resolution satellite imagery, integrated surveying techniques with GPS or laser scanner are expected.

On the contrary, in order to correspond the growing demand of applications of close-range vision techniques for the recording, mapping, 3D modeling and visualization of structures of architectural significance and objects of importance to the cultural heritage, there are still many research goals related to existing theories and technologies that need to be realized and work on these areas can be expected to continue.

Accomplishments of the Working Group

In order to steer WG V/4 to success, the main event of the WG activity during the past year was the International Workshop on "Vision Techniques for Digital Architectural and Archaeological Archives", which was organized by WG V/4, in co-operation with IC WG V/III (Image Sequence Analysis). The Workshop took place in Ancona, Italy (July 1-3, 2003), 55 papers were presented for wide range of topics from the fields of interest of both groups and there were 89 participants from thirteen countries.

The second main activity for WG V/4 in 2003 supported the international workshop on "Visualization and Animation of Reality-based 3D Models" held in Tarasp-Vulpera, Switzerland from 24-28 February. The WG V/4 was a co-organizer of this workshop, and both chairperson of WG V/4 (Dr Hirofumi Chikatsu and Dr. Gabriele Fangi) also served as a session chairman.

WG V/5: IMAGE - QUICK RESPONSE AND DISTRIBUTED COMPUTING FOR CLOSE RANGE APPLICATIONS

Chair: Anthony Stefanidis (USA)
Co-Chair: Vincent Tao (Canada)

State of Science and Technology of Working Group Topics

This WG is addressing emerging technologies and their effects on traditional photogrammetric processes. Currently we can identify the following themes as essential for our working group:

- Advancements in camera technologies and wireless communications.
- Advancements in complementary sensor technology (incl. nanosensors) now enable the collection of various types of auxiliary information (ranging from GPS and INS to environmentally-geared sensors) to support and enhance image analysis.
- Advancements in sensor deployment methodologies, with the trend towards distributed sensor networks.
- Evolving field-computing paradigms, with complex handheld devices and auxiliary sensors.
- The availability of detailed VR models of large geographic areas.
- Continuous efforts on video analysis and spatiotemporal modeling.

Accomplishments of the Working Group

This year WG V-5 co-organized a workshop. More specifically we organized a workshop on GeoSensor Networks (GSN'03). It was held in Portland, Maine on October 9-11 and was very successful. Reflecting the rather interdisciplinary nature of our working group we managed to attract experts from fields ranging from sensor networks

and databases to computer vision and GIS. The workshop website provides additional information on attendees, presentations and other relevant issues (www.spatial.maine.edu/~gsn03/). Workshop proceedings will be published as a book by the CRC division of Taylor & Francis, and we are currently in the process of editing this volume.

This workshop and volume complement our efforts in the previous years to link experts from the photogrammetric community with experts in fields like the ones previously mentioned, fostering collaboration among these communities. Given the success of GSN'03 we anticipate a second workshop in this topic to be held in 2005.

WG V/6: VISUALIZATION AND ANIMATION

Chair: Armin Gruen (Switzerland)
Co-Chair: Shunji Murai (Japan)

Accomplishments of the Working Group

- Optical 3D Measurement Techniques Conference, Zurich, SWITZERLAND, Sept. 03 (with FIG and IAG)

IC WG V/III: IMAGE SEQUENCE ANALYSIS

Chair: Marc Pollefeys (Belgium)
Co-Chair: Guoqing Zhou (USA)

See Commision III.

TECHNICAL COMMISSION VI
EDUCATION AND COMMUNICATION

President: Tania Maria Sausen (Brazil)
Scientific Secretary: João Ávila (Brazil)

State of Science and Technology of Commission Topics

The current status of education and communication within ISPRS is described in a number of papers by the Commission president and Secretary.

- Sausen, T.M., The Brasil Campus-Centre for Space Science and Technology Education for Latin and the Caribbean–CRECTEALC; ISPRS, Vol. XXXIV, Part 6/W11, Commission VI, Geoinformation for practice, 15 to 18th October 2003, Zagreb, Croatia, pp. 228-233
- Avila, J., Sausen, T.M., The updating of ISPRS Directory "Education, Training, research and Fellowship Opportunities in the Remote Sensing, GIS an its Application; ISPRS, Vol. XXXIV, Part 6/W11, Commission VI, Geoinformation for practice, 15 to 18th October 2003, Zagreb, Croatia, pp. 12-20

Accomplishments of the Commission

The Commission has been involved in the following workshops and symposia:

- Workshop "Space in Education in the last few years of secondary education"; organizado pela IAF/IAA/ESA/UNESCO; Edifício Sede UNESCO, Paris, France 13-15 March 2003;
- XI Brazilian Remote Sensing Symposium, Convention Center Hotel Mercure, Belo Horizonte, MG; 5-10 April 2003;
- GIS Brasil 2003, 9th Geotechnolgies Tradeshow, 19-22 August 2003;
- UN/IAF Workshop on "Education and Capacity Building in Space Technology for the Benefit of Developing Countries" with emphasis on remote sensing applications; Bremem, Germany 25-27 September 2003-10-13;
- 54th International Astronautical Congress; Centro de Convenções de Bremem, 29 October to 3 November 2003; Bremen, Germany;
- Workshop " Territorial Information Management", ECOATLAS, Convention Centre, mendoza, Argentina, 20-21 November, 2003
- The updating of ISPRS Directory "Education, Training, research and Fellowship Opportunities in the Remote Sensing, GIS an its Application;

Working Group Activities during the Current Year

WG VI/1: EDUCATION AND TRAINING

Chair: Emmanuel Baltsavias (Switzerland)
Co-Chair: Theodoros Bouloucos (Netherlands)

Accomplishments of the Working Group

The WG continued its activities but due to work overload of its officers could not organise a workshop in Asia, as was originally planned. However, we prepared a special session on Education and Training in our fields with invited speakers during the 6th International Conference "Optical 3D Measurement Techniques", 22-25 September 2003, ETH Zurich, Switzerland (see http://www.photogrammetry.ethz.ch/optical3d/). The special session was well attended and with good talks. The related papers, which were made available in hardcopy and on CD, can be found at the WEB page of the WG.

The WEB page was expanded with new resources and links. However, it continues not to be accessed to a satisfying degree. The WG members have increased to 42 and were regularly informed via e-mail on the WG activities. Furthermore, we have made use of the Educator's Network and have sent relevant information to it.

WG VI/2: COMPUTER ASSISTED TEACHING

Chair: Mark Shortis (Australia)
Co-Chair: Pierre Grussenmeyer (France)

Accomplishments of the Working Group

The web site for ISPRS Working Group VI/2 at http://www.geomsoft.com/isprs6wg2/ has been further enhanced with additional content and changes to the structure.

ISPRS WG VI/2, in conjunction with FIG WG 2.2, organised and participated in two sessions on multimedia in education at the Spatial Sciences Conference 2003 in Canberra, Australia held during September 23-25. Seven papers were presented on various aspects of e-learning, curriculum development and teaching practice. The sessions were held in conjunction with the combined annual meetings of the Remote Sensing and Photogrammetry Association of Australasia, the Institution of Surveyors Australia, the Mapping Sciences Institute of Australia, the Australian Urban and Regional Information Systems Association and Institution of Engineering and Mining Surveyors Australia. More information is available on the Spatial Sciences Coalition website at http://www.spatialscience.org/Conference/.

ISPRS WG VI/2 has obtained a sponsor for CATCON 2004 due to the great generosity of Professor Shunji Murai.

Working Group News and Future Plans

The working group will organise and implement CATCON 2004 during the ISPRS 2004 Congress. In a similar fashion to previous CATCON events at ISPRS Congresses, CATCON 2004 will be an open competition for the most innovative and effective computer aided teaching and learning material. The material may be any type of computer based teaching and learning modules, software or resources. The contestants will be required to participate in a session comprising short presentations and then "hands-on" use. The winners will be judged by peer review.

The current web site will be further expanded with additional links to resources available on the Internet. The list of active members of ISPRS WG VI/2 will be established and also published on the web site. Liaison with FIG WG 2.2 will continue wherever possible.

WG VI/3: INTERNATIONAL COOPERATION AND TECHNOLOGY TRANSFER

Chair: Mojca Kosmatin Fras (Slovenia), Ulrike Karin Rivett (South Africa)
Co-Chair: Tamara Bellone (Italy)

State of Science and Technology of Working Group Topics

The level of professional knowledge, infrastructure, and requirements for technology transfer is very heterogeneous in different parts of the world, and even within regions, thus there is no unique way for realization of the objectives of the WG. A part of the needs are covered with organization of region oriented events like meetings, workshops and tutorials, with co-operation of different disciplines, high-level and application oriented papers, and young authors entering the international sphere. The newly established Foundation of ISPRS could be a possible option for enabling and supporting specific programs within the WG in the future.

Accomplishments of the Working Group

The major effort of the WG VI/3 in 2003 was put in organization of the workshop in Zagreb, Croatia, 15 – 17 October 2003, entitled »Geoinformation for Practice«, included also in the World Space Week Calendar 2003. The event was jointly organized in with the State Geodetic Administration of the Republic of Croatia, Croatian Section of Photogrammetry and Remote Sensing, and under the auspices of Croatian government. The local host put an extraordinary effort to co-ordinate and organize a really high-level event: around 600 participants from 34 countries worldwide (450 registered, 50 VIP and press participants, 90 members of parallel program), 45 oral paper presentations and 3 poster presentations separated in 7 topics and 8 sessions, published proceedings (50 papers, 260 pages), 4 parallel program activities, 11 business presentations and 3 closed business presentations, exhibition with 21 exhibition stalls and around 30 exhibitors from 6 different countries, 15 sponsors, and a rich social program. The technical program comprised seven specific topics including Integration of GPS technology into geoinformation systems

Proceedings were published in advance of the workshop, according to ISPRS Archives guidelines: Volume XXXIV, Part 6/W11, Commission VI, Proceedings of the ISPRS WG VI/3 workshop: Geoinformation for Practice, 15 – 17 October 2003, Zagreb, Croatia. Including 50 papers, 260 pages. More details on the workshop on the web site http://www.comm6wg3-isprs-meeting2003.com.hr/ .

Working Group News and Future Plans

The WG was interchangebly chaired by Mojca Kosmatin Fras and Ulrike Karin Rivett due to some objective reasons.

WG VI/4: INTERNET RESOURCES AND DISTANCE LEARNING

Chair: Sanjay Kumar (India)
Co-chair: Carlos G. Pattillo (Chile)

Accomplishments of the Working Group

The chair of the working group has been active in promoting internet resources and distance learning through publishing articles in GIS development and introducing mapping modules with urban and rural schools across India. We have entered many schools in India at the sec-

ondary level and through alternative methods of education, tried to permeate the concepts and significance of maps and mapping into young minds. The larger objective was also to develop database for tackling development-related issues at the grassroots level. The process involved interactive field exercises, mapping, hands on training, observation techniques on development issues, basic theoretical discourses, and introduction to latest techniques of GPS, GIS and their potentials.

Key activities in this had been in:
- Vasant Valley School Mapping Education, Delhi (completed)
- Rural Schools of Padlos, Maharashtra (completed)
- Rural Schools of Faridabad, Haryana (completed)
- Urban and rural schools of Almora, Uttaranchal (undergoing)

Reports available at - www.csdms.org and www.neighbourhoodmapping.org

TECHNICAL COMMISSION VII
RESOURCE AND ENVIRONMENTAL MONITORING

President: Rangnath Navalgund (India)
Scientific Secretary: Shailesh Nayak (India)

State of Science and Technology of Commission Topics

Applications of Remote Sensing and GIS in the inventory and monitoring of natural resources have been extensive in various countries of the world. Remotely sensed data along with collateral information in GIS environment has been used in spatial modelling, monitoring of natural resources, and eco-systems as well as in disaster related applications. The concept of spatial data infrastructure is becoming established in many countries. Increased availability of hyperspectral and high spatial resolution data, and of microwave data has opened many new areas of remote sensing applications. Retrieval of geophysical and biophysical parameters from various space-borne sensors as well as assimilation of such parameters in process based models and forecasting in the fields of land productivity, weather forecasting as well as ocean state forecasting has been noteworthy. The malfunctioning of Landsat 7 has been a dampener. However, with the launch of IRS-P6 (RESOURCESAT-1) satellite by India carrying a set of three unique sensors offering data at three resolutions in multispectral mode and CBERS-2 (China-Brazil) are expected to fill this void. The advances in GIS and GPS technologies as well as in aerial sensors such as LiDAR, ALTM as well as Digital Cameras are increasingly providing data useful in many of the urban and infrastructure related applications. Disaster is a major area, which has attracted the attention of space faring nations.

Accomplishments of the Commission

A Workshop on "Ocean Colour: Techniques and applications" will be organised with the International Ocean Colour Co-ordinating Group (IOCCG) at the Congress and two special sessions will be organised in collaboration with IOCCG and the International Committee on Remote Sensing of the Environment (ICORSE).

President TC VII attended the Earth Observation Summit organised by the US Dept. of Commerce, State and Energy, July 31, 2003 at Washington DC and also Intergovernmental Ad Hoc Working Group on Integrated Earth Observation Summit, August 1-2, 2003. President, TC VII also visited China during December 1-5, 2003 and participated in discussions with Chinese National Space Administration for identifying areas of collaboration in space applications.

An International Workshop on "Transportation and Mobility: Strategic Initiatives using Remote Sensing and GIS" was jointly organized by National Consortium on Remote Sensing in Transportation - Flows (NCRST-F) and National Remote Sensing Agency (NRSA), India during September 11-12, 2003 at Hyderabad. This was attended by around 80 planners, engineers, decision-makers, academia, and resource personnel from countries like Germany, Hungary, China, UAE besides USA and India.

WG VII/1: FUNDAMENTAL PHYSICS AND MODELLING

Chair: Karl Staenz (Canada)
Co-Chair: Marc Leroy (France)

State of Science and Technology of Working Group Topics

Many of the WG topics have been addressed in recent workshops and conferences. Progress in the various areas, such as sensor development, calibration, data pre-processing (e.g., atmospheric correction, BRDF), modelling, data fusion, advanced information extraction techniques, and applications development, have been demonstrated in the ISPRS supported event, the International Symposium on Spectral Sensing Research (ISSSR'03) (Santa Barbara, U.S.A.; June 2003). In addition, symposia such as the EARSeL Workshop on Imaging Spectromerty (Herrsching, Germany; May 2003), NASA's 12th JPL Annual Airborne Earth Science Workshop (Pasadena, U.S.A.; February 2003), and IGARSS'03 (Toulouse, France; July 2003) revealed the advances made in the development of imag-

ing spectrometry (hyperspectral remote sensing) and microwave remote sensing.

Accomplishments of the Working Group
The major activities of WG VII/1 were related to the participation in the organization and execution of the International Symposium on Spectral Sensing Research (ISSSR'03).

The International Symposium on Spectral Sensing Research (ISSSR'03), the seventh in the ISSSR series, focused on the theme "Sensing from Land, Sea, Air and Space". The overall objective of this symposium is to bring together the government (both civilian and military), industry, and academia to exchange information on applications of remote sensing. The symposium contained 12 sessions with 60 papers. The sessions addressed a variety of topics, such as sensor systems, calibration, terahertz spectroscopy, atmospheric sounding and modeling, data reduction and analysis, detection and identification algorithms, and environmental applications. There was a mix of military and civilian applications, including military target detection and identification of chemical and biological agents.

The symposium showed the progress of hyperspectral sensing and its huge potential for both civilian and military applications. Sensors with higher and higher spectral resolutions are being developed, not only for the detection of material from the ground, but also from space. With this trend, also more sophisticated information extraction algorithms and techniques are required in order to efficiently analyze the data from such sensor systems. In addition, there is a need for real-time data processing for the fast turn-around time required for product generation. This is particular important for military and disaster management applications.

Working Group News and Future Plans
The collaborative effort with CEOS Cal/Val WG will continue in the context of the next meeting.

WG VII/2: SUSTAINABLE AGRICULTURE AND ECO-SYSTEM APPROACH

Chair: K. De Bie (The Netherlands)
Co-Chair: Lief F. Tian (USA)

State of Science and Technology of Working Group Topics
Research in agricultural remote sensing has shifted from individual parameter estimation to a holistic remote sensing based agricultural management approach. The combination of spatially and temporally rich information (vigour, nutrient availability, weed, insect soil characteristics, yield, hydro-meteorological state and flux variables) derived through remotely sensed multi-hyper-spectral, thermal and microwave imagery and management oriented simulation models will provide the modern growers a state-of-the-art total solution approach. The Ag20/20 programme of NASA tries to achieve some of these objectives. In India the agricultural inventory has got a shot in the arm with the recent launching of Resourcesat, which provides multi-spectral data at resolutions from 70 m to 5.8 m. This will facilitate, among many others, multi-crop inventory, precision farming, watershed development programmes. Agricultural remote sensing research is also oriented towards characterizing the long-term sustainability of agricultural system, through estimation of various sustainability indicators. One such programme conducted in India is Cropping System Analysis. The assessment of environmental impact of modern agriculture (e.g. CH4 emission from rice fields) is also facilitated through characterization of cultural practices using remote sensing data.

Accomplishments of the Working Group
Workshop on "Invasive alien weeds" organised during first quarter of 2003 at ITC, Netherlands. International symposium/workshop addressing environmental and land use indicators (as applied to agricultural systems, natural resource management, and multi scale approach from precision farming to global impacts) is proposed to be organised at ITC, the Netherlands.

Working Group News and Future Plans
Special ISPRS journal issue on environmental indicators, organising theme sessions in Istanbul Congress, and commission state of art reviews of working group topics are some of the activities planned.

WG VII/3: INTEGRATED MONITORING SYSTEMS FOR RESOURCE MANAGEMENT

Chair: Shailesh Nayak (India)
Co-Chair: Li Yingcheng (China)

State of Science and Technology of Working Group Topics
Remote sensing and GIS have established themselves as key technologies in managing natural resources and help towards achieving sustainable development. Integration of remote sensing, spatial science and environmental sciences has promoted multi-disciplinary approach to the natural resource management. The large digital thematic databases in geo-referenced formats have been created and GIS has allowed to update, modify, integrate and analyse them for varied applications. Advances made in sensor technology, signal processing, pattern recognition have helped in deriving information about most terrestrial and marine resources. Integrated acquisition of multi-sensor, multi-spectral, multi-resolution data such as ENVISAT (ESA) and RESOURCESAT (India), shall provide spatial information about resources and environment.

Accomplishments of the Working Group
A Workshop on 'Integrated Monitoring Systems' was held during December 9-12, 2003 at Thiruvananthpuram, India

along with the Annual Convention of the Indian Society of Remote Sensing. Ten invited talks were presented during three sessions. Monitoring systems for forest, snow and ice and geology and land use were discussed. Presentations on National Natural Resources Monitoring System and application of remote sensing and GIS in coastal regulation zone implementation were discussed during the "Resource Management" session. Impact of land use / land cover change on sustainable development, impact of global change on productivity, cropping system and conservation of biodiversity were discussed during the last session.

WG VII/4: HUMAN SETTLEMENT AND IMPACT ANALYSIS

Chair: Gábor Remetey-Fülöpp (Hungary)
Co-Chair: Carsten Juergens (Germany)

State of Science and Technology of Working Group Topics

Development of methodology using RS and GIS technologies with special emphasis on use of digital orthorectified aerial photographs and very high spatial resolution satellite imageries as common tools is the observed trend. Advanced data acquisition and analysis technologies were adopted also to support methodology development in World Heritage sites identification, documentation, protection and visualisation.

Accomplishments of the Working Group

The 4th Symposium on Urban Remote Sensing in Regensburg, June 27-29, 2003 was organised by the co-Chair C.Jürgens. Experts from 33 countries including Presidents of ISPRS (J. Trinder) and EARSeL (E.Parlow) participated. The Proceedings of the ISPRS Symposium on CD media is available. WG Chair Prof. Gabor Remetey Fulopp had the opportunity to deliver a lecture at World Summit on Information Society, and to participate in the session arranged by the HABITAT-ESRI project initiative "1000 GIS Cities". Co-Chair Prof. Carsten Jürgens of the ISPRS WG VII/4 has been selected as Chairman for the Special Interest Group (SIG) on RS of Urban Areas within the European Association of Remote Sensing Laboratories. WG Secretary P. Winkler and core member G. Iván made in-depth presentation on the documentation, and management of natural heritage and cultural landscapes in Hungary using the just completed countrywide DDM, orthophoto database and 3D modelling and visualisation at the EARSeL Symposium in Gent, Belgium.

Working Group News and Future Plans

- Conference on" Laser scanner application for landscape assessment "planned to organise at Freiburg Germany during 4-6th February 2004 by Prof. Barbara Koch. - Web site : www.felis.uni-freiburg.de
- Participation in 7th GSDI Conference to be held in Bangalore, India, February 2004.

WG VII/5: DISASTER MONITORING, MITIGATION AND DAMAGE ASSESSMENT

Chair: Vern H. Singhroy (Canada)
Co-Chair: Michael Abrams (USA)

State of Science and Technology of Working Group Topics

Use of EO data for Disaster Monitoring, Mitigation and Damage Assessment are increasing. Current high-resolution satellites both in optical and with microwave regions are being used in all the phases of disaster management-before during and after the disaster. The Space Agencies are actively supporting international efforts in making sure EO has a place in Disaster Management through international co-ordination programs such as GEO (Group on EO), GMES (ESA), IGOS- Geohazards theme, the UN Charter on EO, and the UN programs on Space Technology on Disaster Management. ISPRS WGVII/5 members are participating as technical and co-ordination officers on all these programs. However, there are still serious gaps in the operational uses of EO for disaster management, and the capacity of most countries to use EO data as part of the disaster management strategy. Non-availability of cloud free data in near-real time is an issue of concern.

Accomplishments of the Working Group

Working group members participated in several IGOS Geo-hazards Theme reports (ISPRS WG VII/5). The IGOS executive now accepts this report, and follow up programs are now being planned.

WG was a Co- Sponsor of a Special session on Geological Processes and Geohazards: at the IEEE- IGARSS 03 meeting in Toulouse, France: (July 03.) (participants 120). Major recommendations are:

- More testing of InSAR techniques for Geohazard monitoring, integrated with in-situ and GPS techniques
- Develop guidelines of best practice for EO on hazard assessment

WG was a Co- Sponsor of a Special session on Disaster Management at International Symposium of Remote Sensing of the Environment, Hawaii (Nov 03.)

Participated in CEOS working group on: Disaster Management Support: Report is available at http://disaster.ceos.org

Working Group News and Future Plans

Working group is organizing a special session on Remote Sensing for Disaster Management at the IUGS (International Union of Geological Sciences) Congress in Florence, August 04.

WG VII/6: MONITORING AND MODELLING OF GLOBAL ENVIRONMENTAL CHANGE

Chair: Yoshifumi Yasuoka (Japan)
Co-Chair: Vinaykumar Dadhwal (India)

State of Science and Technology of Working Group Topics

Role of satellite remote sensing in monitoring and modeling of global environmental change is getting strongly defined due to continuous progress being made in sensors, retrieval algorithms and their validation, availability of global geophysical products, long-term RS data sets, interfacing RS inputs in models of earth system functioning (hydrology, productivity, biogeochemistry, land cover changes, phenology, etc.). Continuity of global observations has been maintained with NOAA-AVHRR, SPOT –(VEGETATION & XS), MODIS – (TERRA, AQUA), IRS (LISS & WiFS), MERIS, SeaWiFS and RADARSAT-ENVISAT. In addition, improvements have been made on sensors being planned for geo-stationary as well as polar orbiting satellites. The effort to provide consistent long-term RS data sets such as from NOAA-AVHRR Pathfinder has been supplemented by similar products from SPOT-VEGETATION, MODIS, etc. Capability to monitor atmospheric constituents, including both aerosols and gases (CO2, CH4, O3, NO2 etc.) has been realized to global products. In addition, RS data-based land surface fields (vegetation fraction, soil moisture, LAI, etc., are being used to initialize and validate land surface models (LSM) in Regional Climate Models (RCM). International programmes such as IGBP, GEWEX (Global Energy & Water Exchange), GSWP (Global Soil Wetness Project), GCOS continue to develop techniques for use of RS data and have also highlighted the areas of concern. Given the centrality of carbon in study of global change, use of RS inputs in study of carbon cycle, primary productivity, forest/tree cover and biomass at global scale and impact of land cover change has been demonstrated and role of RS data in implementing international protocols such as Kyoto Protocol is getting defined.

Accomplishments of the Working Group

"International Workshop on Monitoring and Modelling of Global Environmental Change" was held on October 21-22, Kyoto, Japan. The topics covered included Regional Databases, Global Databases, Global and Regional Change, Standards for Global Data Exchange, Global Change Models, International Cupertino, Applications of Global Database to - Terrestrial Eco System, Snow and Glaciers, Atmosphere, Oceans, and Educational Programs. This Workshop was jointly organised along with ISPRS WG IV/8, Japan Society of Photogrammetry and Remote Sensing, Japan Association Surveyors, and IGBP/IHDP and GCMAP. 130 participants from 18 countries participated. Proceedings are available on CD.

The IGBP/IHDP LUCC Focus 2 secretariat office at the Institute of Industrial Science (IIS) of the University of Tokyo was established to promote the joint programs between ISPRS and IGBP. The LUCC Focus 2 is in charge of "Empirical Observation and Diagnostic Modeling".

WEB data distribution service of TERRA&AQUA/MODIS and NOAA/AVHRR images received at the University of Tokyo (Tokyo, Japan) and at the Asian Institute of Technology (Bangkok, Thailand) has been started. The observation area covers most of the Southeast and East Asian regions. All users can retrieve MODIS and AVHRR data at the http://yasulab.iis.u-tokyo.ac.jp/, and download the data through the WWW after geometric correction and area-rectification. All of the data are uploaded at the WEB site at the IIS/UT one day after observation.

Committee and Standing Activities

1. International Policy Advisory Committee (IPAC)

Introduction and Membership

The International Policy Advisory Committee (IPAC) of ISPRS has had an active year. During 2003 IPAC examined three main issues: sustainable development, the benefits of remote sensing and access to (commercial) satellite remote sensing data. This summary report presents the main conclusions on these topics. The members of IPAC during the year 2003 have been: Ade Abiodun, Alain Baudoin, Raul Colomb, Joanne Gabrynowicz, Ray Harris (chair), Yukio Haruyama, John Neer, D P Rao, Barbara J Ryan, Gunter Schreier and Frans von der Dunk. A full list of members is attached.

Sustainable Development

Sustainable development issues should be tackled using both geoscience and social science. ISPRS is in a strong position to promote this theme, and to emphasise the variety of perspectives from countries at different stages of economic development. The subject of water availability provides a potentially useful focus in this area.
ISPRS is in a strong position to continue to press for easier and more open access to remote sensing data in support of sustainable development.
ISPRS should continue to act within an international institutional context to ensure that the role of remote sensing in sustainable development is given its full recognition.

Benefits of Remote Sensing and Access to Data

The ISPRS community and the United Nations family can contribute to the more effective use of remote sensing data by the following measures:

- Pay greater attention to measures of estimating the wealth of nations and the contribution that satellite remote sensing data can play in measuring that wealth.
- Promote the opportunities for bulk buying of remote sensing data followed by controlled distribution.
- Use regional associations, collaborations and groups to develop better means of sharing remote sensing data and expertise, always in the frame of turning data into information and information into knowledge.

Publication
The primary aim of the work of IPAC is to provide policy advice to the ISPRS Council. In addition this year, the reports of IPAC have been published in the open literature as a means of disseminating the work of the group more widely. The reports have been published in ISPRS Highlights and also in the journal Space Policy.

Ray Harris, Chair IPAC

2. International Science Advisory Committee (ISAC)

The year 2003 saw a major change in membership of the ISAC. We welcome now the three new members Dr. Klaus Komp, EFTAS, Germany and Dr. Diane Evans, JPL, USA, both representing Remote Sensing and Anne Ruas, IGN, France for GIS.

We also thank the retiring members Dr. David Goodenough, Dr. Howard Zebker and Dr. Anthony Yeh for serving on the Committee.

Currently the Committee is composed as follows:
- Photogrammetry: Armin Gruen (Committee Chairperson), Wolfgang Foerstner, Clive Fraser, Edward Mikhail
- Remote Sensing: Paul Curran, Diane Evans, Klaus Komp, Tony Milne
- GIS: Michael Goodchild, Martien Molenaar, David Rhind, Anne Ruas

The Committee developed and submitted opinions to the following ISPRS issues and documents:
- Redefinition of ISPRS Technical Commission Terms of Reference
- Guidelines for Peer Review of Papers for ISPRS Events

Armin Gruen, Chair ISAC

3. International Committee on Remote Sensing of Environment (ICORSE)

Introduction
The International Committee on Remote Sensing of Environment (ICORSE) was established in 1998 to provide guidance to the International Symposium on Remote Sensing of Environment (ISRSE), the longest-running symposium of its type in the world. ICORSE is comprised of experts in the field of remote sensing who represent most of the world's national space agencies.

In January of 2000, ICORSE signed a Letter of Intent with the International Society of Photogrammetry and Remote Sensing (ISPRS) to strengthen co-operation and co-ordination. In July of 2000, the General Assembly of ISPRS approved (1) the adoption of ISRSE as a ISPRS-sanctioned event, and (2) the installation of ICRSE as a committee reporting to the ISPRS Council. In this new role, in addition to its role in providing policy and programmatic guidance to ISRSE, ICORSE serves as a standing advisory committee to the ISPRS Council.

30th International Symposium on Remote Sensing of Environment
The 30th instalment of the ISRSE was held in Honolulu, Hawaii. The primary sponsor was the National Aeronautics and Space Administration (NASA). The event was hosted by the East-West Center, and the Pacific Disaster Center, also located in Hawaii. In keeping with this sponsorship, one theme of the symposium was disaster management. The symposium was an unqualified success. 559 people attended from 43 countries and 261 papers were presented orally, and 278 by poster. More information is available at www.symposia.org.

ICORSE Meeting
A meeting of the ICORSE was convened at 5:00PM on November 14, 2003 at the Sheraton Waikiki, in Honolulu, Hawaii.

There is a desire to broaden participation in ICORSE and to include those nations that have made significant progress in developing their space-based remote sensing assets. It was noted that all of Asia is underrepresented on ICORSE and that steps should be taken to invited participation from the region. Specifically, China, Japan, and India were discussed as potential members from this region. It was also noted that Canada's participation has lapsed.

It was agreed that appropriate individuals from these countries should be contacted personally to understand their willingness and ability to participate. It was further noted that the upcoming CEOS meeting in Colorado would provide an opportunity to make several of these contacts.

Future Venues
The 31st ISRSE will be held in St. Petersburg, Russia, June 20-25, 2005. Responsibility for planning will be assumed by the Nansen International Environmental and Remote Sensing.

The need to have alternate symposia held in Europe/North America was reaffirmed. While there is a commitment to

take ISRSE to other parts of the globe, the primary audience served by ISRSE resides in Europe/North America. Thus, by having the 31st ISRSE in St. Petersburg (Europe) in 2005, ICORSE may consider other venues outside the Europe/North American region. It was suggested that, given the desire to engage Asian countries, that Asia might provide a suitable venue for the 32nd ISRSE in 2007.

Chuck Hutchinson, Secretary ICORSE

4. CIPA - The ICOMOS & ISPRS Committee on Documentation of Cultural Heritage

CIPA and UNESCO

CIPA is constantly in good contact with UNESCO, specially with the WHC and the CH Division. At the Annual Meeting of CIPA's Executive Board CIPA agreed unanimously to assist ICOMOS and UNESCO in the definition of technical preconditions for permanent monitoring of the World Heritage Sites, one of the most important CIPA tasks to be followed in the next year. CIPA contacted at first the State Parties of Austria, Slovenia and Greece to co-operate. For future as well as for the existing WH contracts adequate solutions have to be sought. Details are to be discussed within ICOMOS which is the official Advisor of UNESCO for the evaluation of WH Sites and Cultural Landscapes, and with IUCN which is the corresponding partner of UNESCO for Natural Landscapes. CIPA has to nominate the best technical consultants for this purpose. Contacts have been established with the Getty Research Institute, Los Angeles, for the realisation of the Guidelines.

Events

The XIXth International CIPA Symposium 30 Sept - 4 Oct 2003 in Antalya, Turkey on "New Perspectives to Save Cultural Heritage" was held under the auspices of UNESCO. There were about 200 participants from 50 countries. Symposium Director was Prof. Dr. Orhan Altan, Council Member of ISPRS and its Society Delegate in CIPA. The main topics were Recording, Documentation and Information Management Tools applied to:

- Archaeological Heritage, Architectural Heritage, Engineering and Industrial Heritage
- Urban, Natural and Cultural Landscapes, Moveable Heritage, Heritage Management.

Information can be found at http://www.cipa2003-antalya.com

Annual Meeting of the CIPA Executive Board

Prior to the CIPA Symposium the Annual Meeting of CIPA was held in Antalya, Turkey from September 28 - 30, 2003. 12 Executive Board Members were present (6 ISPRS, 6 ICOMOS Ordinary Members and Associate Members). Two Members were excused, two were not present. One ISPRS Ordinary Member position is still vacant as also one of ICOMOS.

The Executive Board decided about a new structure of working groups. A working group (WG) is a (unlimited to number but manageable) group of interested people, willing to work on one of CIPA´s permanent areas of interest as reflected by its ToR. A Task group is ad-hoc formed group of people willing to work on an emerging and strictly defined subject.
The idea is to condense our forces and create a critical mass for each WG. Individual interests (e.g. Laser Scanners in recording museum items, non-professional photography for archaeological documentation, web delivery of virtual museums, etc) will definitely find a home, and after all they will make the activities and the agenda of each WG broad and interesting to broader audiences.

The Recording, Documentation and Information Management (RecorDIM) 5-Year Initiative

In continuation of the CIPA Symposium in Antalya, Turkey a Round Table Meeting of RecorDIM took place within the framework of CIPA on October 5 & 6 2003 to establish closer contacts between information users and providers. About 40 participants, many of them from the documentation communities (representatives from ICOMOS, Getty Conservation Institute, English Heritage, etc.) discussed about their needs and wishes towards the information providers. The "bridging the gap" process showed both sides the necessity of understanding each others glossary which seemed to be one of the difficult parts of the process. A next meeting is planned for 2004 in Istanbul, Turkey during the ISPRS Congress.

Future Events

The XXth International CIPA Symposium in Torino, Italy will be held 27. Sept. - 1. October 2005 Symposium Director is Prof. Dr. Sergio Dequal, Associate Member of CIPA. The first announcement will be sent out at the end of the year 2003, it will include the Call for Papers with a deadline for Abstracts. Detailed Information can be received from sergio.dequal@polito.it

The Members of the Executive Board are (Status 1 October 2003)

Ordinary Members from ISPRS (International Society of Photogrammetry and Remote Sensing):
Orhan Altan (Turkey) Society Delegate and Symposium Director
Pierre Grussenmeyer (France) Treasurer
Klaus Hanke (Austria) Secretary General
Petros Patias (Greece) President
Peter Waldhäusl, (Austria)
Ordinary Members from ICOMOS (International Council on Monuments and Sites):
Giora Solar (Israel), Society Delegate
Robin Letellier (Canada) Vice-President
Steve Nickerson (Canada)
Cliff Ogleby (Australia) Vice-President
Gaetano Palumbo (UK)

Associate Members:
Communication and Web: Michael Doneus (Austria) Webmaster
Former Symposium Directors: Nuran Zeren Gulersoy (Turkey) Co-Director(-2005)
Next Symposium Directors: Sergio Dequal (Italy) (-2007)
Others: Antonio Almagro (Spain), Deren Li (China)

Honorary Members:
Maurice Carbonnell (France)(Hon.-Pres.)
John Badekas (Greece)
Carl-Wilhelm Clasen (Germany)
Mario Fondelli (Italy)
Elzbieta Wanot (Poland)

Call for Delegates
Those National and International ICOMOS Committees not yet represented in CIPA are kindly requested to nominate delegates so that information can be exchanged and partnerships established with the National ISPRS Members. The ICOMOS delegates are to be nominated for three years (whereas ISPRS has four years cycles) with the possibility of extension up to 12 years. Communication is mainly by email in English language. Specially interested experts are welcome who wish to advise, co-operate with and contribute to the work in the 10 Working Groups of CIPA.. For their program please see http://cipa.icomos.org/wgroups. html The National ICOMOS Committees are kindly requested to publish this call for expert co-operation via their national channels and to nominate or extend nomination for further periods.

Klaus Hanke, Secretary General, CIPA

5. SPIE

ISPRS has signed a Memorandum of understanding with SPIE to co-sponsor meetings and exchange publicity. In 2003 SPIE the following SPIE conferences were cosponsored by ISPRS:
- Videometrics VII, January 21-22, 2003. Part of SPIE Symposium on Electronic Imaging, Santa Clara, California. SPIE Proceedings Vol 5013.
- Remote Sensing Europe, 8-12 Sept, 2003, Barcelona, Spain.

Videometrics VIII, will be held in January 2005 (exact dates are not yet confirmed), as part of SPIE Symposium Electronic Imaging, San Jose, California.

Sabry El Hakim

6. ISO

ISPRS is a liaison member of several ISO Technical Committees and has a commitment to supporting efforts to establish standards for data format and transfer. ISPRS also supports efforts for interoperability and data transfer through the Open GIS Consortium (OGC). In order to implement this support, explicit reference to ISO and OGC is made within the terms of reference of 5 ISPRS Working Groups. The most important of these is WG II/4, which has the specific remit to develop image standards. The chair and co-chair of WG II/4 are involved in ISO TC/211, for projects ISO 19129 "Imagery, gridded data, and coverage framework", ISO 19130 "Sensor and data models for imagery and gridded data", ISO 19115-2 "Metadata – Part 2: Metadata for imagery and gridded data" and ISO 19101-2 "Imagery – reference model". The WG has established links with many other groups working in this area.

A new working group on radiometric calibration of remote sensing data is being set up with Liping Di as chair and Stan Morain as editor.
ISPRS currently has liaison status on the following ISO Technical Committees:
- ISO/TC 20 'Aircraft and Space Vehicles' - 'Space Systems and Operations' and 'Space Systems and Information Transfer Systems'
- ISO/TC 42 'Photography'
- ISO/TC 172 'Optics and Optical Instruments' - 'Electro optical systems'
- ISO/TC 211 'Geographic Information/Geomatics'

Ryosuke Shibasaki, co-chair of WG IV/7, has been working for the Work Item 14 "Quality Evaluation Procedures" (QEP) as a project team leader (project No. 19114). QEP have reached the stage of Draft International Standard, which means the work is coming to an end. Ryosuke is also a team member of the 'Data Product Specifications Project.

ISPRS representatives to ISO/TC 211are Hans Knoop and Norman Andersen. Hans Knoop attended the ISO TC/211 meetings in Ottawa, Canada (January 2003), Thun, Switzerland (May 2003), Berlin, Germany (October 2003), Lanham, MD, U.S.A. (December 2003)

Ian Dowman, Secretary General

7. International Steering Committee for Global Mapping (ISCGM)

Ryutaro Tateishi has been appointed as the ISPRS representative on the International Steering Committee for Global Mapping (ISCGM) in October 2003. The purpose of this report is to let ISPRS community, especially WG chairpersons, know the aims and activities of ISCGM. I expect the feedback from readers by letting me, tateishi@faculty.chiba-u.jp, know how ISPRS, or ISPRS WG, might contribute to ISCGM.

The background of Global Mapping project is well described in ISCGM's web site http://www.iscgm.org/; "It is therefore essential that we have access to the most accurate and up-to-date maps important environmental

features, if we are to properly understand our global environment. At present, available maps of the entire globe originate from various sources and therefore their accuracy is inconsistent, mainly because of irregularities in source material, lack of up-to-date data, gaps in the data, etc. Insufficient circulation of existing map information and a concern for national security has also reduced the availability of maps at a global scale."

The concept of Global Mapping, and the establishment of an international body for Global Mapping, was first proposed by the Ministry of Construction (MOC) of Japan in 1992. The International Steering Committee for Global Mapping (ISCGM) was established in 1996. At present, National mapping organizations of approximately 130 countries participate in Global Mapping project under the ISCGM.

The main objective of this global project is to bring all nations and concerned organizations together to develop and provide easy and open access to global digital geographic information at a scale of 1:1 million. This would be used to facilitate the implementation of global agreements and conventions for environmental protection, for monitoring of major environmental phenomena and to encourage economic growth within the context of sustainable development.

The concrete products of Global Mapping project are global eight data layers consisting of transportation, boundaries, population centers, drainage, elevation, land use, land cover, and vegetation. The first four layers have a vector format with a scale of 1:1 million, and the last three layers are based on a raster format with 1 km pixels. The ISCGM has a plan to cover the land of the whole earth by 2007 in international co-operation and collaboration. The Global Map data can be placed as limited number of basic map data in large number of necessary global environmental data for understanding global environment.

Rytutaro Tateishi, Chair WGIV/8

8. Journal

Administrative Matters

- The Editor has informed Council and discussed journal matters during the Istanbul Joint Meeting with the TCPs. Two meetings with Elsevier took place in May and November, the first with participation of Council members. Regular exchange of information via email took place with Elsevier and Council.
- After lengthy discussions Elsevier agreed to the appointment of an Associate Editor, who is expected to help reduce the current Journal problems, especially timely paper processing. Council considered various good candidates and finally appointed Prof. Olaf Hellwich, Technical University Berlin, who starts his work on Dec. 1st 2003.
- The jury of the U.V. Helava Award for the period 2000-2003 has continued its work and the best papers for 2000 and 2001 have been announced, while the decision for 2002 and 2003 should be completed by spring 2004.
- Negotiations between ISPRS and Elsevier have started on renewing the current contract for the period 2005-2008.

Papers, Reviews and Publication Time

The publication delay for the issues has continued and all material for Vol. 58 (2003) will be published between February and April 2004. The paper queue is long and the processing slow, with still insufficient quality of papers and reviews. The paper queue has increased due to the many theme issues, many of which came together after a 1-2 year low in TC and WG activities after the Amsterdam Congress. Copy-editing and language editing are mostly done by the editor with minimum input from Elsevier. Some of these problems are expected to be reduced in 2004 due to the appointment of the Associate Editor and the introduction of the Elsubmit tool. This relatively simple tool will enable WEB-based submission of the papers, paper tracking for authors and editors, and electronic submission of the final papers to Elsevier. A much more functional package that enables full electronic and online management and tracking for authors, editors and also reviewers, called Elsevier Editorial System (based on the package Editorial Manager by Aries) is used at Elsevier for about one year, but unfortunately Elsevier cannot yet make it available for our journal. The use of this system for some journals has led to significant reduction of time from submission to publishing and better papers and reviews.

Electronic and Hardcopy Subscriptions

Complete and detailed information on electronic and hardcopy subscriptions for 2002 and 2003 has not been provided by Elsevier yet. Regarding electronic subscriptions, since each subscriber can have a very variable number of members (e.g. large consortia can have more than 100,000 members), the number of paper downloads (espec. full-text) is used as a measure of the Journal actual use. Provisional statistics show that the downloads have doubled or more from 2002 to 2003 and each of the ISPRS Journal papers (excl. older papers published in Photogrammetria) is accessed ca. 70 times a year. This is high compared to other journals - the average for all Elsevier journals is around 30 downloads per online article per year, while the top review journals have up to 200.

For 2002, the hardcopy subscriptions were: institutional 352, personal 2, ISPRS member 27, institutional from developing countries 1. The small reduction of institutional subscriptions was more than compensated by the electronic subscriptions, that many institutions or consortia tend to prefer. In spite of cheap subscriptions for ISPRS members ($40) and institutions from developing countries ($50), these subscriptions, especially the latter, did not show any significant increase, making clear that they have to be made more widely known.

Distribution of the Journal subscriptions - in print plus electronic - per region is: Americas: 29%, Europe: 50%, Asia: 21%. The Journal is now offered electronically in more flexible subscription types for institutions, e.g. as electronic only without hardcopy, and in a bundle of journals related to Earth Sciences.

On-line Electronic Journal

- All issues of the Journal that were published by Elsevier back to the first issue of 1965 have been converted to electronic form as abstracts, abstracts with references (incl. a few links where available) and full text in PDF. These back issues are available to institutional subscribers by a one-off purchase agreement with a bundle of other journals, while the abstracts are freely accessible.
- Publication of supplementary material (like video, audio, background data, high-resolution images, software etc.) is now possible in the electronic version of the Journal. This option has been used by other journals very little up to now, but can be beneficial in our case, especially for additional and high-resolution images, movies and animations.
- Publication of colour figures in the electronic version, which in the printed version are in B/W, is now possible and gratis.
- Revised and proof-corrected articles are available online (at least 1-2 months) before print publication and can be cited using the DOI (Digital Object Identifier).

Special/theme Issues

The following theme issues have been published in 2003 in the Volumes 57 and 58:

- Three "Best Papers" from the ISRSE Conference in Buenos Aires, 2002 were published in the issue 57/4. This was an action in the frame of a wider co-operation between ISPRS and ICORSE, and a theme issue based on the recent 30th ISRSE is planned for the end of 2004.
- Challenges in Geo-Spatial Analysis and Visualization: Edited by M. Madden, J. Schiewe.
- Algorithms and Techniques for Multi-Source Data Fusion in Urban Areas: Edited by P. Gamba, O. Hellwich, P. Lombardo.

The following issues are finished or practically finished and will be published in early 2004:

- Integration of geodata and imagery for automated refinement and update of spatial databases: Edited by Christian Heipke, K. Pakzad, Felicitas Willrich and Ammatzia Peled (issue already available online)
- Advanced techniques for analysis of geo-spatial data: Edited by Wenzhong Shi, Yvan Bédard, Zhilin Li.

One to two theme issues are under preparation for the end of 2004. Until that period the issues will be devoted to regular papers which have been delayed, partly due to the simultaneous publications of too many special/theme issues.

Miscellaneous

ISI's impact factor was 0.389 in 2002 compared to 0.963 in 2001. This seemingly negative development has some real causes, but it is also partly due to inherent deficiencies in the definition of the impact factor, especially the use in its computation of only the two preceding years, and its instability when the number of papers is small. Other measures, which may be even more appropriate, although not as widely used, show a totally different development. For example, if the last 10 years are used, the citations increased from 145 in 2001 to 231 in 2002, which for an approximately equal number of published papers, leads to an increased "citation index" by 60%, instead of 60% decrease with its current definition. Furthermore, the increased number of paper downloads shows that the use and thus also impact of the Journal has increased.

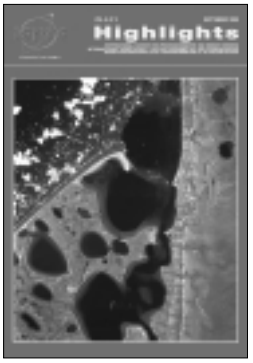
A small update of the Journal's WEB page at the ISPRS server was made, but a major redesign of the page is needed.

The 25 most downloaded articles for the previous year period are now regularly listed and updated every 6 months.

Manos Baltsavias, Journal Editor

9. Highlights

In 2003 we have produced Volume 8 of ISPRS Highlights. It is being produced with good teamwork between the ISPRS Secretary General Dowman, the Publisher's Production Manager (Sandra Visscher) and the Editor-in-Chief (Lucas Janssen).



Issue	No. pages	Print run	Remarks
March Vol. 8.1	72	2100	Annual Report 2002
June Vol. 8.2	48	2000	-
September Vol. 8.3	48	2000	-
December Vol. 8.4	48	2000	-

Table: Statistics regarding ISPRS Highlights in 2003.

Production is planned in such way that the issues arrive at the 1st day of the month of issue. The current situation with distribution is that Highlights is send to 619 persons or companies directly, rather than bulk mail to members (1121 copies). We aim to increase the 'direct mail', among others to attract advertisers. Shortly after publication, Highlights is made available on the Society's internet site in pdf-format.

At different moments the Editor invites Council and TCPs to send in material. Although some people contribute regularly, the relative low input from Society members remains a fact-of-life. In a few cases the limited contribution has caused late printing and distribution. Also, few sustaining members make efforts to submit material for business news. In preparation of the XX ISPRS Congress, much material was provided by the Congress Director.

Lucas Jansen, Editor-In-Chief; Johan Boesjes, President GITC bv

10. Home Page

Information on the Homepage

The ISPRS website (http://www.isprs.org) has turned out to be one of the most important components of ISPRS communications, providing information about the society and linking its various activities.

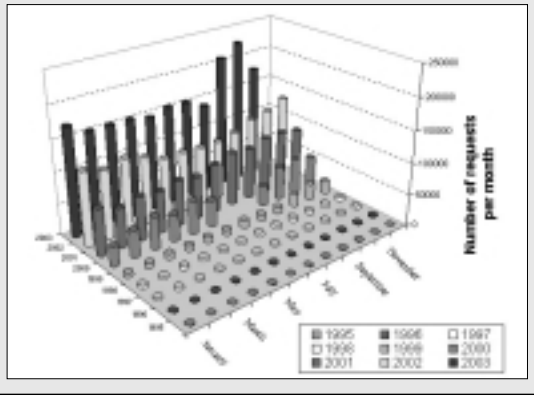
In December 2003 there are about 700 HTML pages with approximately 25 000 lines of information available on the ISPRS web site; moreover there are ca 1000 PDF files, i.e. a total of ca 2 Gb of data available. A search engine (provided by Google) is also working inside ISPRS 'Table of Contents', with the possibility to search for pages inside ISPRS server or inside the WWW. The mailing list activated in October 2002 has more than 400 people subscribed: once per week the latest news inside the website are communicated as well as new events, links and job opportunities.

Statistics of ISPRS Server

The statistics give a reasonable estimate of the use of the ISPRS web server, as it counts only requests for single HTML documents and the requests for images, graphics, icons etc. are not taken into account. Moreover, the statistics refer only to the requests made outside the ETH domain, which excludes all the accesses during maintenance of the documents. In Figure 1 (left) is shown the monthly requests to ISPRS server, in the period January 1995-November 2003. An increasing interest of the community for the ISPRS homepage is evident: the steady increase of the use of the HTML documents over the years and especially after the registration of ISPRS domain (1999) is obvious. The data missing from the figure in the period July-August 2000 is due to the movement of the server from Delft to Zurich.

In November 2003 226260 requests to the ISPRS server were recorded. In 1995 the average number of monthly requests was 424, in 1998 the average was 5 780 while at present the ISPRS server has more than 160 000 requests per month (see Figure 1, right). The different domain (~country) served at least one by the server were 161 (ca. 67% of the registered country code domains), while the distinct organisations served were more than 15 000.

Another interesting statistic concerns the words and queries used in the search engines to find ISPRS and its



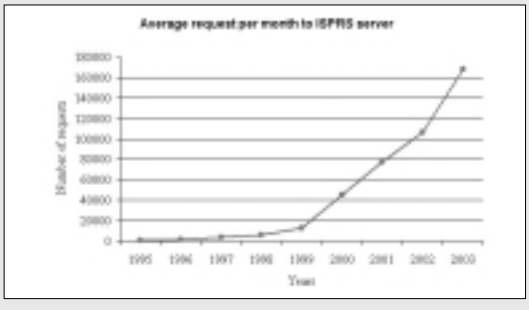


Figure 1, Monthly request to ISPRS server from January 1995 to November 2003 (left). Average request per month to ISPRS server (right).

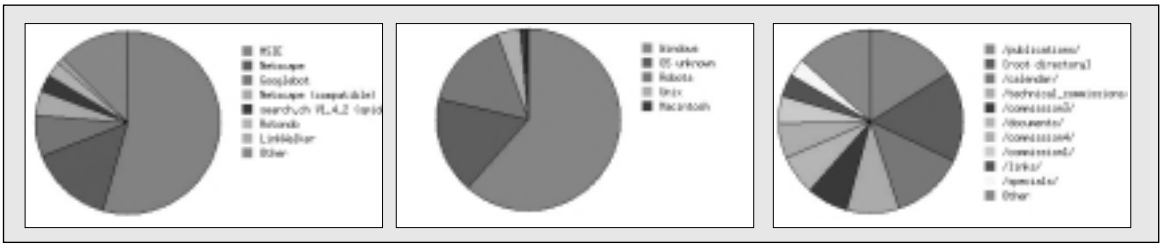


Figure 2, Most used browser (left) and operating systems (centre) to access to ISPRS web pages. Most request directories (right) between ISPRS web pages.

related pages: from ca 30 000 search terms, the most used are remote, sensing, photogrammetry and isprs. Considering all the queries, the most requested are 'photogrammetry', 'isprs', 'remote sensing', 'International Archive of Photogrammetry and Remote Sensing', 'isprs Journal of photogrammetry and remote sensing' and 'orange book'. The browser most used to find information related to ISPRS is Microsoft Internet Explorer followed by Netscape (Figure 2, left). The majority of the users (67%) has Windows as operating systems; then Unix (Sun + Linux) and Macintosh (Figure 2, centre). The information (directories) more requested contain the publications, the events calendar and the technical commissions (Figure 2, right).

Educational Resources on ISPRS Web Site

ISPRS educational pages tries to collect the wide gamma of educational material, software and online publications related to Photogrammetry, Remote Sensing and GIS. This material occupies a great part of ISPRS data and consists of:

- Education-related documents (http://www.isprs.org/links/tutorial.html) like software, tutorials, courses, glossaries and codes related to Photogrammetry, Remote Sensing and GIS. More educational links can also be found in the webpages of ISPRS WG VI/1 (http://www.commission6.isprs.org/wg1/).
- Online proceedings from ISPRS events, EuroSDR/OEEPE workshops, CIPA, etc. (http://www.isprs.org/publications/online_proceedings.html).
- Proceedings of ISPRS mid-term symposia 2002 as well as tutorials and keynotes (http://www.isprs.org/specials/symposium.html).
- Archive of job opportunities in the field of to Photogrammetry, Remote Sensing and GIS (http://www.isprs.org/job_opportunities/index.html)
- A collection of data sets in the field of close range and aerial Photogrammetry and satellite applications (http://www.isprs.org/data/).

These pages are not a complete list of all the useful documents available on the Internet. Therefore if anyone wants to contribute in these lists, please send links or information to fabio@geod.baug.ethz.ch.

Fabio Remondino, Webmaster

11. Events Calendar

Terms of Reference

The ISPRS Events Calendar is published in the quarterly ISPRS bulletin, ISPRS Highlights, and frequently updated on the ISPRS Web Page (http://www.isprs.org/calendar.html). The Calendar contains a list of all ISPRS sponsored and co-sponsored congresses, conferences, symposia, workshops, tutorials and other meetings. It also contains details of all international and national events on topics related to the activities of ISPRS, including those in photogrammetry, remote sensing, spatial information systems, geomatics, surveying, mapping, machine vision, image processing and similar areas.

The Editor of ISPRS Events Calendar will be responsible for updating the entries in the Calendar on a regular basis. The tasks of the Events Calendar Editor are to collect information on ISPRS and other relevant events and to provide updated versions of the calendar to Highlights, the Home page and to Council.

Accomplishments and Activities during the Current Year

The ISPRS Events Calendar Editor, Prof. Tuan-chih CHEN, has put more than 150 new events onto the Calendar this year, and made more than 80 updates. The Editor communicates with the contact persons actively whenever the date of the event is pending, the web site is not ready, or other details are unknown, uncertain, or confusing.

9 events have been cancelled, postponed, or merged due to SARS or other reasons during 2003. By 15 December 2003, there are 32 events on the Calendar for 2004, 5 for 2005, and events for 2006, 2007, and even 2008 will be put onto the Calendar as well.

The ISPRS Events Calendar Editor, Prof. Tuan-chih CHEN, with the ISPRS Webmaster, Mr. Fabio Remondino, are preparing a paper to report the situation of Internet for ISPRS on the XXth Congress in Istanbul.

The ISPRS Events Calendar Editor respectfully asks all of you to submit the details of your congresses, conferences, symposia, workshops, tutorials, meetings, and other events:

- Date (maybe open or pending),
- Event,
- Web site address,
- City, Country,
- Contact person, TEL, FAX, & E-mail.

Tuan-Chih Chen, Events Calendar Editor

12. ISPRS Book Series

The ISPRS Council initiated the new Book Series early in 2003 with the following aims :

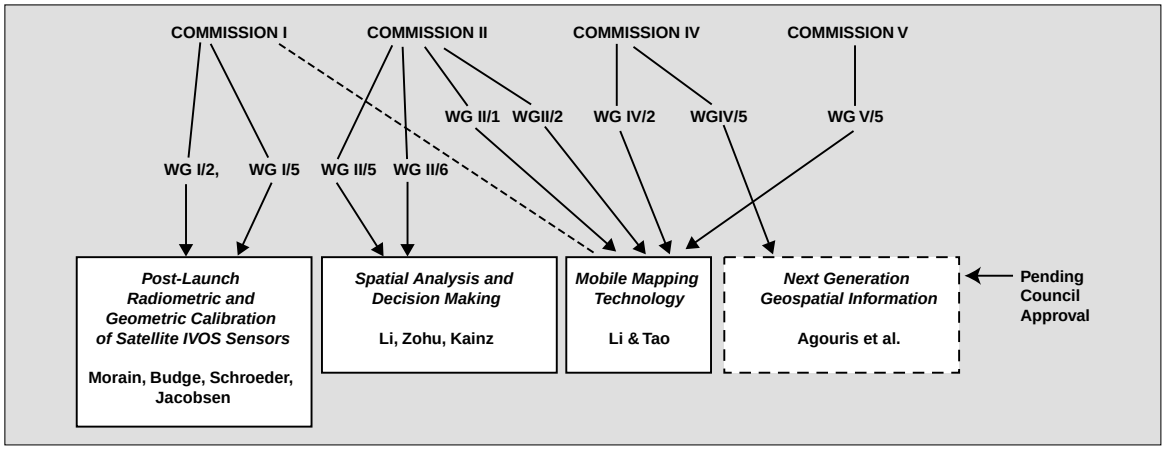
- To publish refereed proceedings from ISPRS Congresses, Symposia or Workshops for widening the international audience exposed to the professional activities undergoing in our community .
- To publish textbooks, or translations of textbooks, and books on advanced scientific topics that are not directly related to ISPRS events

Since its initiation an agreement with the publishers Swets & Zetlinger now part of Taylor & Francis, has been negotiated by the Council. A publication process was structured to ensure that the books will be of high scientific quality. It is required that each paper submitted for publication be refereed by leading experts in its field. Within the short time frame from its initiation, three books have been approved for publication and one is awaiting approval in the near future. See the diagram below. Activities of as many as 9 Working Groups are represented in these volumes. A significant number of review papers are included providing a comprehensive overview and synthesis of the current developments in our dynamic fields of activities. Other articles present new ideas on specific topics from very recent findings from current research.

These achievements represent the strong will of our Commissions and Working Groups to integrate and expose the enormous amount of work conducted. The Council headed by Prof. Trinder provided a constant support and direction and the publisher representative Dr. Janjaap Blom is most helpful in every aspect of the publication process.

Following the Congress in Istanbul we hope to further extend the Book Series to include Review Books and Thematic Books on subjects of high demand in the ISPRS community.

Maxim Shoshany, Editor, Book Series



Members Activities

1. Asian Association on Remote Sensing (AARS)

Asian Conference on Remote Sensing (ACRS)

The major activity of AARS is to organize ACRS on annual base. The 24th ACRS was successfully held in Busan, Korea, 3-7 November, 2003 with more than 500 participants and 500 technical papers. It was a new record in term of the number of participants as well as papers. On behalf of AARS, I thank Prof. John Trinder, President of ISPRS and Prof. Ian Dowman, Secretary General of ISPRS for their participation in this conference representing ISPRS. In addition to the presentation of technical papers, two student sessions were organized to exchange academic information among those universities in Asia with graduate students and teachers.

The General Conference of AARS has decided the next venues and dates as follows.

- The 25th ACRS: 22-26 November, 2004 in Chiang Mai, Thailand
- The 26th ACRS: between October and December, 2005, Hanoi, Vietnam

On behalf of AARS, I would like to invite you to participate in the 25th ACRS in conjunction with the silver jubilee as well as Loy Krathong Festival (water lantern festival at full moon night).

Publication of Book
AARS formed a working group in order to organize Ecosystem Seminar and to publish a book on the subject. Dr. P. S. Roy, Dean of Indian Institute of Remote Sensing (IIRS) edited a book on "Geoinformatics for Tropical Eco-system" in 2003. If anyone wants to get a copy of this book, please contact Bishen Singh Pal Singh Publisher: bsmps@vsnl.com

GIS Software Development
AARS endorsed a GIS software namely GRAM++ as a useful GIS software particularly for education in Asia, which has been developed by Indian Institute of Technology, Bombay. The contents were evaluated in Japan and it was recognized as one of the best software packages in terms of easy learning as well as easy teaching with many functions. If anyone is interested in the software, please contact Dr. Krishna Mohan: bkmohan@csre.iitb.ac.in. The cost is not free but should be very low through negotiation.

Distance Education
AARS will support the distance education project which the Japan International Cooperation Agency (JICA) is planning. This involves the establishment of two courses on remote sensing and GIS with 12 chapters each. Particularly in the chapter of Applications of RS and GIS, several successful applications in Asia will be collected in cooperation of relevant organizations of AARS member countries and regions. The courses will be completed in 2004. This kind of distance education would be a good sign for Commission VI activities.

Shunji Murai, General Secretary, AARS

2. The African Association of Remote Sensing of the Environment (AARSE)

4th AARSE Conference On: Geoinformation For Sustainable Development In Africa (October 14-18 2002), Abuja, Nigeria
The Conference "Geoinformation for Sustainable Development in Africa" (14-18 October 2002) held at the Sheraton Hotel, Abuja, Nigeria, was organized by the African Association of Remote Sensing of the Environment (AARSE). 201 participants from 25 countries and three continents attended it, with 180 participants from Africa and the rest from Europe, the Middle East and North America.

Sponsors of the conference (from outside Nigeria) included the International Institute for Geo-information Science and Earth Observation (ITC), UNESCO and SPACE IMAGING. Logistics and funding to support the conference also came from a number of Nigerian Ministries, Universities, Federal Schools, Organizations, Agencies, Chevron, the Nigerian National Petroleum Corporation and Aero Geomatics Surveys (GAMLAR).

The opening speeches indeed underscored the importance of the meeting and the significance being attached to remote sensing and GIS technologies by the Nigerian Government. Among the highlight of Prof. Isoun's message was the signing (on November 7th 2000) of a contract with Surrey Satellite Technology Limited in the UK for the development of a Micro-satellite as part of a constellation of six West African countries. The Remote Sensing Micro-Satellite -NIGERIASAT1 with a resolution of 30m was launched in mid-2003.

Two pre-conference workshop were organized: ITC, as a committed partner to AARSE organized a two weeks workshop on "Novel Approaches in Earth Observation in Geo-information Science for Earth System Analysis" (from October 1 to 11), for its Alumni that was attended by 20 participants from Nigeria and the West African Region. NSPRS/NISORS of Nigeria arranged the 1-day second workshop on "Fundamentals of Geoinformation" which was attended by 15 participants.

Four students entered for the Essay Competition with the title "Application of Geoinformation for Sustainable Development". Two university undergraduate students were declared winners. These include:
- Mr. E.O. Owolabi, Department of Surveying and Geomatics, University of Lagos, Nigeria and,
- Mr. A.T. Okekunle, Department of Forestry Resources Management, University of Ibadan, Ibadan, Oyo State, Nigeria

Officers of AARSE
AARSE held a 10th year Anniversary dinner to all conference participants; an Executive Council meeting and a gen-

An overview of some of the participants present during the conference.

eral assembly where new officer of the association were selected and introduced. The new officers for the year 2002 to 2006 were selected effective November 1, 2002. The new officers of AARSE include:

Executive Council:
Prof. Dr. Peter Adeniyi, as President of AARSE, Dr. Tsehaie Woldai, as Secretary General of AARSE, Dr. Evelyne Mbede, Vice-President for East African Region, Dr. Heinz Ruther, as Vice-President for South African Region, Dr. Olajide Kufoniyi, as Vice-President for West Africa, Dr. Wilber K. Ottichilo as Treasurer, Dr. Wilber K. Ottichilo as Conference Director 2002-2004, Dr. Musisi Nkambwe as Editor

Councillors of AARSE include:
Dr Justin Ahanhanzo (UNESCO, Paris, France), Dr. Mamadou Fofana (Ass. Secretary of AARSE, Cote d'Ivoire), Prof. Dr. Gottfried Konecny (Germany), Mr. Vincent Mama (Benin), Dr. Jacob Gyamfi-Aiddo (Ghana), Prof. Dr. Ayeni (Nigeria), Dr. Peter Zeil (University of Salzburg, Austria), Dr. Andre Bassole (Burkina Faso), Dr. Dave McDevette (UNEP, Kenya), Dr. Hubert George (FAO, Italy), Dr. C. Ezigbalike (UNECA, Addis Ababa).

AARSE Geoinformation Journal
AARSE will revive its Newsletter and discussion is underway to publish an AARSE Geoinformation Journal. Its first maiden volume is hoped to coincide with the 5th AARSE Conference in Nairobi in 2004.

Kenya (RCMRS, Nairobi) will host the 5th AARSE Conference
The bid to organize the 2004 AARSE 5th Conference was won by the Regional Center For Mapping Of Resources For Development –RCMRS, Nairobi, Kenya. Two countries showed interest and bid to organize the 5th AARSE conference. Apparently, RCMRS, through its Director General came with the detailed workout plan and format to win the heart and mind of the Selection Committee. RCMRS is a registered and important member of AARSE. The AARSE Council unanimously approved the election of Dr. E.W. Otichelo to be the Conference Director of AARSE for the period 2002-2004. The first circular of AARSE 5th Conference on: "Geoinformation Sciences in Support of Africa's Development" is already distributed.

Workshops where AARSE Participated
- Workshop on "Fundamentals of Geoinformation" (October 14 2002), Abuja, Nigeria
- Nigerian National Space Research and Development Agency (NASRDA) GDI Policy meeting (17 October 2002), Abuja, Nigeria
- The African network for the Application of the Remote Sensing for the Integrated Management of Ecosystems and Water Resources in Africa held at the UNESCO Headquarters in Paris from 11-13 November 2002.
- NGDI Stakeholders and Users Workshop, Abuja, Nigeria (February 10-12, 2003), Abuja, Nigeria
- AfricaGIS '03 First Planning Meeting, Pretoria, South Africa (Feb 27 – 28, 2003).
- ICC 2003 conference on "Mapping Africa for Africa", (14 August 2003), Durban, South Africa.
- Workshop On "Africa Stakeholders And Resources Mobilization Towards Implementation Of The Regional Ocean Observing And Forecasting Systems For Africa (Roofs-Africa)" (27 – 30 October 2003), Johannesburg, South Africa.

Dr. Tsehaie Woldai, Secretary General, AARSE

3. European Association of Remote Sensing Laboratories (EARSEL)

General Information
The EARSeL Bureau and Council held their regular meetings in January 2003 in Paris. On this occasion, representatives of other pan-European organisations are invited to present the highlights of their activities and discuss ways of co-operating and co-ordinating these with those of EARSeL. The Council members, who are the elected representatives within each country where EARSeL has member laboratories, each present a report on remote sensing activities and projects within their country. The Council then reviews the recent and future activities of the EARSeL Special Interest Groups, some of which may be disbanded or restructured and others created.

At the second regular annual meeting of the Council, held in Ghent (Belgium) on the occasion of the annual General Assembly and Symposium, the mandates of the Chairman and Secretary General were renewed for a period of two years. The Bureau therefore remains as last year, as follows:
Chairman: Prof. Dr. Eberhard Parlow, University of Basel, Switzerland
Vice-Chairman: Prof. Dr. Rudi Goossens, University of Ghent, Belgium
Secretary General: Dr. Rainer Reuter, University of Oldenburg, Germany
Treasurer: Prof. Dr. José-Luis Casanova, University of Valladolid

Dr. Tomas Benes of the UHUL Forest Management Institute in the Czech Republic continues to be the EARSeL contact for East/West relations.

At this Council meeting it was also decided to set up a SIG on Urban Remote Sensing, to be led by Dr. Carsten Juergens of the University of Regensburg. This is launched as a joint EARSeL/ISPRS activity.

Activities during the Reporting Period
The first EARSeL event of 2003 was a specialist Workshop convened by its SIG (Special Interest Group) on Imaging Spectroscopy led by Dr. Andreas Mueller of DLR

Oberpfaffenhofen. The technical sessions were organised along the following themes: Sensors and Missions, Data Enhancement, Terrestrial Ecosystems, Geology and Mining, Limnology, and Vegetation Analysis. A CD-ROM of the Proceedings is in preparation, and a selection of high-level papers will be published in the EARSeL eProceedings.

The highlight of the year was the annual General Assembly, symposium and workshops which brought together more than 250 participants in the historic Het Pand Conference Centre in Ghent, Belgium, organised by Prof. Rudi Goossens in June. The theme was "Remote Sensing in Transition" and after the welcoming speeches there followed two keynote papers, the first given by Prof. Ferdinand Bonn of Sherbrooke University, Quebec, Canada on "Trends in Integrated Observation of Terrestrial Ecosystems" and the second by Dr. Mario Hernandez, Head of the World Heritage Division of UNESCO in Paris, on "Remote Sensing for World Heritage Sites". These were both very much appreciated. Nearly 70 papers presented will soon be published as a hardback volume accompanied by a CD-ROM.
The symposium was followed by two workshops, the first one convened by the newly established SIG on Remote Sensing for the Coastal Zone, formed by the fusion of the Lidar and Water Applications groups. This two-day event, which included a hands-on tutorial, was attended by just over 80 participants and was very successful. It is hoped to make this a biennial event. Papers are being reviewed before publication in the e-Proceedings series.

The second workshop was the 4th to be organised by the SIG on Forest Fires. It was co-sponsored by the Global Observation of Forest and Land Cover Dynamics Fire program, which is providing an international co-ordination mechanism for improving the availability and use of fire data and securing the long-term, operational delivery of fire information in support of global change and natural resources management. Several leading scientists from the U.S. and Canada attended and a selection of the papers presented will be published after review in the "Remote Sensing of the Environment" Journal.

These technical workshops enable in-depth discussions among experts and are much appreciated by the participants.

Participation in Events Organised by Other Associations
EARSeL has sponsored and members have participated in several meetings organised by various ISPRS Commissions, including the Workshop on "Remote Sensing and Data Fusion over Urban Areas", held 22/23 May 2003 in Berlin, Germany, and the Workshop on "High Resolution Mapping from Space 2003, held at the University of Hannover, Germany, 6-8 October 2003.

EARSeL maintains links with several international organisations such as OEEPE and EuroGeographics and of course the national European Remote Sensing Societies.

Plans for Forthcoming Activities
25-27 May 2004 – 24th EARSeL Symposium – "New Strategies for European Remote Sensing" – Inter-University Centre, Dubrovnik, Croatia

28-29 May 2004 – SIG Workshop on Remote Sensing for Land Use and Land Cover Studies, in Dubrovnik as above.

12 July 2004 – One day tutorial by joint EARSeL/ISPRS WG on Remote Sensing for Multilateral Environmental Agreements – ISPRS Congress, Istanbul, Turkey

26-29 September 2004 – 3rd Workshop on Remote Sensing for Developing Countries, Cairo, Egypt.

Apart from organising the above meetings and arranging for the publication of the relevant Proceedings and the quarterly Newsletter, EARSeL acts as a focal source of information on remote sensing activities throughout the European region.
The EARSeL Directory of members, links to Special Interest Groups, Newsletters, calendar of events, job opportunities, etc., are available on the EARSeL website: www.earsel.org.

There is also a special section devoted to Education and Training in Remote Sensing with texts in various European languages, since most of the material currently available is either in English or French. This section is intended to foster the awareness of the basics and potential of Earth observation techniques among high school teachers and others throughout Europe.
In view of the very many meetings organised by various institutions, EARSeL welcomes opportunities to collaborate with the various Commissions and Working Groups of ISPRS that deal with the theory and applications of remote sensing techniques. We exchange Newsletters whenever possible with other Regional Members of ISPRS and welcome co-operation through our various Special Interest Groups.

Dr. Rainer Reuter, Secretary General, EARSeL

4. European Spatial Data Research (EuroSDR)

General
EuroSDR (European Spatial Data Research - formerly OEEPE) is a user-driven research platform that responds to a research agenda agreed between member mapping organisations (both public and private sector) and research institutes. It does so through the execution and publication of collaborative applied research projects.
EuroSDR has a permanent Secretariat hosted from September 2003 by the Dublin Institute of Technology, Dublin, Ireland.

EuroSDR Officers 2003
President: Prof. Risto Kuittinen, Finland
Chairman Science Committee: Prof. Martien Molenaar, The Netherlands
Secretary-General: Mr. Kevin Mooney, Ireland
Assistant Secretary-General: Ms Helen Murray, Ireland
President Commission 1 (Sensors, primary data acquisition and georeferencing): Prof. Ismael Colomina, Spain
President Commission 2 (Image analysis and information extraction): Prof. Christian Heipke, Germany
President Commission 3 (Production systems and processes): Prof. Eberhard Gulch, Germany
President Commission 4 (Core geospatial databases): Mr. Keith Murray, United Kingdom
President Commission 5 (Integration and delivery of data and services): Mr. Peter Woodsford, United Kingdom
Executive Bureau: Mr. Eric Holland, The Netherlands

EuroSDR Activities
EuroSDR hosted a workshop 'Visualisation and Rendering', together with the International Cartographic Association, at ITC, Enschede at the beginning of the year. The proceedings of this workshop will comprise the imminent EuroSDR Official Publication No. 47.

EuroSDR celebrated its 50th anniversary with a 'Seminar of Honour' on 16th October 2003, – 'From OEEPE to EuroSDR: Fifty Years of Spatial Data Research and beyond' at the Bayerisches Landesvermessungsamt/Bavarian State Mapping Agency (BLVA) in Munich, Germany. Over eighty delegates from more than twenty countries attended. The programme was designed to review the work of OEEPE throughout its first fifty years and today, hear the views of the European GI community on the research needs of the future, and launch the new EuroSDR Rolling Research Plan 2004 – 2006.
The proceedings of the seminar are available as EuroSDR Official Publication No. 46.

EuroSDR continued its work on the following Projects during 2003:
- InterOCI - Interoperability for Orientation and Calibration data of photogrammetric Images (Project leader: Prof. Vittorio Casella, Italy)
- Digital Camera Calibration Procedures - involving an International task force of experts (Project leader: Dr. Michael Cramer, Germany)
- Information for mapping from airborne SAR and optical imagery - Data Fusion Contest (Project leader: Prof. Olaf Hellwich, Germany)
- Automated Extraction, Refinement, and Update of Road Databases - from Imagery and other Data (Project leader: Prof. Helmut Mayer, Germany)
- Evaluation of building extraction -from imagery and laser-scanning data (Project leader: Dr. Juha Hyyppä, Finland)
- Test for digital aerial cameras -performance of hardware and software (Project leader: Prof. Hartmut Ziemann, Germany)

EuroSDR disseminated or is about to disseminate the following Official Publications in 2003:
- No. 44: Topographic Mapping from High Resolution Space Sensors – by D. Holland, B. Guilford and K. Murray 2002
- No. 45: OEEPE Workshop on Next Generation Spatial Database – 2003 by K. Murray and Proceedings of Joint OEEPE/ISPRS Workshop on Spatial Data Quality
- No. 46: From OEERE to EuroSDR: 50 years of European Spatial Data Research and beyond; by C. Heipke, R. Kuittinen and G. Nagel (eds). 2003
- No. 47: EuroSDR/ICA Workshop on Visualisation and Rendering

EuroSDR Plans the Following Activities for 2004
EuroSDR education service: The second module, EduServ-2, is planned for April 2004 with the following two-week courses:
- Course A: Integrated sensor orientation
- Course B: Image orientation with GIS data
- Course C: Laser scanning and interferometric SAR for DTM generation
- Course D: Digital cameras/sensors and data fusion

The Introductory seminar will take place at The Budapest University of Technology and Economics from 15th to 16th April 2004.
Further details are available at http://eurosdr.bme.hu

Project: InterSENSOR-0 - EuroSDR role as a generator of standards or recommendations for primary data acquisition;
Project: Geospatial Information Quality;
Workshop on Positional Accuracy of Core Databases - implications of Improvement;
Workshop on Generalisation -together with the International Cartographic Association;
Workshop on Ontologies and Schema Translation Services;
Collaboration with EuroGeographics on EuroSpec;
Collaboration on GMES; INSPIRE; GINIE;

Strategic EuroSDR Developments in 2003
The first Official Publication to be produced and disseminated through our New Publication System was No. 46: From OEERE to EuroSDR: 50 years of European Spatial Data Research and beyond; by C. Heipke, R. Kuittinen and G. Nagel (eds). 2003
All EuroSDR Official Publications will henceforth be printed and disseminated by Gopher, a Netherlands based publishing house, and may be ordered for 'printing on demand' through the EuroSDR web site at www.eurosdr.org.

EuroSDR launched its new modernised Web Site (www.eurosdr.org) which, through its database driven editing, will be easier to keep up to date and, we believe, is more user-orientated than the previous site. Users may download the EuroSDR Newsletter, a copy of the Rolling Research Plan, which covers all EuroSDR research activities, a low-resolution version of publications, and can order a high-resolution copy for delivery by Gopher, the EuroSDR publishing house.

Kevin Mooney, Secretary-General, EuroSDR