ISPRS Technical Commission I 2010 Progress Report

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Presedincey Activities

Commission I President, Vice President, and Secretary have accomplished the following activities in 2010:

1. Commission I Website:

Commission I website has been designed and continuously updated with new activities by the WGs , See: http://www.commission1.isprs.org. The website includes pointers to the following:

- Commission I General Plan of Activities
- Commission I Working Groups
- Commission I Events
- Commission I Annual Report
- ISPRS highlights, Events, and calendar

2. Participation to ISPRS meetings:

- Dr. Naser El-Sheimy delivered a keynote speech at the GIS Saudi Arabia, Dammam, April 26 – 28, 2010.
- Dr. Naser El-Sheimy attended the ISPRS Council Meeting in Orlando, November 2010,
- Dr. Naser El-Sheimy chaired the general program of the US Institute of Navigation GNSS'2010 meeting which took place in Savannah, Sept 2010.
- Dr. Naser El-Sheimy delivered a keynote speech at the GNSS conference in Taipei, October, 2010.

3. Working Group Activities and Websites

- Most of the working groups have been active and some have been very active in 2010. Each Working Group detailed activities have been listed individually in the next section.
- All Commission I Working Groups website are continuously updated – thanks to Dr. Steve Liang for his tremendous support for all the working groups
- Each Working Group website is listed in the dedicated section of each Working Group

4. Commission I Symposium

ISPRS Com I – Symposium Report

JUNE 15 TO 18, 2010

TELUS Convention Centre, Calgary, Alberta

The ISPRS Commission I symposium took place at the Calgary Convention centre (June 15 – 18) in parallel to the first Canadian Geomatics Conference. **The Theme of this conference: Convergence in Geomatics — Shaping Canada's Competitive Landscape**, reflected the convergence of developments and applications in Geomatics over recent years and its increasing role in supporting the day-to-day decisions that shape our world.

Partnership:

- Canadian Institute of Geomatics (CIG)
- Geomatics Industry Association of Canada (GIAC)
- The GEOIDE Network (Geomatics for Informed Decision Making)
- Tecterra Innovation Centre
- Mapping Information Branch, Natural Resources Canada, GeoConnections

The opening ceremony on June 15 included an address speech by Professor Orhan Altan, president of ISPRS, speeches by the supporting organizations, two plenary speeches by Mr. Glen Hodgson, Vice President and Senior Economist of the Conference Board of Canada and Mr. Jim Garinger who - as Governor – played a leadership role in the incorporation of geomatics into the public policy decision-making process in the State of Wyoming. The Hounourable Doug Horner, Deputy Premier and Minister of Advanced Education and Technology who talked about Alberta's research and innovation system and how it supports the geomatics industry and organizations. The ISPRS plenary session took place on June 16 with two plenary speeches by Professor Orhan Altan and Dr. Geoff Zeiss, Director of Technology, Enterprise Solutions Architecture, Autodesk, Inc.

ISPRS Commission I officers with President and Secretary General of ISPRS

WG	# of paper
WG I/1	15
WG I/2	31
WG I/3	12
WG I/4	14
WG I/5	15
WG I/6	2

ICWG I/V	12
ICWG V/I	17
TOTAL	118

The program attracted 400 attendees, 175 oral presentation, 32 exhibitors, 20 demos, and 50 posters covering the state of the art and future trends of imaging and mapping sensors and platforms, available and future remote sensing data from airborne and space instruments on board various platforms, advances in airborne and satellite observations for land surface mapping applications, and airborne and satellite data and products for interdisciplinary use, implementation aspects of sensors and platforms for geospatial image data acquisition, the strategic importance of geomatics to Canada's future and how specific scientific and industry developments and applications can enhance Canada's socio-economic well-being. Overall feedback from the participants indicates conference was an excellent initiative and very successful in program and format.

Sponsors and Exhibitors	
North West Group/Valtus Imagery Services – Prestige Sponsor	GeoConnections
Pacific Geomatics Ltd./GeoEye – Grand Prix Sponsor	LiDAR Services International Inc.
ESRI Canada Limited – Grand Prix Sponsor	Land Measurement Systems Inc.
Ambercore/Titan/Terrapoint Canada	PCI Geomatics
Cansel Survey Equipment	Sani - International
First Base Solutions Limted/Suredex Corporation	SimActive
ITRES Research Limited	Spatial Geo-Link

WG I/1 Standardization of Airborne Platform Interface

Working Group Officers

- Chair: Andrew Roberts, Northrup Grumman Corporation, USA
- Co-Chair: Jean-Louis Brenquier, EUFAR, France
- Secretary: James Huning, SAIC, USA

Terms of Reference

Working Group I/1 had its initial meeting 4-8 May 2009 in Stresa, Italy in conjunction with the International Symposium on Remote Sensing of the Environment (ISRSE). The primary purpose was to introduce the assembled participants to ISPRS and to describe the various Terms of Reference (TOR) groups and after discussion about each TOR to have the participants become part of one of more TOR. A total of 11 TOR groups were established with an initial representation of approximately fifty persons from more than 10 countries. Each TOR selected a Lead and Co-lead. The 11 TOR groups met individually and prepared a brief presentation for the entire Working Group on their specific goals and objectives. After the ISPRS meeting the Leads and Co-leads worked with their members and prepared a more comprehensive document detailing goals, objective, near term activities and future meetings. Each TOR document was submitted to the Chair, Co-chair and Secretary of WG I/1. A summary report of the TOR reports follows. The 11 sub groups cover a wide variety of issues dealing with Standardization of Airborne Platform Interface:

- The first TOR is responsible for coordinating a forum for discussion between international airborne science communities. The initial forum was held at the ISPRS meeting in Stresa, Italy. At this meeting the primary organizations were the ICCAGRA (Interagency Coordinating Committee for Airborne Geoscience Research and Applications in the United States) and EUFAR (European Fleet for Airborne Research). An implementation plan was developed and plans for future meetings made.

- Format Standards to facilitate international portability of instrumentation. This involves electrical and mechanical interfaces and airframe accommodations.

- Data, both housekeeping and scientific data, are now commonly exchanged between instruments on board a research aircraft, as well as between the aircraft and the ground to allow participation of a larger ground team to the decision process during the flight.

To be effective, such systems require standardization of the data format and communication procedures that are the scope of this TOR.

- Development of an airborne science literature database of peer-reviewed articles. NSERS and EUFAR have limited databases and will merge these two as the foundation for other sources to build upon. A joint database is planned for review by May 2010.

- Support to regulatory agencies in the certification of new scientific sensors and development of requirements for the approval of LiDARs, dropsondes and electromagnetic spectrum emissions. A major effort is to define the scope of the issue among the organizations that have regulatory authority, and then to develop a process by which sensor certification issues can be addressed.

- Maintain an inventory of international airborne science capabilities publicly accessible on the internet. The majority of the information will come from existing databases and be presented on reference web sites of the EUFAR and ICCAGRA networks. The information will be updated on a schedule that will be determined after the discussion among TOR members and coordination with other TORs within WG I/1.

- Development of a forum to discuss transnational access system(s) for airborne users. Existing systems in Europe and the United States, for example, are very different. The primary goals of the transnational access group are to coordinate the two approaches and facilitate exchange of access between the international communities and to improve the access of instruments and platforms to users of the facilities.

- This TOR focuses on the rapidly emerging application of UASs. Members of this TOR will focus on three primary areas: airspace access, certification regulation, and inventory of UAS relevant activities. Currently there is not a consistent approach to granting UAS airspace access. TOR members will: work with Civil Aviation authorities in different areas to improve access, work with the scientific community to identify priority missions, develop an operational concept and compile a list of UAS related working groups. All items will be presented on the EUFAR and ICCAGRA websites that will be regularly updated.

- Promote education and outreach on an international basis to attract students and researchers to airborne science. This TOR has four primary goals that center on education, communications, promotion of international outreach and development of a strategic implementation plan.

- Development of a forum to coordinate expert international workshops in categories of airborne science sensors for remote sensing and in situ systems. To minimize duplication the TOR members agreed to adopt the European model constituted of 18 Expert Working Groups within EUFAR. This TOR will coordinate with many of the other TOR groups within WG I/1

- Development of airborne data processing standards to facilitate instrument inter-calibration, inter-comparison and normalize international databases is the theme of this TOR. Members plan to develop data processing standards using state-of-the-art algorithms as selected by the experts in TOR (10). A standard for data and metadata input and output will be defined. An implementation plan has been developed.

All TOR leads and co-leads have been notified about the upcoming ISPRS meeting in June 2010 in Calgary and WG I/1 hopes to have good representation from various TORs. Because of current budgetary concerns, EUFAR decided that only one EUFAR representative will attend the general ISPRS WGI meeting. Other meetings that are more directly applicable to TOR activities will be organized during specialized non-ISPRS conferences where TOR members will be in attendance

Mission

The primary mission of Working Group I/1 seeks to promote the standardization of instrument interfaces, data formats, and aircraft accommodations, to facilitate more efficient, flexible, and cost-effective international science flight operations.

The increased portability of instrumentation between aircraft increases the opportunities for cooperative research and can reduce the operating costs by leveraging flight opportunities. WGI/1 also will work to establish common regulatory requirements for the operation of active emitters (RF. Lidars, dropsondes) and to effectively introduce UAS operations in international science campaigns.

Executive summary

The formation of Working Group I/1 in Technical Commission I was established in Stresa, Italy in May 2009. Eleven separate Terms of Reference (TOR) were established but recently two of them were merged leaving ten TORs at the current time. Each of the TORs consists of representatives from the United States, Europe and other countries that operate airborne research platforms. Each TOR has established objectives and implemented plans during the past year. This report summarizes the current status of Working Group I/1 and presents the major plans for the upcoming year.

As presented below the past year has been an active one for the various TORs. Meetings were held in Europe as well as in the United States. Organizations that are informally affiliated with Working Group I/1 also held meetings at which the Working Group programs were discussed. The Working Group has been able to leverage off of other international meetings that have a major airborne component.

A large international meeting was held in Toulouse and many members from the WG I/1 TORs were in attendance (see image) and a separate meeting was held with the TOR leadership to plan for the ISRSE34/ISPRS meeting in Sydney, April 2011 and for the ISPRS Congress in Melbourne, August 2012. The Working Group will be reviewed at the ISPRS Congress in 2012 to determine if it will continue. The decision will be based on the Working Group's ability to achieve the goals it has established.

ISPRS TC1 WG I/1 Standardization of Airborne Platform Interface - has already significantly increased the coordination between the US and European communities. There are 11 Terms of Reference (TOR) and each includes experts in the field from the airborne science community. The variety of TORs provides a forum for the experts from the different fields of expertise to coordinate with one another. Since their creation TORs 2, 3 and 11 have combined into one overarching activity. See Working Group I/1 website (http://www.commission1.isprs.org/wg1/) for more detail.

Attendees at the *International Conference on Airborne Research of the Environment* (ICARE) in Toulouse, France, October 2010. As part of this conference and aircraft exhibition was a meeting of many TORs from Working Group I/1 at the airport (photo below). At ICARE there was also the opportunity for many of the TOR membership to meet with their colleagues and others involved in airborne research

WG1/1 Meetings

The 10 TORs were involved in a large number of meetings during the past year. Some of these were associated with EUFAR, ICCAGRA or the ICARE meetings. Below is a summary of the major meetings that TOR members conducted or attended.

TOR#1: Coordinate a forum for discussion between the international airborne science communities.

- ICCAGRA and WG I/1 representatives participated in EUFAR meeting, Portugal,
- Meeting in China to plan participation in upcoming ISRSE34 meeting and ISPRS Congress in 2012
- Participation in ISPRS meeting in Calgary, June 2010

TOR#2: Develop airborne sensor interface format standards in coordination with other working groups to promote maximum sensor portability between aircraft increasing science yield from the sensors (Merger with TORs 3 and 11).

TOR#4: Develop an airborne science literature search to identify peer reviewed published papers and citations and make the results available in a database.

- Abstract prepared and presented by another TOR attendee at ISPRS Commission I meeting in Calgary, June 2010.

TOR#5: To work with the regulatory agencies of participating nations to foster a better understanding among these groups of the importance of these airborne sensors to environmental research and the efforts put forth to insure their safe operation with the ultimate goal of achieving certification for their use aboard airborne platforms.

- ICAO Meeting, 2010

TOR #6; Maintain an inventory of the international airborne science capabilities and report annually.

- TOR 6 meetings were all virtual (on-line).

TOR #7: Develop forum to discuss transnational access for airborne users.

- Meetings conducted in France, Italy, Florida and Virginia, and ISPRS meeting in Calgary, June 2010.

TOR #8: Support the use of UAS vehicle activity in restricted airspace.

- AMAP UAS Expert Meeting, April, 2010
- ISPRS meeting in Calgary, June 2010

TOR #9: Promote the education and outreach on an international basis of airborne based science activities by promoting Airborne Science" in order to attract more students and researchers to airborne research.
Participate in NASA Airborne Science Program education activity June – July 2010

- Participate in 3 training courses in Europe, Hungary, August, 2010; France, September 2010; France, November, 2010
- GIS educational program, Czech Republic, January 2010
- EUFAR Airborne research, UNESCO, Paris, June 2010

- ISPRS Conference Calgary, June 2010

TOR #10: To develop a forum to coordinate expert international workshops in categories of airborne science sensors for both remote sensing and in situ systems.

- Initial meeting was held in Poland, February, 2009
- Second meeting held in Oregon, June 2010
- Third meeting held in Toulouse as part of ICARE, October 2010
- A fourth meeting will be held in Leipzig, July 2011
- ISPRS meeting Calgary, June 2010

TOR #11, Open Source Processing software. Objective: Processing software of common and accepted algorithms for Inter-comparison of data; Troubleshoot instrument or processor issues: Help boot-strap new or smaller airborne facilities

- ISPRS meeting Calgary, June, 2010
- ICARE conference, Toulouse, France, October 2010

Future Planned Activities

The TORs that comprise Working Group I/1 have planned a number of meetings during the coming year, and particularly for the ISRSE34 conference in Sydney, Australia, during April 2011. At that meeting a special session has been scheduled at which all the TORs will have update presentations.

- All TORs will be preparing for ISPRS Congress in Melbourne, Australia, August, 2012.
- ISRSE34/ISPRS WG I/1 Sydney, Australia, April 2011
- Website of WGI/1 established and will be updated
- TOR 3 meeting planned to coincide with EUFAR N6SP meeting, 2011: Demonstrate interoperable tools on an international scale; development of test plans (data format, validation)
- TOR 4 agreement of template format for publications September 2011
- TOR 5 Continue to work with ICAO to understand certification issues and prepare a document that indicates actions that individual nations will have to undertake for instrument certification
- TOR 6 Complete and distribute list of contacts at organizations that operate airborne facilities and generate common data format for information on the airborne assets- Database will be compiles into a master database that will be posted on the ISPRS WG I/1 website as well as the ICCAGRA and EUFAR websites
- TOR 7 Continuous interaction between European and North American representatives to minimize access to airborne assets nationally and internationally; expand activity to other international organizations that operate research aircraft
- TOR 8 Collaborate with colleagues in Asia, Russia and Australia on UAS activities and issues and conduct education outreach to assist in the understanding of UAS science missions. Attend appropriate UAS meetings
- TOR 9 is involved with a large number of educational programs and will present some results from the NASA SARP 2009 campaign at AGU, San Francisco, December, 2010
- TOR 10 Will present results of activities defined for 2010 at ISRSE34, Sydney, Australia, April, 211. The identified activities include proposing international worshops on extreme environments, vertical profiling of the atmosphere, satellite valida-

tion and ground truthing, and to continue to expand community participation in these activities. TOR members will explore using the internet infrastructure to more efficiently share information in a timely manner

- TOR 11 File format standards will be finalized and specific algorithms will be solicited from community experts and then will be implemented in the toolbox. Toolbox will also contain visualization package. TOR plans meetings in early 2011 and will participate in ISRSE34, Sydney, Australia, April, 2011 and at the ISPRS Congress in Melbourne, Australia, August, 2012.

Working Group Officers contact information:

- Chair: Andrew Roberts, Northrup Grumman Corporation, USA a.roberts@ngc.com
- Co-chair: Jean-Louis Brenguier, EUFAR, bureau@eufar.net
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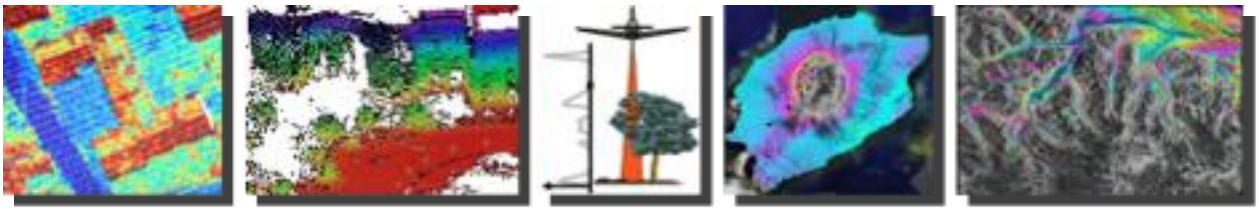
- Web Master: Steve Wegener, NASA, USA, steven.s.wegener@nasa.gov

WG I/2 - LIDAR, SAR and Optical Sensors for Airborne and Spaceborne Platforms



Working Group Webpage:

http://www.commission1.isprs.org/wg2/

Working Group Officers

- Chair: Dr. Boris Jutzi, Institute of Photogrammetry and Remote Sensing, Universität Karlsruhe
- Co-Chair: Dr. Charles Toth, Center for Mapping, The Ohio State University
- Co-Chair: Dr. Franz Meyer, Geophysical Institute, University of Alaska Fairbanks
- Secretary: Dr. Naci Yastikli, Department of Geodetic and Photogrammetric,Yildiz Technical University

Terms of Reference

- Evaluation and assessment of systems for processing and integrating SAR, LIDAR and optical data
- Address challenges in low-frequency spaceborne SAR system design and data processing
- Address challenges and applications of high-resolution spaceborne SAR systems (e.g. TerraSAR-X, Cosmo Skymed)
- Evaluation of Systemsfor generation DEMs (Resolution I.3)
- Evaluation of Multi-frequency SAR, polarimetric InSAR systems
- Evaluation of Multi-pulse and full-waveform LiDAR
- Evaluation of Range imaging with array sensor systems
- Data quality and performance validation of SAR, LIDAR and optical systems
- Liaison with external groups such as CEOS, IGARSS and EuroSDR

Mission

Active sensor-based SAR and LiDAR technology, introduced in the late 90s, has received wide acceptance in airborne surveying as a leading tool for obtaining high-quality surface data in an unprecedentedly short turnaround time. The adoption of the new technology was fairly smooth and quick, primarily due to the high-level of automation of the data processing. LiDAR systems nowadays do range measurement with an increasing number of points per surface, count multiple returns per single shot, deliver reflectance values of the illuminated surface and capture the full waveform of the backscattered laser light. The role and capabilities of Interferometric SAR (InSAR or IFSAR) continue to expand, particularly with respect to wide area DEM creation. Areas of significant technical interest and application include Polarimetric InSAR and Differential InSAR with respect to quite different but important applications. Fusion of high resolution SAR images with optical is again of interest as new techniques are applied.

Working Group Workshops 2010

- Reviewing and co-organizing of ISPRS Technical Commission I Symposium 2010 in Calgary, Canada.
  The submitted abstracts underwent a thorough peer review process performed by the officers of WG I/2; each abstract was reviewed by three officers. 25 papers were accepted. The five oral sessions were titled:
  - Data quality and performance validation of active optical systems
  - Processing of LIDAR data
  - Sensor systems and technologies
  - SAR systems and data processing
  - Advances in mapping and surface extraction

  About 25 papers and one interactive session with six papers were presented.

Other Working Group Activities 2010

- Regular exchange of information with the WG members through letters.
- A dedicated website has been established and linked to the TC I website to support the work of the WG. See http://www.commission1.isprs.org/wg2/.
- Circular call for participation: An active approach to encouraging participation in WG activity was adopted, with a circular invitation to a wide audience. There are currently 22 members of the WG, representing 9 different countries. Note that there are a larger number of professionals who monitor the WG activities, though they are not formal members.
- Planning and progress meetings: The working group Chair and Co-Chair met during the ISPRS symposium in Calgary, Canada to discuss and establish future developments and goals.
- Representation of the Working Group at international meetings and workshops, where the chairmen of the working group assumed active roles in the organization and scientific program, included the following meetings:
  - ASPRS Journal of Photogrammetric Engineering & Remote Sensing (PE&RS) SPECIAL ISSUE 'High-Resolution Earth Imaging for Geospatial Information' (publication, reviewer board)
  - Photogrammetric Computer Vision and Image Analysis (PCV 2010) - Symposium of Commission III the ISPRS, Paris, FRANCE (program committee member, reviewer board)
  - International Geoscience and Remote Sensing Symposium IGARSS 2010 - July 25 - 30, 2010, Honolulu, Hawaii, USA (program committee member, organized and chaired invited Session on 'Ionospheric Effects in Polarimetric and Interferometric SAR Data', Review presentation on 'A REVIEW OF IONOSPHERIC EFFECTS IN LOW-FREQUENCY SAR – SIGNALS, CORRECTION METHODS, AND PERFORMANCE REQUIREMENTS')
  - Representing ISPRS and the WG at LARS (Latin American Remote Sensing) in Santiago, Chile, October 4 - 8, 2010 (two invited talks on LiDAR technology and waveform).
  - 3. Fortbildungsseminar Optische Messtechnik für Anwendungen im Maschinenbau 2010 (invited speaker), 14 October 2010 - Karlsruhe, Germany
  - ASPRS Annual and Fall meeting (combined with Commission IV Symposium), liason to LiDAR committee.

- Representation at the invitation-only MiniSAR Workshop in Taiwan, aimed at consulting the Taiwanese Government in their efforts to build airborne and spaceborne SAR sensors
- Representation of the working group as board member of the 2nd critical design review (CDR) of the Argentinean L-band SAR system SAOCOM
- Representation of working group interests by being named Co-Chair of related International Association of Geodesy (IAG) Study Group IC-SG3: 'Configuration Analysis of Earth Oriented Space Techniques'

Planned Working Group Activities

2011

- WG I/2 will be Co-Organizing 7th International Symposium on Mobile Mapping Technology, 13-16 June 2011, Cracow, Poland.
- WG I/2 will be Co-Organizing Working Group of the ISPRS Workshop High-Resolution Earth Imaging for Geospatial Information 2011 at the 14-17 June 2011 in Hanover, Germany.
- WG I/2 will be Co-Organizing Working Group of the ISPRS Workshop ISPRS Workshop Laserscanning 2011 in conjunction with the other ISPRS working groups, which will take place at the 29-31 August 2011 in Calgary, Canada.
- WG I/2 will be Co-Organizing Working Group of the ISPRS Workshop Photogrammetric Image Analysis PIA11 in conjunction with the other ISPRS working groups of Commission III, which will take place at the 5-7 October 2011 in Munich, Germany.
- WGI/2 will be actively contributing to IGARSS'11 by organizing a invited session on 'Ionospheric Effects in Polarimetric and Interferometric SAR Data'
- WG I/2 chairmen will serve on Scientific Committee of the 1st International Workshop on the Quality of Geodetic Observation and Monitoring Systems (QuGOMS) of the Intercommission Committee on Theory (ICCT) of the International Association of Geodesy (IAG), Munich, GERMANY, 4/13 – 4/15/2011.
- WG I/2 chairmen will be member of Program Committee of 'Earth Observation of Global Changes', Munich, GERMANY, 4/13 – 4/15/2011

2012

- Organize sessions at the ISPRS Congress 2012 in Melbourne, Australia.

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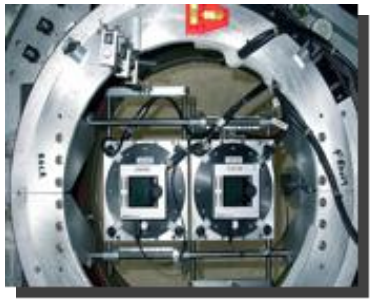
WG I/3 - Multi-Platform Multi-Sensor Inter-Calibration



Working Group Officers

- Chair: Dr. Ayman Habib, Department of Geomatics Engineering. The University of Calgary, Canada
- Co-Chair: Dr. Mostafa Madani, Intergraph Corporation USA
- Co-Chair: Dr. Cheng Wang, National University of Defense Technology China
- Secretary: Dr. Taher Hassan, Department of Geomatics Engineering. The University of Calgary, Canada

Terms of Reference

- Multi-platform data acquisition and Inter-Calibration
- Multi-source data Quality Control and Quality Assurance Methods for land-, air-, and space-borne imaging and ranging systems – collaborate with WG II/4
- System calibration (sensors and inter-sensors)
- Collaborate with EuroSDR in the development of commonly accepted standards procedures for the inter-calibration and testing of Multi-Platform Multi–Sensor systems.
- Liaison with EuroSDR COM

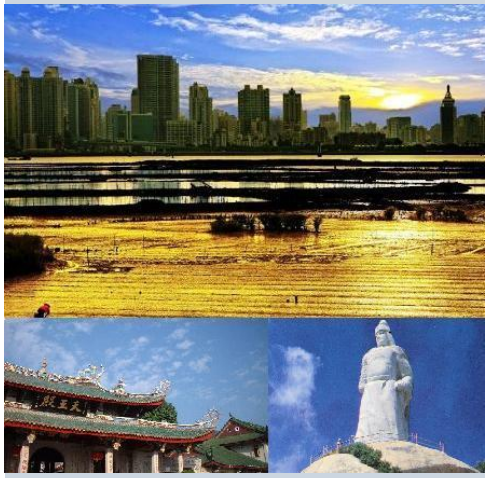
Mission

With the increasing development of new sensors, the integration of multi-platform systems as well as enhanced networking and fusion of multiple sensors are considered a central issue for several geo-spatial applications. For example, integration of terrestrial, airborne, and space-borne sensors can provide an enhanced capability for comprehensive modeling, monitoring, and validation. In disaster management and environmental monitoring applications, for instance, the availability of multi-sensor/multi-platform imaging and non-imaging systems for a continuous, real time monitoring is quite desirable. Research has been largely devoted to the exploitation of individual sensors and the fusion of the resulting sensory data. As fundamentals of the future applications of multiple sensors and multiple platform systems, developing standards and procedures for the calibration, quality assurance, and quality control of multi-sensor/multi-platform mapping systems are becoming new research focuses. There are a variety of recent activities in IEEE/ISPRS and government remote sensing programs geared towards exploiting multi-sensor/multi-platform sensing systems. In support of these activities, WG I.3 will coordinate activities in addressing the scientific, technological, and engineering issues for terrestrial, airborne, and space borne sensor integration. More specifically, WG I.3 will be focusing on the integration of imaging and non-imaging sensors, mission planning of multi-platform sensors, and standards for quality assurance and quality control procedures. This Group will maintain a close link with WG I.5, WG II/4, and the EuroSDR for the development of commonly accepted standards procedures for the inter-calibration and testing of Multi-Platform Multi–Sensor systems.

Working Group Workshops

- EuroCOW 2010: the International Calibration and Orientation Workshop 10 – 12 February 2010, Castelldefels, Barcelona, Spain
- International workshop on Multi-platform/multi-sensor remote sensing and Mapping, January 10 – 12, 2011, Xiamen City, Fujian, China
- ISPRS Workshop, Laser Scanning 2011, University of Calgary, 29 – 31 August, 2011 (Co-organized by WG V/3 and WG I/3)

International workshop on
Multi-Platform/Multi-Sensor
Remote Sensing and Mapping
January 10 – 12, 2011
Xiamen City, Fujian,



2010 Activities

- The working group officers participated as scientific committee members in the International Calibration and Orientation Workshop (EuroCOW), 10 t-12 February 2010, Castelldefels, Barcelona, Spain. Several papers will be submitted by the working group officers and members in this meeting.
- The working group officers have been involved in the organization of the commission symposium in Calgary, Canada (June 2010). Two sessions (12 papers) took place during the symposium.
- The working group officers are in the final stages of preparation for the upcoming working group workshop in Xiamen City, Fujian, China, 2011 (www.mpmsrsm2011.org). A proposal for co-sponsorship has been presented to and accepted by the IEEE-GRSS. The call for papers has been circulated. A total of one hundred and sixteen full papers have been received. All the papers have been peer-reviewed (two reviewers each). Sixty papers have been accepted and final versions have been submitted on November 15, 2010. An MOU has been signed with the IEEE-GRSS for joint publication of the workshop proceedings, which will be Engineering Information (EI) indexed.
- Together with WGV/3, the working group is co-organizing the laser scanning workshop at the University of Calgary (Laser Scanning 2011, August 29 – 31, 2011). The call for papers has been already prepared and will be released in January 2011.
- The working group officers participated in the ISPRS terrestrial LiDAR 2010 workshop in Zhengzhou, China, 15 – 18 October, 2010.
- The working group officers and members have been working on several research projects related to multi-sensor system calibration as well as the quality control of delivered products.

Other Working Group Activities

- Website: A dedicated website has been established and linked to the TC I website to support the work of the WG. See http://www.commission1.isprs.org/wg3/.
- Circular call for participation: An active approach to encouraging participation in WG activity was adopted, with a circular invitation to a wide audience at the end of 2008. There are currently 30 members of the WG, representing 9 different countries.
- Liaison with ICWG V/I - Land-Based Mobile Mapping Systems
- Liaison with WG V/3 – Terrestrial Laser Scanning and 3D Imaging
- Liaison with WG I/5 - Integrated Systems for Sensor Georeferencing and Navigation
- Currently collecting multi-sensor data including terrestrial images, laser scanner data, and navigation data and will be posted soon.

Future Activities

2011

- Organize the working group workshop with IEEE-GRSS co-sponsorship. The workshop focus is on the integration and fusion of multi-platform/multi-sensor applications for terrestrial, airborne, and space borne sensor integration. The workshop will take place in Xiamen City, China, 10 – 12 January, 2011.
- Co-organize the ISPRS laser scanning workshop together with WG V/3, which will take place in Calgary, Canada (August, 29 – 31, 2011).

2012

- Organize sessions at the ISPRS congress in Melbourne, Australia.
- Co-organizing of EuroCOW 2012 with WG I/5. The workshop focus is on sensor orientation and calibration

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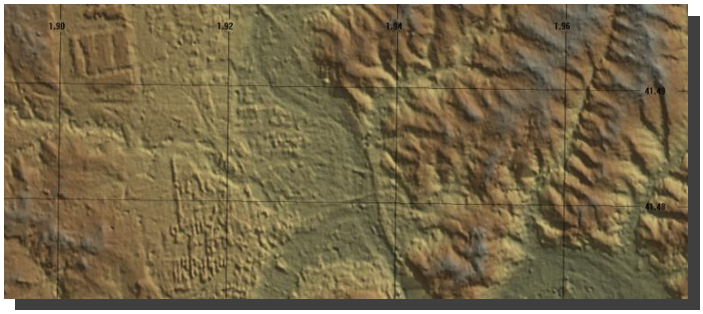
WG I/4 - Geometric and Radiometric Modeling of Optical Spaceborne Sensors



Working Group Officers

- Chair: Dr. Peter Reinartz, German Aerospace Center (DLR)
- Co-Chair: Dr. Daniela Poli, European Commission, Joint Research Centre (JRC)
- Co-Chair: Dr. Karsten Jacobsen, Leibniz University Hannover
- Secretary: Dr. Gurcan Buyuksalih, BIMTAS, Istanbul

Terms of Reference

- Geometric/radiometric calibration/evaluation of optical space sensors including laboratory (including long-term stability) and in-flight calibration activities
- Comparison of existing and evolving algorithms for geometrical modeling of optical space images
- Analysis of available direct sensor orientation and modelling changes during satellite lifetime
- Evaluation of line sensors for DEM generation (cooperation with working groups VII/2 and III/4)

Mission

The aim of the working group is the investigation of the mathematic model and also operational approximations for the correct handling of optical space borne images. Special conditions of sensors having more than one view direction will be respected. For absolute positioning without control points, the long and short term quality of the satellite direct sensor orientation shall be investigated. Based on the determined sensor orientation, the optimal method of digital elevation model generation, analysis and improvement is included. The activities of the WG as expressed in its terms of reference are promoted through various initiatives and events in co-operation with ISPRS, other international organizations, international space agencies and private companies.

2010 Working Group Workshops

- ISPRS 2010: Reviews and co-organizing of Commission I Symposium in Calgary, Canada, meeting of the working group
- ISPRS Istanbul Workshop 2010: Modeling of optical airborne and space borne sensors, Istanbul, Turkey, October 2010


part of historic peninsula in Istanbul

2010 Working Group Activities

- Establishment of benchmarking data sets: Stereo data from Cartosat-1 and Worldview-1 for three areas in Catalonia, Spain for testing DSM generation and DSM quality analysis for HR and VHR sensors. Organization of a high quality reference data set for the same area from airborne laser scanning and DMC flights from the Cartographic Institute from Catalunya (ICC). The goal is the comparison and preparation of the use of quality figures for DSM and DTM evaluation. Data are on-line since June 2010. Presentations are planned for the Hannover workshop in 2011 and the ISPRS congress in 2012.
- Istanbul workshop on Modeling of optical airborne and space borne sensor, in Istanbul, has been a very good success, 22 high level presentations and intensive discussions on the presented topics.
- Event Report on the Istanbul Workshop: Modeling of optical airborne and space borne sensors, held in Istanbul will be published in the next issue of the journal: Photogrammetrie, Fernerkundung und Geoinformation, PFG 2010/6, December 2010
- The working group officers are working on the preparation for the upcoming Conference: **S**ensors and **M**odels in **P**hotogrammetry and **R**emote Sensing (SMPR), in May 2011 in Tehran, Iran
- The working group officers and members have been working on several research projects related to DSM generation as well as DSM and DTM quality analysis.

Other Working Group Activities

- Website: A dedicated website has been continuously updated to support the work of the WG. See http://www.commission1.isprs.org/wg4
- There are currently 48 members of the WG, representing 10 different countries.
- Planning and progress meetings: several communication issues have been handled by e-mail or phone between chair, co-chair and secretary in 2010.
- Liaison with other WGs: The coming ISPRS Hannover Workshop 2011 will be organized together with WG I/2, IV/2, IV/3, VII/2, Discussion on DEM evaluations with WG III/4

Future Activities

- 2011: WG I/4 is Co-organizing a Conference: **S**ensors and **M**odels in **P**hotogrammetry and **R**emote Sensing (SMPR), in May in Tehran, Iran
- 2011: WG I/4 is Co-organizer of the ISPRS Hannover Workshop 2011 on High-Resolution Earth Imaging for Geospatial Information 2011 to be held in June in Hannover, Germany
- 2012: Review abstracts and papers and organize sessions at the ISPRS congress in Melbourne, Australia

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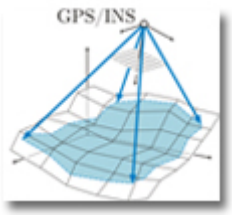
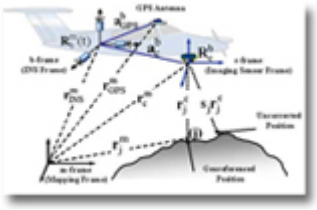
WG I/5: Integrated Systems for Sensor Georeferencing and Navigation



Working Group Officers

- Chair: Jan Skaloud, Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland
- Co-chair: Ismael Colomina, Insititute of Geomatics, Castelldefels, Spain
- Co-chair: Michael Cramer, Insititute of Photogrammetry, University of Stuttgart, Germany
- Secretary, Klaus Legat, Versmessung AVT-ZT, Imst, Austria

Terms of Reference

- Algorithmic aspects of direct georeferencing for Active and Passive Sensors in Marine, Land, Airborne, and Space-borne environment
- Navigation technology and the methods of sensor orientation in urban, indoor and forested environments.
- Georeferencing by integrated sensor orientation - models and adjustment procedures.
- Real-time aspects: mission control, data validation, evaluation, quality control.
- Navigation redundancy, robustness and reliability: impact of system integration.
- Standards and protocols in direct georeferencing and sensor orientation.

Mission

Our working group deals with a fundamental task in photogrammetry and remote sensing: sensor orientation, both in real-time and off-line. Sensor orientation is the determination of a sensor or sensor-system orientation parameters -i.e., in a wide sense, its position, velocity and attitude. In our context, navigation is real-time orientation. Today, orientation and navigation parameters are derived from multiple sensor configurations in a number of ways. Data integration from various, usually redundant or at least partially redundant sensors, allows for a more precise, accurate, reliable, less expensive and faster orientation and navigation.

The mission of the Working Group is to promote, facilitate and communicate research and its results on the topics listed below.

Working Group Workshops

- EuroCOW 2010. This biennial meeting brings together world experts from public and private sectors to present and discuss recent findings and developments on Sensor Calibration and Orientation. EuroCOW 2010 will be a highly-specialized, small-format forum to facilitate the circulation of new and useful information.
- EuroCOW 2012. As in previous additions this meeting will brings together world experts from public and private sectors to present and discuss recent findings and developments on Sensor Calibration and Orientation.

General Working Group Activities

- Regular exchange of information with the WG members through letters.
- Establishment of a WEB page for the working group.
- Disseminating events related announcements via web and via the WG members mailings list.
- Announcement on our WEB page of publications in our fields (books, journals, proceedings, paper collections, bibliographic collections etc.) , with emphasis on free electronic material.
- Collection and free access at our WEB page of proceedings and tutorial notes of ISPRS events.
- Announcement on our WEB page of free or educational software with sensor orientation thematic.
- Announcement of educational and training possibilities, other than the ones offered by higher education institutions, but including information on special M.Sc. courses.
- Active participation in the Technical Commission I Symposium, June 2010, Calgary and the 22st ISPRS Congress, July 2012, Melbourne.
- Organization of events (workshops, seminars, tutorials) especially within the frame of other ISPRS events and aiming at covering regional needs of developing countries. Please refer to the Events page for the currently planned meetings.
- Deepening the collaboration between the work-group members by formulating and submitting joint research proposals.
- Collection of relevant WEB links, incl. related newsgroups and list-servers, hardware and software companies.
- Preparation of annual reports for ISPRS, as well as preparation of reports on WG-cosponsored events and WG news to be published in the ISPRS Highlights.
- Participating in the development of standards for sensor orientation in relevant organizations.

2010 Activities

- The mid-term WG meeting EuroCOW 2010 was hosted by The Institute of Geomatics, from February 10 to February 12, 2010 at Castelldefels near Barcelona, Spain. The EuroCOW 2010 attracted the participation of Working Groups 1.3 (Multi-Platform Multi-Sensor Inter-Calibration), 3.1 (Pose Estimation and Surface Reconstruction from Image and/or Range Data), 3.5 (Image Sequence Analysis) and IC Working Groups I/V (Unmanned Vehicle Systems (UVS) for Mapping and Monitoring Applications) and III/VII (Pattern Recognition in Remote Sensing).

- The WG officer M. Cramer have organized a special issue for the German Society / DGPF Journal Photogrammetrie - Fernerkundung - Geoinformation PFG 02/2010, which contains extended papers on camera evaluation project run by this society. The collected data sets might be used for later projects, for example as test data for other ISPRS WG, and can be accessed through the DGPF executive team (http://www.dgpf.de/neu/pfg/pfg0210/pfg0210e.htm).
- The WG officer M. Cramer initiated number of activities at EuroSDR, such as the empirical work on radiometric aspects of digital airborne cameras. The collected data are described under http://www.fgi.fi/EuroSDR/EuroSDR_radiometry_empirical_materials.pdf and can their access can be requested.
- The WG officers were consulted on the development of standards under ISO/TV 21 and the development of the new technical specification ISO/TS 19159 named "Calibration and validation of remote sensing imagery sensors and data". This activity is supervised by Wolfgang Kresse and the effort is coordinated by various national and international institutions.
- The group members started a new research project related to robust navigation for unmanned airborne micro-vehicles (<5kg). The project aims integrating redundant low-cost (MEMS) IMUs (RIMU), barometer data and GNSS/EGNOS signals together with high-resolution digital surface models. The new platforms shall carry special optical sensors for search-and-rescue mission. This project has 2-years long duration and requires regular meetings between several WG members.
- The WG officers actively participated as several scientific events, namely:
    - The Canadian Geomatics Conference held in Calgary, Alberta in June 2010.
    - ION-GNSS in Portland, Oregon, the largest annual meeting in the field of satellite positioning.
    - WG chair presented an invited lecture at the University of Calgary entitled Optimizing Computational Performance for Real-Time Mapping with Airborne Laser Scanning. His visit initiated new exchange of airborne data and experience with other ISPRS WGs.

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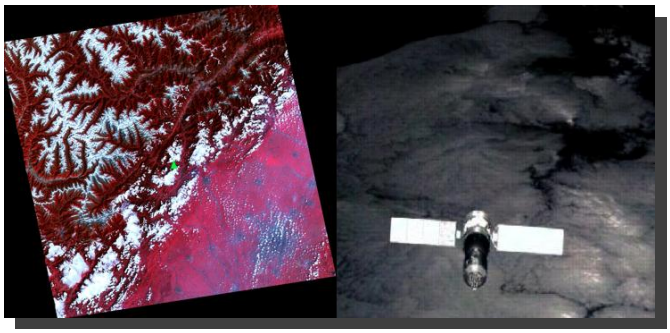
Co-chair: Michael Cramer, University of Stuttgart, Germany, E-mail: michael.cramer@ifp.uni-stuttgart.de
Secretary, Klaus Legat, Versmessung AVT-ZT, Imst, Austria, E-mail: k.legat@avt.at

WG I/6 - Small and Micro Satellites for Earth observation



Working Group Officers

- Chair: Klaus Briess, Berlin Institute of Technology, Department of Aeronautics and Astronautics, Germany
- Co-Chair: Dr. Ugur Murat Leloglu, The Scientific and Technical Research Council, Turkey
- Co-Chair: Professor Xiaoliang Wu, CSIRO Mathematical and Information Sciences
- Secretary: Mrs. WenXia Xu, System Department of China Academy of Space Technology

Terms of Reference

- Core observational needs of earth observation with development trend and strategy
- Assessment of the benefits of small satellites compared to other sources of information
- Challenges in managing small satellite systems Skymed)
- Small satellite platform technique and application situations, including architectures, characterization, calibration, validation, reliability, and failure treatment
- Payload design and accommodation requirements of small satellites with data procession validation
- Small launch vehicles
- Cooperation with other ISPRS WGs

Mission

Remote observations of Earth from space serve an extraordinarily broad range of purposes, resulting in extraordinary demands in many countries.

Recent years, Small satellites are offering new opportunities to address the core observational requirements of both operational and research missions. Small satellites, in particular single-sensor platforms, provide great architectural and programmatic flexibility. They offer attractive features with respect to design; observing strategy; rapid technology infusion; replenishment of individual failed sensors; and robustness with regard to budget and schedule uncertainties.

New approaches to observation and calibration may be possible using spacecraft agility in lieu of sensor mechanisms, for example. Small satellite clusters or constellations can provide new sampling strategies that may more accurately resolve temporal and spatial variability of Earth system processes

Small satellite missions, as a new element of measurement strategy, may also help provide more balance between long-term operational or systematic observations and short-term experimental process measurements, as well as between focused missions and larger, more

comprehensive missions. Earth observation Programs can be more readily tailored to fiscal funding constraints when implemented as a series of smaller satellites. Small spacecraft can play an important role in Earth observation programs, providing to this field many of the expected benefits, such as rapid development and lower individual mission cost.

The WG has witness a change of leadership due to lack of engagement of the old chair.

Other Working Group Activities

1. Website: a dedicated website has been established. See :http://sensorweb.geomatics.ucalgary.ca/isprs/symposium/.
2. Planning and progress meeting: WG I/6 —Small and Micro Satellites for Earth observation in 2010, cooperating with Chinese Aerospace Association.

Future Activities

- 2011: A workshop on Small satellite programmatic, small satellite constellations, high-performance optical system for small satellite, spacecraft bus, subsystems, in Beijing, China.
- 2012: Assisting ISPRS Council on congress.

Working Group Officers Contact Information:

- Chair: Klaus Briess, Berlin Institute of Technology, Department of Aeronautics and Astronautics, klaus.briess@ilr.tu-berlin.de
- Co-Chair: Dr. Ugur Murat Leloglu, The Scientific and Technical Research Council, Turkey, leloglu@uzay.tubitak.gov.tr
- Co-Chair: Professor Xiaoliang Wu, CSIRO Mathematical and Information Sciences, Xiaoliang.Wu@csiro.au
- Secretary: Mrs. WenXia Xu, System Department of China Academy of Space Technology, sogosohu@sohu.com
- Secretary: Mrs. Qingyi Lee, System Department of China Academy of Space Technology, Lee_qq@126.com

ICWG V/I - Land–based Mobile Mapping Systems

Working Group Officers

- Chair: Jonathan Li (Canada)
- Co-Chair: Qingquan Li (China)
- Co-Chair: Antonio Tommaselli (Brazil)
- Secretary: João Fernando Silva (Brazil)

Terms of Reference

- Design, development and evaluation of integrated, multi-sensor, land-based mobile mapping systems
- Design and development of real-time data processing algorithms for land-based mobile mapping systems
- Automation of information extraction from land-based mobile imaging and ranging sensor data
- Development of novel applications in transportation infrastructure mapping and assessment, including pavement and asset mapping, emergency response
- Cooperation with ICA, IAG, FIG, and other ISPRS WGs on 3D mobile mapping; image indexing and retrieval; 3D object reconstruction and city modelling; point cloud processing; sensor integration and multiple sensing solutions; and applications in LBS and disaster management

Mission

ICWG V/I on Land-based Mobile Mapping Systems (2008-2012) addresses Beijing Congress Resolutions V.1, V.2 and V.3, with a focus on the use of land-based mobile platforms, promotes and coordinate research and development activities in the use of land-based mobile mapping systems with innovative integration of multiple, off-the-shelf sensors for rapid 3D object and surface reconstruction, liaises with academia, service providers, and manufacturers in novel applications of land-based mobile mapping systems in transportation, urban mapping, location-based services, and emergency and disaster management sectors.

A. State of Science and Technology of Working Group Topics

In 2010, the ICWG V/I officers have been very actively involved in organizing or attending of ISPRS TC-I midterm symposium held in June 2010, Calgary, Canada and the ISPRS Workshop on Terrestrial Lidar: From Static to Mobile, held in October 2010, Zhengzhou, China, as well as the upcoming events in 2011, including the Joint International Symposium on Lidar and Radar Mapping in Nanjing, China, May 2011, 7th International Symposium on Mobile Mapping Technology (MMT'2011) in Croskow, Poland, June 2011 and ISPRS Workshop on Laser Scanning 2011 in Calgary, Canada, August 2011. All these events attempt providing forums for presenting the latest developments in land-based mobile lidar systems, including sensor modeling and calibration techniques, point cloud preprocessing techniques (hole filling and point cleaning, denosing), point cloud processing and geometric feature extraction towards 3D object reconstruction techniques; promoting R&D activities in the use of land-based mobile mapping systems with innovative integration of multiple, off-the-shelf sensors for rapid 3D object and surface reconstruction; and demonstrating innovative applications of land-based mobile lidar mapping systems in transportation, urban mapping, location-based services, and emergency and disaster management sectors. The experiences obtained in 2009 and 2010 have proved that the ICWG V/I terms of reference are well founded as we focus our efforts towards establishing and promoting best practice in the use of a rapidly growing mobile lidar mapping technology. These terms can be found on our website (http://www.commission5.isprs.org/icwg1_5/).

B. Accomplishments of Working Group during 2010

Website

The ICWG V/I website, managed by Jonathan Li (Chair), is available and updated at http://www.commission5.isprs.org/icwg1_5/.

Conferences

- ICWG V/I co-organized the ISPRS International Workshop on Terrestrial Lidar: From Static to Mobile, jointly with WG I/3 and V/3, in Zhengzhou, China, 15-18 October 2010. Jonathan Li (Chair) served as Chair of the Scientific Committee and the Co-chair f the workshop. Qingquan Li, Antonio Tommaselli, and João Fernando Silva (ICWG Officers) and several ICWG members served as members. Almost all the lidar vendors setup their booth during the workshop. There were more than 40 (8 from overseas) attendants and almost 30 full papers were published in the Symposium Proceedings (DVD). Jonathan Li has been working on a proposal for publishing the selected papers in a theme issue of PE&RS. The next series event in under planning and will be held in South Africa in 2012.
- All ICWG V/I officers served on SC of both the ISPRS TC I and V mid-term symposia to help reviewing submissions. In addition, Jonathan Li, Qingquan Li and Antonio Tommaselli attended the ISPRS TC I mid-term symposium held in Calgary, Canada, June 2010 to present their own research papers and chaired sessions.

Publications

- The selection of 19 papers submitted to EOGC2009 have been peer reviewed and finally published by Springer in 2010 in a refereed book entitled Advances in Earth Observation of Global Changes. Jonathan Li serves as a co-editor (with Emilio Chuvieco and Xiaojun Yang), ISBN 978-90-481-9084-3, 283pp.
- A special Issue of The IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS) (IEEE: SCI/EI), entitled "Earth Observations and Remote Sensing for Environmental Management and Hazard Mitigation" including 10-12 peer reviewed papers from submissions to EOGC2009 will be published by the end of 2010. Jonathan Li serves as co-editor (with Xiaojun Yang).
- A theme issue featured Geospatial Technologies for Disaster Management, has published by International Journal of Applied Earth Observation and Geoinformation (Elsevier: SCI), 2010, Vol. 12, No. 6. Jonathan Li served as the Guest Co-Editor (with Rifaat Abdalla).

C. Working Group News

Upcoming events in 2011:

- ICWG V/I will co-organize the International Workshop on Multi-platform/Multi-sensor Remote Sensing & Mapping, http://www.mpmsrsm2011.org/, jointly with WG I/3, 10-12 January 2011, Xiamen, China. Qingquan Li serves as Co-Chair of SC, Jonathan Li serves as Co-Chair of LoC, Antonio Tommaselli, João Fernando Silva and several ICWG V/I members serve on SC. They have helped reviewing submissions.
- ICWG V/I will be involved in co-organizing the International Conference on Sensors and Models in Photogrammetry and Remote Sensing (SMPR 2011), http://www.smpr2011.com/, jointly with WG I/4, May 18-19, 2011, Tehran, Iran. Jonathan Li and several ICWG V/I members serve on SC.
- ICWG V/I will be involved in co-organizing the 3rd International Conference on Earth Observation of Global Changes (EOGC2011), http://www.eogc2011.tum.de/, jointly with WG III/5, ICA, IAG, ISDE, 13-15 April 2011, Munich, Germany. Jonathan Li serves as Co-Chair of SC, Antonio Tommaselli serves on SC. They have helped reviewing the extended abstracts.
- ICWG V/I will co-organize the joint ICA/ISPRS/FIG International Symposium on LIDAR and Radar Mapping: Technologies and Applications (LIDAR & RADAR 2011), http://www.lidar2011.org/, jointly with ICA, FIG, IAG, and SPIE, 26-29 May 2011, Nanjing, China. Jonathan Li serves as Chair of SC and Editor-in-chief for a SPIE Volume, featuring Advances in LIDAR and Radar Mapping: Technologies and Applications, which will include 80 selected refereed papers. Qingquan Li, Antonio Tommaselli and several ICWG V/I members serve on SC.

- ICWG V/I will be involved in co-organizing the 7th International Symposium on Mobile Mapping Technology (MMT'11), http://www.mmtcracow2011.pl/, jointly with other ISPRS WGs, FIG, IAG, ION, etc., Crakow, Poland, 13-16 June 2011. Jonathan Li, Qingquan Li, Antonio Tomaselli, João Fernando Silva and several ICWG V/I members serve on SC.
- ICWG V/I will be involved in co-organizing the ISPRS Workshop on Laser Scanning 2011, jointly with WG V/3, I/3, and other WGs of ISPRS, http://www.ucalgary.ca/laserscanning2011/, 29-31 August 2011, Calgary, Canada. Jonathan Li serves on SC.

In addition, ICWG V/I offers are also serving on SC of the following conferences:

- Jonathan Li and Qingquan Li: Joint ISPRS Workshop on 3D City Modelling & Applications and the 6th 3D GeoInfo, http://www.lmars.whu.edu.cn/3DCMA2011/, 26-28 June 2011, Wuhan, China.
- Jonathan Li: ICA International Scientific Committee, 25th International Cartographic Conference (ICC 2011), www.icc2011.fr/, Paris, France, 3-8 July 2011.
- Jonathan Li: Technical Program Committee, 1st AfricaGEO Conference, http://www.africageo.org/, Cape Town, South Africa, 31 May to 2 June 2011.
- Jonathan Li: Scientific Advisory Board, 5th International Symposium on Advances in Science and Technology (5thSASTech), http://www.5thsastech.khi.ac.ir/, Mashhad, Iran, 12-18 May 2011.

Planned Events for 2012:

- ICWG V/I will co-organize the 2nd ISPRS International Workshop on Terrestrial Lidar: From Static to Mobile, Cape Town (TBA), May 2012 (TBD).
- All ICWG V/I officers will serve as session chairs in the XXII ISPRS Congress 2012, 25 Aug-1 Sep 2012, Melbourne, Australia

Planned publications for 2012 and 2013

- Jonathan Li & Xiaojun Yang (eds.), 2012, "Mobile Laser Scanning: Techniques and Applications" (tentative), to be published by CRC Press/ Taylor & Francis, in July 2012, proposal under review.
- Yang, X. and Li, J. (eds.), 2012 (expected). Advances in Mapping from Aerospace Imagery: Techniques and Applications, CRC, Taylor and Francis (in process).
- Jonathan Li and Bruch King (eds.) 2012. Advances in Terrestrial LiDAR Techniques and Applications, Photogrammetric Engineering & Remote Sensing, April 2012
- Jonathan Li and Michael Chapman (eds.) 2013. Terrestrial Laser Scanning: From Static to Mobile, International Journal of Remote Sensing, March 2013.
- Rifaat Abdalla and Jonathan Li (eds.) 2013. Geospatial Intelligence for Emergency Response, Photogrammetric Engineering & Remote Sensing, April 2012

WG I/V - UVS for mapping and monitoring applications

Working Group Officers

• Chair: Jurgen Everaerts, Remote Sensing Research Unit, VITO, Belgium
• Co-Chair: Henri Eisenbeis, Institute of Geodesy and Photogrammetry, ETH-Zurich, Switzerland
• Secretary: Kris Nackaerts, Remote Sensing Research Unit, VITO, Belgium

Terms of Reference

• UVS specific issues related to navigation and position/orientation determination (incl. sense & avoid)
• UVS platforms & instruments for photogrammetry and remote sensing (especially low-cost, consumer-type)
• UVS as a tool for RS instrument prototyping
• UVS as a tool for teaching all aspects of photogrammetry & remote sensing
• Document and compare UVS systems (in photogrammetry and RS) in terms of cost, performance, application and quality
• Liaison with Com III, VIII and EuroSDR

Mission

Our working group aims at informing and activating people interested in education and training in the fields covered by ISPRS, especially colleagues working in educational institutions. We are focused on promoting the goals of the WG as expressed in its terms of reference by means of various activities and events and in co-operation with ISPRS, other national and international organizations and Geomatics-related firms.

Working Group Workshops

- The Future of Remote Sensing, Autumn 2010 – Antwerp, Belgium
- IVWG I/V workshop, 2011 – Zurich, Switzerland

Other Working Group Activities

- Regular exchange of information with the WG members through letters.
- Establishment of a web page for the working group.
- Announcement on our web page of publications in our fields (books, journals, proceedings, paper collections, bibliographic collections etc.) , with emphasis on free electronic material.
- Collection and free access at our web page of proceedings and tutorial notes of ISPRS events.
- Announcement on our web page of free software.
- Provide a web accessible knowledge base of UVS related research projects and service providers
- Active participation in the UVS related events
- Organization of events (workshops, seminars, tutorials) especially within the frame of other ISPRS events. Currently, the following events are planned:
- 2010 3rd Intl. Workshop “The future of Remote Sensing”, Antwerp, Belgium

- 2011 Zurich, Switzerland
- Collection of relevant WEB links, incl. related newsgroups and list servers, hardware and software companies.

2010 Activities

- Reviews and co-organizing of Commission I Symposium in Calgary, Canada.
- Reviews and co-organizing of Commission V Symposium in Newcastle, UK
- Third International Workshop “The future of Remote Sensing” in Antwerp, Belgium
- DFG-Rundgespräch "Unbemannte autonom navigierende Flugsysteme (UAS), Rostock, Germany

Future Activities

- 2011: ICWG I/V workshop in Zurich, Switzerland
- 2012: Organize sessions at the ISPRS congress in Melbourne, Australia.
- UAV-g 2011, 3 day conference in September 2010 including live demos at an airfield... Planned number of participants 200.

Appendix 1 - **ISPRS Technical Commission Board Meeting**

Date: Thursday June 17
Time: 5:00 – 6:30

Reception for Commission I – Sponsored by WG 1 (NASA) and the Canadian Geomatics Conference – 6:30 – 7:30

Location: Macleod E4

Meeting Minutes

1. Welcome and Opening Remarks — President TC

Naser El-Sheimy started the meeting with an introduction of the conference attendance and demonstrated each WG participation with technical sessions.

2. Remarks — President ISPRS

Orhan Altan was available at the conference but had to leave town for personal reasons and therefore could not make it to the meeting.

3. Review of activities of last 18 months

Mohamed Mostafa went through each WG activities, where the WG chairs and co-chairs presented the WG activities in the past and the planned activities for 2011, 2012. Mohamed Mostafa eluded to the fact that WG I/6 has not participated by any activities in the past two years and the necessary measure will take place soon.

4. Review/changes in WG officers (if necessary)

N/A

5. Preparations for ISPRS Congress 2012 — Congress Director

Mark (ISPRS Congress 2012 Technical Director) discussed the Congress technical activities, including, the dedicated number of sessions to Commission I, the dedicated facilities and amenities for Commission I, etc. The total number of sessions available for Commission I will be 16. There will be two plenary speakers for commission I. each session could have a mini-plenary speech at the beginning where the plenary speaker would be invited.

6. Hosting Commissions 2012-16

Naser El-Sheimy encouraged the WG officers to nominate the next term 2012-2016 presidency, and discussed the nomination process in detail. Naser El-Sheimy offered to email all interested parties the nomination letters done for Commission I during the 2008-2012 term to WG officers to be used as a reference

7. International Organizations (GEOS, ICSU, CEOS, OGC, IEEE, EuroSDR…)

President/Secretary General

8. Collaboration with ISPRS HQ (Organizing the meetings, publications…)

Secretary General

- Jun Chen encouraged WG officers to publish a conference report for each conference or workshop that has been accomplished at the ISPRS highlights
- Jun Chen encouraged explained to WG officers that recently, any event to be held by a WG has to go through an official application form to be submitted to TCP and Council for approval

9. Publications (Journal, Archives, Book Series Congress Book, E-Highlights, GIM Page, Video)

Secretary General/Editor

- Jun Chen asked Naser El-Sheimy to submit a half page including a picture as a summary of a CGC to be published at the GIM
- Jun Chen explained that each technical commission is responsible for creating a proposal for a resolution… which is the mission for the next commission…. The current resolutions will be used to draft on top of them… the final proposal should be sent to the council before the 2012 congress by at least 2 months
- Mohamed Mostafa suggested publishing an ISPRS book series based on selected papers from the CGC conference. All WG officers seemed to like the idea. The required fund for this activity will be looked into and sought from different funding and grants. Naser El-Sheimy and Mohamed Mostafa will take the lead on that

10. Feedback on the Commission structure

N/A

11. Any other topics

Action Items:

- WG officers to Send event reports to ISPRS council to be published at ISPRS Highlights
- WG officers to send application forms for the upcoming events to TCP and council
- WG officers to Select 3 CGC papers per WG to and suggest to publish those in the ISPRS book series