Convergence in Geomatics – Shaping Canada's Competitive Landscape

The 2010 Canadian Geomatics Conference and Symposium of Commission I, ISPRS
June 15 - 18, 2010
TELUS Convention Centre
Calgary, Alberta, Canada

Canadian Geomatics Conference 2010: Technical Programme

Tuesday, June 15

1:30 pm – 3:00 pm

1.1 Canada's Success with Spatial Data Infrastructure – I (Macleod AB)

Chair: Brian Maloney (Ontario Ministry of Natural Resources, Canada)
CoChair: Helmut Epp (Northwest Territories Centre for Geomatics, Canada)

Papers:

1. *GeoConnections Plans and Priorities* - **Sylvain Latour** (NRCan)
2. *The Roadmap for Geomatics in Alberta.- Tecterra's Vision* **Mohamed Abousalem** (Tecterra)
3. *The Geobase initiative: an examination of the key framework data component of the CGDI.* **Corinna Vester (NRCan), Éric Loubier (NRCan) (160)**
4. *SDI: an international perspective.* **David Coleman (University of New Brunswick)**

1.2 Convergence in Geomatics: Challenges and Opportunities I (Macleod E1)

Chair: Niall Wallace (Infonaut, Canada)
CoChair: Bob Parkinson (ENMAX Power Corporation, Canada)

Papers:

1. *Convergence and the digital infrastructure for a green economy.* **Geoff Zeiss (Autodesk) (102)**
2. *Canadian topographic mapping: an update.* **Sylvain Lemay, Yvan Désy (NRCan) (80)**
3. *Convergence and societal impacts of geographic information in the geoeconomy.* **Robert Ryerson, Stan Aronoff (KGC) (208)**
4. *Collaboration in geomatics: moving forward.* **Gorecki, Richard (Kim Geomatics) (205)**

1.3 Earth Observation for a Changing World: Remote Sensing for Decision Making (Macleod E2)

Chair: Douglas Bancroft (CCRS NRCan, Canada)
CoChair: Babak Ameri (Geosys, Canada)

Papers:

1. *Critical infrastructure monitoring using high resolution SAR satellites.* **Desmond Power (C-CORE), Paul Adlakha (C-CORE), Marina Dragosevic (C-CORE), Peter McGuire (C-CORE), Paris Vachon (DRDC Ottawa), Pierre Meunier (DRDC CSS) (164)**
2. *Mapping urban green space in Montreal for better environmental justice: object-oriented classification of very-high-resolution images.* **Thi Thanh Hien Pham, Philippe Apparicio (INRS Urbanisation) (203)**
3. *The groundwater information network: interoperability in the CGDI for online access to Canadian groundwater data.* **Boyan Brodaric, Eric Boisvert, David Sharpe (NRCan) (149)**
4. *Remote sensing techniques as a tool for runoff water estimation.* **Ameneh Dialameh, Kamil Faisal, Ahmed Shaker, Wai Yeung Yan (Ryerson University) (175)**
5. *Polar View – a program to support climate change adaptation.* **Paul Adlakha, Thomas Puestow, Desmond Power (C-CORE) (166)**

1.4 The Role of Geomatics in Decision-Making for Energy and Environment (Macleod E3)

Chair: Craig Barnes (Alberta Sustainable Resource Development, Canada)
CoChair: Gordon Plunkett (ESRI Canada)

Papers:

1. *Enterprise-based agri-geomatics – growing in value.* **Dolores Durant (AAFC) (138)**
2. *GIS - providing value at the National Energy Board.* **Marta Wojnarowska (NEB), Lin Bai (MRF GC), Justina Krynski (NEB) (150)**
3. *HEAT - home energy assessment technologies: a web based system for residential waste heat analysis using airborne thermal imagery.* **Bharanidharan Hemachandran, Geoffrey Hay , Christopher Kyle, Gang Chen, Ryan Powers (University of Calgary) (178)**
4. Spatial data infrastructures - the evolutionary next step in GIS, **David Monaghan (Intergraph) (95)**

5. Improving corporate decision making - business case for an integrated infrastructure and geospatial management system. **Karen Stewart (ESRI Canada), Terry Wong (City of Calgary), Audrey Stamm (City of Calgary) (169)**

3:15 pm – 4:45 pm

2.1 Session: Canada's Success with Spatial Data Infrastructure - II (Macleod AB)

Chair: John Potter (Saskatchewan Office of Geomatics Coordination, Canada)
CoChair: Chris Almstrom (Government of Yukon, Canada))

Papers:

1. *The dissemination of government geographic data – best practices guide version 2.*0. **Jennifer Sokol (NRCan), Gordon Garrard (NRCan) (37)**
2. *Federal geomatics standards - the story so far.* **Paula Rojas (NRCan), Mohamed Habbane (NRCan) (111)**
3. *CGDI in action: exploring quality of service.* **Sheng Gao (UNB), David Coleman (UNB), Craig MacLachlan (ESRI Canada), Gordon Plunkett (ESRI Canada) (79)**
4. *Geospatial Privacy Challenges.* **Jeannine Parent (NRCan), Rebecca Last (NRCan), Andre Pregent (NRCan), Jennifer Sokol (NRCan) (139)**

2.2 Convergence in Geomatics: Challenges and Opportunities II (Macleod E1)

Chair: Geoff Zeiss (Autodesk, Canada)
CoChair: Phil Mackenzie (Alberta Sustainable Resource Development, Canada)

Papers:

1. *The need to integrate geospatial & research data policy activities.* **John Broome (NRCan) (110)**
2. *Spatial data quality compliance: a preventive approach.* **Joel Grira, Stéphane Roche, Yvan Bédard (Laval University) (134)**
3. *An ontology based context modeling approach for mobile touring and navigation system,* **Sara Saeedi, Naser El-Sheimy (University of Calgary) (198)**
4. *Compiling a geospatial database of existing oil sands industrial features for Alberta Environment.* **Caroline Bampfylde (Alberta Environment), Simon Hughes (Hatfield Consultants), Don Page (Alberta Environment), Brett Purdy (Alberta**

Environment), Susan Stanley (Hatfield Consultants), Aneeqa Syed* (Hatfield Consultants) (171)

2.3 Earth Observation for a Changing World - Temporal Issues (Macleod E2)

Chair: Danielle Marceau (University of Calgary, Canada)
CoChair: Phil Graniero (University of Windsor, Canada)

Papers:

1. *Monitoring the Seasonal Decay of a Proglacial Icing using Ground-Based Time-Lapse Photography,* ***Kenneth Whitehead*** **(University of Calgary)** ***(67)***
2. *Environmental monitoring of landfill sites using multi-temporal Landsat imagery.* **Ahmed Shaker, Wai Yeung Yan (Ryerson University) (154)**
3. *Spatio-temporal dynamics of surface wetness conditions using remote sensing data over Northern Alberta, Canada.* **Musa Akther, Quazi Hassan (University of Calgary) (100)**
4. *A remote sensing based framework for predicting water quality of different source waters.* **Tahir Akbar, Quazi Hassan, Gopal Achari (University of Calgary) (117)**

2.4 The Role of Geomatics in Decision-Making for Health and Public Safety (Macleod E3)

Chair: Matthew Tait (Worley Persons, Canada)
CoChair: Joe Kresovic (Stat Can, Canada))

Papers:

1. *Enhanced decision-making for public safety and security - the multi-agency situational awareness system initiative.* **Trevor Rankin (NRCan) (45)**
2. *Development of an even-driven and scalable oil spill monitoring and management system.* **Hamid Assilzadeh (University of Calgary), Zhinong Zhong (NUDT - China), Tim Liu (University of Calgary), Yang Gao (University of Calgary) (16)**
3. *Using geomatics and airborne laser scanning for rockfall risk zoning: a case study in the french alps.* **Jean-Matthieu Monnet Nicolas Clouet, Frédéric Berger (Cemagref) (91)**
4. *Geomatics and patient safety: using GIS to control and stop hospital infections.* **Wallace Niall (Infonaut Inc.) (214)**
5. *How wetland type and area change through scale: a GEOBIA case study of Alberta's boreal plains.* **Ryan Powers (University of Calgary) (165**

2.5 Tecterra Annual General Meeting (Macleod E4)

Chair: Steven Mulherin, Chairman
Co-Chair: Dr. Mohamed Abousalem, CEO

Tecterra Inc. is a national commercialization organization supporting the development and commercialization of technologies in geomatics for integrated resource management in Canada. Tecterra was created to be a world leader in enabling the commercialization of product and service solutions for energy, forestry, agriculture, environment, and land management and development applications. The first centre of its kind, Tecterra works with industry, entrepreneurs, researchers, and government partners through investments enabling the use of geomatics technologies in addressing local, national and global challenges in resource management. Tecterra, a non-profit organization, is governed by an independent Board of Directors representing key industry sectors associated with Tecterra's focus markets. For more information about Tecterra, go to www.tecterra.com.

Agenda:

3:30 – 3:45	Tecterra AGM Formal Business
3:45 – 4:00	Break
4:00 – 4:30	Tecterra Corporate Presentation

Wednesday, June 16

10:30 am - Noon

3.1 ISPRS WG I/2: Sensor Systems and Technologies (Macleod AB)

Chair: Boris Jutzi (University Karlsruhe, Germany)

CoChair: Franz Meyer (University of Alaska Fairbanks, USA)

Papers:

1. *Efficient image data processing based on an airborne distributed system architecture*. **Oliver Meynberg, Ulrike Thomas, Franz Kurz, Dominik Rosenbaum, Jens Leitloff (DLR) (35)**
2. *Development of a low–cost sensor system for use on gyrocopters.* **Alvand Miraliakbari, Michael Hahn, Johannes Engels (University of Applied Sciences) (201)**
3. Radiometric calibration of airborne LiDAR intensity data for land cover classification. **Wai Yeung Yan*; Ahmed Shaker, (Ryerson University) (153)**
4. *Classification of LiDAR data based on multi-class SVM.* **Pouria Ramzi (Faculty of Geomatic) (185)**

3.2 ISPRS WG I/1: Standardization of Airborne Platform Interface - Session I (Macleod E1)

Chair: Andrew C. Roberts (Northrop Grumman, USA)

CoChair: Jean-Louis Brenguier (Instrumentale CNRM/GMEI/D, France)

Papers:

1. *The "pod" concept applied to remote sensing from aircraft.* **Armond Joyce, Gary Shelton (SAIC) (11)**
2. *Development of airborne instrument data processing toolbox and format standards.* **Matt Freer (EUFAR), Chris Webster (NCAR), Jean-Louis Brenguier (EUFAR) (18)**
3. *Development of an international forum which coordinates airborne science platform capabilities.* **Andrew Roberts (Northrop Grumman), James Huning (SAIC), Jean-Louis Brenguier (EUFAR), Randall Albertson (NASA) (87)**
4. *Approaches to transnational access for airborne platforms: EUFAR and the United States.* **James Huning (SAIC), Jean-Louis Brenguier (EUFAR) (30)**

3.3 ISPRS WG I/3: Multi-Platform Multi-Sensor Inter-Calibration - Session I (Macleod E2)

Chair: Ayman Habib (University of Calgary, Canada)
CoChair: Mostafa Madani (Sanborn, USA)

Papers:

1. *Automated multiple surface registration of irregular point clouds: a comparative analysis of two approaches.* **Ivan Detchev, Ayman Habib, KI IN BANG, Ana Kersting (University of Calgary) (39)**
2. *A spatiotemporal saliency model of visual attention based on maximum entropy.* **Longsheng Wei, Nong Sang, Yuehuan Wang (IPRAI, HUST) (49)**
3. *Real-time hand gesture recognition using range cameras.* **Herve LAHAMY (University of Calgary) (54)**
4. *Study of stability analysis of the interior orientation parameters from the small-format digital camera using on-the-job calibration.* **Edson Mitishita, João Cortes, Jorge Centeno, Alvaro Machado (Federal University of Paraná) (62)**
5. *Development of an international standard for calibration and validation of remote sensing imagery sensors and data* **Wolfgang Kresse (University of Applied Sciences Neubrandenburg)**

3.4 ISPRS WG I/4: Geometric/Radiometric Modelling of Optical Airborne and Spaceborne Sensors - Session I (Macleod E3)

Chair: Peter Reinartz (German Aerospace Centre (DLR), Germany)
CoChair: Dr. Karsten Jacobsen (Liebniz University Hannover, Germany)

Papers:

1. *Bundle block adjustment of cbers 2b hrc images using control lines.* **José Marcato Junior (Unesp), Antonio Tommaselli (Unesp), Nilcilene Medeiros (UFV), Raquel Oliveira (Unesp) (57)**
2. *Precise mapping of high resolution satellite images without ground control points.* **Taejung Kim, Jaehoon Jung (Inha University) (172)**
3. *Radiometric and geometric evaluation of worldview-2 stereo scenes.* **Daniela Poli, Emanuele Angiuli (JRC) (188)**
4. *Estimation of forest biomass from an airborne single-pass L-band POL-InSAR system.* **Bryan Mercer*; Qiaoping Zhang; Marcus Schwaebisch; Michael Denbina, (Intermap Technologies) (120)**

3.5 ISPRS WG I/5: Integrated Systems for Sensor Georeferencing and Navigation - Session I (Macleod E4)

Chair: Jan Skaloud (EPFL-TOPO, Switzerland)

CoChair: Klaus Legat (Vermessung AVT-ZT GmbH, Austria)

Papers:

1. *A method for geometric processing of optical satellite images using automatically determined ground control information.* **Rupert Mueller, Thomas Krauß, Mathias Schneider, Peter Reinartz (DLR) (31)**
2. Delivering value added products from elevation data. Belai Beshah, Chenglin Xie, Lonnie Matsuno (Valtus) (126)
3. *Optimizing computational performance for real-time mapping with airborne laser scanning.* **Jan Skaloud, Philipp Schaer (EPFL) (34)**
4. *Analysis of control and flight configuration requirement for mounting parameters calibration of GPS/INS assisted photogrammetric systems.* **Ayman Habib, Ana Kersting (University of Calgary) (42)**
5. *Optical measurement of high-frequency orientation changes of remote sensing systems.* **Jürgen Wohlfeil (German Aerospace Centre) (7)**

3.6 Canada's Success with Spatial Data Infrastructure - Technical Implementation (Macleod A3,4) Enter Macleod AB and bear left

Chair: Trevor Rankin (NRCan),

This session will showcase private sector advances in geospatial technologies that enable new markets for businesses and services. A focus will be on innovative standards based tools and technologies that form the technical base of the Canadian GeoSpatial Data Infrastructure (CGDI). Success stories from the re-deployment of CGDI technologies to the emerging international SDI marketplace will also be highlighted.

- Leveraging the CGDI for Public Safety, Homeland Security and Homeland Defence, **Robert Thomas, (Compusult)**
- Faster and more efficient access to geospatial resources using OLAP and ontologies , **Terry MacNeill, (Fujitsu Consulting)**
- **Title**: ESRI Support for Robust and Reliable CGDI Services, **Gordon Plunkett (ESRI Canada)**

1:30 pm – 5:00 pm

4.1 – 7.1 Industry Seminars: Macleod E1, E2, E3, E4

Chair: Tim Crago (North West Geomatics, Canada)

CoChair: Daniel Tessier (GIAC, Canada)

2:00 - 2:45

4.1 *Sensor Web Enablement: Collaboration Through Open Standards* Mr. Robert Thomas, Marketing Manager, Compusult Limited (Macleod 1)

4.2 *The Use of GeoEye-1 Imagery for Regional and Community Mapping*, Mr. Peter Von Gaza, Geomatics Specialist, Geomatics Yukon, Yukon Territory and Dr. Geoff Tomlins, President, Pacific Geomatics Ltd. (Macleod 2)

4.3 *Using ArcGIS Technology for Implementing Web Mapping and Developing Online Content*, Mr. Gordon Plunkett, Director, SDI, ESRI Canada Limited (Macleod 3)

4.4

2:45 – 3:30

5.1 *ERDAS Enterprise Solutions,* Mr. Tony Sani, President, Spatial Geo-Link (Macleod 1)

5.2 *Mobile Laser Scanning – Increasing Productivity in 4D,* Mr. Adam Jones, Regional Sales Manager, Ambercore (Macleod 2)

5.3 *Correlator 3D: The new generation of photogrammetry solutions,* Dr. Philippe Simard, President, SimActive (Macleod 3)

3:30 – 4:15

6.1 *Optimization of Workflows*, Ms. Karen Stewart, Industry Manager, ESRI Canada Limited (Macleod 1)

6.2 *Geoautomation- a new paradigm in mobile mapping systems,* Mr. Paul Currie, Business Development Manager – Mobile Mapping, McElhanney Consulting Services Limited (Macleod 2)

6.3 *GeoImaging Tools,* Mr. Peter Hazlett, Product Manager, PCI Geomatics (Macleod 3)

4:15

7.1 *GIS On The Web: The Big Step Forward*, Mr. Alex Miller, President, ESRI Canada Limited (Macleod 1)

7.5 GEOIDE Students' Network Student Showcase (Macleod AB)

Chair: Greg McQuat (Queen's University, Canada)
CoChair: Amit Joshi (Geoide Network, Canada)

Papers:

1. *Exploring Spatial-Temporal Data in Healthcare.* **Nayyar, Shikha**
2. *Process modeling of tree mortality in forest fires.* **Michaletz, Sean**
3. *Calibration and validation of the MIKE-SHE hydrological model for the Elbow River Watershed, Alberta.* **Wijesekara, Gayan**
4. *Visualize Climate Data in Google Earth - A Script Integrating Ferret with KML and A Multiple Earth Platform.* **Zhou, Jian**

5. *Modelling Spread of Mountain Pine Beetle Infestation in Western Canada.* **Long, Jed**
6. *A Line Based Approach for Three-Dimensionalizing Urban Surveillance Networks.* **Tal, Ron**
7. *Increasing the Utilization of Geovisual Analytics for Health Policy Decision-Making.* **Young, Jacqueline**
8. *Developing Software-based Mobile Application for Enhanced Positioning Service based on alternative usage of WiFi technology.* **Jung, Wook Rak**

Thursday, June 17

8:30 am – 10:00 am

8.1 GEOIDE AGM and Phase IV Project Presentations (Macleod AB)

Chair: Nicholas Chrisman (GEOIDE, Canada)
CoChair: Gregory McQuat (Queen's University, Canada)

GEOIDE Annual General Meeting (8:30-9:00)
Presentations by GEOIDE students (9:00 – 12:00):

1. *Multi-Sensors Systems for Tracking and Mobility Applications*, **Tashfeen Karamat (PIV-03)**
2. *CODIGEOSIM: Geosimulation tools for Simulating spatial-temporal spread patterns and evaluating health outcomes of communicable diseases*, **Mondher Bouden (PIV-05)**
3. *Breathing Life into 3D Urban Models*, **John Harrison (PIV-17)**
4. Public Protection and Ethical Geospatial Data Dissemination, **Krista Jones (PIV-23)**
5. *Mapping the Future of Educational Gaming for Situated Learning in Real Geographies*, **Élodie Edoh-Alove (PIV-24)**
6. *Stochastic Modeling of Forest Dynamics - Health Effects: Estimating Smoke Exposure*, **Victoria Wan (PIV-43)**

8.2 ISPRS WG I/2: Data Quality and Performance Validation of Active Optical Systems (Macleod E1)

Chair: Charles Toth (The Ohio State University, USA)
CoChair: Mike Chapman (Ryerson University)

Papers:

1. *Altm ORION establishes a new standard in LiDAR data quality, accuracy and precision.* **Valerie Ussyshkin; Livia Theriault Michael Sitar; Tatijana Pantovic*, (Optech Incorporated) (90)**
2. *Evaluation of a range imaging sensor concerning range resolution and illumination.* **Jorge Centeno* (UFPR); Boris JUTZI (IPF-KIT) (107)**
3. *Compressing and classifying LiDAR waveform data.* **Charles Toth*; Dorota Brzezinska (The Ohio State University) (130)**
4. *LiDAR-data: automatic object detection for urban flooding models.* **MD AKTARUZZAMAN* (University of Kaiserslautern); Theo Schmitt (SIWAWI) (83)**

8.3 ISPRS WG I/1: Standardization of Airborne Platform Interface - Session II (Macleod E2)

Chair: Jean-Louis Brenguier (Instrumentale CNRM/GMEI/D, France)

CoChair: James R Huning (SAIC, USA)

Papers:

1. *Developing an international forum to coordinate community workshops addressing airborne science sensors.* **Bruce Doddridge (NASA Langley Research Center), Manfred Wendisch (Leipzig Institute for Meteorology) (55)**
2. *Education and training activities in airborne research.* **Ils Reusen (VITO), Alexandra Novak (NSERC, University of North Dakota), George Seielstad (BAERI), Catherine Lockwood (Chadron State College), Tom Cecere (USGS), Larry Handley (USGS), Vanda Grubisic (University of Vienna), Manfred Wendisch (Leipzig Institute for Meteorology), Jorge Andres Diaz (Universidad de Costa Rica) (76)**
3. *International conference on airborne research for the environment - icare-2010.* **Jean-Louis Brenguier (EUFAR) (143)**
4. *Supporting the use of unmanned aircraft systems (UAS) for global science observations in civil and segregated airspace.* **Brenda Mulac (NASA), Joachim Reuder (University of Bergen) (96)**

8.4 ISPRS WG I/3: Multi-Platform Multi-Sensor Inter-Calibration - Session II (Macleod E3)

Chair: Ayman Habib (University of Calgary, Canada)

CoChair: Cheng Wang (National University of Defense Technology, China)

Papers:

1. *Self-calibration and evaluation of the Trimble GX terrestrial laser scanner.* **Jacky Chow, William Teskey, Derek Lichti (University of Calgary) (63)**
2. *In-situ digital airborne camera validation and certification – the future standard?* **Michael CRAMER (Institute of Photogrammetrie), Goerres Grenzdoerffer (Institut für Management ländlicher Räume), Eija Honkavaara (Finnish Geodetic Institute (FGI)) (82)**

3. *The German camera evaluation project – results from the geometry group.* **Michael CRAMER (Institute of Photogrammetrie), Norbert HAALA (ifp, Universität Stuttgart), Karsten Jacobsen (Leibniz University Hannover) (159)**
4. *Calibration of a PTZ surveillance camera using 3d indoor model.* **Ravi Persad, Costas Armenakis, Gunho Sohn (York University) (176)**

8.5 ISPRS WG I/4: Geometric/Radiometric Modelling of Optical Spaceborne Sensors - Session II (Macleod E4)

Chair: Karsten Jacobsen (Liebniz University Hannover, Germany)
CoChair: Daniela Poli (European Commission, Joint Research Centre, Italy)

Papers:

1. *Image matching and outlier removal for large scale DSM generation.* **Pablo D'Angelo (German Aerospace Center) (20)**
2. *Processing and calibration activities of the future hyperspectral satellite mission ENMAP.* **Amaia De Miguel, Martin Bachmann, Christine Makasy, Andreas Müller, Rupert Mueller, Andreas Neumann, Gintautas Palubinskas, Rudolf Richter, Mathias Schneider, Tobias Storch , Thomas Walzel, Thomas Heege, Viacheslav Kiselev (German Aerospace Center - DLR) (81)**
3. *A geometric simulator for the hyperspectral mission ENMAP.* **Peter Schwind, Rupert Mueller , Gintautas Palubinskas, Tobias Storch, Christine Makasy (DLR) (84)**
4. *Evaluating the potential of image quality metrics for quality assessment of high resolution pan-sharpen satellite imagery in urban area.* **Farzaneh DadrasJavan, Farhad Samadzadegan (University of Tehran) (189)**

10:30 am - Noon

9.1 ISPRS WG I/2: Processing of LIDAR data (Macleod AB)

Chair: Boris Jutzi (University Karlsruhe, Germany)
CoChair: Charles Toth (the Ohio State University, USA)

Papers:

1. *Point processes for unspervised building extraction from airborne LiDAR range data.* **Jonathan Li*, (University of Waterloo); Yu Li, (University of Waterloo); Mike Chapman, (Ryerson University) (129)**
2. *Impact of LiDAR system calibration on the relative and absolute accuracy of derived point cloud.* **Ayman Habib ; KI IN BANG*; Ana Kersting (University of Calgary) (44)**

3. *Assessment of new building recognition technique based on Monte Carlo simulation from LiDAR data.* **Hassan Eid*; Mohamed Elhabiby; Naser El-Sheimy, (University of Calgary) (173)**
4. *Automatic co-registration of terrestrial laser scanning data and 2d floor plan.* **Langyue Wang*; Gunho Sohn (York University) (158)**
5. *Airborne LiDAR fluorescence analysis for the quantification of water quality characteristics.* **Stephanie Rogers*; Tim Webster; Nelson O'Driscoll; Bill Livingstone (Acadia University) (52)**

9.2 ISPRS ICWG V/I: Land-based Mobile Mapping Systems - Session I (Macleod E1)

Chair: Qinquan Li (Wuhan University, China)
CoChair: Naci Yastikli (Yildiz Technical University, Turkey)

Papers:

1. *Methods for the identification and removal of outliers from mobile terrestrial LiDAR data.* **Michael Leslar, Jian-Guo Wang, Baoxin Hu (York University) (78)**
2. *Lynx mobile mapper: the new survey technology.* **Dario Conforti (Optech Incorporated), Federica Zampa (Sineco SpA), Tatijana Pantovic (Optech Incorporated) (85)**
3. *Deriving structural knowledge from terrestrial laser scanning data for 3d façade reconstruction.* **Chao Luo, Gunho Sohn (York University) (195)**
4. *Bundle block adjustment of omni-directional images obtained from a ground mobile mapping system.* **Kyoungah Choi, Taewan Oh, Impyeong Lee (The University of Seoul) (133)**

9.3 ISPRS WG I/4: Geometric/Radiometric Modelling of Optical Spaceborne Sensors - Session III (Macleod E2)

Chair: Daniela Poli (European Commission, Joint Research Centre, Italy)
CoChair: Peter Reinartz (German Aerospace Centre (DLR), Germany)

Papers:

1. *Enhancement of dense urban digital surface models from VHR optical satellite stereo data by pre-segmentation and object detection.* **Thomas Krauß, Peter Reinartz (DLR) (29)**
2. *Benchmarking and quality analysis of DEM generated from high and very high resolution optical stereo satellite data.* **Peter Reinartz (DLR), Pablo D'Angelo (German Aerospace Center), Thomas Krauß (DLR), Daniela Poli (JRC), Karsten Jacobsen (University of Hannover), Gurcan Buyuksalih (Bimtas) (33)**

3. *Computational optimized 3d reconstruction system for airborne image sequences.* **Ke Zhu (Technische Universität München), Matthias Butenuth (TUM) (92)**
4. *Analysis of ASTER GDEM elevation models.* **Karsten Jacobsen (Leibniz University Hannover), Ricardo Passini (BAE SYSTEMS GP&S) (103)**

9.4 ISPRS WG I/5- Navigation Systems (Macleod E3)

Chair: Michael Cramer (University Stuttgart, Germany)
CoChair: Xiaoje Niu (GNSS centre, Wuhan University)

Papers:

1. *Rigorous modeling of GPS residual errors for precise point positioning.* **Mohamed Elsobeiey (Ryerson University), Ahmed El-Rabbany (Ryerson University) (136)**
2. *Mapping WLAN coverage as a potential complementary source for GPS-based navigation in indoor environments.* **Wook Rak Jung (University of Saskatchewan), Scott Bell (University of Saskatchewan) (168)**
3. *Automatic orientation estimation base on photogrammetry for a single pan-tilt-zoom camera.* **Taeyoon Lee (Inha University), Taejung Kim (Inha University), Gunho Sohn (York University), James Elder (York University) (177)**
4. *Integration of PPP GPS and low-cost IMU.* **Shuang Du, Yang Gao (University of Calgary) (19)**

1:15 pm – 2:45 pm

10.1 Supporting Collaboration and Planning (Macleod AB)

Chair: David Gariepy (ESRI Canada)
CoChair: Bill Martin (MNC, Canada)

Papers:

1. *A 3d collaborative geospatial augmented reality system for urban design and planning purposes.* **Bruno St-Aubin, Mir Abolfazl Mostafavi, Stéphane Roche, Nicolas Dedual (Université Laval) (106)**
2. *Geomatics for collaborative innovation.* **Fred McGarry (Centre for Community Mapping) (22)**
3. *Using collaborative recommendations to enhance sensor web's utility as a decision making tool.* **Rohana Rezel, Steve Liang (University of Calgary) (114)**

4. *Community mapping and goverment mapping: potential collaboration?* **Alexandre Beaulieu, Daniel Bégin, Denis Genest (NRCan) (163)**

10.2 Earth Observation for a Changing World – Classification (Macleod E1)

Chair: Christian Nadeau (MDA, Canada)
CoChair: Bryan Mercer (Intermap Technologies, Canada)

Papers:

1. *3D road extraction using a stereo pair of aerial images.* **Aluir DAL POZ (São Paulo State University), João Silva (São Paulo State University), Rodrigo Gallis (Cartovias Eng. Cart.) (64)**
2. *Reducing the effects of misregistration and sun-surface-sensor geometry on the detection of forest harvest cut-blocks.* **Luis Carvalho (Federal University of Lavras), Mustafizur Rahman (University of Calgary), Geoffrey Hay (University of Calgary), Mike Wulder (Canadian Forest Service) (183)**
3. *Swarm based urban road map updating using high resolution satellite imagery.* **Nima Zarrinpanjeh (University of Tehran), Farhad Samadzadegan (University of Tehran), Tony Schenk (Ohio State University) (190)**
4. *Man-made object classification from satellite/aerial imagery using neural networks.* **Adel Moussa, Naser El-Sheimy (University of Calgary) (72)**

10.3 ISPRS ICWG V/I: Land-based Mobile Mapping Systems - Session II (Macleod E2)

Chair: Antonio Maria Garcia Tommaselli (Sao Paulo State University, Brazil)
CoChair: Mohamed Mostafa (ApplAnix, Canada)

Papers:

1. *The integration of ground based and airborne laser scanning for coastal zone mapping.* **Tim Webster (Applied Geomatics Research Group) (23)**
2. *Enhancement of positioning accuracy of terrestrial LiDAR mobile mapping systems.* **Hamad Yousif (University of Waterloo), Jonathan Li (University of Waterloo), Mike Chapman (Ryerson University) (48)**
3. *Spatial information filtering for adaptive visualization in vehicle navigation systems.* **Jianwei Yu, Qingquan Li, Bisheng Yang (Wuhan University) (56)**
4. *Automatic activity identifaction from raw GPS vehicle tracking data.* **Lian Huang, Qingquan Li (Wuhan University) (71)**
5. *Improving the performance of MEMS IMU/GPS POS systems for land based MMS utilizing tightly coupled integration and odometer.* **Yun-Wen Huang, Kai-Wei Chiang (National Cheng Kung University) (131)**

10.4 Advances in Airborne Sensing (Macleod E3)

Chair: Tim Crago (Northwest Geomatics, Canada)
CoChair: Mohamed El-Habiby (University of Calgary, Canada)

Papers:

1. *Airborne geospatial technology for rapid, mapping-grade orthorectified imagery.* **Ernest Yap, Adam Evans (Applanix Corp.) (167)**
2. *Photo-realistic 3d mapping from aerial oblique imagery.* **Jiann-Yeou Rau (National Cheng Kung University) (209)**
3. *Case studies of applying LiDAR for the electrical utility, mining, and water resources industries.* **Kari-Ann McNabb (LSI Inc.) (212)**
4. *Surveillance video object tracking with differential SSIM.* **Jie Yang (Shanghai Jiaotong University) (13)**

10.5 Poster Session (Lobby)

GEOIDE Posters:

1. *Spatio-temporal Modelling in Health Geography*, **Fox Underwood and Stefania Bertazzon** (301)
2. *Orientation estimation of video streams from pan-tilt-zoom camera for integration with 3D models*, **Taeyoon Lee, Taejung Kim, James Elder and Gunho Sohn (302/177)**
3. *Time Geography: Old Ideas Applied to New Datasets*, **Jed A. Long and Trisalyn A. Nelson (303)**
4. *Geospatial Web Surveys of Travel Behaviour*, **Louis Alexandre and Marius Thériault (304)**
5. *Multi-level geosimulation of zoonosis propagation: A multi-agent and climate sensitive tool for risk management in public health*, **Mondher Bouden and Bernard Moulin (305)**
6. *Can we identify behavioral groups from activity diary data?* **Ron Dalumpines and Darren M. Scott (306)**
7. *A method to simulate spatial-temporal spread of influenza using transportation and travel modeling approaches*, **Darijo Bosnjak, Francis Rioux, Marius Thériault and Bernard Moulin (307)**
8. *Spatial and temporal analysis of global HPAI H5N1 outbreaks*, **Zhijie Zhang, Dongmei Chen, Lei Wang, Jean-Pierre Vaillancourt (308)**
9. *A network-based air traveling model of 2009 global H1N1 outbreaks*, **Frank Wen, DongMei Chen, Bing Xu (309)**
10. *Probabilistic Detection and Grouping of Highway Lane Marks*, **Eduardo Corral and James H. Elder (311)**
11. *A line based approach for three-dimensionalizing urban surveillance networks*, **Ron Tal and James H. Elder (313)**
12. *Definition of a unified 3D semantic data model: A must-have in Mobile Augmented Reality Games*, **Alborz Zamyadi and Jacynthe Pouliot (314)**

13. *Hacking the cybernetic grid: filling gaps in digital representations of marginalized populations in Mumbai using 'Social Geoviz'*, **Ana Brandusescu and Nick Hedley (315)**
14. *A Web Spatial Context Service (WSCS) dedicated to Serious Games on Smart Phones*, **Élodie Edoh-Alove, Frédéric Hubert and Thierry Badard (316)**
15. *Objects and Lidar: Exploiting Mobile-Terrestrial Lidar Scanner Geometry Using an Object-Oriented Approach,* **Greg McQuat, Rob Harrap and Paul Treitz (317)**
16. *Developing location-based augmented reality applications for climate change communication and social mobilization*, **Britta Ricker and Nick Hedley (318)**
17. *Exploring rooftop photovoltaic cell feasibility through web-GIS*, **Andrew Blakey and Robert Feick (319)**
18. *3D Visualization for Flood Adaptation Options in Delta, B.C.*, **Kristi Tatebe and David Flanders (320)**
19. *Impact of increased urbanization in the Calgary region on the hydrological processes in the Elbow river watershed in southern Alberta,* **G. Nishad Wijesekara, Anil Gupta, Caterina Valeo, J.G. Hasbani, and Danielle J. Marceau (321)**
20. *Kimberley Climate Change Visioning*, **Olaf Schroth, Ellen Pond and Stephen S.R.J. Sheppard (322)**
21. *Qualitative Strategies for Landmine Location Estimation in Western Sahara*, **Blake Byron Walker (323)**
22. *Developing an Online Community Resource Map to Engage Marginalised Populations*, **Blake Byron Walker, Lori Smith, Samih Munshi and Claus Rinner (324)**
23. *Visualize Climate Data in Google Earth*, **Jian Zhou and Renee E. Sieber (325)**
24. *Making the Geoweb truly participatory: the development of Geolive*, **Nick Blackwell and Jon Corbett (326)**
25. *The Potential of the Participatory Geoweb for Public Engagement and Decision-Making in Climate Change Issues*, **Insoo (Steven) Chung and Claus Rinner (329)**
26. *The relationship of plant distribution to geomorphic processes*, **Marianne N. Chase, Edward A. Johnson and Yvonne Martin (330)**
27. *Modeling post-fire tree mortality: sapwood area reduction in stems*, **Sean T. Michaletz and Edward A. Johnson (331)**
28. *A comparison of classification algorithms for the identification of smoke plumes from satellite images*, **Victoria Wan, W.J. Braun, Charmaine B. Dean and S. Henderson (332)**
29. *Radiometric Calibration of Airborne LiDAR Intensity Data for Land Cover Classification*, **Wai Yeung Yan and Ahmed Shaker (333)**
30. *Sampling the Synthetic World: Creating a Link Between Landscape Simulation and the Sensor Web*, **Daniel S. D'Alimonte and Phil A. Graniero (334)**
31. *Geovisualisation methods for exploring urban heat island effects*, **John Danahy, Rob Feick, Robert Wrigh, Robin Harrap, Jacob Mitchell, Lisa King and Jennifer Penny (335)**
32. *Web mapping and data collection of visitors' activities towards the assessment of Lyme disease risk in a peri-urban forest*, **Hedi Haddad, Bernard Moulin, Vincent Godard and Franck Manirakiza (336)**

CGC Posters:

1. *Evaluating the measurement scales of semantic features for remote sensing images retrieval*, **Changxin Gao (50)**
2. *Flood-risk Mapping from Storm Surges & Future Sea-level Rise in Antigonish County, Nova Scotia, Canada*, **Kathryn Leblanc (53)**
3. **(moved to oral)***Analysis of the short and long-term processes involved in coastline* erosion, **Nathan Crowell (97)**
4. *Best Practice Quality and Accuracy Assessment of Elevation Datasets on a Regional and National Level*, **Hollie Clavering (99)**
5. *Generating a multisource seamless topographic/bathymetric elevation model for hydrodynamic modeling within the annapolis basin, nova scotia*, **Peter MacDermott (104)**
6. *Use of remote sensing in understanding spring pheneology over the forest dominant natural subregions of Alberta*, **Navdeep Sekhon (115)**
7. *Sensitivity analysis of support vector machine in classification of hyperspectral imagery* , **Hadiseh Hasani (187)**
8. *A vector maps watermarking algorithm based on DCT*, **Jiang Rong (207)**
9. *New method in study disease spread using GIS modeling*, **Kamel M. Sheikho (215)**
10. *Variation of RADARSAT-2 Backscatter Intensity over the Great Lakes Ice Cover, Winter 2009-2010*, **Nicolas Thai Nguyen**
11. *A New Semi-Fragile Watermarking Scheme for Authentication and Tamper Localization in Remote Sensing Images,* ***Salwa A.K Mostafa (216)***
12. *Using support vector regression and segmentation to estimate forest height, biomass and volume from LiDAR transects and Quickbird imagery.* **Gang Chen, Geoffrey Hay (University of Calgary) (112)**

3:15 pm – 4:45 pm

11.1 ISPRS WG I.2: Advances in Mapping and Surface Extraction (Macleod AB)

Chair: Boris Jutzi (University Karlsruhe, Germany)
CoChair: Antonio Vettore (Padua University, Italy)

Papers:

1. *Terrasar-X data for improving geometric accuracy of optical high and very high resolution satellite data.* **Peter Reinartz*; Rupert Mueller; Sahil Suri,; Peter Schwind; Mathias Schneider (DLR) (17)**
2. *An incremental regularization of 3d building models for continuous building database update.* **Yoonseok Jwa*; Gunho Sohn, York University (186)**
3. *Elimination of the outliers from Aster GDEM data.* **Hossein Arefi*; Peter Reinartz (DLR - German Aerospace Center) (200)**
4. *Semi-global matching: an alternative to LiDAR for DSM generation?* **Stephan Gehrke*, (North West Geomatics); Kristian Morin (NovAtel); Michael Downey ; Nicolas Boehrer (Leica Geosystems); Thomas Fuchs (Leica Geosystems) (121)**

11.2 Earth Observation for a Changing World – Terrain (Macleod E1)

Chair: Costas Armenakis (York University, Canada)
CoChair: Quazi Hassan (University of Calgary, Canada)

Papers:

1. *Evaluation of stereoscopic Geoeye-1 satellite imagery to assess landscape and stand level characteristics.* **Karl Kliparchuk (Hatfield Consultants Partnersh), Denis Collins (BC Ministry of Forests and Range) (161)**
2. *Airborne hydromapping area-wide surveying of shallow water areas.* **Frank Steinbacher (University of Innsbruck, Austria) (191)**
3. *Hybrid DEM generation and evaluation from spaceborne radargrammetric and optical stereoscopic DEM.* **CHEN XU, Ming Wei, Stephen Griffiths, Bryan Mercer, Roman Abdoullaev (Intermap Technologies Corp.) (123)**
4. *Cadastral mapping of Agricultural lands and Natural Resources by using image and non-image data,* **Ali Farzaneh (10)**
5. Creating an interoperable, distributed web-based biodiversity data portal: the CBMP data *portal.* ***Michael Svoboda (Environment Canada) (118)***

11.3 *ISPRS ICWG V/I: Land-based Mobile Mapping* Systems - Session III (Macleod E2)

Chair: Antonio Vettore (University of Padova, Italy)
CoChair: Michael Cramer (University Stuttgart, Germany)

Papers:

1. *Registration and fusion of multiple images acquired with medium format cameras.* **Antonio Tommaselli (Unesp), Maurício Galo (Unesp), José Marcato Junior (Unesp), Roberto Ruy (Engemap), Rodrigo Lopes (Unesp) (58)**
2. *Semi-supervised object based digital measurable image sequence segmentation for mms.* **Peng Li, Cheng Wang, Han Wang (NUDT, China) (132)**
3. *Assigning elevations to 2D road network based on IFSAR derived DEMs.* **Qiaoping Zhang, Michael Simantov, Jennifer DeVries, Stephen Griffiths (Intermap Technologies) (145)**
4. *Fusion of optical and terrestrial laser scanner data.* **Julien Li-Chee-Ming , Costas Armenakis (York University) (156)**

11.4 GEOIDE Demo Session (Macleod A 3,4)

- *CODIGEOSIM's platform for the geosimulation of disease spread*, **Bernard Moulin and Mondher Bouden (PIV-05)**
- Three-Dimensionalizing Surveillance Networks, **James Elder (PIV-17)**
    - *Breathing Life into 3D Urban Models*
    - *Data Collection and Integration*
    - *Three-Dimensionalization*
    - *Automatic Interpretation of Urban Dynamics*
    - *System Integration and Deployment*
- *Public Protection and Ethical Geospatial Data Dissemination*, **Marc Gervais (PIV-23)**
- GeoEduc3D: Geomatics for Gaming and Learning, **Sylvie Daniel (PIV-24)**
    - *Gaming the City: From Lidar to Geomatics to Warcraft to Sustainability Education - Energy Wars!* **Rob Harrap, Gerry Broughton, Sean Harrap, Uschi Erne, Joshua Pearce, Sylvie Daniel, Michael Power and Greg McQuat.**
    - *What Was Here Then: Historical Map Overlays in the Situated iPhone Community Augmentation Tool*. **Brandon Rasula, Rob Harrap and David Ball.**
    - *Marking up LiDAR Point Clouds: It's just a Game!* **Kelly Sinclair, Rob Harrap and James Stewart.**
    - *Démonstration d'applications de réalité augmentée sur plateforme mobile destinées à des jeux éducatifs basés sur la localisation*, **Vincent Thomas, Sylvie Daniel and Thierry Badard.**
- *Introducing PostGIS WKT Raster 1.0: database raster/vector overlay operations on large datasets*. **Pierre Racine, Steven Cumming, Sandro Santilli, Mateusz Loskot, Jorge Avalero and David Zwarg, Avencia (PIV-43)**.
- *TrafficPulse: A Participatory Mobile Urban Sensor Web for Intelligent Green Transportation* **DongWoo Lee, Leah R.Y. Li, Steve Liang, Andrew Hunter, Lina Kattan, Mohamed El-Darieby, Baher Abdulhai (SII-89)**.

Friday, June 18

8:00 am – 9:00

12.0 Plenary Session: Futures of Geomatics (Macleod AB)

Chair: Steve Mulherin (Polar Capital, Canada)
co-chair: Guy Béliveau (LaserMap, Canada)

- Overview of Canadian National Mapping Strategy (Mike Mepham, NRCan)
- Presentation of results of Round Table Discussions (Prashant Shukle, NRCan)
- Announcements of Potential Funding Opportunities from Tecterra and GEOIDE (Nicholas Chrisman, GEOIDE Network; Naser El-Sheimy, Tecterra)

9:15 - 10:45 am

12.1 and 13.1 GEOIDE Future Directions (Macleod AB)

Chair: Nicholas Chrisman (GEOIDE Network, Canada)
Discussion of GEOIDE Business Plan to continue past 2012; Partnership opportunities between research sector, government and industry

12.2 ICWG I V: UVS for Mapping and Monitoring Applications (Macleod E1)

Chair: Henri Eisenbeiss (ETH Zurich, Switzerland)
CoChair: Kris Nackaerts (VITA, Belgium)

Papers:

1. *A low cost rc-heli UAV for mapping applications.* **ALBERTO GUARNIERI, ANTONIO VETTORE, MARTINA CAMARDA (CIRGEO-UNIVERSITY OF PADOVA) (94)**
2. *The development of a direct georeferencing ready UAV based photogrammetry platform.* **Meng-Lun Tsai (National Cheng Kung University), Kai-Wei Chiang (National Cheng-Kung University), Yun-Wen Huang (National Cheng Kung University), Yen-Shan Lin (National Land Surveying and Mapping Center, Ministry Of The Interior, Taiwan), Ji-Shin Tsai (National Land Surveying and Mapping Center, Ministry Of The Interior, Taiwan), Cheng-fang Lo (GeoSat Informatics Technology Corporation, Taiwan), Yi-shiang Lin (GeoSat Informatics Technology Corporation, Taiwan), Chang-Huei Wu (Dept. of Mechanical Engineering, Yuan Ze University, Taiwan) (68)**
3. *Automated UAV-based video exploitation for mapping and monitoring.* **Stephen Se and Christian Nadeau (MDA) (174)**
4. *Fully automatic UAVs image-based sensor orientation.* **Marco Scaioni (Politecnico di Milano), Luigi Barazzetti (Politecnico di Milano), Raffaella Brumana (Politecnico di Milano), Fabio Remondino (Fondazione Bruno Kessler) (75)**

12.3 ISPRS WG I/5- Integrated Navigation Systems (Macleod E2)

Chair: Aboelmagd Noureldin (Royal Military College of Canada,, Canada)
CoChair: Kai-Wei Chiang (National Cheng Kung University, Taiwan)

Papers:

1. *Intelligent sensor positioning and orientation using a SGN embedded fusion algorithm for a MEMS INS/GPS integrated system.* **Kuan-Yun Chen (National Cheng Kung University), Kai-Wei Chiang (National Cheng-Kung University), Naser El-Sheimy (University of Calgary), Hsiu-Wen Chang (University of Calgary) (36)**
2. *Enabling accurate low cost positioning in denied GPS environments with nonlinear error models of inertial systems.* **Zhi Shen (Queen's University), Jacques Georgy (Queen's University), Aboelmagd Noureldin (Royal Military College) (43)**
3. *Using land-vehicle steering constraint to improve the heading estimation of MEMS GPS/INS georeferencing systems.* **Xiaoji Niu (GNSS centre, Wuhan University), Hongping Zhang (GNSS Centre, Wuhan University), Kai-Wei Chiang (National Cheng-Kung University), Naser El-Sheimy (University of Calgary) (137)**
4. *Comparative analysis of different approaches for the incorporation of position and orientation information in integrated sensor orientation procedures.* **Ayman Habib, Ana Kersting, KI IN BANG (University of Calgary) (41)**

11:00 am – 12:30 pm

13.1 GEOIDE Future Directions (Macleod AB)

13.2 Canada's Success with Spatial Data Infrastructure - Technical implementation (Macleod E1)

Chair: Mike Mepham (GeoConnections Program, Canada)
CoChair: Helmut Epp (Northwest Territories Centre for Geomatics, Canada)

Papers:

1. *A locality-aware peer-to-peer approach for geospatial web services discovery.* **Shawn Chen, Steve Liang, Mea Wang (University of Calgary) (65)**
2. *A real time semantic interoperability framework in ad hoc network of geospatial databases: disaster management context.* **MOHAMED BAKILLAH (Laval University), Mir Abolfazl Mostafavi (Laval University) (69)**
3. *Thematic user communities collaborate to contribute to the development of the Canadian Geospatial Data Infrastructure.* **Paula Rojas, Denis Poliquin, Philip Dawe (NRCan) (142)**
4. *The Canadian Geospatial Data Infrastructure (CGDI) and securing arctic seabird sustainability: an SDI success story.* **Jeannine Parent, Cindy Mitchell (NRCan) (51)**
5. *Implementing a spatial data infrastructure successfully with free and open source software?* **Andrew Hunter, Stefan Steiniger (University of Calgary) (119)**

13.3 Convergence in Geomatics: Challenges and Opportunities III (Macleod E2)

Chair: Steve Liang (University of Calgary, Canada)
CoChair: Simon Lanoix (Sierra Systems, Canada)

Papers:

1. *Resource management applications of a web-based geo-referenced digital image management system.* **Rostam Yazdani (CRGB, ILMB) (108)**
2. *Communicating geospatial data quality of 3d objects in virtual globes.* **Krista Jones, Rodolphe Devillers (Memorial University of NL), Yvan Bédard (Université Laval) (147)**
3. *EU-DEM: the seamless European digital elevation model.* **Hugh MacKay (Intermap Technologies) (193)**
4. *SPOC – survey plan on-line checker.* Wendy Amy and William Martin (MNC Ltd.) (25)