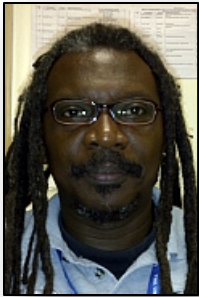




2011-2014 REPORT TO FIG GENERAL ASSEMBLY



*Dr. Michael Sutherland (Canada, and Trinidad and Tobago)
Chair (2011-2014), Commission 4, International Federation of Surveyors (FIG)
April 2014*

Throughout 2011-2013 and from 2013 to the present time Commission 4 faced a number of setbacks caused by the deaths of a working group Chair (The now former Chair of Working Group Working Group 4.3 *Multi-Sensor Systems for Hydrographic Applications* died tragically on Friday, 31st August, 2012) and of a normally active member, the professional retirement of one working group Chair, and the non-performance by one working group because a confirmed Chair was unable to fully assume responsibilities. Yet the accomplishments of

Commission 4 are all the more remarkable because of these events, and the working group Chair who retired from his professional position even managed to produce an FIG publication (i.e., *FIG Guide to Ellipsoidally Referenced Surveying for Hydrography* by working group Chair Mr. Jerry Mills, and Dr. David Dodd). The Commission Chair, all other working group Chairs and, as well, the Vice Chair (Administration and Communication), were active in producing relevant non-FIG publications, organizing workshops/conferences/conference sessions, participating in FIG Task Forces, and pertinently representing FIG on international Boards and at international meetings. Details on these items are found in the sections on: (1) Working Groups; and (2) Conferences, Meetings, Workshops and Symposia. Still more information may be found at:

- <http://www.fig.net/commission4/reports/reports.htm>;
- <http://www.fig.net/commission4/newsletters/newsletters.htm>;
- <http://www.fig.net/commission4/Publications/publications.htm>.



Ms. Angela Etuonovbe (Nigeria) was confirmed as Chair-Elect, Commission 4 for 2012-2014 at FIG Working Week 2012 in Rome, Italy. She will begin her term as Chair, Commission 4 in 2015.

Any success of this Commission cannot be solely claimed by the Commission Chair because it is the accomplishments of the Commission's membership that make the Commission's successes. This opportunity is taken to deeply thank all Commission Chairs and members who positively contributed to the Commission since 2011 – their efforts are acknowledged and greatly appreciated, especially in spite of their busy professional commitments and in light of all the setbacks! Rising from a fall is victory!

COMMISSION 4 EVENTS / ACTIVITIES / ACCOMPLISHMENTS FROM 2011 TO DATE (APRIL 2014)

COMMISSION CHAIR

The Chair of Commission 4, Dr. Michael Sutherland, engaged in the expected guidance and coordination of Commission 4 activities. These include managing the activities of working groups, preparing annual and other reports, keeping Commission 4 stakeholders informed through FIG website contents, and organizing conference sessions at FIG working weeks, regional conferences, and Congress. Dr. Sutherland also contributed as a peer reviewer of papers for FIG working weeks, regional conferences, and Congress.



Dr. Sutherland among presenters at the European Union Permanent Committee on Cadastre, Cyprus (2012)

As a special invited speaker or participant, Dr. Sutherland represented the interests of Commission 4 and FIG at a number of workshops / meetings (not including FIG working weeks, regional conferences, and Congress):

- 2013: “FIG Commission 4 and Hydro supported Development”. Special invited presentation, Joint International Federation of Surveyors – International Hydrographic Organization conference on the “Blue Economy”, 9th April, Southampton, England [**organized by Commission 4 Vice-Chair Administration and Communication, Mr. Gordon Johnston**].
- 2013: Participant, Joint IHO-FIG-IMO-IOC Strategic Capacity Building meeting, Monaco, November 20-21.
- 2012: “Boundaries and Governance in Coastal and Marine Spaces”. Special invited presentation, European Union Permanent Committee on Cadastre (PCC), Cyprus, November 29-30.
- 2012: “Spatially Enabled Governance”. Special invited presentation, UNRCC-PCGIAP International Symposium on Spatially Enabled Government and Society, Kuala Lumpur, Malaysia, February 15-16.
- 2011: “Hydrography and National Development”. Special invited presentation (Guest Speaker) at the Nigerian Hydrography Awareness Day, Lokoja, Nigeria, October 25-26 [**organized by Working Group 4.5 Hydrography in Africa Chair, and Commission 4 Chair-Elect, Ms. Angela Etuonovbe**].
- 2011: “Implementing a Marine Cadastre (or other similar marine information systems)”. Special invited paper for presentation at the Plenary Session of the 11th South East Asian Survey Congress, Kuala Lumpur, Malaysia, June 22-24.

Dr. Sutherland was a periodic contributor to Commission 4 newsletters and articles in *Hydro International*, *Lighthouse*, *Geomatics World* and *Geomatica*, informing readers about the Commission, its activities, and hydrography related topics:

- [1] Sutherland, M. (2013). "Hydrographic representation spans fifty countries – FIG Commission helps drive 'Blue Economy'." In *Geomatics World*, July/August 2013, p. 30-31.
- [2] Sutherland, M. (2013). "Weaker Without Hydrography" In *Hydro International*, May-June 2013, Volume 17, Number 4, http://www.hydro-international.com/issues/articles/id1463-Weaker_Without_Hydrography.html.
- [3] Sutherland, M. (2013). "Commission 4 Report" In *Hydro International*, Volume 17, Number 4, May-June.
- [4] Sutherland, M. (2012). "Report from FIG Working Week 2012, Rome Italy". In *Hydro International*, 2012, Volume 16, Number 4, July/August.
- [5] Sutherland, M. (2011). "International Federation of Surveyors, Commission 4 Newsletter". In *Geomatica*, 2011, 65:(3) 313-314, 10.5623/cig2011-047.
- [6] Sutherland, M. (2011). "Commission 4: Still giving a FIG". In *Hydro International*, 2011, Volume 15, Number 2, March/April.
- [7] Sutherland, M. (2011). "David Neale of Trinidad and Tobago Passed Away on 7 June 2011". In *Hydro International*, 2011, Volume 15, Number 4, July/August.
- [8] Sutherland, M. (2011). "Commission 4: FIGuring Significantly in Hydrography". In *Hydro International*, 2011, Volume 15, Number 6, November/December.

VICE-CHAIR, ADMINISTRATION AND COMMUNICATION

Mr. Gordon Johnston, Vice-Chair (Administration and Communication) has over the last three plus years performed the usual duties of the position related to maintaining communication among Commission 4 members, communicating with the public on Commission 4 business, and handling the administrative tasks of the Commission. Mr. Johnston has been and still is an active member and FIG representative of the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC).

Mr. Johnston also acts as the *de facto* FIG-IHO Liaison, and since 2011 has worked to strengthen ties between the two organizations. Evidence of this Vice-Chair's hard work is the Joint International Federation of Surveyors – International Hydrographic Organization conference on the "Blue Economy", held on 9th April 2013 in Southampton, England. This conference was organized by Mr. Johnston and by all accounts was successful. Mr. Johnston is organizing other sessions to be held at FIG 2014 in Kuala Lumpur, Malaysia in June 2014.



Mr. Gordon Johnston, Vice-Chair (Administration and Communication), Commission 4 addressing attendees at the Joint FIG-IHO One-Day Strategic seminar on the "Blue Economy", Southampton, UK (2013)

Since 2011, Mr. Johnston has represented Commission 4 and FIG at a number of conferences / workshops / meetings:

2011:

- Ocean Business 2011, 5-7 April, Southampton, UK;
- FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) meeting.

2012:

- Ocean Business 2012, Southampton, UK;
- FIG 8th Regional Conference, Montevideo, Uruguay, 26th to 29th November, 2012;
- FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) meeting.

2013:

- **Joint FIG-IHO One-Day Strategic seminar on the "Blue Economy", organized by Commission 4 Vice Chair (Administration and Communication), Mr. Gordon Johnston, April 9th 2013, National Oceanographic Centre (NOC) Southampton, UK;**
- FIG Regional conference, Abuja, Nigeria, May 6-9;
- Joint IHO-FIG-IMO-IOC Strategic Capacity Building meeting, Monaco, November 20-21;
- UN-GGIM Meeting, Cambridge, England, July 24-26th;
- FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) meeting.

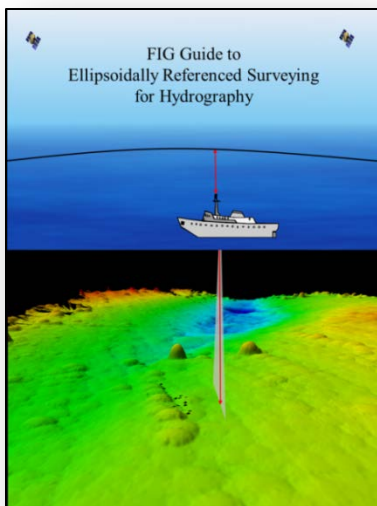
2014:

- First IHO Capacity Building Seminar, Monaco, March 5-6;
- FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) meeting, April 11-17.

WORKING GROUP 4.1 ELLIPSOIDALLY REFERENCED HYDROGRAPHIC SURVEYS (ERS)

The objectives of Commission 4.1 for 2011-14 include:

1. Study and report on the technical aspects of using GNSS to vertically reference hydrographic surveys to the ellipsoid;
2. Catalog the methods used to conduct a vertical datum transformation from the ellipsoid to vertical datums used for hydrographic and offshore surveying;
3. Develop uncertainty models for both of the above.



The current Chair of Working Group 4.1 *Ellipsoidally Referenced Hydrographic Surveys (ERS)*, Mr. Jerry Mills, retired from his fulltime job at National Oceanic and Atmospheric Administration (NOAA) and began a new chapter in his life. In spite of this, Mr. Mills has, along with his working group's technical advisor Dr. David Dodd, University of Mississippi, USA has fulfilled his working group's major objective and has produced an FIG publication titled *FIG Guide to Ellipsoidally Referenced Surveying for Hydrography*, to be released at FIG2014. In 2011, preliminary results were presented at the U.S. Hydrographic Conference, Tampa, Florida and subsequently published in the November 2011 issue of the International Hydrographic Review: Dodd, D. and Mills, J. (2011) Ellipsoidally Referenced Surveys: Issues and Solutions. The FIG publication is the culmination of more than three years of hard work and is credit to Jerry Mills and David Dodd, Working Group 4.1, Commission 4, with support from FIG.

WORKING GROUP 4.2 STANDARDS AND GUIDELINES FOR HYDROGRAPHY

This working group's aim is to:

- Assist in the development and recognition of standards of competency;
- Assist in the development of technical standards and guidelines;
- Cooperation with sister organizations and other appropriate bodies.

The working group continues to seek to:

- Promote the use of standards and guidelines to the surveying community;
- Review Standards coming from ISO TC211 (and other reputable sources) for relevance to Hydrography;
- Assess the impact of international standards on current industry practice;
- Represent Commission 4 on the FIG Standards Network;
- Promote recognition of professional pathways;
- Review IHO and other Manuals of Hydrography in conjunction with WG 4.3.

This working group's activity in 2011 was limited to tasks undertaken by the Chair on a Canadian national level where priorities called for efforts related to Standards and Guidelines to be directed closer to home.

WORKING GROUP 4.3 MULTI-SENSOR SYSTEMS FOR HYDROGRAPHIC APPLICATIONS

The stated foci of this working group are to:

- Assist in the development of technical guidelines for sensor integration (best practises);
- Cooperate with sister organizations and other appropriate bodies (e.g., IHO, IMO);
- Cooperate with other FIG Commissions.

Stated specific objectives are to:

- Liaise with working group 4.2 to upholding the standards of hydrography;
- Report on the development, possibilities and limitations of new technologies;
- Organize a Symposium with the working title "Integrating Sensors in Hydrography";
- Assist in the development of technical guidelines for sensor integration.

In 2011 it was reported by the now deceased Chair as follows:

A questionnaire was distributed in summer 2010. The main goals were to contact with interested persons and establish an efficient working group. Responses to the questionnaire didn't meet expectations but the working group is active and is communicating via email and ftp. An ftp website for the distribution of information was announced to collect the description of problems, international, national and institutional standards and presentations/papers regarding the use of multi-sensor systems. New approaches shall be taken into account.

A new German report was distributed which deals with uncertainties in Hydrography, implemented as part of a new quality management system of the German water- and shipping authorities. Presentations and papers can be expected in the near future. Several discussions clarified that one focus of the working group shall lie on the positioning, attitude determination and calibration of MBES and MLS onboard (patch test).

Next steps:

- *The ftp site has to be filled up with information, published to interested user and later be switched to a website.*
- *The IHO Manual will be investigated regarding possible additions.*

- Beside the FIG Working Week in Rome some aspects of multi-sensor systems for hydrographic applications will probably be presented at the Hydro12 conference in Rotterdam (NL) in November 2012 (hydro12.com).

The work was in continual development in 2012 but, sadly, Dr. Volker Böder died tragically on Friday, 31st August, 2012. The Passing of Professor Dr. Volker Böder was reported in *Hydro International* as follows:



It is with great sadness that we recognise the passing on Friday, 31st August, 2012 of Professor Dr. Volker Böder of HafenCity University Hamburg (HCU), Germany and, until his passing, Vice-Chair of Commission 4, and Chair of Working Group 4.3 Multi-Sensor Systems for Hydrographic Applications. Ironically, Volker's demise was due to a shipping accident that occurred on the River Rhine close to Basel (on the German-Swiss border). Volker was a very active member of Commission 4 who was working on a publication related to the development of technical guidelines for sensor integration (best practises). Although he had a busy life outside of FIG and Commission 4, he was very supportive of the Commission's work and objectives. I found him always pleasant, soft spoken, respectful and dependable. He shall be very much missed as a colleague and friend.

Since the death of Dr. Böder, this working group effectively stalled. Commission 4 and FIG lost a valuable comrade and friend.

WORKING GROUP 4.4 MARITIME AND MARINE SPATIAL INFORMATION MANAGEMENT

This working group's aim is to participate in co-operation with United Nations agencies on topics that are related to commission expertise (e.g. marine cadastre, data framework for e-Navigation etc.) and on guidance by FIG Council. Specifically the working group aims to:

- Cooperate with, and represent the interests of FIG Commission 4 to, IMO in the development of an e-Navigation data framework (e.g., harmonization of data models among stakeholders).
- Cooperate with IHO on the continuing development and expansion of S-100 to support hydrographic- and hydrographic-related spatial information management.
- Cooperate with appropriate stakeholders (e.g., IHO-MSDIWG) on the development of concepts and principles that impact and are impacted upon by hydrography (e.g., MSDI, marine spatial planning and management, marine data models and applications, marine cadastre etc.).
- Present and promote the above concepts, principles and outcomes to the international surveying community.

Dr. Bhessem Ramlal, Chair, Study Group 4.4.1 Marine Spatial Data Infrastructure has, since 2012, been working on development of Spatial Data Infrastructure (SDI) – including the marine component - in the Working Group 4.4 (specifically the Chair) has directly been involved in the following activities:

2014:

- Li, J. and X. Yang (eds), 2014. *Monitoring and Modeling of Global Change: A Geomatics Perspective*, Springer.

2013:

- Conference Chair, 5th International Conference on Geoinformation Technologies for Natural Disaster Management, Mississauga, Ontario, 9-11 October 2013.
- International Scientific Committee, 26th ICC 2013, 25-30 August 2013, Dresden, Germany
- Chair, Scientific Committee, 4th International Conference on Earth Observation of Global Change (EOGC2013), 5-7 June 2013, Toronto, Ontario, Canada

- Co-Chair, 8th International Symposium on Mobile Mapping Technology (MMT2013), Tainan, Taiwan, 1-3 May 2013.
- Scientific Committee, International Workshop on the Role of Geomatics in Hydrogeological Risk, 27-28 February 2013, Padua, Italy

2012:

- Yang, X. and J. Li (eds), 2012. *Advances in Mapping from Remote Sensor Imagery: Techniques and Applications*, Taylor and Francis, CRC Press, ISBN 978-1-43-987458-5, 444pp.
- Conference Chair, International Conference on Computer Vision in Remote Sensing, 16-18 December 2012, Xiamen, China
- Scientific Committee, 8th International Conference on Geo-information for Disaster Management (Gi4DM 2012), 13-14 December 2012, Enschede, The Netherlands
- Chair, Scientific Committee, International Symposium on Geomatics for Integrated Water Resources Management (GIWRM2012), 19-21 October 2012, Lanzhou, Gansu, China
- International Advisory Board, International Workshop on Laser Scanning Technologies and Applications (LSTA2012), 28 March 2012, Kuala Lumpur, Malaysia

2011:

- Yang X, Li J (eds), 2011. *Earth Observations and Remote Sensing for Environmental Management and Hazard Mitigation*, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (IEEE: SCI).

Relevant literature produced by this working group includes:

2012:

- [1] Sun, Z., Wang, C., Li, P., Wang, H., and Li, J., 2012. Hyperspectral image classification with SVM-based domain adaption classifiers, *Proceedings of CVRS2012*, Xiamen, China, 16-18 December, 4pp (IEEE: EI).
- [2] Li, J. and Kwon, T.-J. 2012. Improved capability for marine oil spill detection using new generation of SAR imaging satellites, *ISPRS 2012 Congress*, Melbourne, Australia, 25 August- 1 September, Oral Presentation.
- [3] Chen, H.Y., Xu, S.Q., Sun, Q., Chen, L.Q. and Li, J., 2012. Retrieval atmospheric W2 profile from underway data and AIRS in the southern ocean, *Journal of Remote Sensing*, in press.
- [4] Shu, Y., Li, J. and Xie, S., 2012. SAR image segmentation using a novel Markov random field model with label cost prior, *ASPRS Annual Conference*, Sacramento, California, March 19-23.
- [5] Yang, X. and Li, J. (eds.), 2012. *Advances in Mapping from Remote Sensor Imagery: Techniques and Applications*, Taylor & Francis, CRC Press, ISBN 978-1-43-987458-5, 444pp.
- [6] Kwon, T.-J. and Li, J., 2012. Mapping marine oil spills from space, In Yang, X. and Li, J. (eds.) *Advances in Mapping from Remote Sensor Imagery: Techniques and Applications*, Taylor & Francis.
- [7] Chen, J., Li, J., Zhu, Q. and Mao, Z., 2012. Edge-guided multiscale segmentation of satellite multispectral imagery, *IEEE Transactions on Geoscience and Remote Sensing*, 50(11): 4513 - 4520 (IEEE: SCI/EI).

2013:

- [1] Sutherland, M., T. Tienah, A. Seeram B. Ramlal and S. Nichols (2013). "Chapter 7: Public Participatory GIS, Spatial Data Infrastructure, and Citizen-Inclusive Collaborative Governance". Chapter in *Spatial Enablement in Support of Economic Development and Poverty Reduction: Research, Development and Education Perspectives*, H. Onsrud and A. Rajabifard (Eds.), Global Spatial Data Infrastructure Association Press, / 946 Great Plain Ave. PMB-194, Needham, MA, 02492-3030, USA, ISBN 978-0-9852444-2-2, pages 123-140.
- [2] Kwon, T.-J., Li, J., and Wong, A., 2013. ETVOS: an enhanced total variation optimization segmentation approach for SAR sea-ice image segmentation, *IEEE Transactions on Geoscience and Remote Sensing*, doi:10.1109/TGRS.2012.2205259 (IEEE SCI/EI).
- [3] Chen, J., Mao, Z., Philpot, B., Li, J., and Pan, D., 2013. Detecting changes in high-resolution satellite coastal imagery using an image object detection approach, *International Journal of Remote Sensing*, 34(7): 2454-2469 (Taylor & Francis: SCI).

2014:

- [1] Xu L, Li J, Shu Y, Peng J, 2014. SAR image denoising via clustering-based principal component analysis, IEEE Transactions on Geoscience and Remote Sensing, doi.10.1109/TGRS.2014.2304298 (IEEE: SCI/EI).
- [2] Xu L, Li J, Wong A, Wang, C, 2014. A kernel PCA texture feature for efficient segmentation of RADARSAT-2 SAR sea ice imagery, International Journal of Remote Sensing, accepted (Taylor & Francis: SCI).
- [3] Wei B, Yu J, Wang C, Li J, 2014. PolSAR image classification using a semi-supervised classifier based on hypergraph learning, Remote Sensing Letters, revised (Taylor & Francis: SCI).
- [4] Xu L, Li J, Brenning A, 2014. A comparative study of different classification techniques for marine oil spill identification using RADARSAT-1 images, Remote Sensing of Environment, 141: 14-23 (Elsevier: SCI).

WORKING GROUP 4.5 HYDROGRAPHY IN AFRICA

The stated foci of this working group are to:

- Raise the awareness of hydrography in all African countries.
- Make available its potentials to various countries (Africa).
- Enunciate its potentials as a vital component and catalyst to nation building.
- Promote free exchange of information among all those engaged in Hydrography.

Stated specific objectives are to:

- Organize seminars and workshops on the potentials of hydrography in several countries.
- Promote recognition of hydrography by organizing charity walks.
- Communicate the activities of Commission 4 and other FIG events to African member countries.

2011

Chaired by Ms. Angela Etuonovbe, who is also Chair-Elect, Commission 4, this working group pushed for increased recognition of the important contributions of hydrography to society's objectives in Africa. The main aim was to ensure that the discipline of hydrography receive much needed public funding and support. To this end, in 2011 meetings were held with high level Nigerian government officials and Working Group 4.5 organized a workshop on hydrography and national development. This was held in Lokoja, Nigeria between 24th and 26th October 2011. Details of the workshop are outlined in the section on conferences, workshops and symposia, and in a report published on Commission 4 website. The working group also worked closely with FIG Africa Task Force.



Some Attendees at the Workshop on Hydrography Awareness, Lokoja, Nigeria (2011)

2012

In 2012 Working Group 4.5 continued engaging African stakeholders with the specific aim of increasing recognition in Africa of the important contributions of hydrography to society's objectives. In October 2012, the Chair of this working group – Commission Chair-Elect Mrs. Angela Etuonovbe – visited as an attendee at the FIG Africa Task Force meeting. After the workshop a visit was made to the Lands Ministry where meetings were held with the Director and other top government officials. At another meeting a presentation was made on the economic benefit of hydrography to a nation. This activity has stimulated interest among some African government officials.

2013

In 2013 Working Group 4.5 continued the engagement of African stakeholders to promote support for hydrography.

CONFERENCES, MEETINGS, WORKSHOPS AND SYMPOSIA

Details on several Conferences / workshops / meetings attended since 2011 are to be found in Commission 4 annual reports 2011, 2012 and 2013 and as well on Commission 4's website:

- <http://www.fig.net/commission4/reports/reports.htm>
- <http://www.fig.net/commission4/newsletters/newsletters.htm>

Conferences / workshops / meetings attended or organized by members include (though not a definitive list):

2011:

- **Hydrography Awareness Workshop in Nigeria, organized by Working Group 4.5 (Hydrography in Africa) Chair, and Commission 4 Chair-Elect, Ms. Angela Etuonovbe;**
- Hydro 2011 in Fremantle, Western Australia, 7th – 10th 2011;
- Second International FIG Workshop on 3D-Cadastres, 16-18 November 2011, Delft, the Netherlands;
- 11th International LiDAR Mapping Forum 2011, 07-09 February, New Orleans, Louisiana, USA;
- Ocean Business 2011, 5-7 April, Southampton, UK;
- U.S. Hydrographic Conference 2011, 25-28 April, Tampa, Florida U.S.A.;
- 6th International Shallow Survey Conference 2012, Wellington, New Zealand;
- Seminar on Coastal Zone Management, Martinique, November, 24-25;
- Joint IHO-IMO-IOC-WMO-IALA-IAEA Capacity Building Coordination Meeting, Monaco, October 27-28;
- 11th South East Asian Survey Congress, Kuala Lumpur, Malaysia, June 22-24;
- FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) meeting.

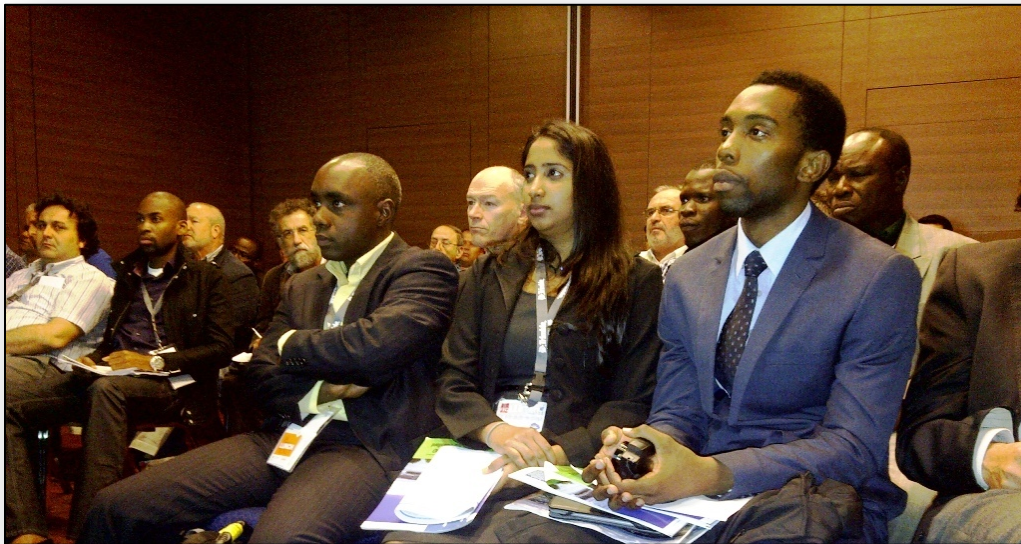
2012:

- IEEE Transactions on Geoscience and Remote Sensing;
- CVRS2012, Xiamen, China, 16-18 December;
- ISPRS 2012 Congress, Melbourne, Australia, 25 August;
- Ocean Business 2012, Southampton, UK;
- ASPRS Annual Conference, Sacramento, California, March 19-23;
- Canadian Hydrographic Conference (15th - 17th May, 2012) in Niagara Falls, Canada;
- Hydro12 "Taking Care of the Sea" conference, Rotterdam, Netherlands, November 13th – 15th 2012;
- FIG 8th Regional Conference, Montevideo, Uruguay, 26th to 29th November, 2012;
- UNRCC-PCGIAP International Symposium on Spatially Enabled Government and Society, Kuala Lumpur, Malaysia, February 15-16.

- European Union Permanent Committee on Cadastre (PCC), Cyprus, November 29-30;
- FIG Working Week 2012, Rome, Italy May 6-10;
- FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) meeting.

2013:

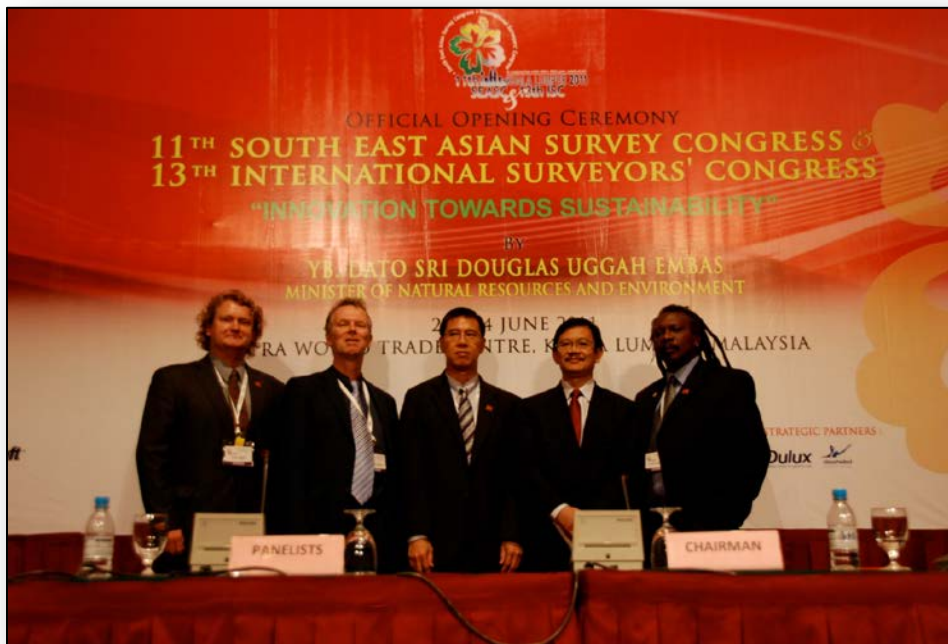
- **Joint FIG-IHO One-Day Strategic seminar on the "Blue Economy", organized by Commission 4 Vice Chair (Administration and Communication), Mr. Gordon Johnston, April 9th 2013, National Oceanographic Centre (NOC) Southampton, UK;**
- FIG Working Week, Abuja, Nigeria, May 6-9;
- Joint IHO-FIG-IMO-IOC Strategic Capacity Building meeting, Monaco, November 20-21;
- GSDI 2013, Addis Ababa, Ethiopia, November 4-8;
- FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) meeting.
- UN-GGIM Meeting, Cambridge, England, July 24-26th;



Attendees at a Commission 4 session, FIG Working Week, Rome, Italy (2012)



Commission 4 Chair, Dr. Sutherland, among participants at the European Union Permanent Committee on Cadastre Meeting, Cyprus (2012)



The Chair of Commission 4 (1st right) among the FIG Delegation with Surveyor Fauzi bin Nordin (2nd right) Chairman, Organizing Committee, 11th South East Asian Survey Congress (2012)



Commission 4 Officers, Young Surveyor (1st Left, Back) and Presenters at FIG 2011 Working Week in Marrakesh, Morocco



Chair-Elect and Chair, Ms. Angela Etuonovbe (5th from left) and Dr. Sutherland (3rd from right), respectively, among some Attendees at the Workshop on Hydrography Awareness, Lokoja, Nigeria, organized by Working Group 4.1 Hydrography in Africa (2011)

BOARDS, COMMITTEES AND LIAISONS

FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC)

Commission 4 continues to represent FIG on the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) jointly with IHO and ICA. Commission 4 has three representatives on the Board, these being: Gordon Johnston (UK), Adam Greenland (New Zealand) and Dr. Keith Miller. Dr. Razali Mahmud (Malaysia) has recently resigned.



In June 2011, Dr. David Neale, former Commission 4 Vice-Chair Administration and Communication, and former Commission 4 representative on IBSC, lost his battle with cancer. The hydrographic community lost a stalwart. Subsequently Dr. Neale was replaced by Dr. Keith Miller as the 4th FIG member on the Board. Keith is from the Department of Geomatics Engineering and Land Management, University of the West Indies, St. Augustine, Trinidad and Tobago.

At the IBSC meeting in 2011, held in New Orleans the Board reviewed 8 submissions, granting immediate recognition to 4 and requesting further input on the others. AAA full list of the current Recognised Courses is available on the IHO website at:

http://www.iho.int/srv1/index.php?option=com_content&view=article&id=440:ibsc&catid=64:4ircc&Itemid=398

The aim for the 2012 meeting will be to update the Standards themselves for their technical content in relation to a syllabus.

At the IBSC meeting, held in May 2012, Buenos Aires, Argentina, kindly hosted by the Argentine Naval Academy and Hydrographic Office at the Sea Sciences School, the IBSC reviewed 14 submissions, granting immediate recognition to 9 and several conditional recognitions (subject to clarifications and further material). Included in the successful submissions for the very first time was the Australasian Hydrographic Certification Panel that sought recognition for its continuing competency and assessment certification scheme.

The 37th meeting of the International Board for the Standards of Competence of Hydrographic Surveyors and Nautical Cartographers (IBSC) met in Tokyo Japan, 11th to 17th April 2014 kindly hosted by the Hydrographic Office of the Japanese Coast guard. A total of 15 submissions were reviewed and considered with many being represented and presentations of support made. New submissions from Iran, Indonesia, France and Canada all contributed to a very busy meeting schedule. In addition the IBSC also dealt with various administrative issues and continued the work to revise and update the Standards. The S-5 Category B being concluded in a draft form for final review by stakeholders. The planned revisions to the S-5 Category A and the S-8 Standards were updated and scheduled work group meetings drafted to further this effort.

A serious concern is the number of members able to continue on the IBSC. At the meeting one IHO and one FIG member had resigned to leave the Board two members short and there was some concern at the possible departure of two more

members. Commission 4 is circulating to the FIG national delegates a request for interest and candidates for membership of IBSC which will be an agenda item at the Commission's meeting at FIG 2014 in Kuala Lumpur, Malaysia.

IHO Liaison

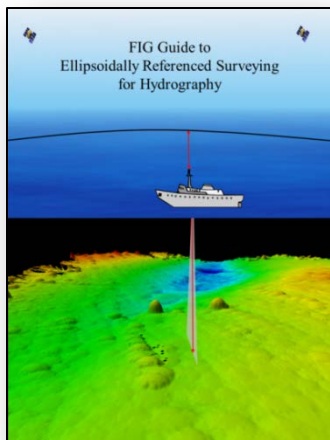
IN 2011 a dialogue started between FIG Commission 4 and the IHB of the IHO with an aim to creating a possible dual hosted event. This has been fruitful in that a joint FIG-IHO one day conference was planned and organized by Commission 4 Vice-Chair Administration and Communication, Mr. Gordon Johnston. The event was held on the 9th April 2013 in Southampton, UK alongside the large commercial exhibition Ocean Business.



Mr. Gordon Johnston, Vice-Chair (Administration and Communication) (L) and Dr. Michael Sutherland, Chair, Commission 4 at the Joint FIG-IHO One-Day Strategic seminar on the "Blue Economy", organized by Mr. Gordon Johnston (2013)

PUBLICATIONS

FIG Publications



Commission 4 produced an FIG publication titled *FIG Guide to Ellipsoidally Referenced Surveying for Hydrography*, which is to be released at FIG Congress 2014, Kuala Lumpur, Malaysia. The publication is the work of Working Group 4.1 *Ellipsoidally Referenced Hydrographic Surveys (ERS)*, Chaired by Mr. Jerry Mills, formerly associated with NOAA. Significant contributions were made by Dr. David Dodd, University of Mississippi, USA.

Newsletters

Commission 4 continues to publish newsletters in *Hydro International* on a regular basis. Newsletters are also published in *Geomatica* (the official publication of the Canadian Institute of Geomatics) and *Lighthouse* (the official publication of the Canadian Hydrographic Association) upon request. A newsletter was also published on Commission 4 website at <http://www.fig.net/commission4/newsletters/newsletters.htm>, which holds links to all other newsletters.

Other Publications

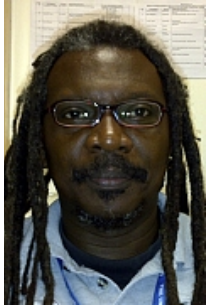
Since 2011 Commission 4 members have made contributions to hydrography and hydrography-related issues via publications in journals and other related media. The importance of these publications, when not directly about hydrography, is that they demonstrate the importance of hydrography as applied to the social, economic, political and environmental objectives of society at large. Some of these publications include:

- Chen, H.Y., Xu, S.Q., Sun, Q., Chen, L.Q. and Li, J., 2012. Retrieval atmospheric W2 profile from underway data and AIRS in the southern ocean, *Journal of Remote Sensing*, in press.
- Chen, J., Li, J., Zhu, Q. and Mao, Z., 2012. Edge-guided multiscale segmentation of satellite multispectral imagery, *IEEE Transactions on Geoscience and Remote Sensing*, 50(11): 4513 - 4520 (IEEE: SCI/EI).
- Chen, J., Mao, Z., Philpot, B., Li, J., and Pan, D., 2013. Detecting changes in high-resolution satellite coastal imagery using an image object detection approach, *International Journal of Remote Sensing*, 34(7): 2454-2469 (Taylor & Francis: SCI).
- Davis, D., M. Sutherland, S. Jaggan and D. Singh (2012). "Determining and Monitoring Sea Level in the Caribbean using Satellite Altimetry". Published in the proceedings of the International Federation of Surveyors Working Week 2012, Rome, Italy, May 6-11, 13 pages.
- Davis, D., M. Sutherland, S. Jaggan and D. Singh (2013). "Using Satellite Altimetry to Monitor and Determine Sea Level in the Caribbean". In *Coordinates Ezine*, April 2013 Issue, <http://mycoordinates.org/using-satellite-altimetry-to-monitor-and-determine-sea-level/>.
- Forbes, D. L., T.S. James, M. Sutherland and S. Nichols (2013). "Physical Basis of Coastal Adaptation on Tropical Small Islands". In *Sustainability Science*, 8(3): 327-344, DOI: 10.1007/s11625-013-0218-4.
- Kwon, T.-J. and Li, J., 2012. Mapping marine oil spills from space, In Yang, X. and Li, J. (eds.) *Advances in Mapping from Remote Sensor Imagery: Techniques and Applications*, Taylor & Francis.
- Kwon, T.-J., Li, J., and Wong, A., 2013. ETVOS: an enhanced total variation optimization segmentation approach for SAR sea-ice image segmentation, *IEEE Transactions on Geoscience and Remote Sensing*, doi:10.1109/TGRS.2012.2205259 (IEEE SCI/EI).
- Li, J. and Kwon, T.-J. 2012. Improved capability for marine oil spill detection using new generation of SAR imaging satellites, *ISPRS 2012 Congress*, Melbourne, Australia, 25 August- 1 September, Oral Presentation.
- Nanlal, C., D. Davis and M. Sutherland (2012). "An Evaluation of Tides in the Caribbean". Published in the proceedings of the International Federation of Surveyors Working Week 2012, Rome, Italy, May 6-11, 15 pages.
- Seeram, A. and M. Sutherland (2014). "Mapping Roxborough's Local Knowledge, using P3DM, to Support the Development of Climate Change Strategies and Policies". Accepted for presentation at the Annual Sir Arthur Lewis Institute of Social and Economic Studies Conference, Port of Spain, Trinidad and Tobago, April 23-25, 16 pages.
- Shu, Y., Li, J. and Xie, S., 2012. SAR image segmentation using a novel Markov random field model with label cost prior, *ASPRS Annual Conference*, Sacramento, California, March 19-23.
- Sookram, S. and M. Sutherland (2012). "Grande Riviere, Trinidad and Tobago: The Vulnerability of a Coastal Community to Sea-Level Rise". Presented at the *UCCI/UWI/ICCI Caribbean Conference: 50-50 – Surveying the Past, Mapping the Future*, Grand Cayman, Cayman Islands, March 21-23, 25 pages.
- Sun, Z., Wang, C., Li, P., Wang, H., and Li, J., 2012. Hyperspectral image classification with SVM-based domain adaption classifiers, *Proceedings of CVRS2012*, Xiamen, China, 16-18 December, 4pp (IEEE: EI).

- Sutherland, M. (2011). "Sea Level Rise Modelling in a Caribbean Small Island Developing State". In Hydro International, 2011, Volume 15, Number 6.
- Sutherland, M. (2011). "Improving the administration of marine and coastal spaces". In Coordinates Ezine, November 2011 Issue, <http://mycoordinates.org/improving-the-administration-of-marine-and-coastal-spaces/>.
- Sutherland, M. (2011). "Marine Cadastre." In Geospatial World, November 2011, pp. 38-42.
- Sutherland, M. (2012). "Report from FIG Working Week 2012, Rome Italy". In Hydro International, 2012, Volume 16, Number 4, July/August.
- Sutherland, M. and D. Singh (2013). "Modeling Sea Level Rise in Caribbean SIDS: The Need for Tide Gauge Data". Published in the proceedings of the International Federation of Surveyors Working Week 2013, Abuja, Nigeria, May 6-10, 10 pages.
- Sutherland, M., T. Tienaah, A. Seeram B. Ramlal and S. Nichols (2013). "Chapter 7: Public Participatory GIS, Spatial Data Infrastructure, and Citizen-Inclusive Collaborative Governance". Chapter in Spatial Enablement in Support of Economic Development and Poverty Reduction: Research, Development and Education Perspectives, H. Onsrud and A. Rajabifard (Eds.), Global Spatial Data Infrastructure Association Press, / 946 Great Plain Ave. PMB-194, Needham, MA, 02492-3030, USA, ISBN 978-0-9852444-2-2, pages 123-140.
- Sutherland, M., K. Miller, D. Davis, A. Seeram and D. Singh (2014). "Modeling Projections of Potential Sea Level Rise Impacts on Some Caribbean Communities: Is it Worth the Effort?". Accepted for presentation at the International Federation of Surveyors Congress, Kuala Lumpur, Malaysia, June 16-21, 14 pages.
- Wei B, Yu J, Wang C, Li J, 2014. PolSAR image classification using a semi-supervised classifier based on hypergraph learning, Remote Sensing Letters, revised (Taylor & Francis: SCI).
- Xu L, Li J, Brenning A, 2014. A comparative study of different classification techniques for marine oil spill identification using RADARSAT-1 images, Remote Sensing of Environment, 141: 14-23 (Elsevier: SCI).
- Xu L, Li J, Shu Y, Peng J, 2014. SAR image denoising via clustering-based principal component analysis, IEEE Transactions on Geoscience and Remote Sensing, doi.10.1109/TGRS.2014.2304298 (IEEE: SCI/EI).
- Xu L, Li J, Wong A, Wang, C, 2014. A kernel PCA texture feature for efficient segmentation of RADARSAT-2 SAR sea ice imagery, International Journal of Remote Sensing, accepted (Taylor & Francis: SCI).
- Yang, X. and Li, J. (eds.), 2012. Advances in Mapping from Remote Sensor Imagery: Techniques and Applications, Taylor & Francis, CRC Press, ISBN 978-1-43-987458-5, 444pp.

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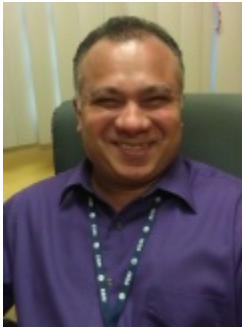
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