

## **FIG Commission 6 – Engineering Surveys**

### **Annual Report of Activities 2013**

#### **Activities in 2013**

##### **FIG Working Week Abuja**

Commission 6 participated in the FIG Working Week in Abuja, May 2013 in 2 technical sessions, presenting 7 papers.

##### **Nottingham, UK**

The 2<sup>nd</sup> Joint International Symposium on Deformation Monitoring was held at the University of Nottingham 9-11 September 2013. Some 84 papers were presented in all, from all around the World.

Further information on Commission 6's activities and contacts can be found on the Commission 6 web page, and most of the conference proceedings can also be found on the FIG's web page. [www.fig.net/commission6](http://www.fig.net/commission6)

##### **Professor Gethin Wyn Roberts FCInstCES**

##### **Chair of Commission 6**

April 2014

## **FIG Working Week 2012, Rome, Italy**

Prof Gethin Wyn Roberts, FIG UK Commission 6 Delegate and Chairman of Commission 6 “Engineering Surveys”, The University of Nottingham Ningbo China

Dr Lawrence Lau, Commission 6 Vice Chair for Administration, The University of Nottingham Ningbo China

Dr Craig Hancock, Commission 6 Vice Chair for Administration, The University of Nottingham UK.

The 35<sup>th</sup> FIG Working Week took place in Rome from the 5 – 10 May 2012. The event was hosted by Consiglio Nazionale Geometri e Geometri Laureati, CNGeGL, and over 1,300 delegates attended, including an incredible 150 young surveyors from 40 different countries.

### **FIG Young Surveyors**

The Young Surveyors (YS) Network held their own pre-conference on the 3 – 4 May. 32 papers were presented by the YS, covering the following areas:

- Challenges for Young Professionals
- Young Surveying Professionals
- GIS and Land Management
- Surveying and Measurement
- Real Estate and Property
- Forum Discussion on Young Surveyors Role and Challenges in the Current Society
- Plenary Session - Young Surveyors as Agents of Change
- Plenary Session - GLTN and Youth Dimensions (co-organised by UN HABITAT)

### **FIG/IAG Workshop**

Running in parallel to this, commissions 5 and 6 held a workshop jointly with the International Association of Geodesy (IAG) focussing on “Reference Frames in Practice”. Some 40 delegates attended this event and the following topics were presented:

- The Role of Geodesy
- GGOS and Future Trends
- Global Terrestrial Reference Systems and Frames
- Regional and National reference systems
- IGS services and other initiatives
- Four dimensional deformation models for Terrestrial Reference Frames
- Gravity and WHS
- Worked examples of Terrestrial Reference Frame realisations

- Multi GNSS Environment
- Standards and Traceability of a Terrestrial Reference Frames / GNSS

### **ACCO Meeting**

On the 4<sup>th</sup> May, there was a daylong meeting of the Advisory Committee of Commission Officers (ACCO) where discussion and decisions were made with regards technical sessions at future FIG events, procedures involved, as well as commission specific events.

### **General Assembly**

The working week itself started off with the General Assembly during the whole of Sunday; where various member organisations, including the ICES, vote on various FIG issues. These included membership applications from new organisations. The University of Nottingham Ningbo China (UNNC) successfully applied for academic membership, The University of Nottingham UK is already a member. This illustrates the increasing surveying activities on the two campuses, including the introduction of the MSc course in Engineering Surveying and Geodesy at UNNC. The full proceedings, agenda and minutes of the General Assembly can be found at the FIG's web page.

### **Technical Sessions**

During Monday to Wednesday the technical sessions at the FIG were held. Commission 6 organised and co-organised the following sessions that included some 84 papers:

TS01F - Dam and Reservoir Engineering Surveying  
 TS01L - Mining and Underground Engineering Surveying I  
 TS02F - Engineering Surveying – Photogrammetry  
 TS03F - Deformation Monitoring I  
 TS04F - Deformation Monitoring II  
 TS05J - Mining and Underground Engineering Surveying II  
 TS06G - Engineering Surveying, Machine Control and Guidance  
 TS07A - Laser Scanners I  
 TS07M - Remote Sensing Applications and Case Studies  
 TS08C - Laser Scanners II  
 TS09D - Laser Scanners III  
 TS09I - Engineering Surveying  
 TS05H - Remote Sensing I  
 TS06I - Remote Sensing II  
 TS08B - The Impact of Earthquakes and Geodynamics on Geodetic Reference Frames

These sessions were very well attended, with standing room only at a couple of the sessions, illustrating the interest in this subject area. One area in particular that has shown a lot of interest this year is that of the subject of laser scanners. Commission 6 has a joint Study Group 6.2.2 Laser Scanners (Joint with Commission 5). This is chaired by Dr Ivo Milev, Bulgaria, who was also voted in as the new Commission 6 chair from 2014. The interest in laser scanners illustrates the impact this device is having on surveying, and how it has become part of the surveyor's armoury over the past 10 to 15 years. Another new device that has emerged over the past handful of years is Ground Based Synthetic Aperture Radar (GBSAR). This is a tripod mounted SAR system.

I can remember when I first saw a laser scanner, on display at the World of Surveying when it was held at Castle Donnington some 10 or so years ago. There was a lot of interest and scepticism of this strange device, that looked a little like a Geodimeter EDM, and only a relatively short time later some such devices are as small and light as a total station, able to record data at a phenomenally high data rate, with a resolution close to that of total stations. The applications of these devices are ever increasing.

Various plenary sessions were held during the working week, including the following:

- Knowledge to Manage
- Knowledge to Protect
- Knowledge to Evaluate

All the papers and presentations will be available on the FIG's web page [www.fig.net](http://www.fig.net).

### **Commission 6's Work**

Commission 6 has been very busy over the past year or so. Various sessions were organised at both the Rome working week, as illustrated earlier, as well as the working week in Morocco in May 2011. Various jointly organised events were held, notably GeoSiberia in Novosibirsk in April 2011 and 2012, a surveying conference focussing on "Innovative Technologies for an Efficient Geospatial Management of Earth" in Ulaanbaatar Outer Mongolia in September 2011, and the same conference is planned in Kazakhstan for September 2012. A conference focussing on surveying high rise buildings is planned for the 22 - 23 November 2012, and the 8<sup>th</sup> FIG regional meeting is to be held in Uruguay 26 – 29 November 2012.

These conferences are held in regions and parts of the World where there are increasing opportunities. An internationally focussed surveyor can take advantages of these opportunities, and such events can allow the right connections to be made.

### **UNNC Paper**

This year I gave a presentation about the University of Nottingham's Campus in China, where I am the Dean of the Faculty of Science and Engineering, and our activities; in particular the start of the MSc course in Engineering Surveying and Geodesy here from September 2012.

The overview of the campus is that we have approximately 5,200 students, and expanding to 8,000 over the next few years. There are a variety of subject areas, including business, international studies, international communications, education, as well as science and engineering. Science and Engineering is relatively new on the campus. All the courses are delivered in English, and follow the same learning outcomes as the courses in the UK and Malaysia campuses. All the quality assurance is carried out in the UK, with the same external examiner. All the students receive a University of Nottingham degree certificate once they graduate.

We plan to expand our non Chinese student numbers to 20% and our postgraduate numbers to 15-20% of the planned 8,000 overall student number. The advantage is that students can obtain a UK based education, but also live in China; hence learning more about the culture as well as the language through our complimentary Mandarin classes.

Due to the expansion, the faculty is currently recruiting a further 39 academic staff from all over the world to join the current 38. This gives academics the opportunity to work in a new facility, supported by the University of Nottingham's pedigree. The University, with support from the local and national Chinese governments, are investing in the infrastructure required for the expansion, as well as equipment and facilities. It is truly an incredible place to live and work, and the pace of expansion is incredible.

The enigma that China appears to be to most people is in reality an easy place to work and live in. The most difficult thing was that first step in taking the plunge and coming out here.

Moreover, two technical papers were presented in TS05B - GNSS CORS Infrastructure and Applications I and TS08C – Laser Scanners II by the Commission Vice Chairs. Lawrence gave insights on the effect of GNSS modernisation on surveying, especially on multipath effect. Craig ..

### **FIG Activities**

The University of Nottingham Ningbo China became an academic member of the FIG at the working week.

Future FIG events include the following:

26 – 28 September 2012, Commission 2 “Professional Education” conference on “Global trends and convergence in Surveying Education”, Moscow.

22-23 November 2012, Commission 6 workshop on “Monitoring High Rise and Tall Engineering Structures”, Hong Kong.

26-29 November 2012, FIG Regional Conference in Uruguay.

During the FIG working week at Rome, various elections for FIG officers were made. The following were voted in to start as commission chairs in January 2014:

Dr Pengfei Cheng (China PR) and Mr Bruno Razza (Italy) were elected as the next Vice Presidents of FIG for term 2013-16.

The Commission Chairs Elect for 2013-14 are –

Commission 1: Mr. Brian Coutts (New Zealand)

Commission 2: Ms. Liza Groenendijk (Netherlands)

Commission 3: Mr. Enrico Rispoli (Italy)

Commission 4: Ms. Angela Kesiena (Nigeria)

Commission 5: Prof. Volker Schwieger (Germany)

Commission 6: Dr Ivo Milev (Bulgaria)

Commission 7: Ms Gerda Schennach (Austria)

Commission 8: Mr Kwame Tenadu (Ghana)

Commission 9: Prof Liao Jinping (China PR)

These people will become chairs from January 2014. In addition to this, the venues for the 2015 and 2016 working weeks were decided upon as:

FIG Working Week 2015 will be in Sofia, Bulgaria

FIG Working Week 2016 will be in Christchurch, New Zealand

### **Final Words**

The FIG working week was an excellent event, and allowed networking as well as learning about new concepts and applications. The World is becoming increasingly smaller and the opportunities for UK surveyors overseas is increasing.



Gethin with President CheeHai Teo



Gethin and President Jason Smith, President ICES



Gethin with Vice President Rudolf Staiger and Kate Fairlie (chair of the FIG Young Surveyors' Network)



Gethin Receiving the Certificate of Academic Membership for the University of Nottingham Ningbo China.



A who's who of FIG and IAG.





It was very hot in Rome.



Lots of Deformation Monitoring in such a Historic City.



More monitoring



Gethin, Alan Wright, Ahmed Chiki and daughter Neila Chiki from Algeria