

FIG in Africa

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WHEN I heard that the International Federation of Surveyors was holding its 2013 working week in Nigeria, I was excited and promptly submitted my abstract. Though living and working in the UK, my roots are in Nigeria and I was eager to hear from and interact with the surveyors, GIS professionals and geodesists in that nation.

Held in Abuja in May 2013, the FIG working week was the first in a sub-Saharan African country, and it was the most attended FIG working week to date with over 2,000 Nigerian delegates and 250 foreign delegates in attendance from 40 different countries. The Nigerian Institute of Surveyors (NIS) worked in conjunction with FIG to deliver a successful working week.

The theme of the week was environment for sustainability. The opening ceremony was attended by the Minister of Works, Mike Onolememe, who represented Nigerian president Goodluck Jonathan. There were also key presentations from UN Habitat and World Bank representatives. In addition to the plenary sessions, the technical programme included up to eight parallel sessions covering the various subject areas of the different FIG commissions. There was also a wide range of international and local exhibitors of surveying equipment, software, GIS solutions and more (Trimble, Esri, Intergraph, Leica Geosystems, Thomson Reuters, Sivan Design, FOIF, CHC and many more).

Engineering surveys

The work of commission 6, engineering surveys, is of particular relevance to ICES. The paper on measurement and documentation for structural integrity assessment of an in-service school building at risk, by Ehirobo et al, highlighted the structural, geotechnical and geomatic techniques used for studying and determining the cause of the severe cracks evidenced in a school building. Ivo Miev looked at using low cost GNSS in the field of infrastructure maintenance with particular applications for road and rail

maintenance. He addressed the issue that in a large part of the world, high cost restricts the availability of high precision dual frequency receivers while lack of bi-directional infrastructure limits the availability of online systems such as real-time GNSS reference networks. His solution uses the mass market android platform to provide high accuracy post processing solutions for surveying professionals.

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Henriques et al applied a regression model to data from many geodetic campaigns in order to predict the deformation of large structures. The method was applied to a concrete dam, an embankment dam and a pavilion roof in Portugal. The predicted displacements were used to evaluate the quality of measurements where there was limited redundancy. Analysis of structural displacements is important to structural safety control. Ehigiator-Irigue et al utilised a Kalman filter technique to analyse the deformation of an oil storage tank 22m high and 72m in diameter at the Facardos terminal. Reflectorless total station data collected from four measurement campaigns conducted between 2000 and 2008 was used to model the displacements and velocities of 16 monitoring points on the oil tank. Their results showed that with passing time, the tank was both expanding in diameter and settling vertically.

The highlights of FIG's working week in Nigeria

Geodesy and geospatial infrastructure

In the national geodesy and geospatial infrastructure sessions Aune Rummukainen presented on land uplift and its effects in Finland, looking at the Bothnian Bay as an example. Nwilo et al presented the preliminary results in the development of the Nigerian geocentric datum (NGD2012). Edozie and Adebomelin presented on the development and sustainability of NIGNET (the Nigerian GNSS network) and its relation to the African Geodetic Reference Frame, AFREF. Uzodinma and Ehigiator-Irughe had a paper on the topic of removing inconsistencies arising from the multiplicity of transformation parameters in Nigeria. Ono et al highlighted and evaluated the geodetic network control being established in the state of Anambra in Nigeria, while Ayoola et al investigated the role of continuously operating reference station (CORS) GNSS data for climate monitoring using the NIGNET network. These presentations were well received, particularly among the Nigerian surveyors in attendance.

During the conference the topic of GNSS CORS network, in particular the recently established NIGNET CORS network in Nigeria was a source of lively debate and discussions. NIGNET is a network of 11 GNSS CORS distributed around the country which form the zero order geodetic network. NIGNET, together with 60 passive

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stations of the primary geodetic network, form the realisation of the Nigerian Geocentric Datum. An interesting paper by Alvan et al covered surface anomalies prior to earthquakes. This investigated whether satellite remote sensing could be used to detect earthquake predictors days or even weeks before the event. This is based on the premise that seismic activities prior to coastal earthquakes cause the deformations of surface and rise in temperature leading to anomalies in the sea surface temperature or sea surface chlorophyll-a concentration. The ability to detect these via remote sensing may provide warning signs of the seismic activities in the ocean floor or nearby coastal area. Two major coastal earthquakes in central California in 2003 and 2004 with magnitudes >6 were used in the study.

In addition to the technical sessions a gala dinner was held. This was an excellent evening with local Nigerian cuisine, musicians, comedy and dance creating a great atmosphere for interaction between the delegates. For me, the FIG working week was a resounding success. Of particular note were the young surveyor volunteers who helped with the smooth running of the presentations and many other behind the scenes duties, as well as the NIS and FIG staff.



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