



Technical Seminar on References Frame in Practice Kobe, 29-30 July 2017

Venue: The Kobe Chamber of Commerce and Industry, Kobe, Japan
Conference Room – 2 and 3

DRAFT PROGRAM

Saturday 29th July 2017

09:00 – 09:30 Welcome and Opening Remarks –

Dr. Hiroshi Murakami and Prof. Geoffrey Blewitt

09:30 – 10:30 Session 1: Introduction and Definitions

Prof. Geoffrey Blewitt: Geodetic reference frame theory

This keynote presentation will provide fundamental theory with respect to global velocity field determination. It will also highlight the importance of sourcing and sharing GNSS geodetic data; with an emphasis on the potential benefits to participating countries from a scientific, economic and social perspective.

10:30 – 11:00 Morning Tea

11:00 – 12:30 Session 2: 3-D Reference Frame

Dr. John Dawson: Global to Regional to National: A practical approach to improving access to the ITRF

This presentation will focus on approaches for accessing the International Terrestrial Reference Frame (ITRF). Key elements of the Asia Pacific Reference Frame (APREF) initiative, which is providing improved access to the ITRF in Asia and the Pacific, will be discussed. An illustrative example of how Australia has used APREF to update and modernize its national datum will be detailed.

Prof. Hasanuddin Z. Abidin: Semi-Dynamic Datum of Indonesia

This presentation will be on the realization and implementation of the new Indonesian semi dynamic datum, which also includes the vertical datum (geoid). It will present the status, problems and constraints in establishing this new datum in a relatively vast maritime archipelago of Indonesia, with relatively dynamic geodynamic and tectonic setting.

12:30 – 13:30 Lunch

13:30 – 14:10 Country Report

14:10 – 15:30 Session 3: Vertical Reference Frame

Dr. Matt Amos: Development of modern vertical reference frames

Geoid based vertical datums are an efficient and accurate way to provide a consistent height reference system that can be related to other height, geometric and tidal datums in current or historic use in a region. They are particularly suited to the unification of height systems between areas that cannot be physically connected. This presentation will use the development of New Zealand's vertical datum as a case study to show how geoid based datums can be practically developed and implemented in an incremental and cost-effective way that meets the needs of the end users.

Mr. Kevin Kelly: Vertical Reference Frame and GIS

This presentation will focus on vertical datums and transformations between them in a GIS environment. We will demonstrate VRF referenced data management in GIS and vertical transformation of surveying and mapping datasets. A summary of two IAG services: International DEM Service (IDEMS) as a source of vertical surface data and the International Service for the Geoid (ISG) repository for worldwide local and regional geoid models will be presented.

15:30 – 16:00 Afternoon Tea

16:00 – 17:00 Session 4: IGS, ICG and FIG AP CDN

Ms. Ruth Neilan: International GNSS Service (IGS) at IAG

The presenter will provide an overview of the latest developments of the International GNSS Service (IGS), from Multi-GNSS to Real-Time and access to reference frame through GNSS. The presentation will also highlight the status and role of IGS from an observational basis; the GNSS Performance Monitoring IGMA-IGS joint trial project (with UNOOSA-ICG); timing via GNSS; and other services linked to vertical reference frame determination.

Ms. Sharafat Gadimova: International Committee on GNSS (ICG) at UN

The International Committee on Global Navigation Satellite Systems (ICG), established in 2005, acts as a platform for open discussion and the exchange of information under the umbrella of the United Nations, and as such promotes the use of GNSS technology for

environmental management and protection, disaster risk reduction, agriculture and food security, emergency response, more efficient surveying and mapping, and safer and more effective transportation by land, sea and air. ICG meets annually to discuss developments in GNSS and to review the status of implementation of its work plan and hence to build a GNSS system of systems to be used by civilian users. The 12th meeting of the ICG, to be held on 2 - 7 December 2017 in Kyoto, Japan, will continue reviewing and discussing developments in GNSS and to allow ICG members, associate members and observers to address recent developments in their organizations and associations with regard to GNSS services and applications.

Mr. Robert Sarib: Capacity development of FIG AP CDN

In this presentation, the capacity building challenges being faced by a geospatial organisational in Asia and the Pacific will be described. This discussion will also focus on the social, technical, economic and environmental trends that affect not only Datum Modernisation but also capacity development of surveyors.

17:00 – 17:30 Presentation from sponsors

18:00 – 20:00 Seminar Dinner @Ariston Hotel Kobe (By invitation only)

Sunday 30th July 2017

09:00 – 11:00 Session 5: Modelling of crustal deformation

Prof. Manabu Hashimoto: Crustal deformation modelling theory and examples

This presentation will focus on the theory of measurements of displacements of the Earth's surface with space geodetic techniques such as GNSS and SAR. Then, interpretation of measured displacements with mechanical models such as dislocation theory will follow. Examples of recent earthquakes and volcanic eruptions will be presented.

Mr. Basara Miyahara: Case study of Japan

This presentation will provide case study of monitoring and modelling of crustal deformation in Japan. The crustal deformation is continuously monitored utilizing GNSS CORS network (GEONET) and SAR interferometry. Deformation models have been developed for both consecutive crustal deformation and coseismic displacements.

Dr. Chris Crook: Case study of New Zealand

The 2016 Kaikoura Earthquake caused meters of deformation in the South Island of New Zealand. This talk will explain how this deformation is incorporated into the New Zealand Geodetic Datum 2000 - the observations use, how it is modelled based, and how the model is integrated into the datum as a patch"

11:00 – 11:30 Morning Tea

11:30 – 13:00 Session 6: Software dealing geodetic adjustment of crustal deformation

Mr. Satoshi Kawamoto: GNSS analysis software “GSILIB” for utilizing Multi-GNSS data

The “GSILIB” software is a free GNSS analysis software developed by GSI. The software is a fork of the open-source “RTKLIB” software adding capability to deal with multi-GNSS data. Multi-GNSS data would provide more accurate and reliable positioning, however, new biases arise. This talk reviews the “GSILIB” software, and how the systematic biases between GNSS are reduced by the software.

Dr. John LaBrecque: The Promise and Challenges of High Rate GNSS for Environmental Monitoring and Disaster Response

The Global Geodetic Observing System (GGOS) recognizes the potential of high rate real time GNSS for environmental monitoring, and has initiated a program to advance GNSS real time high rate measurements to augment seismic and other sensor systems for earthquake and tsunami early warning. This presentation will overview how high rate multi-GNSS networks can support improved coastal warning of tsunamis induced by earthquakes, volcanic eruptions, severe weather and other catastrophic events.

13:00 Summary – FIG Commission 5, IAG

The Organizers IAG, FIG, UN GGIM AP, UN ICG, GSI and JFS would like to thank and acknowledge the following sponsors for their generous support of this event.

