

IGS Welcome, Goals, Strategies, Workshop Objectives

Urs Hugentobler

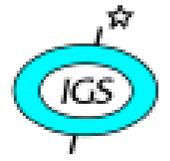
Chair, IGS Governing Board

IGS Workshop 2012, Olsztyn, Poland



Workshop Objectives

- What are our achievements and highlights?
- Where are we?
- What are the challenges?
- Where are we going?
- What is our strategy?

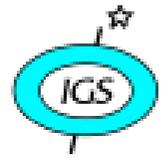


*“The International GNSS Service provides the highest-quality GNSS data, products, and services in support of the Earth observations and research, positioning, navigation and timing, the terrestrial reference frame, Earth rotation, and other applications that benefit society.”**

**From IGS Strategic Plan 2008-2012*

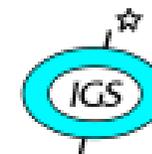
Strategic Plan

2008 - 2012

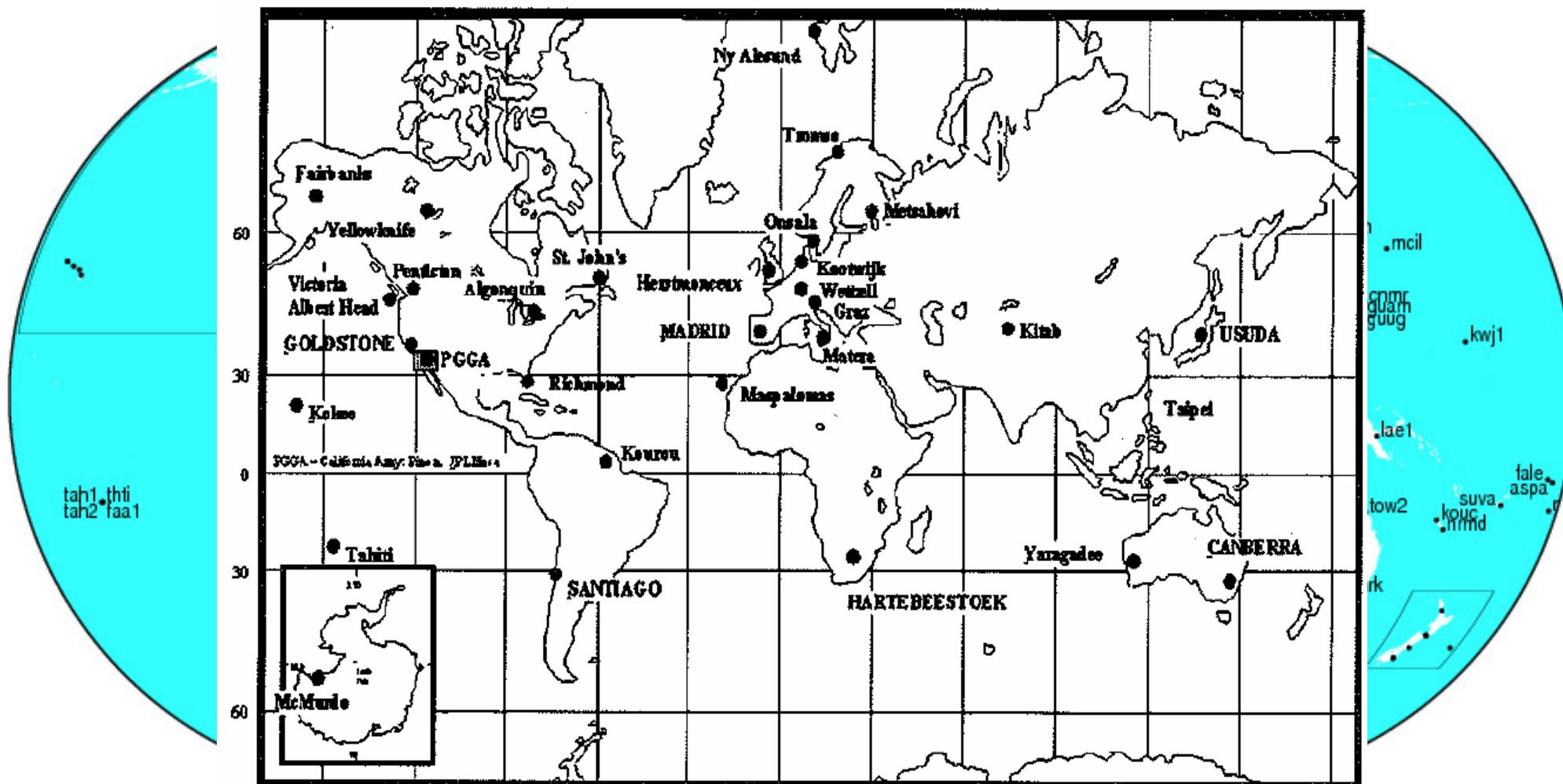


- Strategic Plan 2008-2012
- Update in preparation for 2013-2016
- Inclusion of upcoming challenges and opportunities
- Refinement of implementation plan

IGS Tracking Network

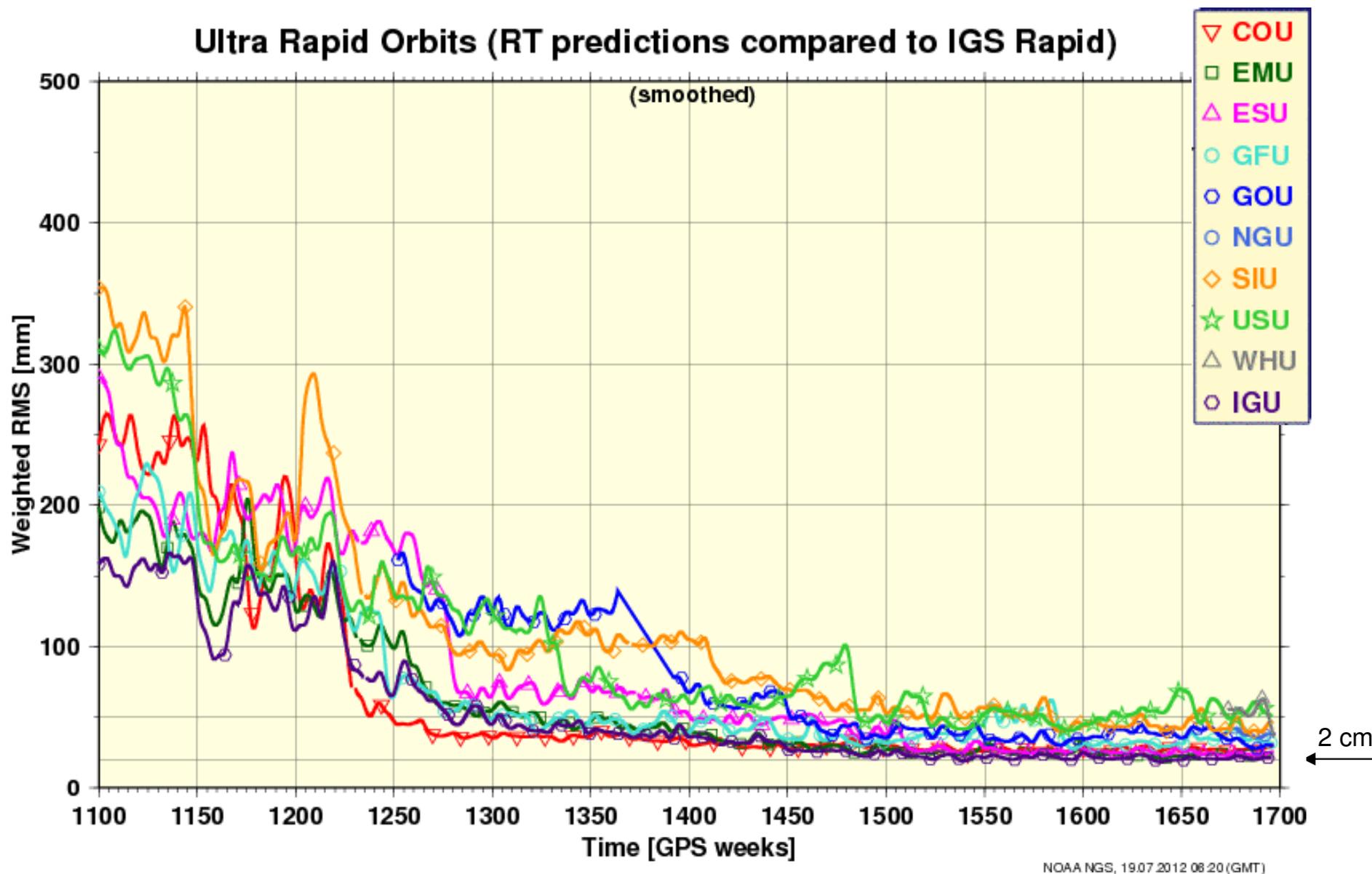
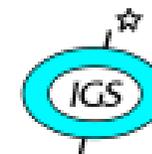


2002 - 236 Stations



GMT 2012 Jul 18 18:45:30

IGS Ultra Rapid Orbits



EDITOR

AIUB Astronomical Institute
University of Bern

INTERNATIONAL
GNSS SERVICE

Technical Report

2011

FOR MORE INFORMATION

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IGS IS A SERVICE OF



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International Union of Geodesy and Geophysics



International Council for Science
World Data System

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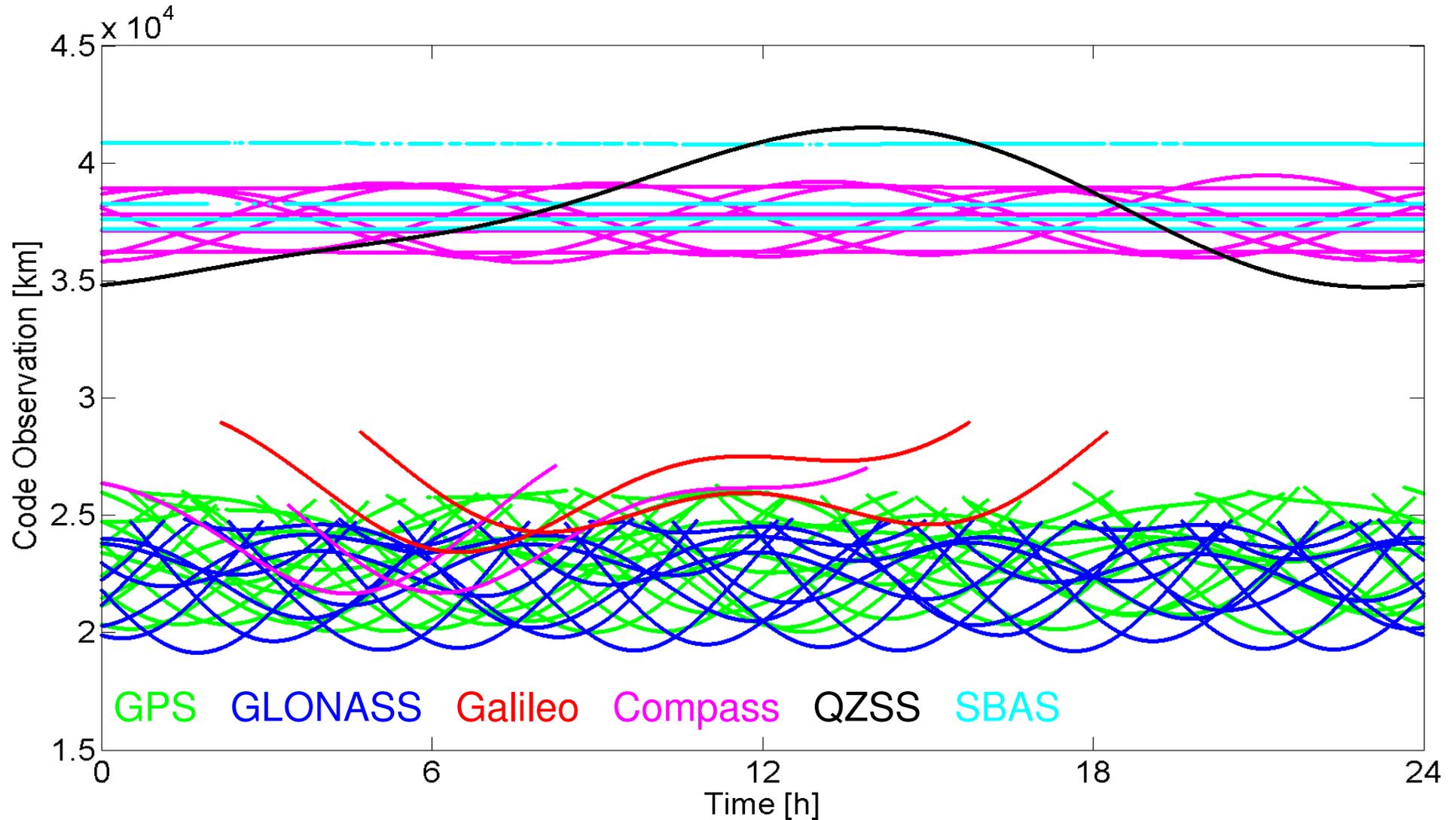
Astronomical Institute
University of Bern



Multi-GNSS



Multi-GNSS Receiver Singapore, Trimble NetR9, LEIAR25.R3 LEIT



RINEX 3.0 Observation File



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3.00          OBSERVATION DATA      M (MIXED)          RINEX VERSION / TYPE
Bnx2Rnx          congo                20120309 082056 GMT PGM / RUN BY / DATE
Source NTRIP stream gnss.gsoc.dlr.de/GMSD1          COMMENT
GMSD1          MARKER NAME
M          MARKER NUMBER
Hauschild          DLR/GSOC          OBSERVER / AGENCY
5049K72188          TRIMBLE NETR9          4.43          REC # / TYPE / VERS
4938353448          TRM59800.00          SCIS          ANT # / TYPE
-3607665.0563  4147867.7288  3223716.9486          APPROX POSITION XYZ
          0.0000          0.0000          0.0000          ANTENNA: DELTA H/E/N
G  16 C1C L1C D1C S1C C2X L2X D2X S2X C2W L2W D2W S2W C5X SYS / # / OBS TYPES
    L5X D5X S5X          SYS / # / OBS TYPES
R  20 C1C L1C D1C S1C C2C L2C D2C S2C C1P L1P D1P S1P C2P SYS / # / OBS TYPES
    L2P D2P S2P C3X L3X D3X S3X          SYS / # / OBS TYPES
E  16 C1X L1X D1X S1X C5X L5X D5X S5X C7X L7X D7X S7X C8X SYS / # / OBS TYPES
    L8X D8X S8X          SYS / # / OBS TYPES
S   8 C1C L1C D1C S1C C5X L5X D5X S5X          SYS / # / OBS TYPES
C  12 C2I L2I D2I S2I C6I L6I D6I S6I C7I L7I D7I S7I          SYS / # / OBS TYPES
J  24 C1C L1C D1C S1C C1X L1X D1X S1X C1Z L1Z D1Z S1Z C2X SYS / # / OBS TYPES
    L2X D2X S2X C6X L6X D6X S6X C5X L5X D5X S5X          SYS / # / OBS TYPES

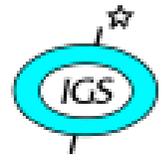
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...

many new observation types

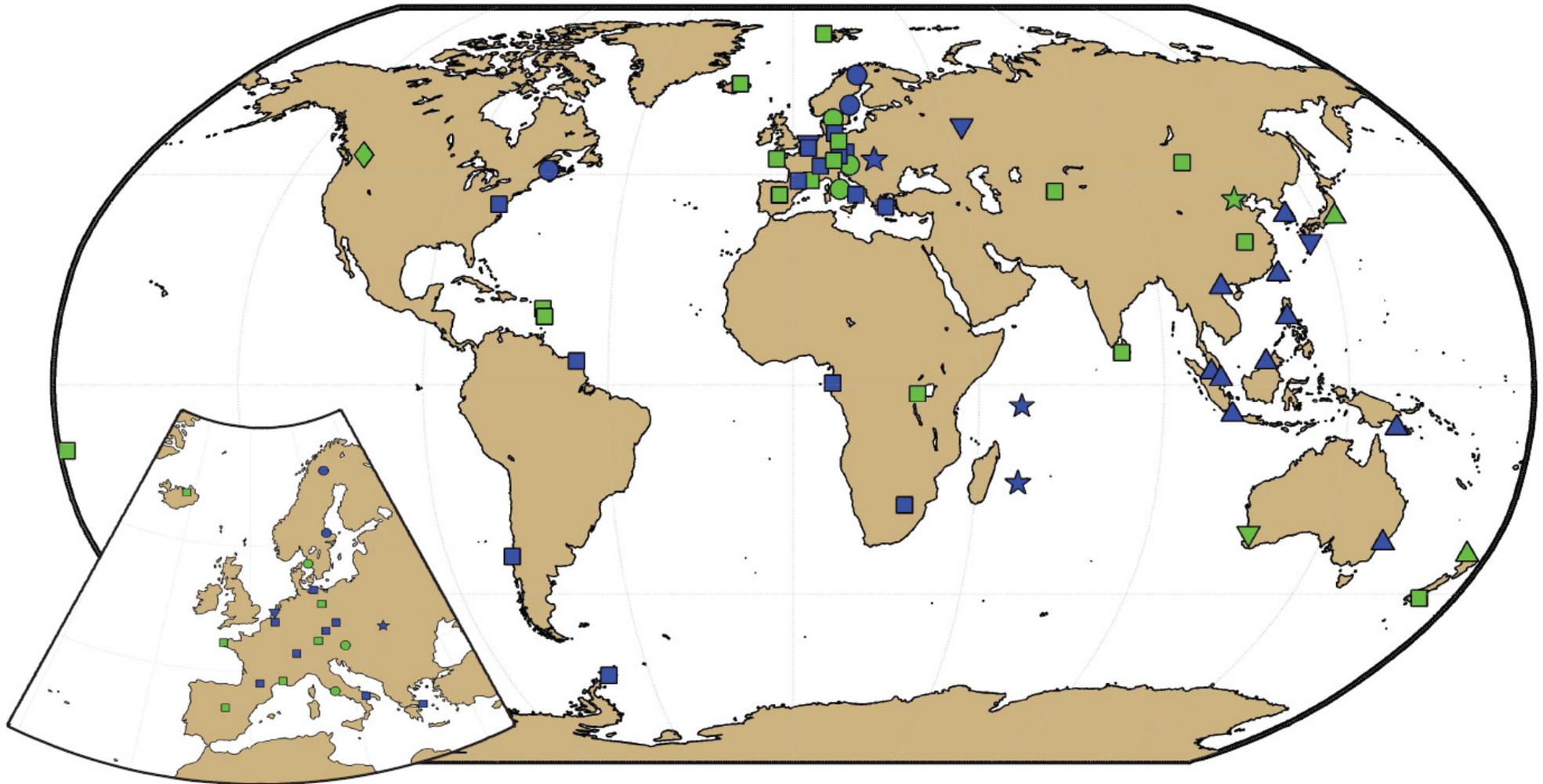
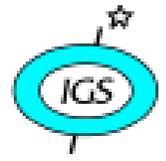
new systems

Multi-GNSS Experiment (M-GEX)



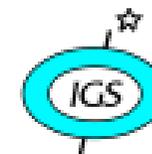
- IGS prepares for incorporation of new GNSS
- Goal of M-GEX
 - Experiment to operate an expanded network of new receivers capable of tracking new signals in addition to GPS & GLONASS
 - Support JAXA Multi-GNSS proposal activities
- Tasks
 - Set-up tracking network of Multi-GNSS equipment
 - Make tracking data publicly available
 - Experiment with data flow and signals, qualify equipment, signals, ...
- How to continue?

M-GEX Network



- ★ GPS/GLONASS
- ◆ GPS/GLONASS + QZSS
- GPS/GLONASS + GIOVE/Galileo
- GPS/GLONASS + GIOVE/Galileo + Compass/Beidou
- ▼ GPS/GLONASS + GIOVE/Galileo + Compass/Beidou + QZSS
- ▲ GPS/GLONASS + GIOVE/Galileo + QZSS
- ▲ + SBAS

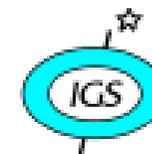
Galileo Signals



Galileo	E1	1575.42	A PRS	C1A	L1A	X	X	X	X	X	
			B I/NAV OS/CS/SoL	C1B	L1B						
			C no data	C1C	L1C						
			B+C	C1X	L1X						
			A+B+C	C1Z	L1Z						
	E5a	1176.45	I F/NAV OS	C5I	L5I	X	X	X	X	X	
			Q no data	C5Q	L5Q						
			I+Q	C5X	L5X						
	E5b	1207.140	I I/NAV OS/CS/SoL	C7I	L7I	X	X	X	X	X	
			Q no data	C7Q	L7Q						
			I+Q	C7X	L7X						
	E5 (E5a+E5b)	1191.795	I	C8I	L8I	X	X	X	X	X	
			Q	C8Q	L8Q						
			I+Q	C8X	L8X						
	E6	1278.75	A PRS	C6A	L6A	X	X	X	X	X	
			B C/NAV CS	C6B	L6B						
			C no data	C6C	L6C						
			B+C	C6X	L6X						
			A+B+C	C6Z	L6Z						
							GeNeRx1	Novatel 15A	Leica GRX1200	JPS δ -G3TH	Trimble NETR9

- IGS assumes leadership in the development and maintenance of RINEX
- 2008 IGS joined the Radio Technical Commission for Maritime Services Special Committee 104 (RTCM-SC104).
- In 2011 a joint IGS/RTCM RINEX WG was formed, chaired by IGS.
- IGS goes for RINEX 3
- Transition plan
- Strong link to M-GEX

Real-Time Network



http://www.rtigs.net/nrcan_monitor.php



<http://igs.org>

IGS Workshop2012, Olsztyn, Poland, 23-27 July 2012

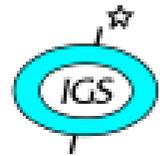
IGS Real-Time Service



- Real-time WG since 2001
- Solve issues concerning formats, protocols, data streaming, analysis, combination, redundancy
- IGS Real Time Service will go public, IOC with GPS real-time orbit and clock product later this year.
- Real-time global precise point positioning for scientific and hazard detection applications, and eventually for quality assessment and monitoring of multi-constellations satellite performance.
- No service guarantee, but high level of redundancy to offer reliable service of high-accuracy real-time products.

IGS Infrastructure





Provisional for Public Comment

IGS Site Guidelines

Infrastructure Committee
April 2012

1. Introduction

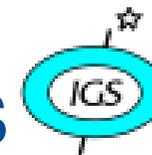
The IGS network is a collection of heterogeneous stations operated by many different organizations pooling their resources under the IGS umbrella for the common good. Stringent rules are inconsistent with the voluntary nature of the IGS. However, participating stations must agree to adhere to the standards and conventions contained herein, which ensure the consistent high quality of the IGS network and products.

Of particular importance to the IGS is the stable, long-term operation of the network. Therefore, changes to any station's configuration or immediate surroundings should be carefully planned to minimize discontinuities in the station's position time-series. Special consideration should be given to designated reference frame stations that contribute to the realization of the International Terrestrial Reference Frame (ITRF)(see the IGS08.snx file for a listing of stations that contribute to the IGS reference frame). Any changes to these stations should be planned well in advance following the procedures in section 2.3 of these Guidelines.

Suggestions for additions or changes to these guidelines are welcome at cb@igs.org

- Prepared by IGS Infrastructure Committee
- Emphasis on stable network
- Under final review, approval at GB wrap-up meeting on Friday.
- <http://igs.org>

IGS Working Groups and Working Groups



Working Groups
Data Center WG
Reference Frame WG
Tide Gauges WG
Space Vehicle Orbit Dynamics WG
Clock Product WG
Troposphere WG
Ionosphere WG
Antenna WG
Bias and Calibration WG
GNSS WG
RINEX WG
Real Time Pilot Project

How to convert IGS network to multi-GNSS?

Radiation pressure modelling for new satellites?

Clock products for new signals?

Incorporate new GNSS

New Systems and Signals

patterns for new frequencies

biases of new signals

new systems (M-GEX)

observation format (RINEX 3.0)

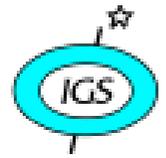
Real Time Products



IGS Relations

- Global Geodetic Observing System of IAG (GGOS)
- International Earth Rotation and Reference Systems Service (IERS)
- United Nations/International Committee on GNSS (ICG)
- International Federation of Surveyors (FIG)
- Radio Technical Commission for Maritime Services (RTCM)
- International Council for Science, World Data System (WDS)

Summaries and Recommendations



IGS Workshop 2012

Olsztyn, Poland

Plenary Session / WG Splinter Meeting Summary and Recommendations

Session/Splinter Meeting Title:

Date:

Chair (& Co-Chair):

Rapporteur:

Procedure:

- Provide the filled form until Thursday evening (for sessions before Friday) electronically to urs.hugentobler@bv.tum.de and igscb@jpl.nasa.gov.
- The rapporteur will have 5 minutes for presenting the Recommendations in the Splinter Working Group Reports and Recommendations session of Friday.

Key Issues, Session / Discussion Highlights:

Please briefly summarize key issues or reports, ~ one paragraph each.

Address in particular issues related to IGS Infrastructure, M-GEX and Real-Time if appropriate.

Recommendations :

Please prioritize top three recommendations, and if recommendations are adopted, please suggest who is responsible to implement, and what timeframe is needed to accomplish.

Where appropriate attempt to harmonize your recommendations with those of other WGs.

Session and WG Chairs:

- Define a rapporteur
- Summarize key issues
- Address infrastructure, M-GEX, Real-time
- Prioritize top three recommendations
- Provide the filled form until Thursday evening.
- For participants: feedback form

