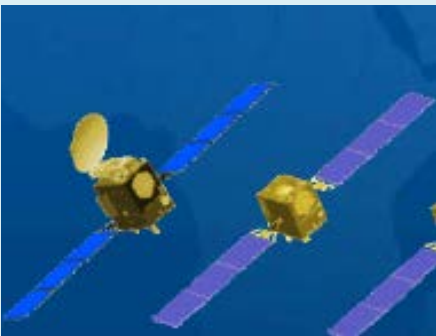


# The IGS Multi-Signals Tracking Campaign MGEX - Planning , Status, Perspectives

R. Weber  
on behalf of the GNSS WG

IGS Workshop 2012

July 23-27, 2012, Olstyn, Poland



# IGS M-GEX - The IGS Multi-GNSS Global Experiment

- Aug 2011 - Call for Participation released
- Oct 30, 2011 - Proposals due
- Dec 15, 2011 – Proposals evaluated by the Organizing Committee
- Feb 1, 2012 – Experiment begins
- Jul 23-27 – First Results Evaluation and discussion at IGS 2012 Workshop, Olsztyn, Poland
- August 2012 – Experiment ends for temporary installations; tracking continues for permanent installations ?

CfP available via <http://www.igs.org/>

## IGS Multi-GNSS Global Experiment

- Call for tracking sites
- Call for Data Centers
- Call for Analysis Efforts
- Call for collaboration with federated networks to realize a multi-GNSS global network

## IGS Multi-GNSS Global Experiment

- Call asks in first place for timely RINEX tracking data
  - track as many signals as possible (focus on GNSS, but can include SBAS)
- Analysis of the new multi-GNSS assumed as an element of IGS ACs on a 'best effort' basis
- Analysis and engineering analysis by other interested groups strongly encouraged
- Include Real Time tracking aspect and signal utilization which will be coordinated by the IGS Real-Time Pilot Project and WG

# IGS Multi-GNSS Global Experiment

- Experiment Tasks
  - setup tracking network of Multi-GNSS equipment
  - make RINEX tracking data publicly available
  - experiment with data flow and signals
  - qualify equipment and signals
- Future Tasks (mid-term)
  - upgrade IGS network to Multi-GNSS
  - generate Multi-GNSS products

## Proposals (as of Dec 2011)

- Data Centers

  - 3 RINEX Datacenter (CDDIS, IGN, BKG)

  - + 1 Real-Time Data Center (BKG)

- Analysis Proposals

  - IGS ACs: NRCan, CODE

  - non-IGS ACs: Shanghai (SHAO), UMB (Norway),

  - Pecny(Czech Rep.), BKG (Germany), Curtin (Australia),

  - Delft(Netherlands)

- Federated Networks

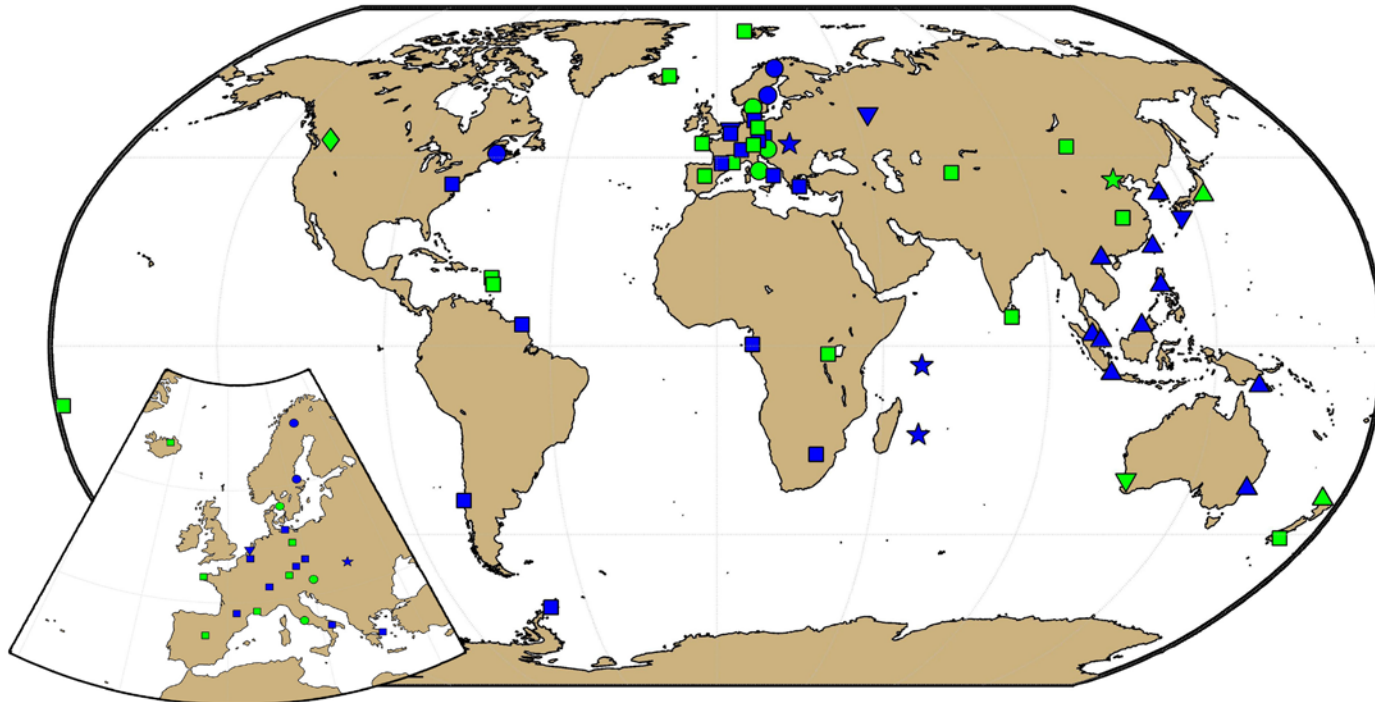
  - explicitly : JAXA MGM-Net, GEONET Australia

  - implicitly: GFZ, CNES, IGN, DLR, BKG,LM, GSI

## Organizational Aspects

- The IGS M-GEX is coordinated by an Experiment Organizing Committee. This Committee is appointed by the IGS GB for the duration of the experiment and will then be dissolved. Further activities will be coordinated by the IGS GNSS Working Group.
- IGS WGs currently mainly involved: GNSS, Antenna, Real-Time, RINEX, Bias and Calibration, Infrastructure Committee
- Other WGs will be progressively involved as soon as products shall be generated

# M-GEX sites (as of July 2012)



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

As of July 17th,2012: 40-45 tracking sites, 16 proposed sites



Organisation	Point of Contact	Site Location	Site ID	Receiver Type	Antenna Type	RINEX - V.	RT-data
BADW	<a href="mailto:christof.voelksen@badw.de">Christof Voelksen</a>	Reykjalid, Iceland	MYVA	LEICA GR10	LEIAR25.R4	3.01	yes
Obs. Pacny	<a href="mailto:jakub.kostalecky@pacny.cz">Jakub Kostalecky</a>	Ondrejov, Czech Rep.	GOP6	LEICA GR1200 +GNSS	LEIAR25.R4	3.01	RTCM 2.1
GSI Japan	<a href="mailto:lgs-grp@gsi.go.jp">Tomoaki Furiya</a>	Tsukuba, Japan	TSK2	Javad Delta-G3T	JAVAD RingAnt-DM	3.01	
GSI Japan	<a href="mailto:lgs-grp@gsi.go.jp">Tomoaki Furiya</a>	Aira, Japan	AIRA	Trimble NETR9	TRM59800.00	3.01	no
GSI Japan	<a href="mailto:lgs-grp@gsi.go.jp">Tomoaki Furiya</a>	Chichijima, Japan	CCJ2	Trimble NETR9	TRM59800.00	3.01	no
GSI Japan	<a href="mailto:lgs-grp@gsi.go.jp">Tomoaki Furiya</a>	Shintotsukawa, Japan	STK2	Trimble NETR9	TRM59800.00	3.01	no
IGN, France	<a href="mailto:Thierry.duquesnoy@ign.fr">Thierry Duquesnoy</a>	La Reunion, France	REUN	Trimble NETR9	TRM57971.00	3.00	RTCM 3.1
IGN, France	<a href="mailto:Thierry.duquesnoy@ign.fr">Thierry Duquesnoy</a>	Guadeloupe, France	ABMF	Trimble NETR9	TRM57971.00	3.00	RTCM 3.1
IGN, France	<a href="mailto:Thierry.duquesnoy@ign.fr">Thierry Duquesnoy</a>	Martinique, France	LMMF	Trimble NETR9	TRM57971.00	3.00	RTCM 3.1
IGN, France	<a href="mailto:Thierry.duquesnoy@ign.fr">Thierry Duquesnoy</a>	Brest, France	BRST	Trimble NETR9	TRM57971.00	3.00	RTCM 3.1
IGN, France	<a href="mailto:Thierry.duquesnoy@ign.fr">Thierry Duquesnoy</a>	Caussois, France	GRAC	Trimble NETR9	TRM57971.00	3.00	RTCM 3.1

CNES, France	Alain Brissaud <a href="mailto:Alain.brissaud@cnes.fr">Alain.brissaud@cnes.fr</a>	Toulouse, France	TLSE	Trimble NETR9	TRM59800.00	3.01	RTCM 3.0
CNES, France	Alain Brissaud <a href="mailto:Alain.brissaud@cnes.fr">Alain.brissaud@cnes.fr</a>	Libreville, Gabon	NKLG	Trimble NETR9	TRM59800.00	3.01	RTCM 3.0
CNES, France	Alain Brissaud <a href="mailto:Alain.brissaud@cnes.fr">Alain.brissaud@cnes.fr</a>	Dionysos, Greece	DYNG	Trimble NETR9	TRM59800.00	3.01	RTCM 3.0
CNES, France	Alain Brissaud <a href="mailto:Alain.brissaud@cnes.fr">Alain.brissaud@cnes.fr</a>	Seychelles	SEYG	Trimble NETR9	TRM59800.00	3.01	RTCM 3.0
CNES, France	Alain Brissaud <a href="mailto:Alain.brissaud@cnes.fr">Alain.brissaud@cnes.fr</a>	Futuna, Wallis and Futuna	FTNA	Trimble NETR9	TRM59800.00	3.01	RTCM 3.0
CNES, France	Alain Brissaud <a href="mailto:Alain.brissaud@cnes.fr">Alain.brissaud@cnes.fr</a>	Pretoria, South Africa	HARB	Trimble NETR9	TRM59800.00	3.00 ;	RTCM 3.0
CNES, France	Alain Brissaud <a href="mailto:Alain.brissaud@cnes.fr">Alain.brissaud@cnes.fr</a>	French Guiana, France	KOUG	LEICA GR10	LEIAR25.R3	3.00	RTCM 3.0
BKG, Germany	Georg Weber <a href="mailto:Georg.weber@bkg.bund.de">Georg.weber@bkg.bund.de</a>	Wetzell, Germany	WTZZ	JAVAD TRE_G3TH	LEIAR25.R3	3.01	RTCM 3.1
BKG, Germany	Georg Weber <a href="mailto:Georg.weber@bkg.bund.de">Georg.weber@bkg.bund.de</a>	O'Higgins, Antarctica	OHIX	LEICA GR1200 +GNSS	LEIAR25.R3	3.00	RTCM 3.0
BKG, Germany	Georg Weber <a href="mailto:Georg.weber@bkg.bund.de">Georg.weber@bkg.bund.de</a>	Concepcion, Chile	CONZ	LEICA GR1200 +GNSS	LEIAR25.R3	3.00	RTCM 3.0
BKG, Germany	Georg Weber <a href="mailto:Georg.weber@bkg.bund.de">Georg.weber@bkg.bund.de</a>	Warnemünde, Germa ny	WARN	LEICA GR1200 +GNSS	LEIAR25.R3	3.00	RTCM 3.0


Landmateriet Sweden	Gunnar Hedling <a href="mailto:Gunnar.hedling@ln.se">Gunnar.hedling@ln.se</a>	Kiruna, Sweden	KIR8	JAVAD TRE_G3T Delta	AOAD/M_T Radom OSOD	3.01	JPS raw
Landmateriet Sweden	Gunnar Hedling <a href="mailto:Gunnar.hedling@ln.se">Gunnar.hedling@ln.se</a>	Onsala, Sweden	ONSA	JAVAD TRE_G3T Delta	AOAD/M_T Radom OSOD	3.01	JPS raw
Landmateriet Sweden	Gunnar Hedling <a href="mailto:Gunnar.hedling@ln.se">Gunnar.hedling@ln.se</a>	Gavle, Sweden	MAR6	JAVAD TRE_G3T Delta	AOAD/M_T Radom OSOD	3.01	JPS, raw
Curtin Univ., Australia	Ahmed El-Mowafy <a href="mailto:a.el-mowafy@curtin.edu.au">a.el-mowafy@curtin.edu.au</a>	Perth, Australia	CUT0	Trimble NETR8	TRM59800.00 Radom SCIS	3.01	RTCM 3.0, 3.1
MGM Network, JAXA	Kaori Kawate <a href="mailto:Kawate.kaori@jaxa.jp">Kawate.kaori@jaxa.jp</a>	Taguig City, Phillipines	PLUZ	JAVAD	JPS GrAnt-G3T	3.01	JPS raw
MGM Network, JAXA	Kaori Kawate <a href="mailto:Kawate.kaori@jaxa.jp">Kawate.kaori@jaxa.jp</a>	Daejeon, South Korea	DAE2	JAVAD	JPS GrAnt-G3T	3.01	JPS raw
MGM Network, JAXA	Kaori Kawate <a href="mailto:Kawate.kaori@jaxa.jp">Kawate.kaori@jaxa.jp</a>	Waigani, Papua New Guinea	MORE	JAVAD	JPS GrAnt-G3T	3.01	JPS raw
MGM Network, JAXA	Kaori Kawate <a href="mailto:Kawate.kaori@jaxa.jp">Kawate.kaori@jaxa.jp</a>	Bating, Malaysia	ANMG	JAVAD	JPS GrAnt-G3T	3.01	JPS raw
MGM Network, JAXA	Kaori Kawate <a href="mailto:Kawate.kaori@jaxa.jp">Kawate.kaori@jaxa.jp</a>	Gadong, Brunei	BRUN	JAVAD	JPS GrAnt-G3T	3.01	JPS raw
MGM Network, JAXA	Kaori Kawate <a href="mailto:Kawate.kaori@jaxa.jp">Kawate.kaori@jaxa.jp</a>	West Java, Indonesia	BAK2	JAVAD	JPS GrAnt-G3T	3.01	JPS raw
MGM Network, JAXA	Kaori Kawate <a href="mailto:Kawate.kaori@jaxa.jp">Kawate.kaori@jaxa.jp</a>	Hanoi, Vietnam	NAV1	JAVAD	JPS GrAnt-G3T	3.01	JPS raw
MGM Network, JAXA	Kaori Kawate <a href="mailto:Kawate.kaori@jaxa.jp">Kawate.kaori@jaxa.jp</a>	Singapore	SNTU	JAVAD	JPS GrAnt-G3T	3.01	JPS raw
MGM Network, JAXA	Kaori Kawate <a href="mailto:Kawate.kaori@jaxa.jp">Kawate.kaori@jaxa.jp</a>	Taiwan	NCKU	JAVAD	JPS GrAnt-G3T	3.01	JPS raw

CASM, China	Quianxin Wang <a href="mailto:wangqx@casm.ac.cn">wangqx@casm.ac.cn</a>	Beijing, China	BJFS	Trimble NETR8	TRM59800.00 Radom SCIS	3.01	no
GNS Science, New Zealand	Simon Edwards <a href="mailto:info@geonet.org.nz">info@geonet.org.nz</a>	Warkworth, New Zealand	WARK	Trimble NETR8	TRM55971.00	2.1 ?	RTCM 3.1
ASI, Italy	Guiseppe Bianco <a href="mailto:Guiseppe.bianco@asi.it">Guiseppe.bianco@asi.it</a>	Matera, Italy	MATG	LEICA GR1200 +GNSS	LEIAR25.?	3.01	RTCM 3.1
Univ. Rome, Italy	Augusto Mazzoni <a href="mailto:Augusto.mazzoni@uniroma1.it">Augusto.mazzoni@uniroma1.it</a>	Rome, Italy	MOSE	LEICA GR25	LEIAR25.?	3.01	Raw+ RTCM 3.1
JAXA, Japan	Kaori Kawate <a href="mailto:QZSS-AP@jaxa.jp">QZSS-AP@jaxa.jp</a>	Tanegashima Island Japan	GMSD	Trimble NETR9	TRM59800.00 Radom SCIS	2.11, 3.00	Trimble RT27
Kazan Fed.Universit y, Russia	Renat Zagretinov <a href="mailto:rz@ksu.ru">rz@ksu.ru</a>	Kazan, Russia	KZN2	Trimble NETR9	TRM59800.00 Radom SCIS	3.00	BINEX
GMV, Spain	Ricardo Piriz <a href="mailto:rpirez@gmv.com">rpirez@gmv.com</a>	Tres Campos, Spain	GAP1	TPS NET-G3A	TPSCR.G3 Radom TPSD	3.01	RTCM 3.0
ZAKPOS Ukraine	Stepan Savchuk <a href="mailto:ssavchuk@polynet.lviv.ua">ssavchuk@polynet.lviv.ua</a>	Mukachevo, Ukraine	MUKA	Trimble NETR5	TRM55971.00	3.01	RTCM 3.1
AIUB, Switzerland	Rolf Dach <a href="mailto:Rolf.dach@aiub.unibe.ch">Rolf.dach@aiub.unibe.ch</a>	Zimmerwald, Switzerland	ZIMJ	JAVAD TRE_G3TH Delta	JAVRINGANT DM	3.01	?
DLR, Germany, CONGO	Oliver Montenbruck Oliver.montenbruck@ dlr.de	Wetzell Germany	WTZX	JAVAD TRE_G3TH Delta	LEIAR25.R3 LEIT	?	JPSraw, RTCM3- MSM
DLR, Germany, CONGO	Oliver Montenbruck Oliver.montenbruck@ dlr.de	Sydney, Australia	UNSX	JAVAD TRE_G3TH Delta	JAVRINGANT DM	?	JPSraw, RTCM3- MSM
OMA Belgium	Carine Bruyninx <a href="mailto:c.bruyninx@oma.be">c.bruyninx@oma.be</a>	Brussels, Belgium	BRUX	SeptPOLARX4TR	JAVAD RingAnt-DM	3.01	RTCM 3.1

GFZ Potsdam	Markus Ramatschi <a href="mailto:gpsnet@gfz-potsdam.de">gpsnet@gfz-potsdam.de</a>	Ny Alesund Norway	NYA2	JAVAD TRE_ G3TH DELTA	JAV_RINGANT G3T	3.02	no
GFZ Potsdam	Markus Ramatschi <a href="mailto:gpsnet@gfz-potsdam.de">gpsnet@gfz-potsdam.de</a>	Oberpfaffenhofen Germany	OBE3	JAVAD TRE_ G3TH DELTA	JAV_RINGANT G3T	3.02	no
GFZ Potsdam	Markus Ramatschi <a href="mailto:gpsnet@gfz-potsdam.de">gpsnet@gfz-potsdam.de</a>	Wuhan, China	WUH2	JAVAD TRE_ G3TH DELTA	JAV_RINGANT G3T	3.02	no
GFZ Potsdam	Markus Ramatschi <a href="mailto:gpsnet@gfz-potsdam.de">gpsnet@gfz-potsdam.de</a>	Ulanbaataar, Mongolia	ULAB	JAVAD TRE_ G3TH DELTA	JAV_RINGANT G3T	3.02	no
GFZ Potsdam	Markus Ramatschi <a href="mailto:gpsnet@gfz-potsdam.de">gpsnet@gfz-potsdam.de</a>	Tashkent Usbekistan	TASH	JAVAD TRE_ G3TH DELTA	JAV_RINGANT G3T	3.02	no
GFZ Potsdam	Markus Ramatschi <a href="mailto:gpsnet@gfz-potsdam.de">gpsnet@gfz-potsdam.de</a>	Colombo, Sri Lanka	SGOC	JAVAD TRE_ G3TH DELTA	JAV_RINGANT G3T	3.02	no
GFZ Potsdam	Markus Ramatschi <a href="mailto:gpsnet@gfz-potsdam.de">gpsnet@gfz-potsdam.de</a>	Potsdam Germany	POTS	JAVAD TRE_ G3TH DELTA	JAV_RINGANT G3T	3.02	no
GFZ Potsdam	Markus Ramatschi <a href="mailto:gpsnet@gfz-potsdam.de">gpsnet@gfz-potsdam.de</a>	Dunedin New Zealand	OUS2	JAVAD TRE_ G3TH DELTA	JAV_RINGANT G3T	3.02	no
GFZ Potsdam	Markus Ramatschi <a href="mailto:gpsnet@gfz-potsdam.de">gpsnet@gfz-potsdam.de</a>	Kigali, Rwanda	NURK	JAVAD TRE_ G3TH DELTA	JAV_RINGANT G3T	3.02	no

# IGS CB – MGEX Webpage

ritte Aktuelle Nachrichten Galileo\_IOV\_Launch



The image shows a world map with numerous green and yellow location pins indicating the positions of IGS CB stations. The map includes labels for various countries and regions in multiple languages, such as Canada, United States, Mexico, North Atlantic Ocean, South Atlantic Ocean, Europe (including UK, France, Spain, Italy, Germany, Poland, Czech Republic, Slovakia, Austria, Hungary, Turkey, Ukraine, Russia), Africa (including Egypt, Sudan, Chad, Nigeria, Mali, Niger, DR Congo, Kenya, Tanzania, Angola, Namibia, Botswana, Madagascar), Asia (including Kazakhstan, Mongolia, China, South Korea, Japan, India, Pakistan, Afghanistan, Saudi Arabia, Thailand, Indonesia, Papua New Guinea), and Australia. The Google logo is visible in the bottom left corner of the map area, and the text 'Kartendaten ©2012 MapLink, Tele Atlas, Nutzungsbedingungen' is in the bottom right corner.

An experiment to track, collate and analyze all available GNSS signals. This includes signals from the Compass/BeiDou, Galileo and QZSS systems, as well as from modernized GPS and GLONASS satellites and any space-based augmentation system (SBAS) of interest. Analysis centers will attempt to estimate inter-system calibration biases, compare equipment performance and further develop processing software capable of handling multiple GNSS observation data.

See [Call for Participation document](#) for details. Submissions should be submitted through the [response form](#). Contributing stations must submit a [site log](#) to igscb.

Data is available at [International GNSS Service \(IGS\)](#), [Crustal Dynamics Data Information System \(CDDIS\)](#), [Institut Géographique National \(IGN\)](#), [Bundesamt für Kartographie und Geodäsie \(BKG\)](#)

Webpage: [www.igs.org/mgex](http://www.igs.org/mgex)  
MGEX Mailing List : [mgex@igs.org](mailto:mgex@igs.org)







## RINEX Data Centers

### Archives contain

Daily (30s) , Near-Real (30s) and High-rate data (1s)  
High rate data (mainly converted from RT streams)

### Problems

- Distributed log-file archives
- Overall pictures of data-availability required (e.g. at CB from daily summaries at DCs)
- Receivers might track less signals as proposed to MGEX but more signals as mentioned in logfile !!!

	A	B	C	D	E	F	G
1	Station name (RINEX)	System G, R, E, C, J, S	RINEX V 3.0x	Station name (WM)	Systems	Remarks	
2	ABMF	G, R, E, S	3.02	ABMF	2	N SBAS	
3	BRST	G, R, E, S	3.02	BRST	2	N SBAS	
4	BRUX	G, R, E	3.01	BRUX	2	S no SBAS	
5	CONZ	G, R, S	3.01	CONZ	2	S no Galileo	
6	CUTO	G, R, E, C, J, S	3.02	CUTO	4	N SBAS	
7	DLF1	G, R, E, C, S	3.02	DLF1	4	S no QZSS	
8	DYNG	G, R, E, S	3.00	DYNG	2	S	
9	FTNA	G, R, E, S	3.00	FTNA	2	N SBAS	
10	GMSD			GMSD	4	S RINEX data not available	
11	GOP6	G, R, E, S	3.01	GOP6	2	S	
12	GRA2	G, R, E	3.01			Additional station	
13	GRAB	G, R, E, C, S	3.00	GRAB	3	N SBAS	
14	GRAC	G, R, E, S	3.02	GRAC	2	N SBAS	
15	HARB	G, R, E, S	3.00	HARB	2	S	
16	KIR8	G, R, E, C, S	3.00	KIR0	3	S	
17	KZN2	G, R, E, S	3.00	KZN2	4	S no Galileo, no COMPASS, no QZSS, no SBAS, high rate	
18	LMMF	G, R, E, S	3.02	LMMF	2	N SBAS	
19	MAR7	G, R, E, C, S	3.00				
20	MATG	G, R, E, S	3.00	MATG	2	S no Galileo, no SBAS, high rate	
21	MOSE	G, R, E, S	3.01	MOSE	3	N SBAS, no COMPASS	
22	MYVA	G, R, E, S	3.01	MYVA	2	N SBAS	
23	NKLG	G, R, E, S	3.00	NKLG	2	S	
24	NURK	G, R, E	3.02	NURK	2	N	
25	NYA2	G, R, E	3.02	NYA2	2	N	
26	OBE3	G, R, E	3.02	OBE3	2	N	
27	OHIX	G, R, E, S	3.01	OHIX	2	S	
28	ONS1	G, R, E, C, S	3.00	ONSA	3	N	
29	OUS2	G, R, E	3.02	OUS2	2	N	
30	POTS	G, R, E	3.02	POTS	2	N	
31	REUN	G, R, E, S	3.02	REUN	1	S Galileo	
32	SEYG	G, R, E, S	3.00	SEYG	1	S Galileo	
33	SGOC	G, R, E	3.02	SGOC	2	N	
34	TASH	G, R, E	3.02	TASH	2	N	
35	TLSE	G, R, E, S	3.00	TLSE	2	S	
36	ULAB	G, R, E	3.02	ULAB	2	N	
37	UNB3	G, R, E, C, S	3.02	UNB3	3	S	
38	USN4	G, R, E, S	3.01	USN4	2	S	
39	USN5	G, R, E, S	3.01				
40	WARN	G, R, E, S	3.00	WARN	2	S no Galileo, no SBAS	
41	WTZZ	G, R, E, S	3.01	WTZZ	2	S	
42	WUH2	G, R, E	3.02	WUH2	2	N	
43							
44	G... GPS, R... GLONASS, E... Galileo, C... COMPASS, J... QZSS, S... SBAS						

# M-GEX Real-Time Streams (<http://mgex.igs-ip.net/>)

Agency	Station(s)	Receiver(s)	Raw	MSM	Constellations
AGG_DITS	M0SE	Leica GR25	LB2	☑	GRS(E?)
ASI	MATG	Leica GRX1200+GNSS	LB2	☑	GRS(E?)
BKG	CONX	Javad Delta-G3TH	JPS	☑	GRSE
	OHIX	Leica GRX1200+GNSS	LB2	☑	GR(S?)E
CNES	DYNG, NKLG, TLSE	Trimble NetR9	RT27	☑	GRSE
CUT, TUD	CUT0, DLF1	Trimble NetR9	RT27	☑	GRSEJC
DLR	WTZX, UNSX	Javad Delta-G3TH	JPS	☑	GRSE
IGN	ABMF, BRST, GRAC, HARB, LMMF, REUN	Trimble NetR9	RT27	☑	GRSE
JAXA	GMSD	Trimble NetR9	RT27	☑	GREJC
KEG	MYVA	Leica GR10	LB2	☑	GRS(E?)
KZU	KZN2	Trimble NetR9	RT27	☑	GRSE(J?)C
NRCAN	RM3M0	Javad Delta-G3T	n/a	☑	GR
SWEPOS	KIR8, MAR7, ONS1	Trimble NetR9	RT27	☑	GRSE(J?)C
	BRUX	Septentrio PolaRx4	SBF	☒	

## Current Situation (as of July 17, 2012)

- RINEX archives
  - almost all sites track GPS, GLONASS and Galileo
  - About 70% also SBAS
  - 7 COMPASS sites, 1 QZSS (Curtin)
- Real Time (22 RTCM-MSM)
  - 24 streams
  - Among them 7 COMPASS, 4-7 QZSS

# THE CURRENT STATUS OF MGM-NET



Source: S. Kogure

Call for hosting site



	City	Country
1	Bulit Kayu Arang	Brunei
2	Jakarta	Indonesia
3	Daejeon	Korea
4	Putrajaya	Malaysia
5	Waigani	Papua New Guinea
6	Taguig city	Philippines
7	Hanoi	Vietnam
8	Ondrejov	Czech Republic
9	Delft	Netherland
10	Tainan	Republic of China
11	Singapore	Singapore
12	Alaska	U.S.A.
13	Yanbu	Saudi Arabia
14	General Santos	Philippines
15	Nagarkot	Nepal

Call for application has been opened continuously until enough number of sites are selected.

-  Selected Sites
-  under selection process

# CONTRIBUTION TO IGS MGEX PROJECT

Source: S. Kogure

- 10 sites in MGM-net were registered to IGS M-GEX
  - Installation process are going on.
  - The site which installation was completed has started operation and is preparing data provision to M-GEX
  - Data exchange conversion issue should be resolved for inclusion QZSS into M-GEX experiments
    - Current draft version RTCM MSM has NOT covered QZSS yet.
    - RINEX 3.02 including QZSS are almost finalized, but still NO official format has included QZSS at this moment.
    - Earlier official adoption of RINEX and RTCM MSM including QZSS are requested.
    - The data observed at MGM-net station will be provided by RINEX 2.11/3.01 and RAW data stream tentatively until those data formats will be updated.

## Lessons learned so far -- Technical Issues

- Need for consistent PRN assignment of GIOVE and COMPASS/Beidou-2 satellites
- Adopt RINEX Format for QZSS (3.02) **asap**
- RINEX handling of broadcasting L1-signals from differing antennas (QZSS)
- RTCM –MSM to RINEX conversion of RT streams for some receiver types (JAXA) missing
- RTCM-MSM support for QZSS?
- ANTEX upgrade for L5 PCOs/PCVs
- Still interest in RINEX V2 data ?
- ....

**A more detailed discussion of issues has been prepared by O.Montenbruck (presentation slides)**

- Future of MGEX

According to CfP campaign will end August 31st;  
Continuation agreed within GB until quality and consistency of Multi-GNSS tracking data is ensured to generate IGS products as well as the required format extensions (RINEX, ANTEX, RTCM,..) are in place

- We strongly encourage interested groups and especially manufacturers to support this experiment by proposing additional sites equipped with their most recent multi-GNSS receivers

(currently Novatel, Septentrio, Topcon , Ashtech not or under-represented)

- Experiment can be joined any time



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MGEX teaches us a lot about obstacles for  
a consistent handling and data processing  
of Multi-GNSS data

**Thank you for your attention**