

THE CURRENT STATUS OF ASIA OCEANIA MULTI-GNSS DEMONSTRATION CAMPAIGN

7th Meeting of the International Committee
on Global Navigation Satellite Systems (ICG)

November 5 - 9, 2012
@Beijing, China

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ASIA OCEANIA MULTI-GNSS DEMONSTRATION CAMPAIGN



Three Major Activities

Establishment of Multi-GNSS Monitoring Network



Applications Demonstration

Disaster Mitigation



Precise Positioning



ITS



LBS



Others, ex. ionospheric observation etc

Regional Workshop

3rd Workshop, Nov. 2011
@ Jeju, Korea:



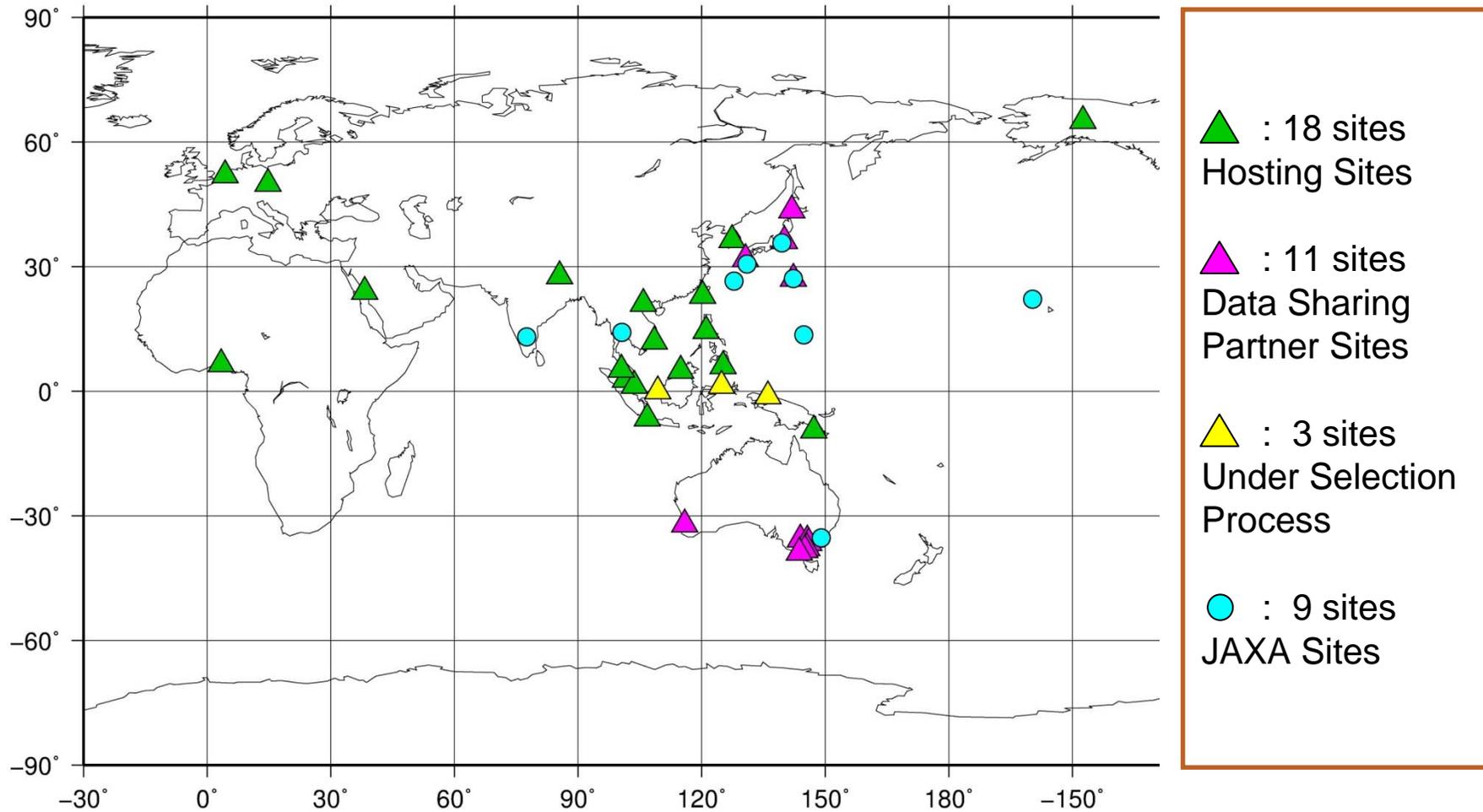
2nd Workshop, Nov. 2010
@ Melbourne, Australia



1st Workshop, JAN. 2010,
@ Bangkok, Thailand



THE CURRENT STATUS OF MGM-NET (1/3)



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

THE CURRENT STATUS OF MGM-NET (2/3)



- Selected 18 of Hosting Sites and 11 of Data Sharing Partner Sites.

Hosting Sites

	City/Town	Country/Region
	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 Fairbanks	U.S.A.
	13 Yanbu	Saudi Arabia
	14 General Santos	Philippines
	15 Nagarkot	Nepal
	16 Lagos	Nigeria
	17 Nibong Tebal	Malaysia
	18 Da Lat	Vietnam

Data Sharing Partner

	City/Town	Country/Region
○	1 Aira	Japan
○	2 Shintotsugawa	Japan
○	3 Ogasawara	Japan
○	4 Tsukuba	Japan
○	5 Perth	Australia
○	6 Kerang	Australia
○	7 Cobram	Australia
○	8 Benalla	Australia
○	9 Woori Yallock	Australia
○	10 Mornington	Australia
○	11 Marengo	Australia

○ In operation

Registered to IGS M-GEX.

THE CURRENT STATUS OF MGM-NET (3/3)



- Negotiating Collaboration with other GNSS network
 - GNSS network operators such as GFZ, Geoscience Australia are on going with considering;
 - Data exchange/sharing
 - Space agencies such as DLR(CONGO), ESOC/ESA, CNES/IGN(REGINA), and JPL/NASA are on going with considering;
 - Data exchange/sharing
 - Collocation of Antenna/Rx (Hosting ANT/Rx mutually)
 - Cross validation for POD performance on the orbit and clock offset estimation for new GNSS constellations

CONTRIBUTION TO IGS MGEX PROJECT



- 14 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.

ACTIVITIES 2: APPLICATION DEMONSTRATION: WORKING GROUPS



Working Groups	Examples of GNSS applications
Disaster Mitigation and Management	Tsunami monitoring, GNSS Meteorology, Landslide Monitoring, Emergency Message
Precise Positioning	Precise Agriculture, Construction machine guidance/control
Intelligent Transportation Systems (ITS)	Probe-car, Mobile Mapping System, Road Pricing, Car-navigation,
Location Based Services (LBS)	Mobile phone, Pedestrian Navigation, Short message, Sightseeing application

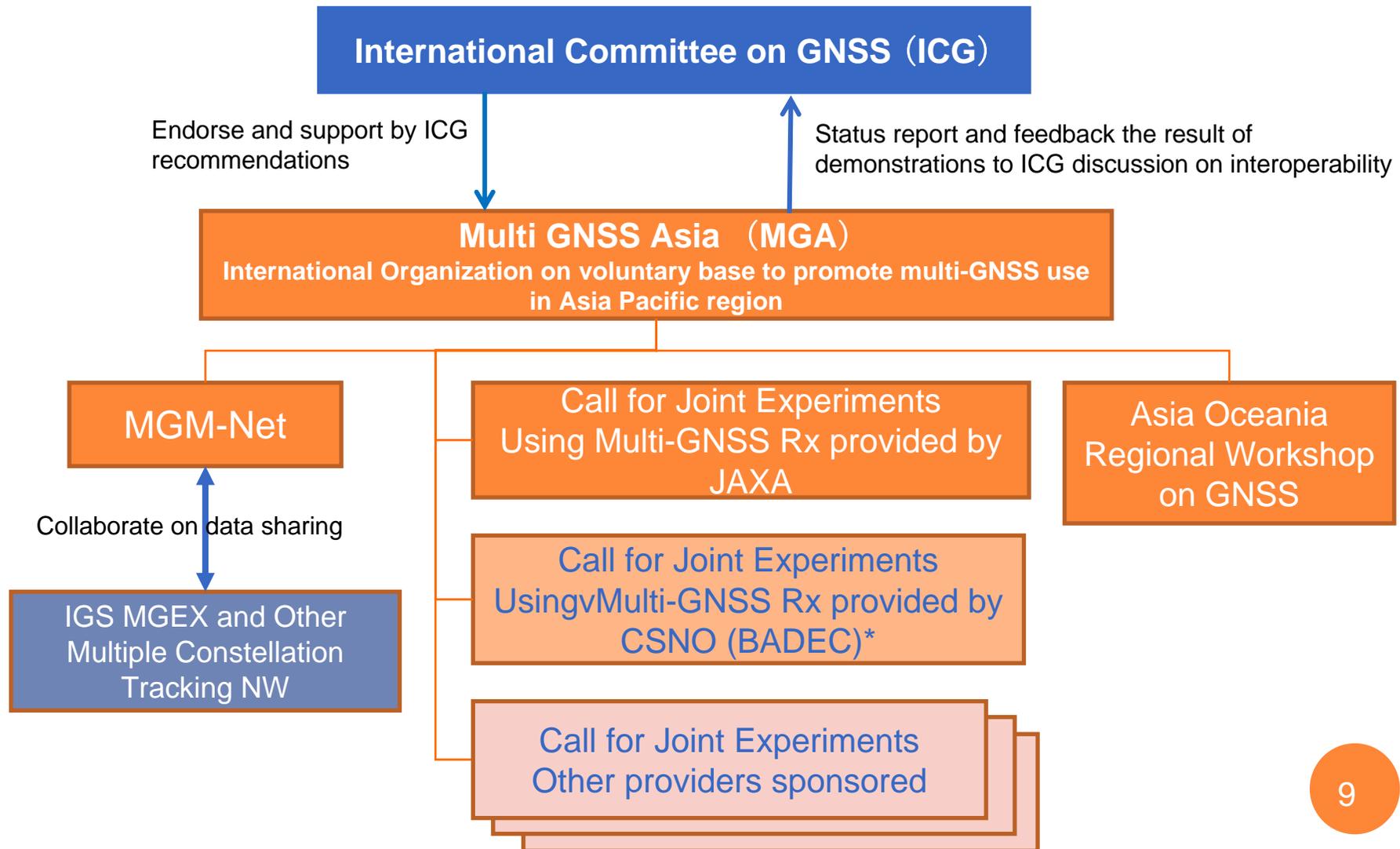
THE 8th CALL MULTIFUNDS JOINT EXPERIMENTS



- 8 Experiments were endorsed to be implemented <- 1st CALL

1	Evaluation of Multi-GNSS for Precision Agriculture in Korea, Chungnam National University	Korea
2	Sustainable Resource Utilization by Precision Farming of Oil Palm Plantation; RTK-Auto Guided Oil Palm Planter; On-the-Go Soil ECa Mapping, University Putra Malaysia	Malaysia
3	Automated rice transplanter guided by using Multi-GNSS including QZSS , Agricultural Research Center , National Agriculture Research Organization	JAPAN
4	"Joint QZSS/GPS positioning using L1/L5 band signals“, National Cheng Kung University,	Republic of China
5	"Multi-GNSS Experiment at RMIT University in Melbourne“, RMIT University	Australia
6	Evaluation of QZSS-LEX and L1-SAIF signals based positioning compared to DGPS and IGS PPP, positioning for Thailand	Thailand
7	Exploiting the use of QZSS and GNSS for navigational and high precision applications and their performance assessment (EQUATOR)	China
8	Development of Driver Behavior Measurement Method for Level of Safety Estimation from High Precision and High Resolution Global Positioning System with Quasi-Zenith Satellite System (QZSS)	Thailand

DEMONSTRATION IN ASIA OCEANIA REGION



* A demonstration campaign proposed by China. MGA is inviting China to promote jointly under MGA as well as UN ICG framework.

REGIONAL WORKSHOP ON GNSS



- Purpose

Discussion about new application experiments of GNSS and Information sharing of the results of the current status of the activities of Multi-GNSS Asia.

- Date 8-10th Dec. 2012

- Venue Kuala Lumpur, Malaysia

- Co-Host Organization JAXA, ANGKASA, SPAC, G-NAVIS

- Support Organization ICG, IGS

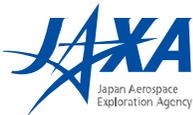
- Contents

- What's new about GNSS
- GNSS Applications presentations
- Reports of Activities of Multi-GNSS Asia (MGA)



Berjaya Times Square Hotel

Registration site has opened on the WEB site: <http://www.multignss.asia>



Multi-GNSS Demonstration Campaign



PARTICIPATION TO MGA

- The organizations which have interests in GNSS utilization in Asia Oceania region are expected to participate:
 - Government agencies,
 - Universities, and research institutes
 - International organizations
 - Industries such as Receiver manufacturer, service providers
 - GNSS providers

Please visit to

http://www.multignss.asia/howto_join_mga.html

MGA PARTICIPATING ORGANIZATIONS



No	Organizations	Countries
1	Beach Building & Civil Group (BBCG)	Australia
2	RMIT University (RMIT)	Australia
3	Japan Aerospace Exploration Agency (JAXA)	Japan
4	University Putra Malaysia (UPM)	Malaysia
5	National Cheng Kung University (NCKU)	Republic of China
6	Asian Institute of Technology (AIT)	Thailand
7	Chungnam National University (CNU)	Korea
8	SINGAPORE LAND AUTHORITY (SLA)	Singapore
9	The University of Nottingham Ningbo China (UNNC)	China
10	Tokyo University of Marine Science and Technology (TUMST)	Japan
11	National Electronics and Computer Technology Center (NECTEC)	Thailand
12	Ministry of Science and Technology (MOST)	Vietnam
13	National Agriculture and Food Research Organization (NARO)	Japan
14	Earthquake Research Institute, the University of Tokyo (ERI)	Japan
15	Research Faculty of Agriculture, Hokkaido University (AGHU)	Japan
16	National Space Agency of Malaysia (ANGKASA)	Malaysia
17	Hanoi University of Science and Technology	Vietnam

As of Nov. 4, 2012



SUMMARY

- 18 stations of hosting sites and 11 stations of data sharing partner sites were selected as MGM-net.
 - Call for application is being opened continuously until enough number of sites are selected.
- 14 sites in MGM-net were registered to IGS M-GEX and now are preparing data provision.
 - Data format update is an issue to be resolved for QZSS data sharing with IGS M-GEX.
- 8 Joint Experiments are being implemented as MGA experiments.
- The 4th Workshop will be held on Dec. 8-10, 2012 at Kuala Lumpur, Malaysia.
- Multi-GNSS Asia (MGA) was established to promote the Campaign activities. 17 organizations joined as of the early November, 2012.

Multi-GNSS Demonstration Campaign



ORGANIZATION: STRUCTURE

MGA Member

