

The chairpersons' report on the first Asia Oceania Regional Workshop on GNSS

I. The Workshop

1. The first Asia Oceania Regional Workshop on GNSS was held on 25-26 January 2010 at the Sofitel Centara Grand Hotel, Bangkok, Thailand.
2. The workshop was hosted by the Japan Aerospace Exploration Agency (JAXA), the Satellite Positioning research and Application Center (SPAC), and the Geospatial Information and Space Technology Development Agency (GISTDA) of Thailand, and supported by the United Nations International Committee on GNSS (ICG).
3. The workshop had 195 participants from 95 organizations, including GNSS signal providers, universities, research institutes and agencies, gathered from 18 countries.

II. Workshop Agenda

A. GNSS Overview

4. Four global GNSS systems (GPS, Glonass, Galileo and COMPASS) and two regional ones (QZSS and IRNSS) were introduced. In this session, the Russian delegation proposed a collaborative activity: data exchange between their augmentation system, SDCM and other augmentation systems in the multi-GNSS campaign. Combining GNSS usage with the COMPASS communications function was proposed by the Chinese delegation

B. Introduction of the Multi-GNSS Demonstration Campaign

5. The concept of the Asia Oceania Multi-GNSS Demonstration Campaign was introduced: Objectives, Proposed Activities, Planned Schedule, Organizational Structure, and so on. As an organization to manage the campaign activity, the establishment of Multi-GNSS Asia (MGA) was proposed. The organization should be voluntary, with no direct funding of projects, but would encourage participants to share resources and knowledge.

C. Application

6. 32 presentations were given in the six applications sessions. Several applications were presented, and valuable information exchanges took place through Q&A sessions and during the coffee break times.
 - Multi-GNSS network establishment
 - Ionospheric Observation
 - Precise Positioning including precise agriculture
 - Disaster Mitigation and Management
 - Intelligent Transfer Systems (ITS), Mapping, and Location Based Services (LBS)

- Timing and other

D. Group Discussion

7. Four discussion groups were formed. Summaries of discussions were reported by moderators. One of the most important outcomes was that personal networks and relationships were established through the group discussions.

(Multi-GNSS network establishment)

8. Launching a project to establish a multi-GNSS network in collaboration with the International GNSS Service (IGS) was strongly supported. The concept of the network system was introduced and will consist of four main components: Tracking Network, Data Center, Analysis Center, and Governing Board. The implementation issues which should be addressed include: multi-GNSS receivers, data exchange format, and analysis tools for precise orbit and clock estimation.

(Precise Positioning)

9. Launching two projects to establish future joint demonstration of multi-GNSS usage: "Site-specific management for crop production using multi-GNSS" and "Automatic guidance using multi-GNSS – Field robotics" It was required that QZSS be able to provide differential correction signals, desirably free of charge. It also was requested that GNSS receivers be able to track different GNSSs, including Galileo, COMPASS, IRNSS, etc.

(Disaster Mitigation and Management)

10. The following four specific teams were established to investigate future joint demonstrations of multi-GNSS use for disaster mitigation & management: geological hazards (earthquake, tsunami), atmospheric & climatological hazards, landslides, and technological aspects. The following seven project candidates were proposed: "Validation of impact of multi-GNSS on positioning accuracy of GPS buoy data", "Validation of GNSS impact on atmosphere research and on weather prediction", "Impact of QZSS on radio occultation observation", "Degradation in steep slopes and forests monitoring using multi-GNSS", "QZSS L1-SAIF usage for system test", "More general application for disasters", and "GNSS-R(reflectometry)".

(Intelligent Transfer Systems (ITS), Mapping, and Location Based Services (LBS))

11. The following ten topics of interest were defined: "Traffic control & management", "Travel demand management", "Commercial vehicle management", "Safety and security", "Automated highway", "Navigation", "Telematics", "Surveying & infrastructure management", "Intra-regional trade", and "Other modes than auto". The implementation issues include: availability of affordable

receivers, access to specifications and internal architectures of GNSS, and whether the focus should be on region-wide or very local issues/applications.

III. Next Steps

12. The result of the workshop, including presentation materials, will be shared by participants of the workshop via the official website.
13. In the case of the proposed joint projects related to the Multi-GNSS Demonstration Campaign, further discussions will be conducted. Communication support tools such as Wiki and Mailing list will be prepared.
14. It was agreed that the next annual regional workshop should be held at the end of 2010. However, the date and venue of the next workshop will be announced as soon as it is finalized.
15. The MGA will be expected to be launched to promote Multi-GNSS Demonstration Campaign.
16. Drafted Terms of Reference (TOR) which define the MGA organization, procedures, and regulations, will be available on the official website.

IV. Recommendations

17. For the next workshop it is proposed to have fewer application sessions and more group discussion sessions, so as to focus on the Multi-GNSS Demonstration Campaign.
18. More information about the Multi-GNSS Demonstration Campaign should be presented at other conference/workshop opportunities such as the 2010 IGS workshop and 2010 ICG meeting.
19. In order to promote the activities of the “Asia Oceania Multi-GNSS Demonstration Campaign”, we recommend that the following questions should be clarified in an FAQ document.
 - What will be the role of the MGA with regards to assessing and promoting projects?
 - What will be the role of participants?
 - Will MGA deal with not only QZSS but also other GNSS systems such as GLONASS, Galileo, and COMPASS?
 - What reporting processes will be adopted? Website? Newsletter? Conference/workshop presentations?
 - What is the relationship between QZSS and MGA?
 - What is the relationship between IGS and MGA?
 - What is the relationship between the IGS network and the multi-GNSS network proposed at the workshop?
 - What are the advantages and disadvantages (or restrictions) of the LEX signal message of QZSS?
 - What will be the IPR and publication rights with respect to project outcomes?
 - Will there be any support to collaborators in other countries?

V. Conclusion

20. The first workshop successfully implemented the establishment of personal networks and relationships among participants, who gained a common understanding of the forthcoming “Asia Oceania Multi-GNSS Demonstration Campaign”.

21. We have just started our joint activities, and we believe such a workshop should be held on a regular basis. We strongly encourage the official launch of the Multi-GNSS Asia (MGA) organization, which will promote the demonstration campaign and encourage joint activities in Asia Oceania region.

22. As co-chairs of the workshop, we ask participants to join the MGA and contribute to future joint collaboration in our region.

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