Global Navigation Satellite System application in Malaysia

Noordini binti Che'Man

Lecturer, Department of Urban and Regional Planning, Faculty of Built Environment, Universiti Teknologi Malaysia, MALAYSIA
Participant in Summer School "Rapid Mapping Technique for Disaster Observation and Global Change Data Acquisition" 2016

Introduction

Malaysia covers a land area of about 329,758 sq. km, consisting of 11 states in Peninsular Malaysia, 2 states in the island of Borneo (Sabah and Sarawak) and 3 Federal Territories, and with a population of approximately 30 millions (2015). Currently, the widespread use of global navigation satellite system (GNSS), give a great impact to surveying and mapping in Malaysia. This paper will give a overview regarding the Global Navigation Satellite System application in Malaysia.

GNSS in Malaysia

Global Navigation Satellite System or GNSS has become a crucial tool in several positioning applications in Malaysia. Department of Survey and Mapping Malaysia or JUPEM is government agencies which involve with the cadastral survey and the mapping survey for the country. It has experienced the tide of technological advancement for more than two decades now, since the widespread use of Global Navigation Satellite System technology and the availability of accurate satellite imagery in the field of surveying and mapping. In line with the Malaysian government's efforts to enhance its public delivery system, JUPEM through the use of real-time GNSS survey technology embark on a project aim at providing centimeter accuracy real-time positioning service through a GNSS network for the whole of Peninsular Malaysia, Kuching, Miri and West Coast of Sabah and sub-meter accuracy throughout the whole nation known as Malaysia Real-time Kinematic Network (MyRTKnet) (United Nation, 2012). With the initiation of the MyRTKnet, GNSS surveying has volutionized land surveying and mapping in the country. This project was implemented under the 8th and the 9th Malaysian Development Plan from year 2002 to 2008 respectively. This concept is based on having a network of 78 GNSS reference stations at a spacing of 30 to 150km.

Figure 1 : GNSS reference station in Malaysia
Source: United Nation, 2012

MyRTKnet services provides various surveying applications for surveying and mapping which could benefit the surveyors and other GPS users. Other than MyRTKnet, SISPELSAT is also current domestic GNSS infrastucture built in Malaysia. It is owned and operated by Marin Department in Peninsular Malaysia. It is the primary navigational-aid for vessels navigating within the shore of Peninsular Malaysia. The design based on International Association of Lighthouse Authorities (IALA) guidelines for the Performance & monitoring of a DGNSS Service in the band 283.5 – 325 kHz. There will be one future domestic GNSS infrastucture to be built in Malaysia known as Malaysian SBAS which is a space-based augmentation system that fulfills a range of user service requirements by means of an augmenting GNSS core systems.

References

Malaysian GNSS and DGPS Integrity Monitoring System [Online], accessed on 1 November 2016, available at http://gnss-integrity.angkasa.gov.my/about.php

United Nation (2012), Status of Surveying and Mapping in Malaysia.