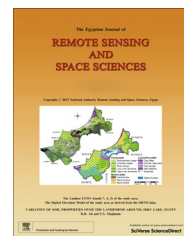




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REVIEW ARTICLE

Anticipated prospects and civilian applications of Indian satellite navigation services in Sri Lanka

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Abstract The government of Sri Lanka has embarked on a massive development programme of the country in all spheres of the economy, with the conclusion of war in May 2009. Sri Lanka is witnessing a new era with a rapid increase especially in infrastructure development projects. With the annihilation of the threats of terrorism, new prospects in satellite and space related technologies and their applications are flourishing. Navigation satellite (NAVSAT) technology plays the core role in a majority of the modern location based services (LBS) and consequent applications can be productively utilized for the development of the country. Global Positioning System (GPS) technology and related services are currently utilized in numerous location based applications in the country.

India has launched navigation service providing satellite programmes, including a regional navigational satellite system. Whilst being covered under the footprint of Indian navigational satellite programmes, neighbouring countries of India can positively use their services for the benefit of the country through collaborative approaches.

In this paper, positive impacts of 3 Indian Navigational Satellite programmes (GAGAN, IRNSS and INSAT-MSS reporting system) for the civilian applications over Sri Lanka are discussed. Other neighbouring countries covered under the footprint of Indian navigational satellite programmes can also employ these services for the location based applications productively.

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1. Introduction

The island of Sri Lanka lies in the Indian Ocean between latitudes 5°N and 10°N, and longitudes 79°E and 82°E, separated from the Indian peninsula by the Palk Strait at the Southern tip of India (Fig. 1) with a total land mass of 65,610 km² (Navaratne et al., 2005). Sri Lanka experienced armed conflicts with a terrorist group named, “Liberation Tigers of Tamil Eelam (LTTE)” since 1983 (Nagai et al., 2007). The country had been divided into two parts, controlled by the government and LTTE with changing conflict front lines in Northern and Eastern Provinces. The main cities including Colombo had high terrorist threats, consequently high security measures have been taken in the country. As a result, there were high restrictions for space related and location based technologies until 2009. After defeating three decades of terrorism through a mil-

itary action in 2009 (Wheeler, 2012), Sri Lanka stepped ahead into a new era of development. The government embarked on many infrastructure development projects including expressways, international harbours, coal and hydropower plants and airports also covering the areas which were previously under LTTE and considered as war zones, which could lead to rapid developments in most of the industries in the island (Central Bank of Sri Lanka, 2011). With the diminution of terrorist risks new opportunities in applications of space and location based technologies have commenced flourishing along with the ongoing rapid development projects in Sri Lanka.

People used landmarks, celestial bodies, dead reckoning (magnetic compass), radio navigation to satellite navigation systems for navigation purpose over the years (Kayton, 2007). Position, Velocity and Timing (PVT) via satellites are vital services that have come out in recent years. Today a majority of the location based services are hinged on navigational satellites.

Satellite navigation (SAT NAV) system provides pilotage type geo-spatial positioning at anytime of the day under any weather condition. Currently, United States GPS (Global Positioning System) and Russian GLONASS (Global Navigation Satellite System) are the only fully operated global navigational satellite systems (GNSSs). China is developing a global navigation system called COMPASS by enhancing their existing regional navigational satellite system Beidou. In addition, the European Union is developing a global navigational satellite system called Galileo, and scheduled to be fully operative around 2020. In addition, countries such as France, Japan and India are developing their own regional satellite navigation systems (El-Rabbany, 2006).

Whilst being the neighbouring country of Sri Lanka, India has launched several navigational satellite programmes and extended their services in location based technologies. In this paper, anticipated benefits of 3 Indian navigational satellite programmes (GAGAN, IRNSS and INSAT MSS reporting service) on Sri Lanka are addressed.



Figure 1 Location of Sri Lanka.

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