
GNSS Applications for Safe Navigation in Egypt's Nile

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ABSTRACT

The Global Navigation Satellite Systems “GNSS” applications were broadly developed during the last 15 years, and were combined with many important events in that precise field. GNSS applications in different fields will play a key role in almost all sectors of human life activities moving its utilizations from the transportation to all domains due to their high-performance standards. GNSS provide the fastest and most accurate method for Position, Navigation and Time “PNT”.

The uses of GNSS expanded particularly after the reconstruction and full operation of Russian Global Navigation Satellite System “GLONASS” in 2010, and the expected entry of European Satellite Navigation System “GALILEO” in operational phase in 2015, to represent integration and redundancy with American Satellite Navigation System “GPS”.

In addition to the regional augmentation systems that cover wide areas of the world, which resulted in the development of modern navigation, positioning and tracking Systems, such as Electronic Chart Display and Information System “ECDIS” and Automatic Identification System “AIS”. However, their uses are limited in North Africa in general and in Egypt in particular, despite the wide spreads of EGNOS services in North Africa.

The Nile River considered the main artery in Egypt, as it passes through the Egyptian land, it creates ports and cities on its both long sides, and it used to transport goods and tourists. Nevertheless, the Nile River has its great economic feasibility importance for Egyptian civilization; its passageways still have many small islands, shallow water, and rocks, which form dangerous obstacles to navigation by boats.

The paper reveals, the GNSS applications recommended for improving the safe navigation in the Nile River in Egypt, by using the modern navigational aids and tracking systems based on GNSS services. Moreover, it illustrates the extent of GNSS contribution for well monitoring the floating units and indicates, “Marking” the dangerous areas in the Nile river passageways.

KEYWORDS: GNSS – River Navigation – Tracking - Nile River