The Evil Waveform and Ionospheric Characterization Monitoring Network (MoNEWIC) Project

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Abstract

Launched by ESA in 2010 as part of the European GNSS Evolution programme, the Monitor project aimed in its first phase (2010-2013) to improve our knowledge of ionospheric variability and signal scintillation through the development and deployment of innovative techniques. While in the second phase (2014-2016), an extensive network of globally distributed receivers was established to analyse both total electron content (TEC) and scintillation data. Particular attention was paid to extreme scintillation events. While this remains an important part of the new eMONITOR requirements, additional emphasis was placed on monitoring the so-called Evil Wave Form (EWF), as technical distortions of GNSS signals are particularly important for Safety-of-Life applications. Within the framework of the ongoing H2020 project H037-MoNEWIC, these tasks are currently being worked on by DLR, NLR, ADS, IEEA, UPC and ICTP. Furthermore, an attempt is being made to record bitgrabber data streams of heavy scintillation events from low and high latitude regions. Such data streams can then be used as example scenarios for different GNSS receivers to test their robustness to strong phase and amplitude scintillations. For this activity, two bit-grabber recorders will be placed at low latitudes in African countries (Nigeria and Rwanda) and one at high latitudes in Scandinavia (Norway). In combination with other installed GNSS and EWF receivers, they will form the GNSS experimental receiver network within the EGNOS extension area.

The presentation will give an overview of the H2020 project "Evil Waveform and Ionospheric Characterization Monitoring Network (MoNEWIC)" and the current status of work.