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**MONITOR2: Ionospheric Monitoring Network in Support to SBAS and Other GNSS and Scientific Purposes**

Abstract:
MONITOR [1] is a project from the European Space Agency's GNSS Evolutions Programme started in 2010, dedicated to the collection of data and products during active periods of solar activity for later understanding of the impact of ionospheric effects on EGNOS and Galileo system performance. In the frame of this project several tasks have been achieved, in particular the deployment of a network of scintillation receivers (Novatel + Septentrio + GISMO) mainly at low and high latitudes, the development of a real time Central Archiving and Processing Facility (CAPF) and the development of dedicated processors to generate user oriented outputs for TEC, scintillation, and space weather issues.

This project, in its new phase started in 2014, is moving forward with an improved and updated scope, addressing in addition to general ionospheric monitoring, the generation of dedicated products and reports to EGNOS system evolution, international collaboration in related ionospheric topics including feasibility studies in Africa. The main new features are: an upgraded data archiving system providing improved accessibility, the integration of data from SAGAIE network [2] from French Space Agency, CNES and the exploitation of its data for new products, new station deployment in regions of interest (mainly in West and Central Africa and in high latitudes in Europe), and the upgrade and development of new products allowing better analysis of geophysical conditions during periods of compromised system performance and service. As an example, the Along Arc TEC Rate (AATR index) [3] is computed routinely, as it has proven to be a clear indicator of ionospheric activity that degrades SBAS system performance [4]. In addition, Monitor already produces VTEC maps (obtained using various techniques and algorithms), several space weather indicators including solar flare detection, ROTI maps, indices related to the quality of measurements and scintillation analysis tools.

This paper focuses on the new developments of the project, including new features, the data accessibility and data share and access policy. The ionosphere scintillation aspects, in particular at high latitudes, and the last developments of the GISM scintillation model will also be addressed.

[1] R. Prieto Cerdeira, Y. Béniguel, "The MONITOR project: architecture, data and products", Ionospheric Effects Symposium, Alexandria VA, May 2011
[2] H. Secretan (CNES), M. Monnerat (Thales), R. Kameni (ASECNA), "SAGAIE, a GNSS Network for Investigating Ionospheric behavior in sub-Saharan region", InsideGNSS September/October 2014
[3] J. Sanz, J.M. Juan, G. González-Casado, R. Prieto-Cerdeira, S. Schlüter, R. Orús-Perez,

European Space Agency, ES “Novel Ionospheric Activity Indicator Specifically Tailored for GNSS Users“, ION GNSS 2014, Tampa, September 2014