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New Near-Real Time Monitoring of the Ionosphere over Europe Available On-line

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With the beginning of the 24th Solar cycle, the increased Solar activity requires having a close eye on the ionosphere for better understanding Space Weather physics and its effects on radio communications. In that frame, near-real time ionospheric models over Europe are now routinely generated at the Royal Observatory of Belgium (ROB). These models are made available to the public through new interactive web pages at the web site of the GNSS team (www.gnss.be) and the Solar Influences Data Analysis Center (www.sidc.be) of ROB. The models are ionospheric Vertical Total Electron Content (VTEC) maps estimated every 15 minutes on a 0.5°x0.5° grid. They use the high-rate GPS observations of the real-time stations in the EUREF Permanent Network (EPN) provided by the ROB NTRIP broadcaster. The maps are published on the ROB web site with a latency of 7-15 minutes with respect to the last GPS measurement included in the 15-minute observation files.
In a first step, this paper presents the processing strategy used to generate the VTEC maps: input data, parameter estimation, data cleaning and interpolation method. In addition, the tools developed to further exploit the product are introduced, e.g. on-demand animated VTEC maps. In a second step, the VTEC maps are compared with external ionospheric products and models such as Global Ionospheric Maps and IRI 2011.
These new near-real time VTEC maps will allow any user within the geographical scope of the maps to estimate in near-real time the ionospheric delay induced along the signal of any observed satellite. In the future, the web site will continuously be updated in response to evolving user needs. This paper opens doors to discussions with the user community to target their needs.