Geophysical Research Abstracts
Vol. 15, EGU2013-13988, 2013
EGU General Assembly 2013

Increasing the accuracy in the application of global ionospheric maps computed from GNSS data

Manuel Hernadez-Pajarez, Miguel Juan, Jaume Sanz, and Alberto Garcia-Rigo
Res. group of Astronomy and Geomatics (gAGE), UPC, Barcelona, Spain

Since June 1998 the Technical University of Catalonia (UPC) is contributing to the International GNSS Service (IGS) by providing global maps of Vertical Total Electron Content (Vertical TEC or VTEC) of the Ionosphere, computed with global tomographic modelling from dual-frequency GNSS measurements of the global IGS network.

Due to the IGS requirements, in order to facilitate the combination of different global VTEC products from different analysis centers (computed with different techniques and softwares) in a common product, such global ionospheric maps have been provided in a two-dimension (2D) description (VTEC), in spite of they were computed from the very beginning with a tomographic model, estimating separately top and bottomside electron content (see above mentioned references).

In this work we present the study of the impact of incorporating the raw vertical distribution of electron content (preserved from the original UPC tomographic runs) in the algorithm of retrieving a given Slant TEC (STEC) for a given receiver-transmitter line-of-sight and time, as a "companion-map" of the original UPC global VTEC map distributed through IGS servers in IONEX format. The performance will be evaluated taking as ground truth the very accurate STEC difference values provided by the direct GNSS observation in a continuous arch of dual-frequency data (for a given GNSS satellite-receiver pair) for several receivers worldwide distributed which have not been involved in the computation of global VTEC maps.