Contribution of the Royal Meteorological Institute of Belgium to the ESA Space Weather Pilot Project.

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Abstract

The Royal Meteorological Institute of Belgium (RMIB) as one of the three Belgian Space Pole institutes has participated as a partner to the SIDC ESA Space Weather Pilot Project with the Royal Observatory of Belgium (ROB), the Belgian Institute for Space Aeronomy (BISA) and Creaction, Inc.

In particular, the Ionospheric Profils division of the RMIB and The Earth Rotation, Geodysie and Time division have exploited their synergies to develop a forecast service for GPS users. In this paper, we present the different tasks developed and done at the RMIB to reach this goal.

The project results lead to several Web pages (see http://gpsatm.oma.be) where one sees in particular the geomagnetic K index of Dourbes estimated in real time and the comparison between of GPS Total Electronic Content (GPS-TEC) and Ionosonde Electronic Content (IEC) ...

Tasks entrusted to the RMIB

- Calculation of the IEC (Ionospheric Electronic Content) from measurements of the digisonde at Dourbes and validation of the GPS-TEC (Total Electronic Content) in near real-time.
- Automatic Transfer of the data from Dourbes and preparation of the parameters requested for specific work packages.
- Based on the 10 year data bank accumulated at ROB about the occurrence of small-scale ionospheric disturbances, the Dourbes ionosonde and geomagnetic data bank, study of the correlation between geomagnetic activity and the occurrence of severe to extreme ionospheric small-scale variability.

Products

- Validation of the GPS-TEC based on ionosonde measurements
- Correlation between the geomagnetic activity and the ionospheric small-scale variability
- Monitoring of the geomagnetic field in near real-time

Publications: