

IONOSPHERIC SPECIFICATION SERVICES FROM THE DIAS IONOSONDE NETWORK

Anna Belehaki

National Observatory of Athens, IAASARS, Metaxa and Vas. Pavlou, 15236 Greece

The strategic goal of DIAS - European Digital Upper Atmosphere Server is to establish a unique e-infrastructure in Europe for the monitoring, specification, forecasting and prediction of the ionosphere - plasmasphere - thermosphere environment for both scientific and operational applications. The service is based on data from 10 European Ionosondes (Athens, Rome, Ebre, Arenosillo, Chilton, Juliusruh, Pruhonice, Moscow, Tromsø and Sodankylä). DIAS developments are coordinated by the Ionospheric Group of NOA (Belehaki et al., 2005; 2006a; 2007) and the system has gone through 4 major releases since its first operation in 2007. The system is under continuous evaluation and improvement, through systematic upgrades and validation of the released services. The DIAS portal is accessible at <http://dias.space.noa.gr>.

The basic products available for European latitudes, are: (1) real-time ionograms; (2) nowcasting and forecasting maps of ionospheric parameters (e.g., foF2, M(3000)F2, MUF); (3) nowcasting maps of the electron density up to the hmF2 altitude; (4) alerts for forthcoming ionospheric disturbances in the European sector using data from the Advance Composition Explorer (ACE) mission of NASA.

Recently, the DIAS system was selected as one of the federated services that will support the pilot phase of the Space Situational Awareness Preparatory Phase of the European Space Agency (SSA SN-IV3 project), and therefore it has undergone major upgrades concerning its Information -Technology (IT) infrastructure and its scientific services. In order to be fully compliant with SN IV-3 requirements, two basic upgrades have been implemented: (1) the upgrade of the nowcasting mapping algorithm to extend the ionospheric maps at higher latitudes (2) the implementation of an ionospheric-plasmaspheric profiler able to produce TEC maps over Europe.

In parallel the DIAS DB has been selected by the FP7- RI ESPAS consortium (<http://www.espas-fp7.eu>) as the main data repository for European ground-based ionospheric datasets, and the work of homogenizing DIAS metadata and harvesting them to the ESPAS platform is under implementation. The first phase concerns the use case for searching for datasets and characteristics within the datasets. The second phase of ESPAS, in which DIAS also participates, concerns use cases for developing e-science services to meet the needs of the near-Earth space communities.

This contribution presents the system functionality, the data and products released from the front end, the backend applications including interfaces and scientific models deployed to run in real time. Results on the validation of products indicative of their accuracy will be also summarized.