



On the advantage of EISCAT(3D) measurements in technological applications

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The Earth's ionosphere may pose serious threats to those technological applications relying on satellite radio signals propagating through the atmosphere. At high latitudes, those threats may be driven by spatial and temporal fluctuations in the Total Electron Content as well as by scintillations. The effect of particular ionospheric events on applications related to Global Navigation Satellite Systems (GNSS) and to Earth remote sensing will be shown and discussed.

The EISCAT measurement campaigns have been set up in the framework of the Trans-National Access programme, in order to improve the modelling of ionospheric effects on satellite radio signals. The improvement is based on a modelling based not on the usual integrated information carried by satellite radio signals but on the imaging operated by the EISCAT incoherent scatter radar. The radar measurement results are compared with transionospheric radio signals at VHF, UHF, and L band in order to understand the feasibility and appropriateness of the two approaches.

The advantage offered by the future EISCAT_3D imaging with respect to its capability of assisting this type of technological applications will be discussed. In particular, the purpose of this study is to show how and to which extent EISCAT_3D measurements may be used in applications such as satellite navigation, precise positioning, surveying, augmentation systems, remote sensing, amongst others.