



Impacts of Space Weather Effects on the Ionospheric Vertical Total Electron Content

Johannes Hinrichs (1), Volker Bothmer (1), Niclas Mrotzek (1), Malte Venzmer (1), Eren Erdogan (2), Denise Dettmering (2), Andreas Goss (2), Michael Schmidt (2), Florian Seitz (2), Klaus Börger (3), Sylvia Brandert (3), Barbara Görres (4), and Wilhelm F Kersten (4)

(1) Institute of Astrophysics at the University of Goettingen (IAG), Goettingen, Germany, (2) Deutsches Geodätisches Forschungsinstitut der Technischen Universität München (DGFI-TUM), Munich, Germany, (3) German Space Situational Awareness Centre (GSSAC), Uedem, Germany, (4) Bundeswehr GeoInformation Centre (BGIC), Euskirchen, Germany

In the space weather project OPTIMAP (OPERational Tool for Ionosphere Mapping And Prediction) we investigate and analyse the solar influences on the Earth's ionosphere, to help establish an improved forecast for global VTEC maps, taking into account space weather effects. The resulting service will be implemented at the German Space Situational Awareness Centre. Here we present results from the analysis of a time series of global ionospheric VTEC-maps provided through computations at DGFI-TUM and the IGS analysis center CODE, in conjunction with EUV and X-ray radiation and solar wind parameters measured by space missions in operation (GOES, SDO, ACE, SOHO and STEREO). The individual impacts of radiation and different solar wind structures, such as coronal mass ejections, high speed streams and CIRs, are described. This includes an analysis of the strongest geomagnetic storms measured since the launch of ACE.