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Interactive comment on "Ionospheric Response to Solar EUV Radiation Variations: Comparison based on CTIPe Model Simulations and Satellite Measurements" *by* Rajesh Vaishnav et al.

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The manuscript focuses on examining the delay time in Total Electron Content (TEC) associated with solar activity as investigated from 70oS to 70oN latitude along the 15oE longitude. Based on the data from the International GNSS Service (IGS) and the Coupled Thermosphere Ionosphere Plasmasphere Electrodynamics (CTIPe) model, changes in TEC data are correlated with solar data relating to changes in the spectral range of the extreme ultraviolet (EUV). The period from years 2011 to 2013 is well chosen because precise data on the Solar Spectral Irradiance (SSI) is available and the EUV variability is pronounced at the first maximum of solar activity during the 24th

solar cycle. The comparison of TEC data changes with EUV data, the SOLAR2000 and EUVAC ïňĆux10 models and the solar radio ïňĆux index F10.7 leads to a more precise accuracy of delay times from EUV to TEC changes and to improvements in the physics-based Coupled Thermosphere Ionosphere Plasmasphere Electrodynamics (CTIPe) model. In this section, different degrees of correlation with TEC data are clearly explained using the simulated or modeled or measured energy input into the CTIPs model. Taking these results into account, the ionospheric delay time is estimated for the various sources of EUV or EUV-simulated data at different states of solar EUV activity. The EUV-SDO data provide the most reliable values for the TEC time delay. To further investigate the estimated dalay time of 16 houres for the modeled TEC and 17 hours for the observed TEC, the different delay times in the northern and southern hemisphere and related issues to improve the CTIPc, the need for the availability of continous SSI-EUV flux data is clearly expressed. Investigating the correlation between TEC and SSI-EUV is difficult due to the âĂŽspontaneous' occurrence of active sunspot regions on different regions of the solar disk. Could it be helpful to select periods of distinct high EUV activity changes, as from June to December 2013, in order to derive even more preccise delay times? If longer periods are selected, the periodocity is a mixture of lower and higher solar activity. Then the appearance of sunspots at different locations on the solar disk shifts the maximum EUV emissions in relation to coherence with one another, for which the correlation is expected to decrease. An explanation of this problem would be helpful for the reader to interpret the results. Conclusion: The manuscript is clearly structured and well written. It contributes good results on the TEC delay times for the selected geografic region from 70oS to 70oN latitude along the 15oE longitude during the period from 2011 to 2013. If possible, an estimate of the expected improvement by considering the aspect of selecting coherent EUV data periods is suggested. The manuscript is strongly recommended for publication.

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