

## **RESPONSE OF THE ELECTRON CONCENTRATION IN D-LAYER TO SHORT-TERM VARIABILITY OF SOLAR ACTIVITY SIMULATED WITH A CLIMATE-CHEMISTRY-IONOSPHERE MODEL**

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**Abstract:** We have developed climate-chemistry-ionosphere model SOCOL<sup>i</sup> which is based on a general circulation model and includes complete representation of the chemistry of neutral and ionized species in the atmosphere from the ground up to the mesopause. We have studied the response of the electron concentration in the ionospheric D-layer to the short-term variability of the solar UV irradiance during the Sun rotation cycle and several solar proton events as well as the changes of the neutral composition and temperature regime of the middle atmosphere. The results of the simulations are compared with available measurements by the satellite and ground based instruments. The comparison with the observations allows the evaluation of the model performance, which will be discussed together with the perspectives of the model application for the space weather nowcasting using the solar UV irradiance data acquired by LYRA instrument onboard ESA PROBA-2 satellite and available in near-real time.