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Improved EUV dataset for ionospheric response studies

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The main contribution to production of ionisation during quiet solar wind conditions happens by Extreme Ultraviolet (EUV) and X-ray solar radiation, which ionizes the atoms and molecules in the upper atmosphere. Other phenomena such as energetic charged particles and cosmic rays also have an ionizing effect and can contribute to the ionosphere. The amount of energy (photon flux) at EUV and X-ray wavelengths varies by about a factor of two over the 11 year solar
cycle. This variation is clearly reflected in the electron density of the ionosphere. Solar indices are commonly used to describe solar activity and variability. Different indices are used to either describe the solar spectrum or the effect of solar EUV on the atmosphere and ionosphere. The irradiance variations from solar minimum to solar maximum in the EUV range reach up to 200%. For longer wavelengths this variability decreases rapidly. Proxy data are typically used to model the TEC in the Earth atmosphere. We present studies that show for which cases the proxy data is a good proxy for EUV variability and for which wavelengths the dataset shows large deviations from the actual EUV variability. This study might help to improve the ionospheric response the the incoming EUV variability.