



## **Discrepant Responses of the Global Electron Content to the Solar Cycle and Solar Rotation Variations of EUV Irradiance**

Yiding Chen, Libo Liu, Huijun Le, and Hui Zhang

Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, China (chenyd@mail.iggcas.ac.cn)

In this paper the responses of the ionosphere to the solar cycle and solar rotation variations of extreme ultraviolet (EUV) irradiance are comparatively investigated using daily mean global electron content (GEC) and 0.1–50 nm EUV daily flux. GEC is well correlated with EUV on both the solar cycle and solar rotation timescales; however, the responses of GEC to the solar cycle and solar rotation variations of EUV are significantly different in terms of the following two aspects: (1) There is a significant time lag between the solar rotation variations of GEC and EUV; the lag is dominated by a 1-day lag and generally presents a decrease trend with solar activity decreasing. For the solar cycle variations of GEC and EUV, however, there are no evident time lags. (2) The GEC versus EUV slopes are different for the solar cycle and solar rotation variations of GEC and EUV; the solar cycle GEC versus EUV slope is higher than the solar rotation GEC versus EUV slope, and this difference occurs in different seasons and latitudinal bands. The results present an aspect of the difference between ionospheric climatology and weather.