

Long time scale variation of ionospheric conductivity and geomagnetic Sq amplitude due to geomagnetic secular variation

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Effects of the secular variation of the geomagnetic main field on the ionosphere were examined. Variation of ionospheric conductivity was estimated using the intensity of the geomagnetic main field given by IGRF model. It was found that decrease of the intensity causes enhancement of the height-integrated conductivity by about 30 % at its maximum in the period from 1941 and 1998. Next, variation of the amplitude of geomagnetic Sq field was examined in the same period. The results show that the amplitude increases by about 15 % in maximum case at the observatories where geomagnetic main field is clearly decreasing but not at those where the field strength was almost constant. This is consistent with the results of the previous simulation for the effects of geomagnetic field strength on the ionospheric dynamo.

