Relationship between global temperature anomalies and geomagnetic aa index using decomposition method

I. H. Cho[1], Y. J. Moon[2], and H. Y. Chang[1]
[1]*Kyungpook National University,* [2]*Kyung Hee University*

We have examined the relation between global temperature anomalies and the geomagnetic aa index (observed at the antipodal observatories located at England and Australia where recordings were available back to 1868). There exists a peace of evidence for a linkage between solar induced parameters and the global warming. The geomagnetic aa index is compared with global temperature anomalies using decomposition methods. We find that recent anomalies is inconsistent with that of aa index. It may be implying that the global warming is caused by anthropogenic factors.

Geomagnetic and solar activity variations of the nighttime mid-latitude ionospheric trough observed by DMSP F15

Ho-young Kim[1] and Sun Mie Park[2]
[1]*Korea Science Academy,* [2]*KAIST*

The equatorward edge of the high-latitude convection region is frequently colocated with a region of depleted plasma density, which usually has a sharp poleward edge and a more gradual decline at its equatorward side. The total plasma concentration depletion can exceed an order of magnitude in the F region and is called the mid-latitude trough. We investigate the geomagnetic and solar activity dependences of the nighttime mid-latitude ionospheric trough using in situ measurements carried out by the DMSP F15 satellite at 833 km altitude sun-synchronous polar orbit (21:30 LT) for the period of 2000-2001. The result shows correlations between the mid-latitude trough and the geomagnetic disturbances. The ionospheric trough location moves equatorward as the Kp index increases and the Dst index decreases. However, it is seen to have no correlation with the solar activity variations (F10.7 values). During geomagnetic disturbances the electric fields and particle populations which characterize the auroral region expand equatorward. These intense convection electric fields can be responsible for density depletion and ionospheric trough formation.