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Universal time dependence of the AE index deduced from the realtime magnetosphere simulations

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We examine the geomagnetic AE indices dependence on the universal times (UT) using the results of the NICT realtime magnetosphere simulation. In this study we compare two simulation electrojet indices deduced from the long-duration and continuous realtime simulation under various real solar wind parameters: One is AE(280), calculated from all the mesh points at latitudes between 60 and 70 degrees. The other is AE(12), calculated from the 12 nearest mesh points to the real AE observatories. We find the UT dependence in AE(12), while AE(280) depend little on the UT. The dependence is generated by the distance or latitude difference between the observatories and the locations which contribute the most to the AU or AL indices, as shown by the observational results. We show the quantitative relation between the two indices every UT.

Keywords: geomagnetism, AE index, magnetosphere, simulation, conductivity, universal time