

Long-term variations of quiet-time geomagnetic H components on the nightside at mid latitudes

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Magnetic H-component values for several mid-latitude observatories were analyzed using the principal component analysis. It was found that there exists a seasonal variation in the opposite sense between the northern and southern hemispheres. The amplitude of the seasonal variations is larger at higher latitudes. This fact possibly indicates that the seasonal variation is caused by a electric current system at high latitudes such as the Region-1 current system. It was also found that there exists an irregular variation in the same sense between the two hemispheres, which is likely to anti-correlate with solar-wind activity.

Keywords: geomagnetic variation, long-term variation, field-aligned current