

POLAR MAGNETIC INDICES: A NEW KEY TO CORRELATE MAGNETIC VARIATIONS IN THE EARTH'S HEMISPHERES

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We present the first results of a statistical study of the correlation between the variations of geomagnetic activity at two near-pole geomagnetic observatories: Thule in the Northern hemisphere and a new, polar Concordia (Dome-C) observatory in the Southern hemisphere. The results obtained show an extremely high correlation between geomagnetic activity indices at these two polar geomagnetic observatories. Especially high correlation occurred during equinoctial months when the correlation coefficient between the polar magnetic indices computed from magnetic variations measured at these observatories was 0.94-0.96, which is probably the best correlation observed between two hemispheres for a long enough time interval. The correlation between the geomagnetic activity indices in two polar regions exceeds significantly the correlation between these indices and the solar wind coupling function, which shows that despite the huge distance between the polar regions in two hemispheres, the different geographic position of the stations, a significant asymmetry in geomagnetic disturbances due to IMF By effect, an effect of inter-hemispheric currents, turbulence of the solar wind flow, and the effect of local neutral winds in the ionospheres of two hemispheres, the inter-hemispheric similarity plays a predominant role even at very high latitudes in the region of open magnetic field lines.

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