CONJUGATE ASYMMETRY IN ULF PC3 WAVE BEHAVIOUR AND ITS VARIATION THROUGH THE SOLAR CYCLE

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In 1965 J. Verő demonstrated that near sunspot maxima the mid-latitude Pc3 pulsation amplitude drops drastically to about half of its normal value during (local) winter months. It was found moreover, that the winter attenuation of pulsations is related to the anomalously high winter plasma density of the upper ionosphere – plasmasphere region. The phenomenon was termed by Verő as the winter anomaly of geomagnetic pulsation activity. Up to the present time, the effect has been demonstrated for all sunspot maxima which have occurred since the IGY; in addition, some new details have also been discovered and clarified. However the basic question, i.e. the mechanism of damping effect remains unanswered. In this study the results of an analysis of geomagnetic pulsations recorded at nearly conjugate stations (Tihany in Hungary and Hermanus in South Africa, L = 1.8) during the period 2001-2006 is reported. It was found that the density dependent attenuation of pulsations caused remarkable asymmetries in the course of the latest sunspot maximum. Moreover, it is established that the attenuation is not confined to the winter months, but it occurs throughout the whole year, but it is the most efficient, when the plasma density is highest, i.e. during winter anomaly of the F2 electron density near sunspot maxima.

ULF waves, winter anomaly, solar cycle variation

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