



## **ULF energy transfer in the solar wind - magnetosphere - ionosphere - solid Earth system**

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It is now possible to bring together recent, previously unknown, and amazing correlations that have been shown to exist between different parts of the solar wind - magnetosphere - ionosphere - solid Earth system, in particular with respect to earthquake activity. There is strong evidence of electromagnetic processes responsible for earthquake triggering, that we study extensively. We will focus here on one correlation between power in solar wind compressional fluctuations and power in magnetospheric pulsations and ground H component fluctuations. The variation of the horizontal component H of the geomagnetic field is the crucial parameter in the Magneto-Seismic Effect MSE to be discussed in a companion paper. The connection of earthquake activity to possible solar or solar wind drivers is not well understood; many authors have attempted correlations in the past with mixed results. We will use data from the S3C Great Observatory and from ground-based magnetometer arrays to show long term trends near solar minimum for ultra low frequency (ULF) fluctuations, specifically the Pc5 (~1 - 8 mHz) band. For the satellites we will also demonstrate the entry of compressional Pc5 energy and waves at the dayside magnetopause, and the transport through the magnetosphere for selected events in 2002. The ionosphere modulates waves transmitted to the ground so we only compare the wave power and not the waves themselves for the ground-based magnetometers. The role of ionospheric currents will be highlighted in a companion paper.