



## **Comparison of the ionospheric plasma turbulence over seismic and equatorial regions.**

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Many strong earthquakes which are objects of interest in investigations of the changes registered in the electric field in the ELF frequency range (1 Hz – 1250 Hz) in the ionospheric plasma, occurs in the equatorial region. In order to determine, if the observed disturbances are connected with the coupling between the ground and the ionosphere in the seismic active region, it is necessary to analyse and compare plasma instability phenomena occurring in the equatorial F-region ionosphere and are known as equatorial spread F (ESF) to changes before earthquakes because their character is very similar.

The aim of this paper is the analysis of changes in the electromagnetic ELF field, registered by the French micro-satellite DEMETER over epicentres of three selected strong earthquakes with magnitude bigger than 6, which took place in: Sichuan, Chile and Haiti. A comparison between those cases and changes observed by the same satellite over the equatorial region in the similar time of year is presented.

The analysis of the data, was conducted with the Fourier, wavelet and bispectral methods. The last one gives answer to question, whether the changes localized with the spectral analysis are nonlinear. Further processing consists the determination of the power spectrum and its slope, which allows to determine the type of turbulence which was induced by the three wave interaction. The last stage of the presented research, was finding the characteristic remarks of changes, by calculation of the probability density function (PDF) and calculation of its characteristic values such as kurtosis and skewness.