



ELF recordings in Republic of Macedonia

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The aim of authors is to present for the first time, the results related to the acquisition and research of the Schumann resonance in Macedonia. Since 5.09.2013 two antennas to record atmospheric electromagnetic waves has been installed on the site in the Plackovica mountain. As a next step related to a profound analyses of Schumann's resonance, our intention should be researching the characteristics of local/regional geomagnetic and seismological activities, as well as the correlation with local changes in some Schumann's resonant modes of interest. Further there was comparison of the results obtained by Auto-regresive spectral analysis of ELF field and seismic activity for the time interval of six hours in the day of strong earthquake: IRAN-IRAQ BORDER REGION 2017/11/12 18:18 UTC, Mw= 7.3 The main goal is observing changes in the characteristics of ELF frequencies in the interval 1-5Hz and the Schumann's Resonance interval 6-30Hz. As examples the 24hour registration on the date 2016/11/19, withAR spectral analysis and summing of 720, 120 second samples, in the frequency interval 0.5-30Hz are clearly differentiated the following resonance frequencies (RF): RF1 = 0.90HZ; RF2 = 3.18Hz; RF3 = 7.56-7.9Hz; RF4=13.85Hz; RF5 = 19.23-20.026Hz; RF6 = 26.59Hz; Equipment Design Three induction antennas with ferro-cores were d for this research. This equipment for the first time was tested in 2014 on the mountain Karadzica (1500 m), in the central part of R. Macedonia. The seismic activity in Macedonia has been continuously followed since 1958, the geomagnetic activity since 2004 (FDI fluxgate magnetometer) and the monitoring of ELFsignals since 2013 on 2 locations: Seismological Observatory –Skopje and University of Shtip - Shtip. In 2016 on was activated an unified geophysical station in which are included: seismological station, fluxgate magnetometer (Lemi) and induction antennas (NS and EW) located in an object-part of the University in Stip. location near the city Shtip, on the mountain Plachkovica (PLAC) 1500 meters above sea level (41.79N,22.44E) Applying the FFT and autoregression spectral analysis (AR), Schumann's modes are clearly visible. The first results point out the possibility of using this kind of research for correlation in such different components of the geophysical field. However, not to be forgotten that the changes in the ELF waves spectrum at a specific location are effected by the changes in the SpaceWeather.

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“Exploration of changes in some geophysical fields preceding the occurrence of earthquakes in the Balkans”.