



Disturbances of the VLF/LF radio signal reception at Dobrogea Seismological Observatory due to local abnormal electric activity

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The National Institute for Earth Physics, as part of the INFREP initiative, has monitored radio waves emitted by 10 transmitters all over Europe in relation with seismicity in the last 5 years. In Romania a radio receiving system is located in only one site (Dobrogea Seismological Observatory) situated in Eforie Nord, in the Eastern part of Romania. The electro-magnetic field monitored both at the ground and (sub) ionospheric level, in different frequency ranges (VLF/LF) is considered to be promising for earthquake forecasting.

Because the abnormal behavior of the VLF/LF recordings that could not be correlated with the tectonic activity of the seismogenic zones crossed by the radio paths, we decided to monitor other two parameters, at the receiving site: the vertical component of the atmospheric electric field, which indicates variations of electrical properties of the near-ground air (Boltek electric field mill), and the atmospheric local conditions (WS-3600 weather station). The zone is also surveyed by seismic devices (seismometers, accelerometers and infrasonic equipment) and GPS/GNSS base stations to emphasize the local tectonic conditions. We obtained in such way a multiple-parameter monitoring system that increases the confidence in observational data and decreases uncertainties regarding the accuracy of the data recorded until now. As we are exploring different parameters we have obtained some conclusions regarding the correlation of the anomalies with their possible causes. The final expectation of the monitoring system regard the chance to take a snapshot of the geophysical medium before, during and after a significant earthquake occurrence and to reveal if there was or wasn't a noticeable trace of the preparatory stage of it.

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