



## **Radio VHF emission as Earthquake atmosphere precursors.**

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Long time observations (1992-2002) of high frequencies radioemission at Greece seismic net stations demonstrate the high probability of VHF signal registration (two channels 43 and 51 MHz registered simultaneously) before the imminent earthquakes (magnitude range:  $M=4.5-6.5$ ). Based on careful examination of real geometry for each pair of earthquake epicenter point and point of VHF observation we conclude that FOV obstacles as mountains or hills can produce an effective shadow. This is one of arguments for definition of source location of HF radioemissions. Additional observed fact is that epicenters position of major earthquakes is outside the radiohorizon of observation points. It is important to note that sometimes the epicenters of future earthquake were located under thick seawater layer. Take into account above pointed out and the statistic of long time observations we find decision on atmosphere nature of intensive VHF radioemission before majority of Mediterranean earthquakes.

The model of convective mechanism for electrical charged clouds appearing over the earthquake preparation zone is discussed. Electrical discharges in atmosphere are proposed as possible reason of pre earthquake radio VHF noise emissions. The supposed mechanism of preseismic electricity generation is the model of convection carrier started in an atmosphere. It is governed by the horizontal gradient of air temperature. The occurrence of electrical charges in a surface of the sea and transportation them further on heights up to 10 km in our model occurs due to sporadic energy injections that allocated within bottom of the sea as gases and heat.

The dimensions of width and height of active atmosphere region are governed by the size of assortment atmosphere convection cells in the earthquake preparation area. The mean scale of the sporadic spots is close to 3 km each as it is derived from shadow

geometry and spectral fluctuations of VHF signal. Based on experience of Greece VHF precursors observation the method for satellite mapping of VHF emission (40-60 MHz band) as part of VULKAN project for early warning of natural hazards are discussed. The flux power density of VHF emission is estimated and compared with observed one at referenced sources (Kobe and Spitak earthquakes).