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Anomalies Observed in VLF and LF Radio Signals on the Occasion of the Western Turkey Earthquake ($M_w = 5.7$) on May 19, 2011

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ABSTRACT

Since 2009 a network of VLF (20 - 60 kHz) and LF (150 - 300 kHz) radio receivers is operating in Europe in order to study the disturbances produced by the earthquakes on the propagation of these signals. In 2011 the network was formed by nine receivers, of which three are located in Italy and one is in Austria, Greece, Portugal, Romania, Russia and Turkey. On May 19, 2001 an earthquake ($M_w = 5.7$) occurred in western Turkey, that is inside the " sensitive" area of the network. The radio data collected during April-May 2011 were studied using the Wavelet spectra, the Principal Component Analysis and the Standard Deviation trends as different methods of analysis. Evident anomalies were revealed both in the signals broadcasted by the TRT transmitter (180 kHz) located near Ankara and in a VLF signal coming from a transmitter located in Western Europe and collected by the receiver TUR of the network located in eastern Turkey. Evident precursor phases were pointed out. Some differences in the efficiency of the three analysis methods were revealed.

KEYWORDS

Earthquake Precursors; European Radio Network; Radio Signal Analysis

Cite this paper

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