

EGU21-1047

<https://doi.org/10.5194/egusphere-egu21-1047>

EGU General Assembly 2021

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



## A possible radio anomaly observed on the occasion of the $M_W=6.0$ earthquake occurred in Dodecanese islands at the end of January 2020

**Pier Francesco Biagi**<sup>1</sup>, Anita Ermini<sup>2</sup>, Mohammed Boudjada<sup>3</sup>, Hans Eichelberger<sup>3</sup>, Konstantinos Katzis<sup>4</sup>, Michael Contadakis<sup>5</sup>, Christos Skebelis<sup>5</sup>, Iren Moldovan<sup>6</sup>, Mourad Bezzeghoud<sup>7</sup>, Alexandra Nina<sup>8</sup>, and Giovanni Nico<sup>9</sup>

<sup>1</sup>Università di Bari, Department of Physics, Bari, Italy (pf.biagi@gmail.com)

<sup>2</sup>Department of Industrial Engineering, University of Tor Vergata, Rome, Italy

<sup>3</sup>Space Research Institute, Austrian Academy of Sciences, Graz, Austria

<sup>4</sup>Department of Computer Science and Engineering, European University of Cyprus, Nicosia, Cyprus

<sup>5</sup>Department of Surveying & Geodesy, University of Thessaloniki, Thessaloniki, Greece

<sup>6</sup>National Institute of Earth's Physics, Seismological Department, Bucharest, Romania

<sup>7</sup>ECT, University of Evora, Evora, Portugal

<sup>8</sup>Institute of Physics, University of Belgrade, Belgrade, Serbia

<sup>9</sup>IAC, CNR, Bari, Italy

Since 2009, several VLF/LF radio receivers have been installed throughout Europe in order to realize a European radio network for studying the radio precursors of earthquakes, called the INFREP network. The current network has nine VLF/LF receiving stations, two in Romania and Greece, one in Italy, Austria, Portugal, Cyprus, and Serbia. The receivers can measure with 1 min sampling rate the intensity of 10 radio signals in the band VLF (10-50 kHz) and LF (150-300 kHz). The scope of existing transmitters is manifold, e.g. they are used for radio broadcast (LF), for radio-navigation or time signals and mainly for military purposes in the VLF range. At the end of January 2020 an intense seismic crisis occurred in Dodecanese Islands; the main event ( $M_w=6.0$ ) occurred on January 30. This seismic activity occurred in the "sensitive" area of the INFREP network. The analysis of the data collected by INFREP receivers has revealed clear anomalies in three VLF signals appearing some days before the main earthquake. The anomalies appear in the trends collected by the Cyprus receiver and the epicenter is inside the 5<sup>th</sup> Fresnel ellipses defined by transmitters-receiver. Here we report the data analysis and we present in detail the anomalies. The possibility that they are precursors of the quoted earthquake seems significant.

Biagi, P.F., Colella, R., Schiavulli, L., Ermini, A., Boudjada, M., Eichelberger, H., Schwingenschuh, K., Katzis, K., Contadakis, M.E., Skeberis, C., Moldovan, I.A. and Bezzeghoud, M. (2019) The INFREP Network: Present Situation and Recent Results. *Open Journal of Earthquake Research*, 8, 101-115. <https://doi.org/10.4236/ojer.2019.82007>