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Fractal Structure with a Resonance Pattern during El Hierro 2011-2012 Volcano-Seismic Crisis: A Possible New Prediction Approach

Roberto Quevedo (1), Pedro Hernandez (2,3), Nemesio Perez (2,3)

(1) CEO and founder of Bionerics Research and business entrepreneur, Gran Canaria, Canary Islands, Spain (robertoq@bionerics.com), (2) Instituto Volcanológico de Canarias (INVOLCAN), 38400 Puerto de la Cruz, Tenerife, Canary Islands, Spain (phdez@iter.es), (3) Environmental Research Division, ITER, 38611 Granadilla de Abona, Tenerife, Canary Islands, Spain (nperez@iter.es)

A resonance pattern in the number of earthquakes profile has been observed during the recent 2011-2012 period of volcanic unrest at El Hierro Island, Canary Islands. This pattern has allowed us to predicting the ratio number of earthquakes and also offered a fractal profile. Some general mathematical functions have been deduced from the observed resonance phenomenon of the El Hierro submarine eruption related to the number of earthquakes. It is known that the resonance phenomenon occurring in nature usually denote a structure, symmetry or a subjacent law (Fermi et al., 1952; and later- about enhanced cross-sections symmetry in protons collisions), which, in this case, may be indicative of magmatic interactions showing a sequence not completely chaotic but cyclic provided with symmetries. Turbulent phenomena of the magma flow, at a very deep level (maybe convective), with a well-defined structure, may be becoming apparent with the resonances and fractal nature observed, since the number of the seismic movements of the crust may be a measurable conformational effect of the magma movements themselves. The resonance and fractal models allowed making predictions in cycles from a few weeks to months.