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Continuous monitoring of the C and O isotope composition of CO_2 subsurface degassing at Cumbre Vieja, La Palma, Canary Islands

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La Palma Island belongs to the Macaronesian Canarian archipelago. Its volcanic activity in the last 123 ka has taken place only at the southern part of the island, where Cumbre Vieja volcano is located. This volcano is characterized by a main 20 km long north–south rift zone and up to 1950 m in elevation and covering an area of 220 km^2 with vents located also at the northwest and northeast. It is the most active basaltic volcano in the Canaries with 7 historical eruptions being San Juan (1949) and Teneguía (1971) the most recent ones. After a seismic repose period of 46 years (only 6 seismic events recorded), two intense seismic swarms occurred at Cumbre Vieja volcano in October 2017 (7-9 and 13-14 October, 2017). In response to this volcanic reactivation process and to strengthen the volcanic monitoring system with the aim of checking the possible arrival of deep seated (magmatic) CO_2 to the surface, a new type of laser based isotopic analyzer, a DeltaRay^{TM} Isotope Ratio Infrared Spectrometer (IRIS) (Thermo Fisher Scientific) was installed at the end of October 2017 in the municipality of Fuencaliente (at the southern part of the volcano). The instrument measures simultaneously in a continuous mode the C and O isotopic composition of soil gas CO_2. Soil gas samples were taken from an inverted PVC chamber that accumulates de soil gas and pumps it into the instrument through a polyamide pipe. The chamber is vented with fresh air during 20 minutes and accumulates soil CO_2 gas for 40 minutes each hour. During the study period the recorded data showed similar atmospheric CO_2 concentration ($\sim$0.04%) and a range of δ^{13}C-CO_2 from -15.4 to -6.7‰ vs. VPDB, with an average value of -10.1‰The results time series suggest atmospheric CO_2 with slights inputs of biogenic CO_2. This relatively new analytical technique provide a valuable tool to monitor the emission of deep seated gases, an excellent information to improve early warning system of the volcano. To correlate temporal variations in the isotopic signatures with changes in the seismic-volcanic activity of Cumbre Vieja volcano, a longer observation period will be required.