



Hydrogen chloride $^{37}\text{Cl}/^{35}\text{Cl}$ isotopic ratio field analyzer for the investigation of volcanic plumes

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We present a new analyzer for the in-field measurement of the isotopic ratio $^{37}\text{Cl}/^{35}\text{Cl}$ in the hydrogen chloride emitted by volcanoes, developed within the frame of the ERC Project CO₂Volc (Grant 279802). The Project aims to the measurement of several molecular species in the volcanic plumes. The analyzer is based on molecular spectroscopy. The volcanic plume interacts in a multipass cell with two laser beams at suitable wavelengths. From the absorptions of the two beams by the two isotopologues the isotopic ratio is retrieved. We report here the results of the laboratory checks of the instrument, and the results of a measurement campaign carried out on Etna and Vulcano. The campaign aimed to verify not only the in-field performances of the analyzer but also to assess its robustness in such a hostile environment.