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Melbourne and Rittmann Volcanoes: Results from ICE-VOLC Project

Andrea Cannata[1,2], Danilo Contrafatto[2], Paola Del Carlo[3] (paola.delcarlo@ingv.it), Giuseppe Di Grazia[2], Angelo Ferro[2], Salvatore Gambino[2], Gaetano Giudice[4], Giovanni Giuffrida[4], Alessandro La Spina[2], Graziano Larocca[2], Marco Liuzzo[4], Giuseppe Salerno[2], Letizia Spampinato[2], Luciano Zuccarello[2]
[1]Università degli Studi di Perugia, Dipartimento di Fisica e Geologia, Perugia, Italy, [2]Istituto Nazionale di Geofisica e Vulcanologia, Osservatorio Etneo, Catania, Italy, [3]Istituto Nazionale di Geofisica e Vulcanologia, Pisa, Italy, [4]Istituto Nazionale di Geofisica e Vulcanologia, Palermo, Italy

Melbourne and Rittmann volcanoes are located in the Victoria Land. While Rittmann's last eruption dates back probably to Pleistocene, those of Melbourne occurred between 1862 and 1922, thus suggesting that it is still active. At present, Melbourne and Rittmann show fumarolic fields. Despite the limited knowledge on both volcanoes (particularly for Mt. Rittmann), the Antarctic uncontaminated framework (characterised by absence of anthropic noise) and the proximity to the Italian Mario Zucchelli Station make them ideal sites for studying volcano seismic sources, geothermal emissions and volcanic gas impact on the environment.
In the framework of the ICE-VOLC project (www.icevolc-project.com), multiparametric investigations have been performed during the XXXII and XXXIII Italian expeditions in Antarctica (2016-2017). During the campaigns, different kinds of research activities were carried out, in particular: i) acquisition of seismic signals by two temporary stations on different sites of both volcanoes; ii) collection of rock samples from Mt. Rittmann and Melbourne; iii) sampling of ash layers within glaciers nearby Melbourne; iv) sampling of fumaroles gases on both volcanoes; v) remote sensing measurements of volcanic gases in atmosphere; and vi) prospection, exploration and mapping of ice-caves on both volcanoes. Results gathered in the first phase of the project allowed us to shed new light into the state of activity of these poorly-known volcanoes.