



## **ICE-VOLC Project: unravelling the dynamics of Antarctica volcanoes**

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Melbourne and Rittmann volcanoes are located in the Victoria Land. Whilst Rittmann's last eruption dates probably to Pleistocene, Melbourne's most recent eruption between 1862 and 1922, testifying it is still active. At present, both volcanoes display fumarolic activity. Melbourne was discovered in 1841 by James Clark Ross, Rittmann during the 4th Italian Expedition (1988/1989). Our knowledge on both volcanoes is really little. The position of these volcanoes in the Antarctic region (characterised by absence of anthropic noise) and its proximity with the Italian Mario Zucchelli Station makes them ideal sites for studying volcano seismic sources, geothermal emissions, seismo-acoustic signals caused by cryosphere-hydrosphere-atmosphere dynamics, and volcanic gas impact on environment.

Hence, the main aim of the ICE-VOLC ("multiparametric Experiment at antarctica VOLCanoes: data from volcano and cryosphere-ocean-atmosphere dynamics") project is the study of Melbourne and Rittmann, by acquisition, analysis and integration of multiparametric geophysical, geochemical and thermal data. Complementary objectives include investigation of the relationship between seismo-acoustic activity recorded in Antarctica and cryosphere-hydrosphere-atmosphere dynamics, evaluation of the impact of volcanic gas in atmosphere. This project involves 26 researchers, technologists and technicians from University of Perugia and from Istituto Nazionale di Geofisica e Vulcanologia of Catania, Palermo, Pisa and Rome.

In this work, we show the preliminary results obtained after the first expedition in Antarctica, aiming to perform geochemical-thermal surveys in the volcano ice caves, as well as to collect ash samples and to install temporary seismic stations.