

New data on underwater volcanoes in Bransfield Strait, Antarctica

May 16 2019



Credit: University of Granada

Scientists from the University of Granada (UGR) have successfully obtained images of the structure of two of the most important submarine volcanoes in the Bransfield Strait, Antarctica. The study was part of the 2018-19 Spanish Antarctic Expedition, which has just been completed.

The research project "BRAVOSEIS: Seismological study of the

submarine volcanoes of the Bransfield Strait (Antarctica)" is led by the UGR and covers the period 2017-20. It is funded by the Spanish Ministry of Science and Universities, in collaboration with national and foreign research groups.

The Bransfield Strait is located between the Antarctic Peninsula and the South Shetland Islands, where two Antarctic research stations are located. It is a 'zone of extension' or rift— that is, the site of a major crack in the earth's crust, through which subterranean matter can come to the surface.

One of the phenomena associated with this extension or stretching process is the formation of active volcanoes. In the Strait of Bransfield there are several volcanic vents, most of which are underwater (with the exception of Deception, Penguin, and Bridgeman Islands).

The BRAVOSEIS project investigates submarine [volcanic activity](#) in the Bransfield Strait—a topic about which very little is known. The knowledge generated by this research represents a major step forward, both theoretically and practically, particularly as this area is home to the biggest population of research stations in the whole of the Antarctic. Researchers on the project are conducting an ongoing study of the area, using a dense seismic network and marine geophysics techniques. In total, the team will conduct three scientific research expeditions in Antarctica during the lifetime of the project (2017-20).

In the most recent expedition, a group of about 30 researchers spent two months in the Antarctic, between January and February 2019. Their mission was to perform three core tasks: to complete a land-based seismic network, comprising 17 broadband seismometers, located in the South Shetland Islands and the Antarctic Peninsula; to deploy a submarine seismic network, comprising 24 ocean-bottom seismometers (OBS) and 6 anchored hydrophones; and to conduct marine geophysical

studies (bathymetry, seismic profiling, gravimetric analysis, and magnetism) on the [submarine volcanoes](#). The results will contribute to a better understanding of the three-dimensional structure, both locally and regionally.

Geophysical measurements

Despite challenges such as the adverse weather conditions, the sea conditions, and the presence of large icebergs, UGR researcher Javier Almendros González explains, "we have managed to carry out most of the activities we had planned to, installing all the seismic stations in the network and taking geophysical measurements along 1,500 kilometres of profiles."

All the instruments used during the research were designed to operate independently for a whole year. "Now we just have to hope they work correctly, and in 2020 we will go back to Antarctica to extract the data that's been recorded," he explains.

Researchers from both Spanish and foreign institutions have taken part in the study, including the University of Washington and the National Oceanographic and Atmospheric Administration (NOAA) from the United States, and Germany's GeoForschungsZentrum Potsdam (GFZ) and Alfred Wegener Institute (AWI).

Within Spain, the UGR also enjoys the collaboration of several institutions, such as the University of Jaén, the National Geological and Mining Institute, the National Geographic Institute, and the Polytechnic University of Madrid. The logistics and resources for the project are provided by the Marine Technology Unit of the Spanish Higher Council for Scientific Research (CSIC), thanks to the support of the research vessel Sarmiento de Gamboa.

Provided by University of Granada

Citation: New data on underwater volcanoes in Bransfield Strait, Antarctica (2019, May 16)
retrieved 15 May 2024 from <https://phys.org/news/2019-05-underwater-volcanoes-bransfield-strait-antarctica.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.