

Student's idea leads to Antarctic volcano discovery

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An Edinburgh student has helped identify what may be the largest volcanic region on Earth.

A study conceived by undergraduate Max Van Wyk de Vries has revealed that West Antarctica's vast [ice sheet](#) conceals almost 100 newly discovered volcanoes. The largest of these is as tall as the Eiger in Switzerland. Max, a third-year student in the School of GeoSciences, came up with the idea by analysing publically available radar mapping data of Antarctica.

He proposed his study to researchers in the School, who were impressed by the quality of Max's work and used their expertise to verify the presence of the volcanoes.

Ice sheet

Geologists and ice experts say the range has many similarities to East Africa's volcanic ridge, which is currently acknowledged to be the densest concentration of volcanoes in the world. Researchers remotely surveyed the underside of the ice sheet for hidden peaks of basalt rock, like those of other volcanoes in the region whose tips push above the ice.

They analysed the shape of the land beneath the ice using measurements from ice-penetrating radar, and compared the findings with satellite and database records, as well as geological information from aerial surveys.

Volcanic range

Scientists found 91 previously unknown volcanoes, ranging in height from 100 to 3850 metres. The peaks are concentrated in a region known as the West Antarctic Rift System, spanning 3,500 kilometres from Antarctica's Ross Ice Shelf to the Antarctic Peninsula.

"Antarctica remains among the least studied areas of the globe, and as a young scientist I was excited to learn about something new and not well understood. After examining existing data on West Antarctica, I began discovering traces of volcanism. Naturally I looked into it further, which led to this discovery of almost 100 volcanoes under the ice sheet," says Max Van Wyk de Vries.

Long-term effects

Results from the study, which is the first of its kind, will help scientists understand how volcanoes can influence long-term fluctuations in the ice sheet. They could also help improve understanding of how the continent has changed during past climates. The team's results do not indicate whether the volcanoes are active, but should inform ongoing research into seismic monitoring in the area.

Volcanic activity may increase if Antarctica's ice thins, which is likely in a warming climate, scientists say. Previous studies and the concentration of volcanoes found in the region together suggest that activity may have occurred in previous warmer periods. The study is published in the Geological Society Special Publications series.

"It is fascinating to uncover an extensive range of volcanoes in this relatively unexplored continent. Better understanding of [volcanic activity](#) could shed light on their impact on Antarctica's ice in the past, present

and future, and on other rift systems around the world," says Dr Robert Bingham.

Provided by University of Edinburgh

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