



SCAR Sub-Group

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AntVolc

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Person Responsible: Adelina Geyer

## SCAR Executive Committee Meeting 2019

Plovdiv, Bulgaria, 29-31 July 2019

# Antarctic Volcanism (AntVolc) Expert Group 2018-19 Report

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### Summary of activities:

- Membership of AntVolc has stabilised at c. 110 members, representing 16 countries (Spain, Italy, New Zealand, USA, UK, Argentina, Germany, South Korea, Japan, Australia, Poland, Iceland, Bulgaria, Greece, Romania and France)
- Adelina Geyer took over from John Smellie as Chair at the end of 2018, with a term of office of 2 years.
- The AntVolc website, hosted at the Institute of Earth Sciences Jaume Almera (ICTJA-CSIC) (<https://antvolcscar.wordpress.com/>), is under continuous update and new dedicated AntVolc Twitter (@antvolc) and Facebook accounts have been created.
- An AntVolc “White Paper” Workshop is now in the planning stage and may take place towards the end of 2019; practical considerations may require it to be moved into 2020.
- Organisation of four scientific sessions:
  - **SCAR & IASC POLAR 2018:** Davos | Switzerland | 19-23 June 2018  
Session: "Magmatic, tectonic, and geodynamic investigations of the Polar Regions". *Comment: this event was extraordinarily successful, with 84 abstracts submitted.*
  - **EGU2019:** Vienna | Austria | 7–12 April 2019  
Session: Arctic, Antarctic and other glaciated terranes volcanism – magmatic, tectonic, geomorphic and climatic implications.
  - **IUGG2019:** Montreal | Canada | 8-18 July 2019  
Session: Arctic & Antarctic volcanism in space & time – magmatic, tectonic and palaeoenvironmental aspects & linkages
  - **XIII ISAES 2019:** Incheon | Republic of Korea | 22-26 July 2019  
Session: Antarctic Volcanism and Magmatism: Past, Present and Future

- The major deliverable of AntVolc, a landmark review volume titled '*Volcanism in Antarctica: 200 million years of subduction, rifting & continental break-up*' is well underway. Thus far, apart from the overview chapters to be written by the three editors once the other submissions are complete, all but two of the chapters have been received and 24 are now revised & accepted. The volume is still on track to be completed by autumn/early winter 2019. If so, publication by mid-late summer 2020 should be assured, depending on the Geological Society of London publishing schedule at the time.

### **Major Future Initiatives and Actions:**

Continue with the writing and editing of a volume on Volcanism in Antarctica (to be published as a memoir of the Geological Society, London), with anticipated completion by end 2019.

To get underway by mid 2020 a 'White Paper' for SCAR summarizing the state of research into Antarctic volcanism and provide a roadmap for future volcanic research.

Encourage completion of an online database of tephra analyses for Antarctica, which is only partly complete so far (due to lack of funds) but already available for scrutiny online.

Support and encourage the compilation and completion of a volume titled 'The Antarctic mantle' (editors: Adam Martin & Wouter van der Wal), a review volume similar in intention to the volume on 'Volcanism in Antarctica' but with a different focus. This is a new deliverable of AntVolc.

### **Optional additional information**

#### **Outreach, communication and capacity-building activities**

AntVolc now has a new priority line to promote Education and Outreach. Our first step here has been setting up active social media accounts for our group. These are now online and can be found on twitter and facebook by searching @antvolc (or: <https://twitter.com/antvolc>; <https://www.facebook.com/AntVolc>). The coordinator is an Early Career Scientist, Max Van Wyk de Vries ([vanwy048@umn.edu](mailto:vanwy048@umn.edu)). The main objectives are:

- Sharing the details and results of ongoing projects and research online in an accessible media-friendly way specifically catering to young researchers
- Setting up and maintaining AntVolc social media pages and stimulating discussion
- Creating links with other organizations to help organize outreach events (e.g.: Antarctica Day/Polar Week etc.)
- Making details of AntVolc meetings and conference sessions available asap, alongside photos of talks and posters available online on the AntVolc website and on social media
- Extending the gallery of photos of Antarctic fieldwork, combined with descriptive captions

## Updates for your group's SCAR web page

AntVolc webpage is to be found in: <https://antvolcscar.wordpress.com/>. A new section corresponding to the new priority line of the Expert Group "Education and Outreach" has been added: <https://antvolcscar.wordpress.com/education-and-outreach/>. Additionally, the publications page has been updated and also the conference sessions publicized.

## Notable Papers

*(Three most notable papers, if applicable – see the example below, which includes a brief statement (shaded) indicating the link to the group.)*

Antoniades, D., Giralt, S., Geyer, A., Álvarez-Valero, A.M., Pla-Rabes, S., Granados, I., Liu, E.J., Toro, M., Smellie, J.L. and Oliva, M. 2018. The timing and widespread effects of the largest Holocene volcanic eruption in Antarctica. *Nature Scientific Reports*, 8: 17279; doi:10.1038/s41598-018-35460-x

*This paper provides, for the first time, a precise age for the Deception Island paroxysmal eruption, which enables its presence as tephra to be tracked right across Antarctica (> 4000 km) and raises the possibility that the event may have had pan-continental environmental effects.*

Smellie, J.L., Rocchi, S., Johnson, J.S., Di Vincenzo, G. and Schaefer, J.M. 2018. A tuff cone erupted under frozen-bed ice (northern Victoria Land, Antarctica): linking glaciovolcanic and cosmogenic nuclide data for ice sheet reconstructions. *Bulletin of Volcanology*, 80:12; doi:10.1007/s00445-017-1185-x.

*This paper describes the eruptive mechanisms and products of an explosive eruption beneath cold-based ice, the first description of such an eruption to be published, and shows how linked volcanological—cosmogenic studies can yield important new insights into past environmental reconstructions in Antarctica.*

Peters, N.J., Oppenheimer, C., Brennan, P., Lok, L.B., Ash, M. and Kyle, P., 2018. Radar Altimetry as a Robust Tool for Monitoring the Active Lava Lake at Erebus Volcano, Antarctica. *Geophysical Research Letters*, doi:10.1029/2018GL079177

*This paper describes how an new tool, radar altimetry, has been applied innovatively to monitor the elevation of an active lava lake (typically obscured by dense volcanic fumes) as a practical measure of quantifying the volcanic hazard associated with varying overpressures in an active volcanic conduit.*

## Budget

### Planned use of funds for 2018 and 2019

Month/Year (MM-YY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email
2019	White Paper Workshop	5000	Adelina Geyer	ageyer@ictja.csic.es