



FOREWORD

Forty years of Brazilian Antarctic research: A tribute to Professor Antonio Carlos Rocha-Campos

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This special volume of the *Annals of the Brazilian Academy of Sciences* (ABC) is dedicated to the first scientific leader and organizer of Brazilian Antarctic scientific investigations, the late Professor Antônio Carlos Rocha-Campos—a paleontologist, glacial geologist, and full member of the ABC. This volume also commemorates 40 years of ongoing activity in the Brazilian Antarctic Program (PROANTAR).

The Brazilian Antarctic Program began in 1982 with the exploration of a region that was previously unknown to our scientists. Gradually, as with any project, with investment and much effort, we developed the first Ph.D. programs for polar scientists. They included areas of knowledge that had not yet existed in Brazil, such as glaciology and polar oceanography. The successful implementation of our scientific program and its role within the international Antarctic community owes much to the constant efforts of Professor Rocha-Campos, who was appropriately recognized with his election to the presidency of the Scientific Committee on Antarctic Research (SCAR) of the International Science Council (ISC) for the period 1994–1998. Much of the results of Brazilian research in the first 25 years of PROANTAR are reported in the ABC's special publications (*Pesquisa Antártica Brasileira*) edited by Professor Rocha Campos (Academia Brasileira de Ciências 1989, 1990, 1998, 2004, and 2012).

In 2012, as a sign of maturity and progress, the first action plan for Brazilian Antarctic science was prepared to cover the period 2013–2022 (Simões et al. 2013); the task was developing an advanced research program. This undertaking included exploring Antarctic connections with the Atlantic Ocean and South America and examining the complexity of Antarctic ecosystems and their responses to climate change. Improving our knowledge of the Southern Ocean and its role in climate change according to different timescales was another objective. Finally, the upper Antarctic atmosphere was studied. Most of the 57 articles in this special volume of the *Annals of the Brazilian Academy of Sciences* reflect the implementation of this action plan, which is now ending.

The last 20 years have been marked by rapid changes in ice masses, ocean waters, and biota in the western part of the Antarctic Peninsula and surrounding islands, where Brazilian research has been concentrated. Thus, many articles address the detection of signs of environmental changes in this Antarctic region, one of the most sensitive on the planet. Some papers discuss climatological processes that connect the Antarctic region to South America (e.g., Vasconcelos et al. 2022).

In this volume, investigations from the most diverse areas of geosciences predominate—23 articles on glaciological, paleontological, sedimentological, pedological, and geophysical topics. In

particular, the volume records some of the Brazilian scientific investigations into the West Antarctic ice sheet that only started during the International Polar Year (2007–2009). There are seven articles on glaciological topics, of which six address the chemistry of surface snow and the record of ice cores (e.g., Marcher et al. 2022).

The search for extremophiles and the rapid advancement of genomics have accelerated investigations of Antarctic microorganisms, lichens, and mosses. Thus, it is not surprising that seven articles explore topics directly or indirectly related to the medicinal potential of some of these organisms (e.g., Lima et al. 2022).

Three articles address topics on the legal framework and diplomacy within the Antarctic Treaty System (e.g., Sampaio 2022), reflecting the global trend of integrating knowledge provided by the social and human sciences into the natural sciences, which is essential for sustainability and correct ethical actions in research.

Many of the results recorded in this volume can be attributed to the intense cooperation of Brazilian researchers with colleagues from various Antarctic programs. In particular, we cannot fail to mention the collaboration with Argentine and Chilean colleagues, who often supported our field and laboratory work and provided long and fruitful scientific discussions.

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REFERENCES

ACADEMIA BRASILEIRA DE CIÊNCIAS. 1989, 1990, 1998, 2004, 2012. *Pesq Antárt Bras*, 1–5. Rio de Janeiro.

LIMA IGO, BISPO JRS, AGOSTINHO AYH, QUEIROZ AC, MOREIRA MSA, PASSARINI MRZ, OLIVEIRA VM, SETTE LD, ROSA LH & DUARTE AWF. 2022. Antarctic environments as a source of bacterial and fungal therapeutic enzymes. *An Acad Bras Cienc* 94: e20210452. <https://doi.org/10.1590/0001-3765202220210452>.

MARCHER A, BERNARDO RT, SIMÕES JC & AUGER J. 2022. Water stable isotopes in snow along a traverse of the West Antarctic Ice Sheet: insights into moisture origins, air-masses distillation history, and climatic value. *An Acad Bras Cienc* 94: e20210353. <https://doi.org/10.1590/0001-3765202220210353>.

SAMPAIO DP. 2022. Diplomatic culture and institutional design: Analyzing sixty years of Antarctic Treaty governance. *An Acad Bras Cienc* 94: e20210539. <https://doi.org/10.1590/0001-3765202220210539>.

SIMÕES JC, VIANA AR, RESENDE E, CORREIA E, EVANGELISTA H, WAINER I, MATA MM, PELLIZARI VH & VALENTIN Y. 2013. Antarctic Science for Brazil: An action plan for the 2013–2022 period. Brasília, Ministério da Ciência, Tecnologia e Inovação.

VASCONCELLOS FC, OLIVA FG, PIZZOCHERO RM, SILVA TM, PARISE CK & CALDAS CF. 2022. Combined performance of September's Weddell sea ice extent, Southern Annular Mode, and Atlantic SST anomalies over the South American temperature and precipitation. *An Acad Bras Cienc* 94: e20210803. <https://doi.org/10.1590/0001-3765202220210803>.

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