



NASA



# Strategic Plan 2017-2022

*Connecting and Building Antarctic Research*

# Preface



COEA-IVIC / Venezuelan Antarctic Program

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Interest in Antarctic scientific research is rising. There is a growing recognition of its importance in understanding processes with global implications, in particular in the current context of climate change. Environmental changes have become more relevant than ever before for the global community and their governments. Antarctica and the Southern Ocean have a fundamental role in regulating processes such as climate and carbon uptake, and research in the Antarctic is crucial to understanding processes of global significance and to advancing science. Additionally, rapid changes are occurring in parts of Antarctica that could open the continent to a new level of activities in the coming decades.

Antarctic governance, administration and environmental protection must be based on scientific data. Therefore, SCAR is more in demand than ever to deliver scientific input to international discussions and provide a platform for the growing international and interdisciplinary collaborations that are required. Since 1958, SCAR has been central in defining the vision and goals of science in Antarctica and has facilitated the implementation of Antarctic science by promoting international and transdisciplinary collaborations. The provision of scientific advice, identification of opportunities, and the facilitation of collaboration are the core elements of SCAR's essential mission.

An important restructuring of SCAR was approved in 2002, and the first SCAR Open Science Conference under the new structure was held in Germany in 2004. The new structure helped to make SCAR more effective and to increase its presence and influence in the Antarctic Treaty Consultative Meetings (ATCM). The change of structure also helped to increase collaborations with other international organizations and committees with interests in Antarctica,

including the Committee on Environmental Protection (CEP), the Council of Managers of National Antarctic Programs (COMNAP), and the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), among others. A substantial number of inputs and submissions are presented every year to the ATCM and the CEP, often jointly with partner organizations, and a SCAR Science Lecture is now given at each ATCM.

SCAR has become an observer to the United Nations Framework Convention on Climate Change (UNFCCC) and is increasing its collaboration with the Intergovernmental Panel on Climate Change (IPCC). SCAR's endeavour to further develop these roles are exemplified through recent SCAR activities at the COP21 event in Paris in November 2015, and the provision of advice to the IPCC Working Group 1.

In order to achieve its mission, SCAR regularly develops Strategic Plans. The regular review of the Strategic Plan allows SCAR aims and actions to be aligned to the contemporary demands of science and society and enables SCAR to remain an influential scientific advisor on Antarctic issues.

Prior Strategic Plans have helped SCAR to achieve important outputs and outcomes. Some examples are highlighted below:

- Consolidation of the biennial SCAR Open Science Conferences and SCAR meetings as a productive occasion for interaction of the international and multidisciplinary Antarctic community;
- Development of the 1st Antarctic and Southern Ocean Science Horizon Scan and identification of research priorities for the next two decades and beyond;

- Cooperation with COMNAP to identify technological and logistic needs for Antarctic research in the future;
- Increased support for early-career scientists, including the development of a fellowships programme and the establishment of processes supporting capacity building in countries that have only recently begun undertaking Antarctic research;
- Promotion of international field campaigns and coordinated initiatives such as the Southern Ocean Observing System (SOOS) and Integrating Climate and Ecosystem Dynamics (ICED); and
- Preparation of different products and outputs of broad interest, such as the Biogeographic Atlas of the Southern Ocean, BEDMAP-2, the Southern Ocean Acidification Report and others.

SCAR is moving into its sixth decade and has grown substantially in membership – from 12 original members in 1958 to 43 in 2016. It is now well-established as an internationally recognized and influential organization. This has only been possible through the engagement and support of thousands of researchers from around the world that comprise the SCAR Antarctic scholarly community, together with the support of the SCAR national committees. SCAR's successful functioning also relies on the efforts of many volunteers who have generously contributed their time in a range of roles. SCAR looks forward to continuing its contribution to the advancement of knowledge and to assisting international cooperation in Antarctic scientific research.

Jerónimo López-Martínez  
President of SCAR, 2012-2016



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A scenic landscape featuring a large, rugged mountain range in the background with patches of snow. In the foreground, a rocky, brownish shore leads to a body of water. A single penguin is standing in the shallow water, facing away from the viewer. The sky is overcast.

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# What is SCAR?

Formed in 1958, the Scientific Committee on Antarctic Research (SCAR) is an interdisciplinary body of the International Council for Science (ICSU), and currently includes 43 member countries and 9 ICSU unions. SCAR strives to include new members, as countries not yet engaged develop an increasing interest in Antarctic science. At regular intervals, SCAR evaluates its achievements and adjusts its structure and strategy to improve its functioning and accommodate emerging issues. Involvement in SCAR science is open to all.

YPASM



The mission of SCAR is to advance Antarctic research, including observations from Antarctica, and to promote scientific knowledge, understanding and education on any aspect of the Antarctic region. To this end, SCAR is charged with the initiation and international coordination of Antarctic and Southern Ocean research beneficial to global society. SCAR provides independent and objective scientific advice and information to the Antarctic Treaty System and other bodies, and acts as the main international exchange of Antarctic information within the scientific community.

SCAR is currently composed of three science groups, six research programmes, and several specialized subsidiary groups serving to address various scientific needs over a limited time frame. These groups are periodically reviewed to help focus SCAR outcomes on the most important priorities and products needed. For more information, please visit [www.scar.org](http://www.scar.org).





## SCAR's vision for 2017-2022

SCAR's vision is to be an engaged, active, forward-looking organization that promotes, facilitates, and delivers scientific excellence and evidence-based policy advice on globally significant issues in and about Antarctica.

SCAR will use the key questions arising from the 1st Antarctic and Southern Ocean Science Horizon Scan to guide research priorities and research direction over the next six years and beyond.

*SCAR is concerned with environmental sustainability. We will make every effort to minimise the carbon footprint of our meetings and to advocate means to reduce environmental impact of scientific activities.*

# Executive Summary



SCAR's vision is to create a legacy of Antarctic research as a foundation for a better future. In line with this vision, through scientific research and international cooperation, SCAR will establish a thorough understanding of the nature of Antarctica, the role of Antarctica in the global system, and the character and effects of environmental change and human activities on Antarctica.

SCAR's work in the next five years will focus on five key objectives:

- a) To amplify its leadership in Antarctic research by further strengthening and expanding high-quality collaborative and visionary Antarctic research, including observations from Antarctica;
- b) To offer independent scientific advice to Antarctic Treaty Consultative Meetings and other bodies dealing with Antarctic and Southern Ocean matters;
- c) To enhance and grow research capacity in SCAR member countries;
- d) To enhance public awareness and understanding of Antarctic issues through communication of Antarctic research results in a timely and accessible manner; and
- e) To facilitate unrestricted and free access to Antarctic research data.

The actions required in the next six years to achieve the above objectives are highlighted in blue boxes contained within each section of this Strategic Plan. Underlining all objectives is SCAR's aim to enhance the information flow to all interested researchers and policy makers, and stimulate cross- and trans-disciplinary exchange.

# Core Strategies

Günther Heinemann

# science leadership

SCAR encourages excellence in all aspects of Antarctic research and its global significance. This includes research on the continent and in the surrounding Southern Ocean; in the physical, geological and life sciences, and in research related to human engagement with the Antarctic region. SCAR assumes leadership in delivering valuable research products, such as the SCAR Biogeographic Atlas of the Southern Ocean and the widely consulted report on Antarctic Climate Change and the Environment (ACCE), which are indicative of the quality of SCAR research as well as of SCAR's interest in tangible outputs that will advance humankind's understanding of the Antarctic and its global connections.

The key questions emerging from the 1st SCAR Antarctic and Southern Ocean Science Horizon Scan, carried out in 2014, provide a long-term vision for high-impact cross-cutting Antarctic research and will assist in guiding the scientific work of SCAR. This includes foci on impacts of climate and other anthropogenic changes as well as studies addressing fundamental research questions. SCAR will continue to promote and advance scientific excellence and will embrace emerging challenges through its scientific groups and international cooperation.

**SCAR will:**

- continue to promote the implementation of the findings of the 1st SCAR Antarctic and Southern Ocean Science Horizon Scan to help focus scientific efforts and resources on key research questions, and revisit the Horizon Scan at five-year intervals to identify new research directions;
- use the very popular biennial SCAR Open Science Conference and the SCAR international thematic symposia that take place every four years to grow interest in Antarctic and Southern Ocean science, to engage with related scientific communities and to promote collaboration between SCAR members, institutes and individuals;
- add value to the research programmes of SCAR member states and international programmes through the SCAR Scientific Research Programmes and specialized subsidiary groups;
- publicize and reward excellence in SCAR research, especially via administering the prestigious Tinker-Muse Prize for Science and Policy in Antarctica;

- continue to foster interdisciplinary and cross-cutting research activities, particularly with regard to more effective integration of the social sciences and humanities;
- encourage international initiatives such as the Southern Ocean Observing System (SOOS) and Integrating Climate and Ecosystem Dynamics (ICED);
- engage with national Antarctic programmes, the Council of Managers of National Antarctic Programs (COMNAP), satellite observation groups, and other international programmes and organizations with a polar focus, to identify common research priorities and encourage shared use of scientific resources; and
- reach out to groups who currently do not have a polar focus, but whose work may benefit from information on Antarctic science.

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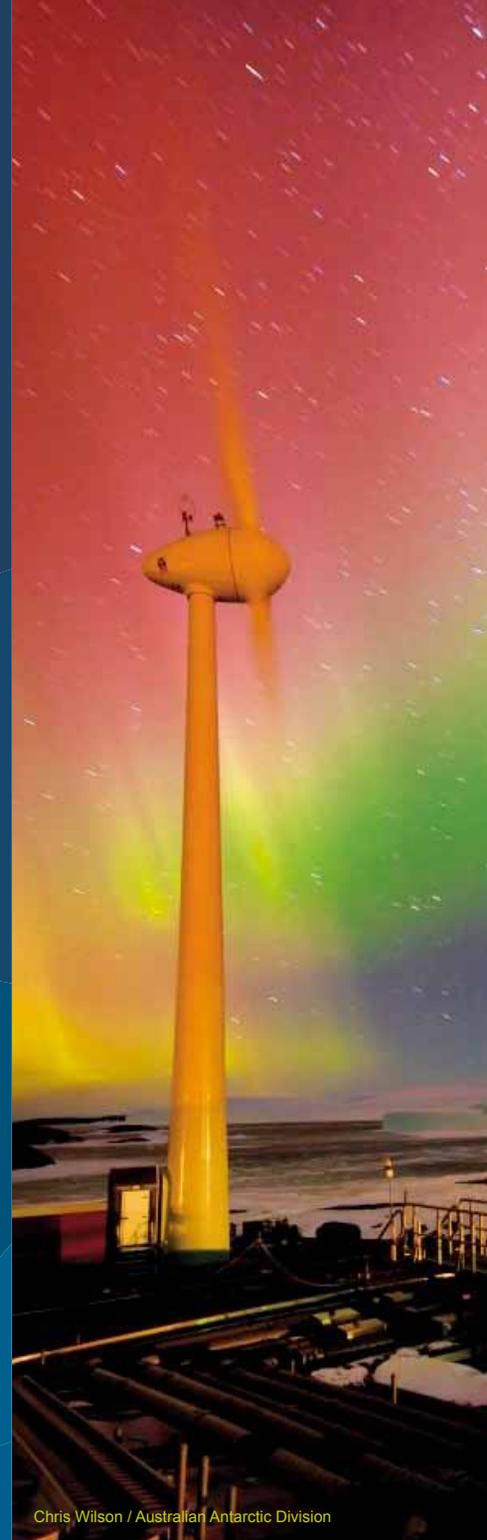
# advice

SCAR provides independent, evidence-based, scientific advice to the Antarctic Treaty System and other organisations, such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC). SCAR identifies issues resulting from greater scientific understanding of the Antarctic region and the Southern Ocean and brings them to the attention of policymakers.

SCAR is an official Observer to the Antarctic Treaty and provides scientific advice in a variety of fields, particularly on environmental and conservation matters, to the following bodies:

- Antarctic Treaty Consultative Meeting (ATCM) and its Committee on Environmental Protection (CEP),
- Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), and
- Agreement on the Conservation of Albatrosses and Petrels (ACAP).

SCAR's advice typically takes the form of information on policy-relevant scientific issues, reviews of the state of knowledge and scientific advice, and through the Antarctic Environments Portal. SCAR is open to community consultation and initiatives that bring together experts and groups to formulate new policy, advice and guidance for national programmes, marine protected areas, and stakeholders. SCAR also plays an important role in highlighting and advising on emerging scientific issues with potential future significance and impact.





### **SCAR will:**

- provide scientific advice and further strengthen its relationships within the Antarctic Treaty System, UNFCCC, IPCC and others such as the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES);
- bring to the attention of these policy bodies and national programmes, emerging scientific issues of regional and global significance;
- present high-quality, relevant research through the SCAR Science Lecture at ATCMs;
- continue to support the Antarctic Environments Portal and its efforts to deliver science summaries for policymakers;
- increase engagement with policy-related partners such as CCAMLR;
- create learning opportunities for all researchers on the science-policy interface; and
- maintain its cooperation with national Antarctic programmes, COMNAP and other international programmes and organizations with a polar focus.

## capacity building, education and training

Training, support and development of the Antarctic community are fundamental to SCAR. The SCAR fellowships, which aim to facilitate collaboration and knowledge-transfer between researchers and institutions, are good examples of SCAR's capacity-building programme for both early-career and more established researchers. SCAR also encourages and rewards excellence in Antarctic research, as well as outstanding service to the research community, through a performance-recognition scheme in the form of biennially awarded SCAR medals. SCAR assists educators, students and early-career researchers, and helps under-represented groups and emerging programmes to participate in SCAR's activities and Antarctic research. SCAR promotes and facilitates the incorporation of Antarctic research into the educational landscape.



### **SCAR will:**

- establish a mentoring programme for researchers in new SCAR member countries, particularly those with emerging Antarctic programmes;
- work with the Association of Polar Early-Career Scientists (APECS) and similar organisations to provide career development and mentoring, and to promote involvement of early-career researchers in SCAR groups;
- encourage groups and member countries to hold specialized training courses for early-career scientists and others interested in developing Antarctic research activities;
- facilitate networking through use of social media and web-based communication tools;
- enable the participation of scientists new to the Antarctic community in the SCAR Open Science Conference, the SCAR international thematic symposia, and specific workshops;
- identify additional funding sources to grow and strengthen its fellowship and award schemes;
- engage in appropriate international educational activities; and
- promote the development and publication of educational products communicating Antarctic research to educators, students and the general public.

## communication

Effective communication underpins all of SCAR's activities. SCAR utilises a suite of communication tools and strategies to provide the information and products required by stakeholders, including the wider public, to ensure transparency and visibility. In addition, communication platforms are provided to ensure easy exchange within the SCAR scientific community to facilitate networking.



Günther Heinemann



#### **SCAR will:**

- use the most effective communication technologies, including social media, to enhance its visibility and further promote SCAR activities;
- continue to regularly update the SCAR website and produce an e-newsletter;
- expand participation in SCAR activities by providing virtual participation, especially in the SCAR Open Science Conferences and the SCAR international thematic symposia;
- regularly review the effectiveness of its communication strategy and mechanisms; and
- work closely with SCAR national committees and partners to ensure effective communication.



**Full Members**

**Associate Members**

**Union Members:**

International Astronomical Union - IAU

International Geographical Union - IGU

International Union for Quaternary Research - INQUA

International Union of Biological Sciences - IUBS

International Union of Geodesy and Geophysics - IUGG

International Union of Geological Sciences - IUGS

International Union of Physiological Sciences - IUPS

International Union of Pure and Applied Chemistry - IUPAC

Union Radio Scientifique International - URSI

# grow and strengthen scar membership

SCAR is a well-established organisation that continues to grow, reflecting the rising recognition of the global importance of Antarctic research. SCAR depends on member contributions and welcomes the stimulating input from its members. SCAR encourages active participation of its members to achieve its mission and goals.

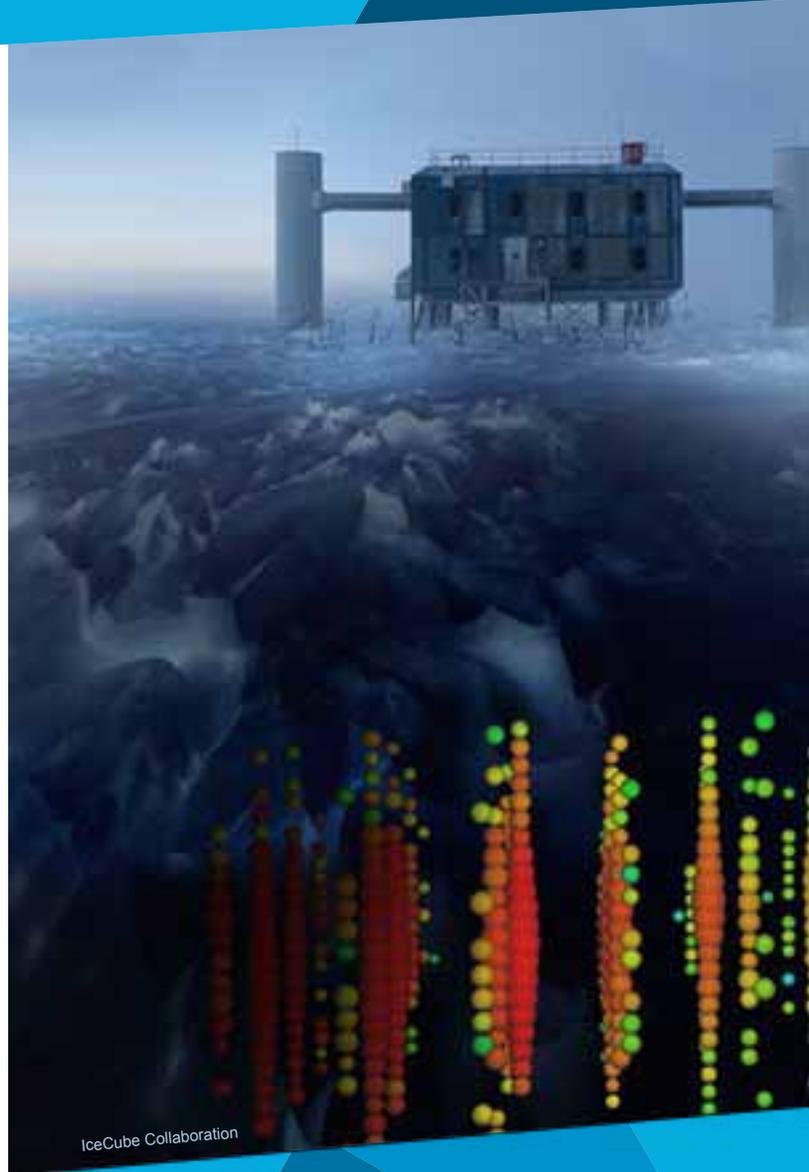
One of the major SCAR activities that strengthens SCAR's membership is the biennial Open Science Conference. This meeting provides the opportunity to bring the entire SCAR international science community together with researchers from other networks, to discuss their science and facilitate international and interdisciplinary collaborations.

## **SCAR will:**

- seek to broaden its membership;
- foster, through new and existing activities, the closer integration and participation of its members;
- sponsor activities at national and international meetings to promote SCAR's aims;
- promote engagement with scientists and policymakers from countries not traditionally involved in Antarctic research;
- organize webinars to promote Antarctic science in member countries; and
- build upon its relationship with ICSU bodies to proactively identify areas of common interest.

## data management and access

In the spirit of the Antarctic Treaty, SCAR promotes free and unrestricted access to Antarctic data and information. SCAR follows the ICSU data policies and has developed a data policy and promotes compliance with this policy amongst its members. SCAR recognises the important role of national Antarctic Data Centres and assists SCAR members in the process of establishing or expanding their data management and access.



IceCube Collaboration



#### **SCAR will:**

- ensure visibility and access to data through the Antarctic Master Directory;
- encourage the community to contribute data to appropriate open-access repositories;
- require recipients of SCAR research funding to submit a data management plan and ensure it is followed;
- work toward ensuring SCAR peer-reviewed literature is published as open-access;
- promote the development and implementation of standards and quality control procedures that support the exchange of data;
- create training opportunities for scientists on data management practices;
- promote coordination among the different National Antarctic Data Centres; and
- promote cooperation with international information platforms (e.g. Global Biodiversity Information Facility, GBIF).

# Enabling Strategies



## coordination

SCAR facilitates coordination of the international scientific community through SCAR's Scientific Groups and Research Programmes, biennial open science conferences, thematic symposia and workshops, as well as other international events. SCAR provides a virtual network through mailing lists, websites, social media and other communication mechanisms.

**SCAR will:**

- facilitate the exchange of ideas via the biennial SCAR Open Science Conference and the SCAR international thematic symposia;
- stimulate cross-disciplinary collaboration via the SCAR Scientific Research Programmes and groups;
- ensure wide participation by facilitating access to its activities, including providing technologies to support virtual participation;
- strengthen coordination of activities with COMNAP, IASC and ICSU Unions; and
- promote Antarctic sessions in international and national conferences.



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# partnerships





Partnerships support SCAR's goals. SCAR's diverse partnerships include bodies of ICSU, advisory groups to the Antarctic Treaty System, organisations with a polar mission, observing networks and programmes with polar interests. During the next phase of SCAR, we will put particular emphasis on those that can help to realize specific SCAR goals with respect to science issues and demands of society and politics towards Antarctic knowledge.

**SCAR will:**

- nurture and expand the partnerships that are of particular importance to SCAR's mission;
- reinforce alliances with Arctic counterparts (IASC, the International Arctic Science Committee, for example) to develop a polar perspective on climate change and other research issues;
- partner with IASC and other groups interested in polar research to identify themes of international priority;
- strengthen cooperation, seek common interests and exchange scientific expertise and educational knowledge with partners; and
- encourage communication and cooperation, with particular emphasis on aspects of climate change, human impacts and the associated research programmes.



# resourcing

SCAR is primarily funded by national contributions from its members and seeks support from other sources for specific activities. To continue to serve the community, and provide advice, SCAR endeavours to attract new funds especially for the fellowship programme and support for young scientists.

## **SCAR will:**

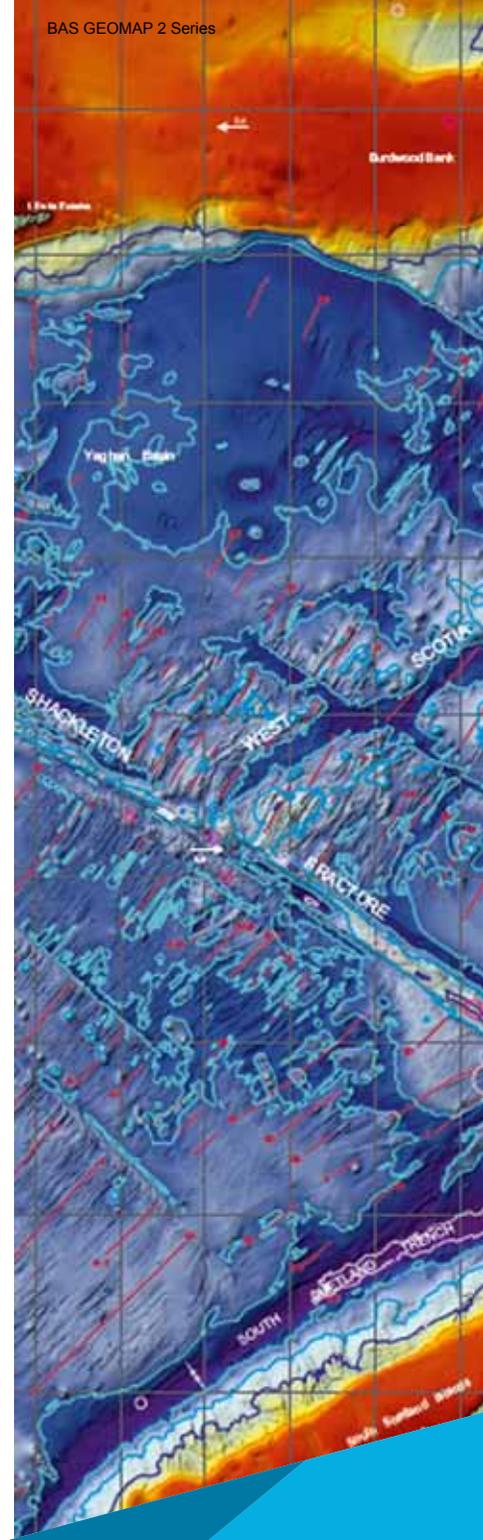
- simplify the membership contribution structure;
- create a database for potential international Antarctic activity funding;
- work closely with National SCAR Committees and partners to leverage new funding;
- develop outreach activities to publicize the importance of Antarctic research;
- provide guidance on how members may contribute more actively to SCAR activities and governance; and
- explore opportunities to expand the SCAR fellowships and other award schemes.

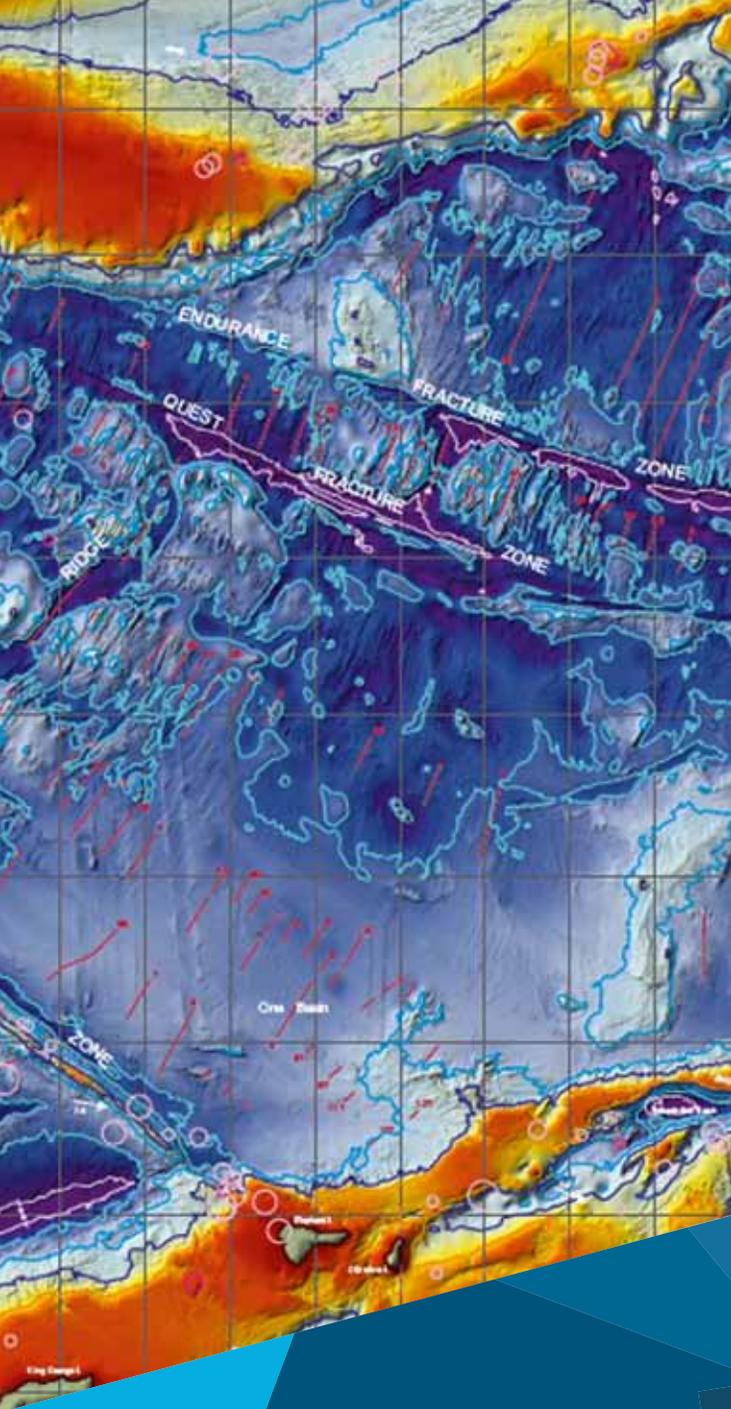
# products

SCAR develops and facilitates the creation of tangible and conceptual products, such as focused research outputs, databases, publications, maps and educational materials. These products benefit the wider community, enhance SCAR's visibility and serve a practical purpose in the context of policy advice and research activities of SCAR members and beyond.

## SCAR will:

- promote its products widely and provide up-to-date information on its website and through social media;
- regularly review existing products to ensure that they are up to date;
- seek opportunities to develop new and innovative products;
- promote the inclusion of the SCAR logo or name in the products made by the SCAR community; and
- develop outreach activities to publicize the importance of Antarctic research.





## review processes

SCAR maximizes its effectiveness through regular streamlined review processes, and ensures the flexibility of its activities through renewal and initiation of activities. Detailed information about the nature and timing of these review processes, which include internal and external reviews of SCAR's organizational structure and goals, scientific groups, research programmes, award schemes and other projects and activities, is available on SCAR's website. It is also envisioned that SCAR will internally review this strategic plan regularly to ensure it is a living document that reflects the organization's needs and changes. To help achieve a broader perspective, SCAR will also take steps to include a wider group of reviewers, particularly those outside the Antarctic community.

# Concluding Statement

Barriers of access to Antarctica are diminishing while participation in Antarctic activities is increasing. Human activities are intensifying, both on land and at sea, and the number of countries seeking to enter the concert of nations that carry out scientific research on the Antarctic continent, the Southern Ocean islands and in the surrounding seas, is expanding.

These environments form a remote but integral component of the Earth System, studies of which are essential to our understanding of the functioning of the Earth System as an integrated whole, including its manifold ecosystems. The Antarctic, embracing the continent and its surrounding seas and islands, is influenced by global change and in turn influences the way global change develops. International collaboration is essential to expanding our understanding of these linkages, as well as to our use of Antarctica as a platform for astronomy and for observing Earth's outer atmosphere, the behaviour of the magnetosphere, outer space, and sun-earth interactions.

If we are to preserve the uniqueness of Antarctica, to protect its ecosystems, and to sustainably manage its resources, the need for international communication and cooperation will be even more pronounced. To this end,

scientific research should continue to be an international, collaborative and trans-disciplinary endeavour that, aside from expanding our knowledge about Antarctica and the Southern Ocean, and effectively sharing this knowledge with the wider public, enables unbiased and independent advice to be provided to those governing the Antarctic. The provision of such independent and objective advice, based on high-quality and peer-reviewed science, is fundamental to informed decision-making about the management and conservation of Antarctica. Considering the increased need for international facilitation and coordination of Antarctic research, resulting from a greater public and political interest in Antarctica, SCAR has a major role to play in the coming decades.

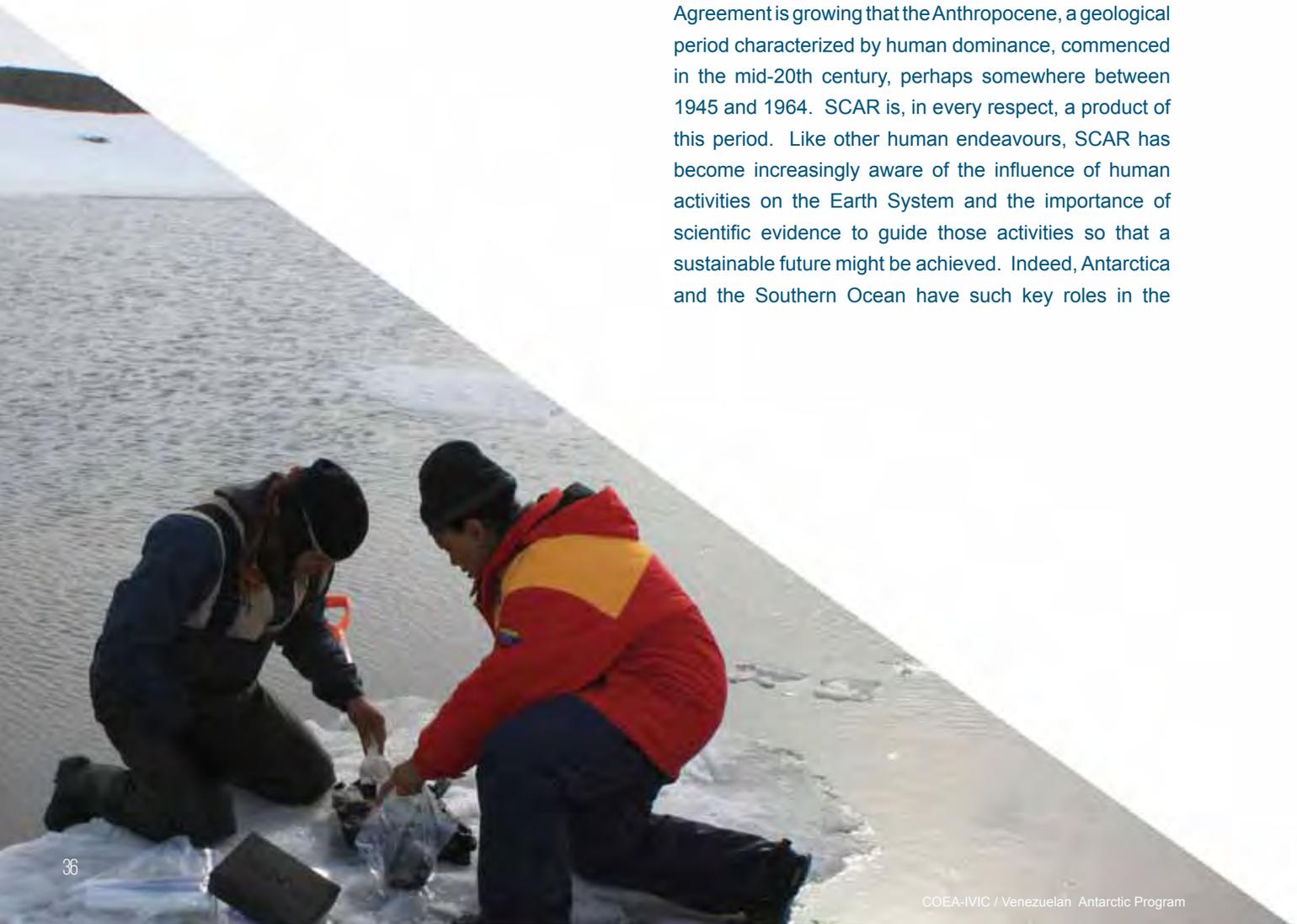
In the 59 years of its existence, SCAR has developed into an international organisation of high acceptance, both in the scientific community and the Antarctic Treaty System. The rising importance of polar research has made it more important than ever to shape SCAR into a body that can respond, with excellent scientific knowledge and on a broad international basis, to emerging questions posed by global change and societal demands. The regular review of this Strategic Plan will be a help to keep SCAR on track and align its goals with the changing landscape of Antarctic challenges.

*Anton Van de Putte*



# Coda

Agreement is growing that the Anthropocene, a geological period characterized by human dominance, commenced in the mid-20th century, perhaps somewhere between 1945 and 1964. SCAR is, in every respect, a product of this period. Like other human endeavours, SCAR has become increasingly aware of the influence of human activities on the Earth System and the importance of scientific evidence to guide those activities so that a sustainable future might be achieved. Indeed, Antarctica and the Southern Ocean have such key roles in the





Earth System, and significant living systems, that research in and about these regions is indispensable for securing a sustainable future. Ensuring that research is effectively facilitated and globally supported, and its outcomes appropriately communicated to society and its decision-making representatives, are SCAR's key goals over the life of this plan. SCAR will continue to support research, and the excitement and importance of research in all its forms, promote the development of capacity and resources for such work, and engage with partners, both in the Antarctic and Southern Ocean communities and beyond. SCAR will undertake these roles, recognizing its home within ICSU and its role as a primary contributor of scientific advice in and about Antarctica.

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Incoming SCAR President, 2016-2020



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