

Scientific Committee on Antarctic Research

Connecting and Building Antarctic Research

www.scar.org



What is SCAR?

The 1957-8 [International Geophysical Year](#) established that international scientific activity in Antarctica needed coordination - so SCAR was born!

SCAR is an inter-disciplinary committee of the [International Science Council \(ISC\)](#).

SCAR initiates, develops and coordinates high quality international scientific research in Antarctica and the Southern Ocean.

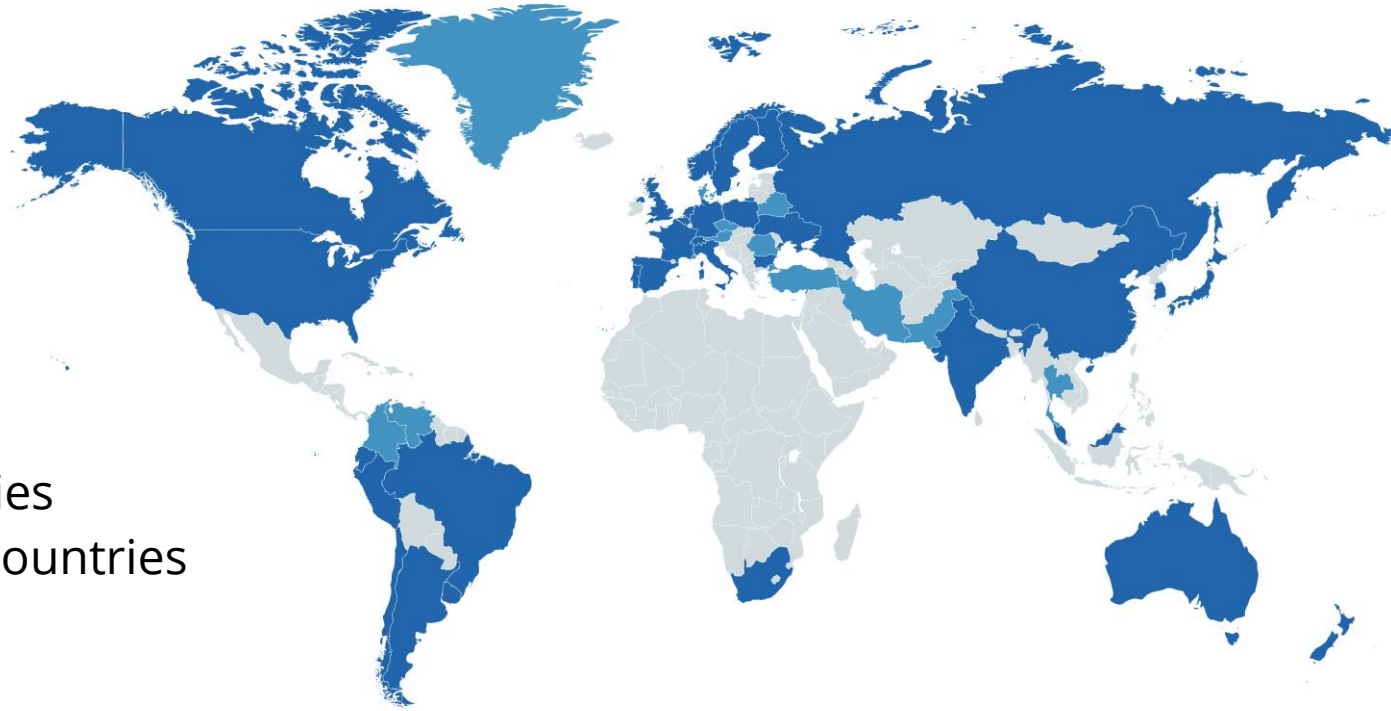
The scientific business is conducted by SCAR [Science Groups](#) which represent the scientific disciplines active in Antarctic research.

SCAR provides objective, independent scientific advice to the [Antarctic Treaty Consultative Meetings](#) and other organizations such as the [UNFCCC](#) & [IPCC](#).



Member countries and unions

- Full members
- Associate members



- 46 Member countries
 - 34 Full member countries
 - 12 Associate member countries
- 9 international unions



SCAR will focus on seven main objectives over the next five years:



Promote SCAR's leadership in science by strengthening and expanding high-quality, collaborative, visionary and societally relevant research through international partnerships while addressing urgent global priorities including climate change and biodiversity.



Provide independent scientific advice to the Antarctic Treaty System (ATS) and other international bodies in response to science and knowledge needs identified by policymakers.



Encourage and facilitate unrestricted and free access to Antarctic research data and samples in support of all the above objectives.



Enhance and expand research capacity in SCAR's member countries, recruit new members, and encourage the support of research that addresses the above imperatives.



Increase public awareness and understanding of Antarctic issues and the essential roles Antarctica and the Southern Ocean play in the Earth's climate systems.



Ensure equality, diversity, and inclusion (EDI) principles are applied to all of SCAR's activities and actions, including SCAR's management, structure, and the realization of its missions and vision.



Reduce the carbon footprint of all SCAR activities.

Scientific Research Programmes (SRPs)

SRPs address major, priority, scientific issues of global or fundamental importance, at the cutting edge of the science, requiring substantial fieldwork and/or observations in the Antarctic. These SRPs were approved in 2020 and will last until 2028.

INStabilities and
Thresholds in
ANTarctica (INSTANT)

Near-term Variability
and Prediction of the
Antarctic Climate
System (AntClim^{now})

Integrated Science to Inform
Antarctic and Southern Ocean
Conservation (Ant-ICON)

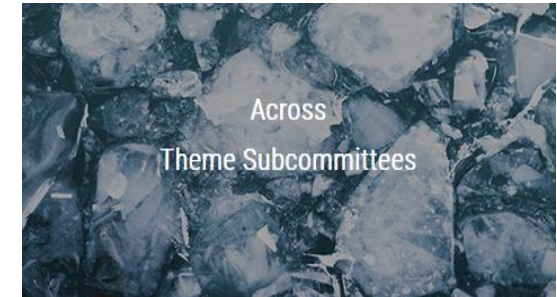
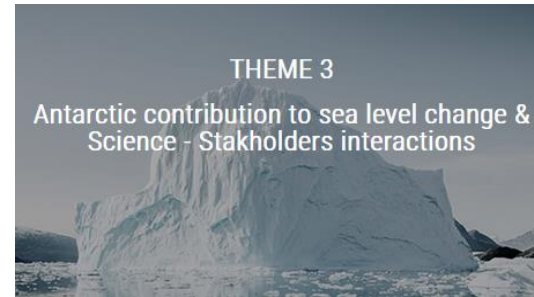
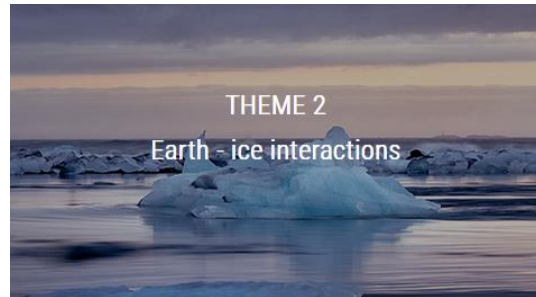


Scientific Research Programmes (SRPs)



INSTabilities and Thresholds in ANTarctica (INSTANT)

INSTANT aims to quantify the Antarctic ice sheet's contribution to past and future global sea-level change, from improved understanding of climate, ocean and solid Earth interactions and feedbacks with the ice, so that decision-makers can better anticipate and assess the risk in order to manage and adapt to sea-level rise and evaluate mitigation pathways. www.scar-instant.org



Research Themes:

- Climate-Ice sheet Processes in Antarctica (CLIP-Ant)
- High Resolution Seasonal to Decadal Records
- Southern Ocean- Antarctic Chronology and Environmental proxies (SOACEP)
- Southern Ocean Antarctic Interactions

Research Themes:

- Antarctic Geothermal Heat Flux
- Probing Solid Earth and its Implications
- Earth -Ice -Sea Level
- Antarctic Geological Boundary Conditions

Research Themes:

- Data-Modelling Integration Hub

Research Themes:

- Inter-Ice Sheet Model Design
- Antarctic Sea Level Fingerprint



Scientific Research Programmes (SRPs)



INSTabilities and
Thresholds in
ANTarctica
(INSTANT)

Latest News:

- Research conceived and supported by INSTANT was published in *Science* in late 2023 and provides the first empirical evidence that the tipping point of the West Antarctic Ice Sheet could be reached even under the Paris Agreement targets of limiting warming to 1.5 – 2°C

<https://www.science.org/doi/10.1126/science.ade0664>

Contact:

Tim Naish (timothy.naish@vuw.ac.nz)

Florence Colleoni (fcolleoni@inogs.it)



Understanding future sea level change around Antarctica

Information Paper 95 was submitted by SCAR and the Council of Managers of National Antarctic Programs (COMNAP) to the Antarctic Treaty Consultative Meeting in 2023. The paper outlines

1. Making substantial improvements to current sea-level projections for Antarctic coastlines is included within the work plans for SCAR INSTANT
2. The melting of the world's glaciers and ice sheets does not produce spatially uniform sea-level. Highlights the importance and challenges in accurately predicting location-specific sea-level change for Antarctica's coastline.
3. Under the highest emissions scenarios, and if 'low-confidence' ice sheet processes play out, sea-level will 'likely' rise by as much as ~1.2 m in some regions of Antarctica by the end of the century and fall by as much ~2.2 m in other regions at the same time.
4. Future sea-level change represents risks for operations including science support and tourism, coastal infrastructure and assets, heritage sites, specially protected and managed areas, and bioregions;
5. Future research requirements and recommendations for actions to mitigate the identified risks.



Recommendations to Parties in IP 95

- IP 95 suggests that Parties support their National Antarctic Programmes to:
 - extend the current critical observational infrastructure – especially the network of long-term continuous geodetic observations (GPS) and tide gauges that provide location-specific timeseries of changes in land elevation and sea level.
 - facilitate research to improve projections of Antarctic ice mass loss and its regional variability.
 - monitor local sea-level and land elevation near identified coastal hazards.
 - identify risk and to adapt with urgency to impacts that are now unavoidable.
 - adopt a dynamic decision-making approach that provides resilience in response to those unavoidable impacts and that can be updated and modified as new information evolves. This dynamic approach is key because sea-level projections are uncertain, especially beyond 2060–2070.



Scientific Research Programmes (SRPs)

Near-term Variability and Prediction of the Antarctic Climate System (AntClim^{now})

AntClim^{now} aims to answer fundamental science questions, relating to Antarctic climate variability. The programme aims to take a regional approach to observing and modelling the Antarctic environment, but taking an integrated approach that will consider the Antarctic as a whole.

The five main themes for AntClim^{now} are:

- Theme 1. Antarctic climate variability and its linkages to the global climate system
- Theme 2. Understanding present-day climate trends in Antarctica
- Theme 3. Predictability of the Antarctic climate system
- Theme 4. Global and regional cross-disciplinary impacts
- Theme 5. Communication of results to stakeholders

Latest News:

- Workshop held in 2023: Toward an Antarctic Radiation Regional Network
- Fellowship scheme for AntClimNow on dataset development and stewardship

Contact:

Tom Bracegirdle (tjbra@bas.ac.uk)
Ilana Wainer (wainer@usp.br)



Scientific Research Programmes (SRPs)

Integrated Science to Inform Antarctic and Southern Ocean Conservation (Ant-ICON)

Ant-ICON aims to answer fundamental science questions, relating to the conservation and management of Antarctica and the Southern Ocean. It focus on research to drive and inform international decision-making and policy change.

The four main themes for Ant-ICON are:

- Integrated forecasting of future change
- Environmental sustainability of human activities in Antarctica
- Antarctic conservation in a global context
- Socio-ecological approaches to the management and conservation of the Antarctic.

Latest News:

- Ant-ICON/SC-ATS Science Policy Fellows announced for 2024

Contact:

Mecha Santos (mechasantos@yahoo.com.ar)



→ **If you are interested in joining Ant-ICON,** subscribe to the mailing list. (available at the SCAR website)

Ant-ICON is also on social media:

- Twitter handle: @AntICON_SCAR
- Instagram: @anticon_scar
- Facebook: AntICON.SCAR (the name of the page)
- YouTube: Ant-ICON Playlist



Standing Committees

Standing Committees handle ongoing business to help SCAR fulfil its mission.

Antarctic Data
Management

SCADM develops and maintains an Antarctic Data Management System.

Antarctic Geographic
Information

SCAGI delivers a range of up-to-date geographic information products through its various projects and provides advice and information to SCAR relating to geographic information.

Antarctic Treaty
System

SCATS provides advice and information to SCAR in relation to the Antarctic Treaty System and other policy bodies such as CCAMLR.

Finance

SC-Finance advises SCAR's Executive Committee and the SCAR Delegates Meeting on all financial matters.

Social Science
and Humanities

SC-HASS initiates, develops and coordinates rigorous and high quality research on the Antarctic region within the Humanities and Social Sciences.



SCAR data policy 2022

<https://scar.org/~documents/route%3A/download/5797>

- Data must be ethically open
- Data should be free
- Data must be provided in a timely manner
- FAIR Principles should be applied to the greatest extent practicable
- All data must be accompanied by a complete set of metadata
- Data should have persistent and globally unique identifiers
- Data must be labelled as reusable
- Data sources should be attributable and attributed
- Data must be appropriately preserved for the long term
- Data management and long-term curation must be planned and resourced
- Data providers are responsible for any quality assurance and quality control required to meet community standards.



Science Groups

GeoSciences



Life Sciences



Physical Sciences

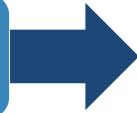


SCAR's three permanent disciplinary Science Groups:

- **Share** information on disciplinary scientific research;
- **Identify** research areas or fields where current research is lacking;
- **Coordinate** proposals for future research;
- **Establish** groups to address specific research topics within the discipline.

Expert Groups

GeoSciences



IBCSO



International Bathymetric Chart of the Southern Ocean (IBCSO)

Aims to gain better knowledge of the sea floor topography in the Southern Ocean. The [Southern Ocean Regional Center](#) collects and compiles bathymetric data from hydrographic offices, scientific institutions and data centers to create the first regional digital bathymetric model that covers all circum-Antarctic waters.

<https://scar.org/science/geo/ibcs>

June 2022:

Release of IBCSO Version 2 – combining approximately 1,500 datasets from more than 20 countries and over 80 organizations to produce the most accurate data driven map of the seafloor south of 50°S yet.

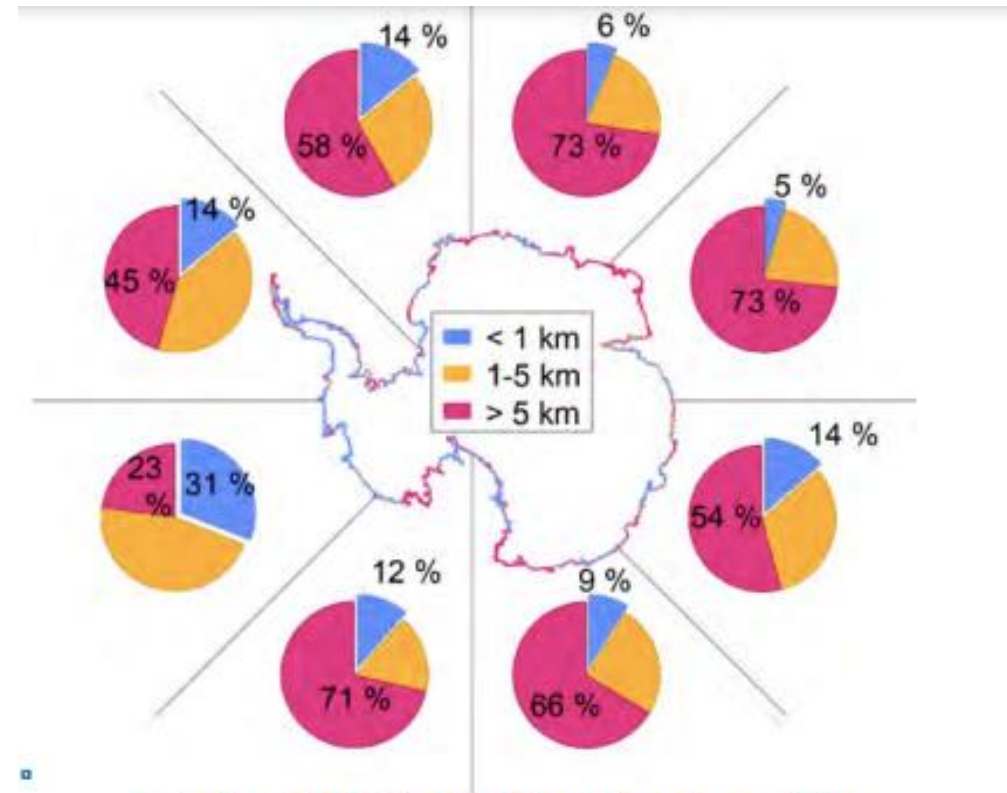


RINGS Action Group:

collaborative international effort to map all Antarctic ice-sheet margins

established in 2021 to coordinate regional survey efforts and relevant research programs so that the current knowledge gaps at the ice-sheet margin are filled to better understand current and future Antarctic contributions to the sea-level rise.

COMNAP RINGS was established in 2023 to provide support with logistics knowledge and coordination of logistics support



Only 12% of the Antarctic ice-sheet grounding line has radar data within 1 km.

Data source:

BedMachine (Morlighem et al., 2020)

Antarctic Wildlife and Health Working Group

Visit the website for more details
<https://scar.org/library-data/avian-flu>

A highly pathogenic strain of **Avian Influenza (HPAI)** has had significant outbreaks since 2021 and has decimated wild bird populations in Europe, South Africa and the Americas.

In October 2023, the first case was confirmed in the sub-Antarctic and as of now, confirmed cases have been recorded at six sites, and suspected cases recorded at seven sites in the Antarctic Treaty Area.

The SCAR Antarctic Wildlife has issued risk assessments and guidance and has established a database to monitor and record information on the spread of HPAI outbreaks in the Antarctic and sub-Antarctic.



Antarctic Climate Change and the Environment

A DECADAL SYNOPSIS AND
RECOMMENDATIONS FOR ACTION



STEVEN L. CHOWN
RACHEL I. LEIHY
TIM R. NAISH
CASSANDRA M. BROOKS
PETER CONVEY

BENJAMIN J. HENLEY
ANDREW N. MACKINTOSH
LAURA M. PHILLIPS
MAHLON C. KENNICUTT II
SUSIE M. GRANT

SCAR and the Antarctic Treaty

Antarctic Climate Change and the Environment: A Decadal Synopsis. Findings and Policy (and research) Recommendations (WP30 and 31)

Chown, S.L., Leihy, R.I., Naish, T.R., Brooks, C.M., Convey, P., Henley, B.J., Mackintosh, A.N., Phillips, L.M., Kennicutt, M.C. II & Grant, S.M. (Eds.) (2022) *Antarctic Climate Change and the Environment: A Decadal Synopsis and Recommendations for Action*. Scientific Committee on Antarctic Research, Cambridge, United Kingdom. www.scar.org



SCAR and the Antarctic Treaty

- SCAR working papers and information papers to ATCM XLVI include:
 - Observing networks
 - Long term observations
 - Antarctic Climate Indicators
 - Antarctic Climate Change and Environment Update
 - Avian influenza
 - Emperor penguins

- Annual Lecture to the ATCM: Tropical-Antarctic teleconnections



Antarctic Environments Portal

Visit the website for more <https://environments.aq/>

- SCAR hosts the Antarctic Environments Portal - which provides accessible and up-to-date scientific information on Antarctic environments and human activities to support the work of decision makers in the Antarctic Treaty System
- The portal's primary audience is Antarctic Treaty Stakeholders; however the Portal is publicly accessible and we hope that the Portal's information summaries will be of use to anyone interested in the Antarctic environment.



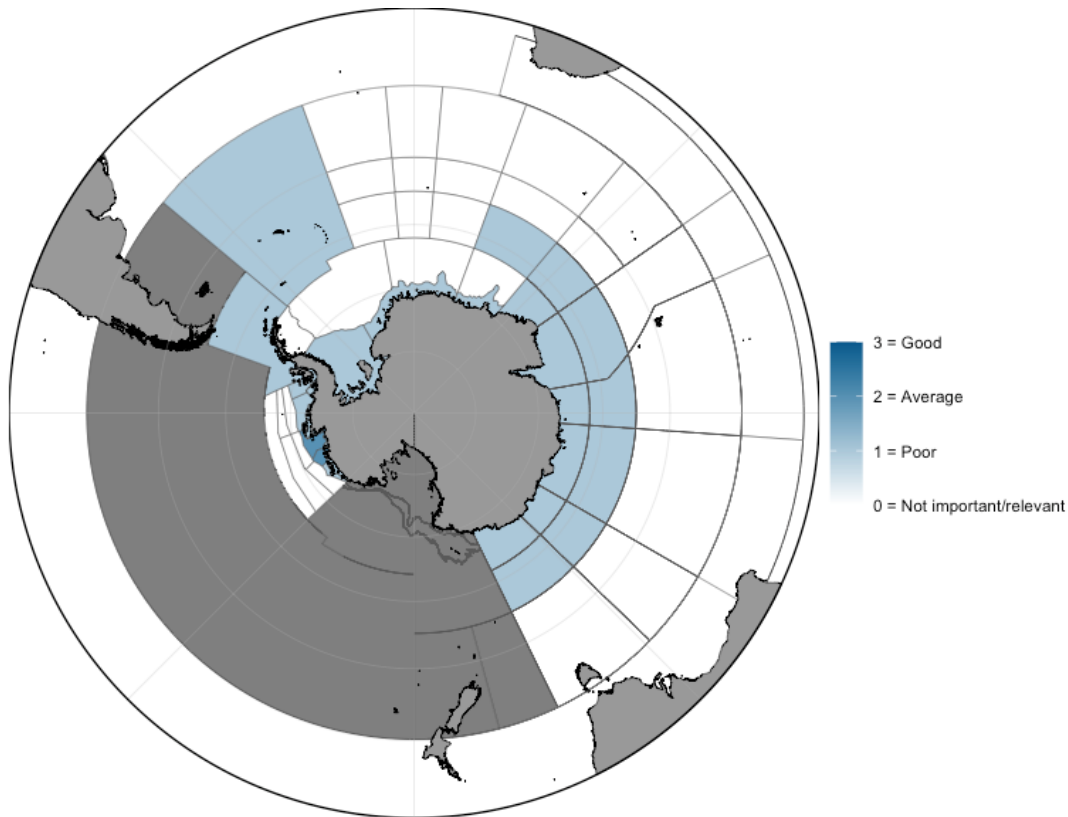
Southern Ocean Observing System

- Statement from SOOS Symposium 2023

*The Southern Ocean is a critical component of the global climate system. The Southern Ocean controls to a large extent the uptake of human generated heat and carbon into the ocean. Yet, we are currently observing critical changes in the Southern Ocean that are seen in the record low levels of sea-ice extent, record high temperatures and dramatic shifts in penguin populations, among other striking changes. **The chronic lack of observations for the Southern Ocean challenges our ability to detect and assess the consequences of change.** As such, it is more pressing than ever to have a sustained and coordinated Southern Ocean observing system to provide an understanding of current conditions, inform predictions of future states, and support policies and regulations for the benefit of society.*



Work with partners



SOOS, in prep

- Southern Ocean Observing System (SOOS)
 - 2021-25 Science and Implementation Plan
 - key challenge “improve subglacial and continental shelf bathymetry”
 - <https://doi.org/10.5281/zenodo.6324359>

UN Decade of Ocean Science

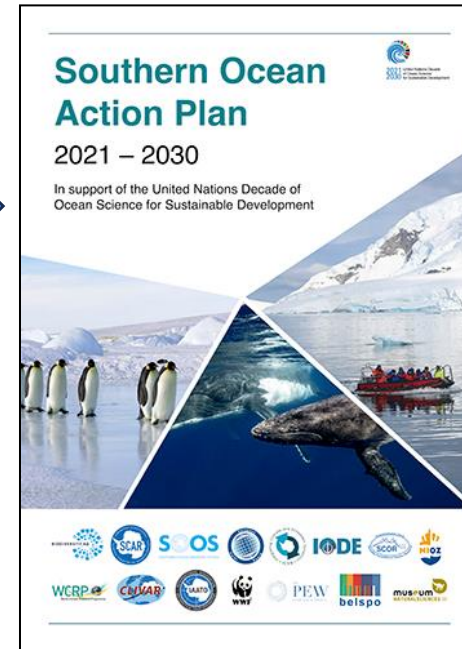


United Nations Decade
of Ocean Science
2021-2030

Vision: The science we need for the ocean we want.

Mission: Transformative ocean science solutions for sustainable development, connecting people and our ocean

SCAR coordinates the Southern Ocean Task Force www.sodecade.org and created the Southern Ocean Action Plan. Goal 3.5 of the Plan is to ‘Improve subglacial and continental shelf bathymetry to understand how it affects Antarctic ice sheet, and related ecosystems, response to climate change’



As of June 2023, SCAR leads the Decade Collaborative Centre for the Southern Ocean which aims to:

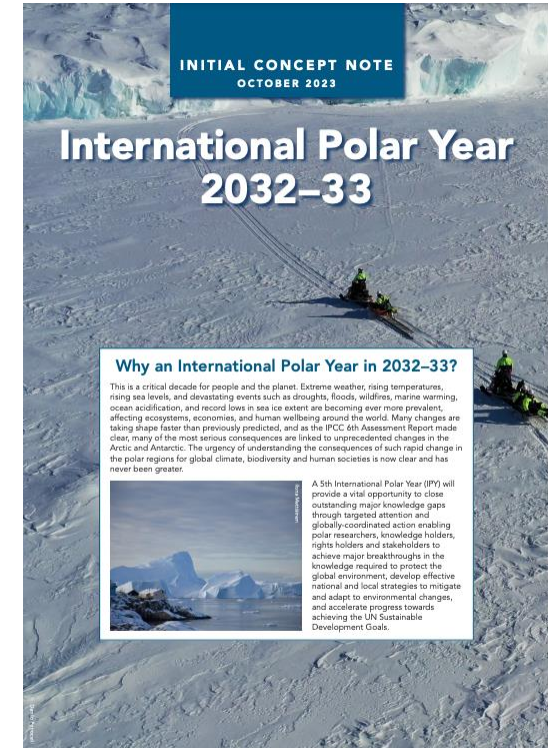
- Coordinate existing Decade Actions for the region
- Catalyse new initiatives
- Lead targeted communications and outreach
- Mobilise resources for the region



5th International Polar Year 2032-33

- The International Arctic Science Committee (IASC) and SCAR have begun preparatory work alongside many other partner organisations including ISC and WMO.
- The IPY is an opportunity for targeted attention and globally-coordinated action to enable polar researchers, knowledge holders, rights holders and stakeholders to:
 - achieve major breakthroughs in the knowledge required to protect the global environment
 - develop effective national and local strategies to mitigate and adapt to environmental changes
 - accelerate progress towards achieving the UN Sustainable Development Goals.

Concept note published
October 2023



SCAR Open Science Conference

11th SCAR Open Science Conference
Pucón, Chile

Open Science Conference: 19-23 August

Business Meetings: 17-18 and 24-25 August

Delegates Meeting: 26-28 August

Organizers: Chilean Antarctic Institute (INACH)

Visit the website for more details
<https://www.scar2024.org>

Programme

50 Parallel Sessions covering:

- Physical Sciences
- Geosciences
- Life Sciences
- Humanities and Social Sciences
- Cross-Disciplinary Topics

- Workshops and side events (more info TBC)
- Plenary Lectures
- Mini-symposia



Keep in touch!



- Email info@scar.org with any questions or to sign up to the SCAR mailing list
- Follow SCAR news and learn about SCAR via our website www.scar.org
- Follow SCAR on twitter @scar_tweets

