

Southern Ocean Observing System (SOOS)

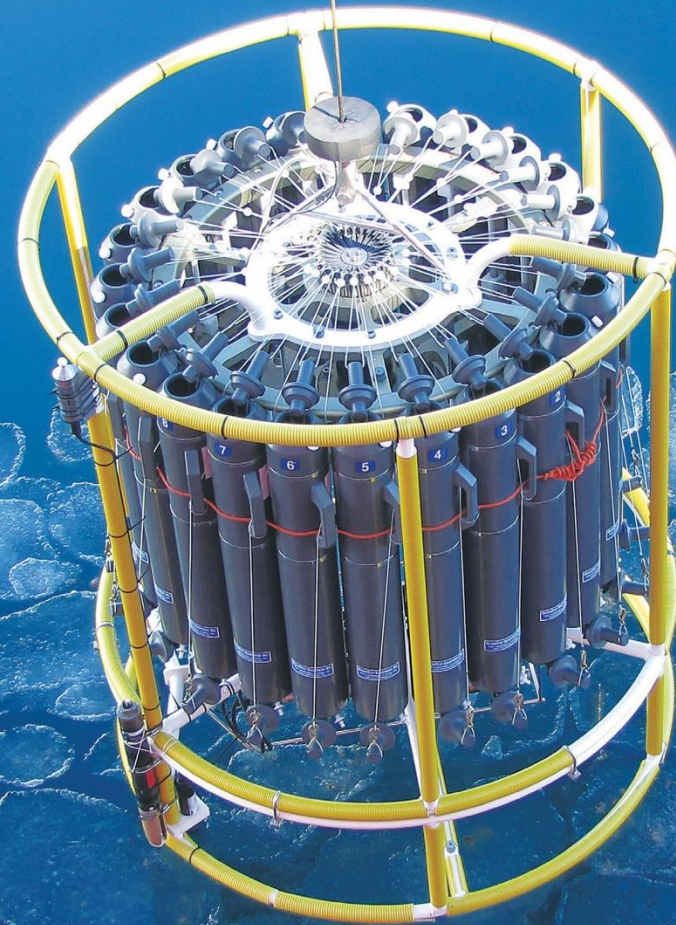
SOOS Executive Committee:

Irene Schloss (Co-Chair), Wolfgang Rack (Co-Chair), Andrew Meijers (Vice Chair), Sarat Chandra Tripathy (Vice Chair) and Alyce Hancock (Executive Officer)

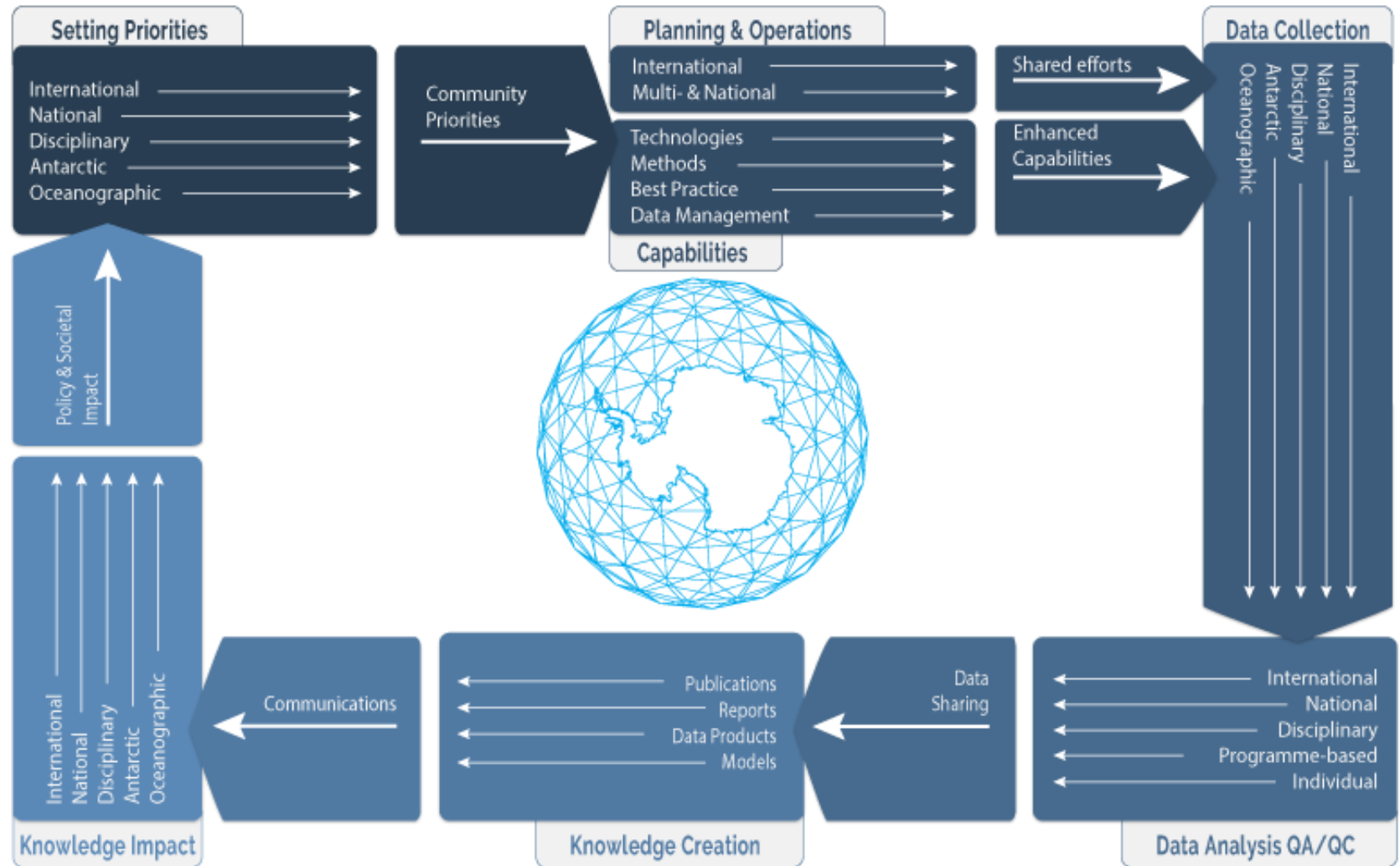


SOOS Mission

Our mission is to facilitate the sustained collection and delivery of essential observations of the Southern Ocean to all stakeholders, through the design, advocacy, and implementation of cost-effective observing and data delivery systems.

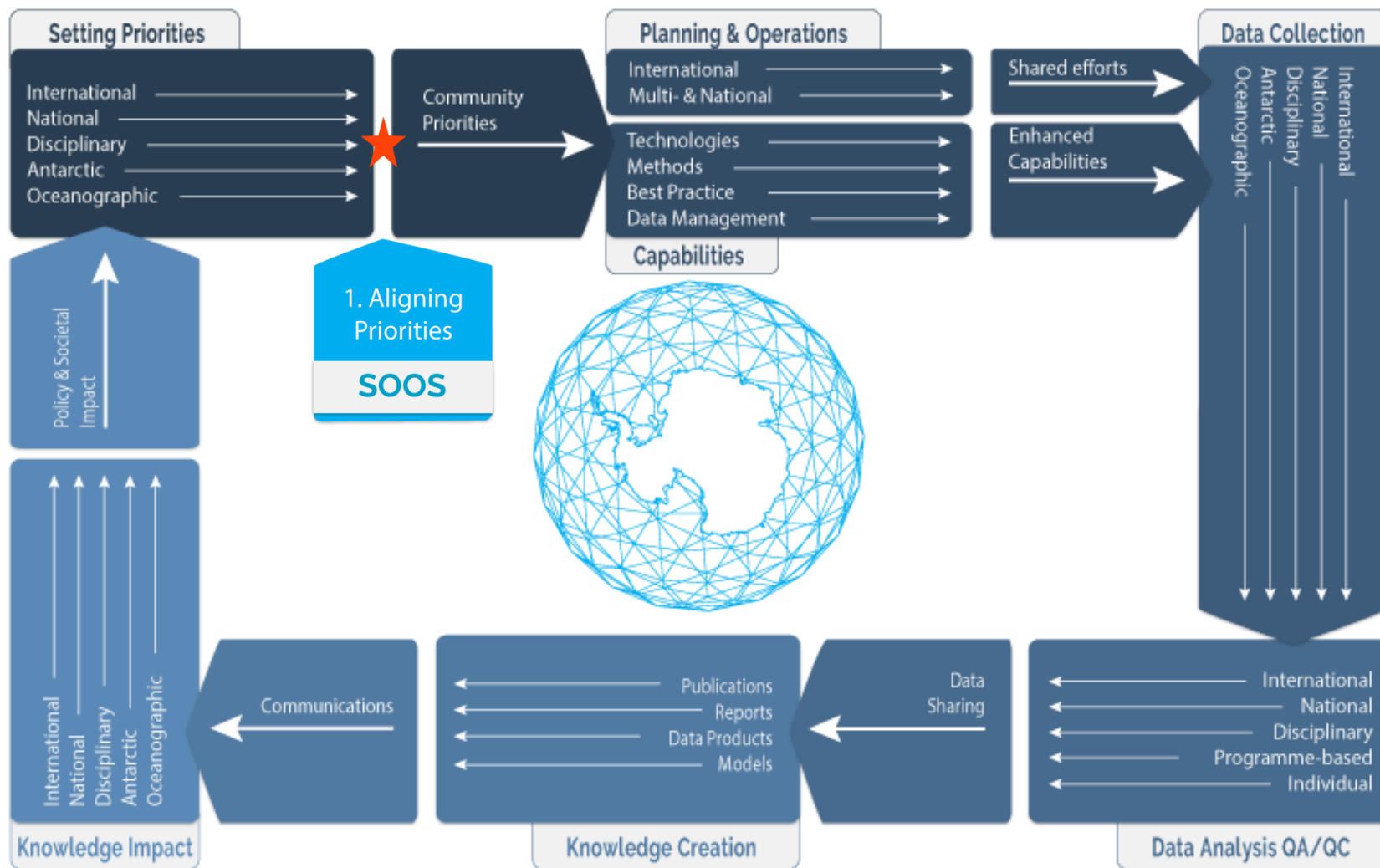


Southern Ocean Science Pathway



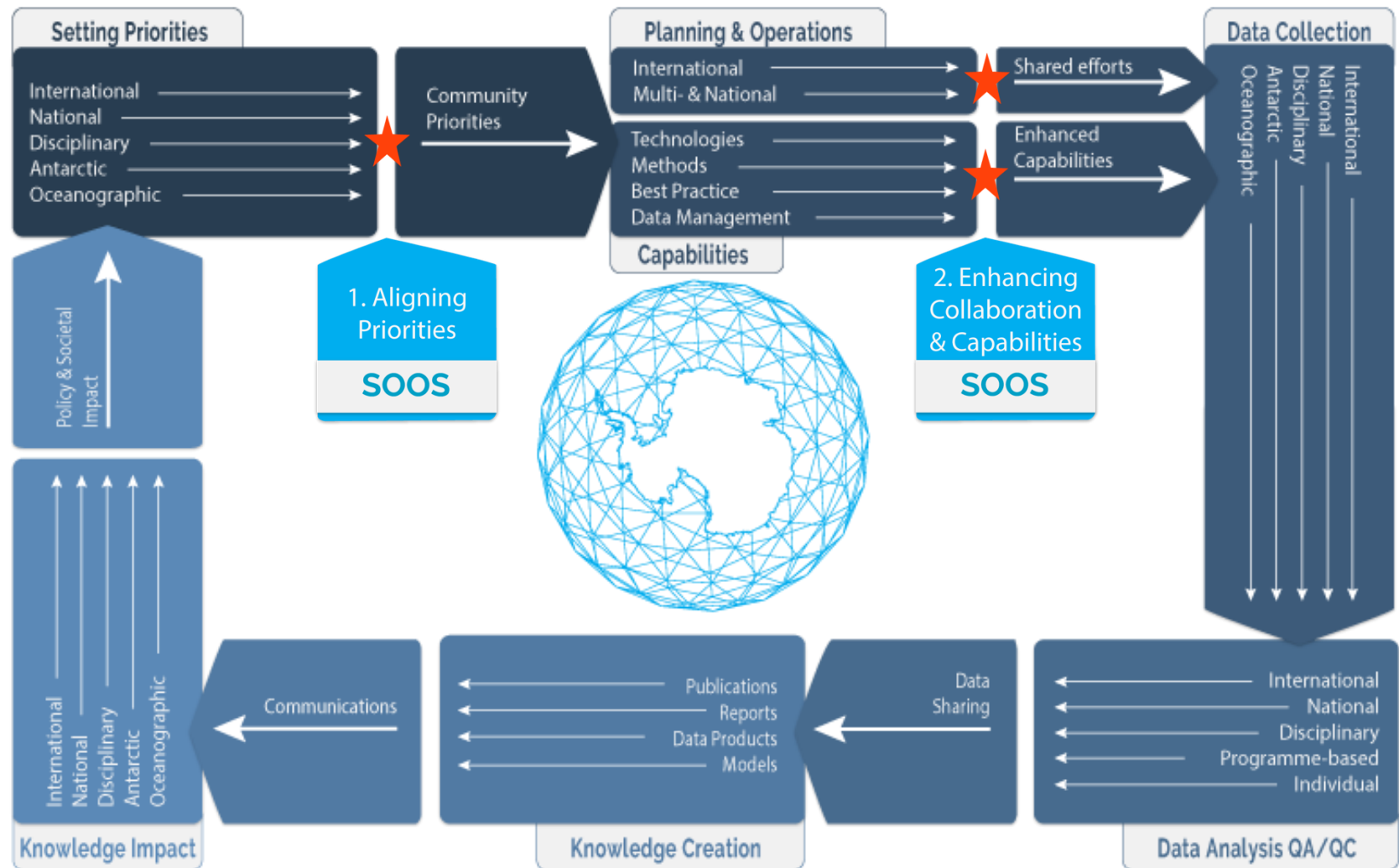
Southern Ocean Science Pathway

1. Align, advocate and support scientific and observational priorities



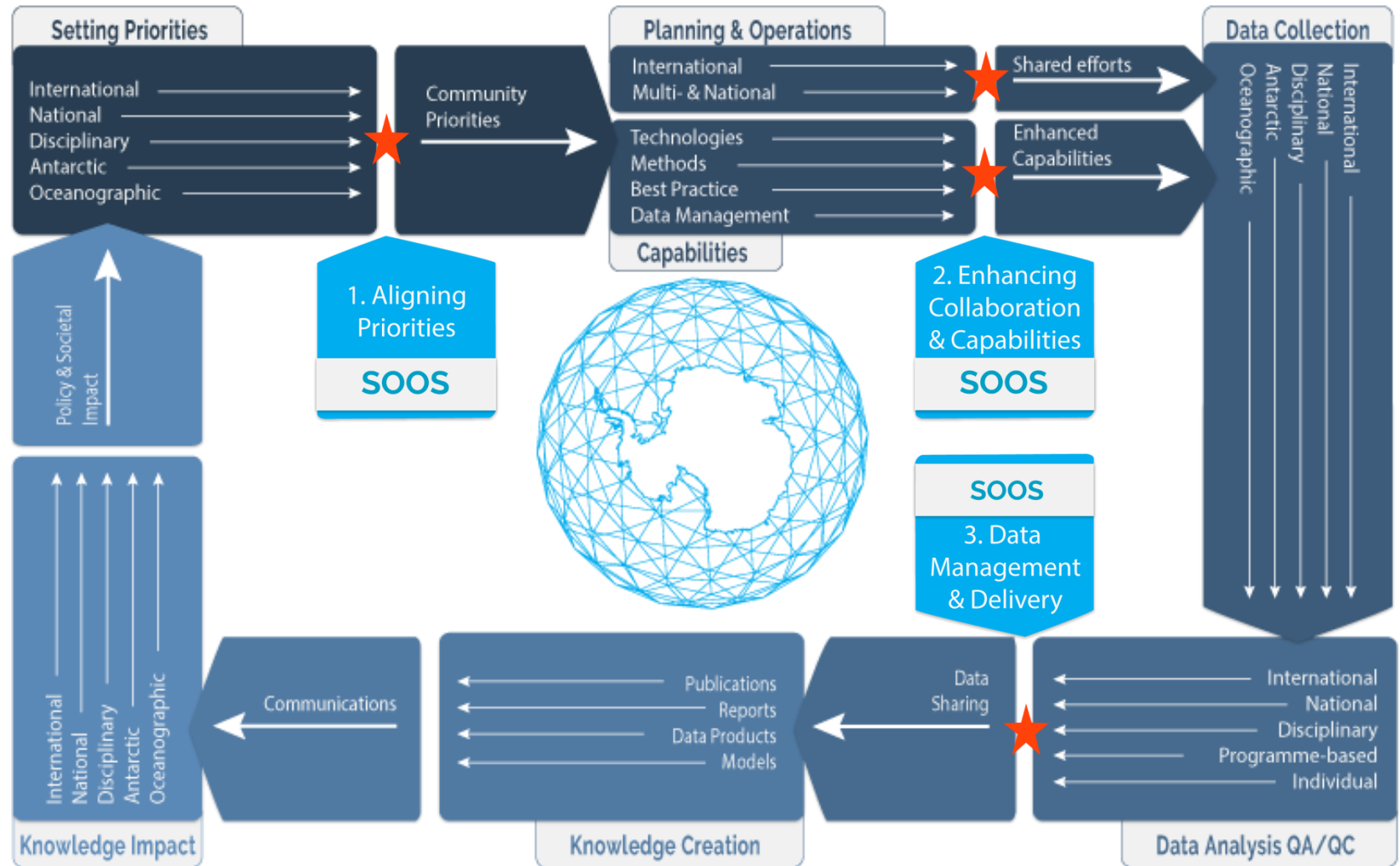
Southern Ocean Science Pathway

1. Aligning, advocating and supporting scientific and observational priorities
2. Enhance collaboration and observational capabilities



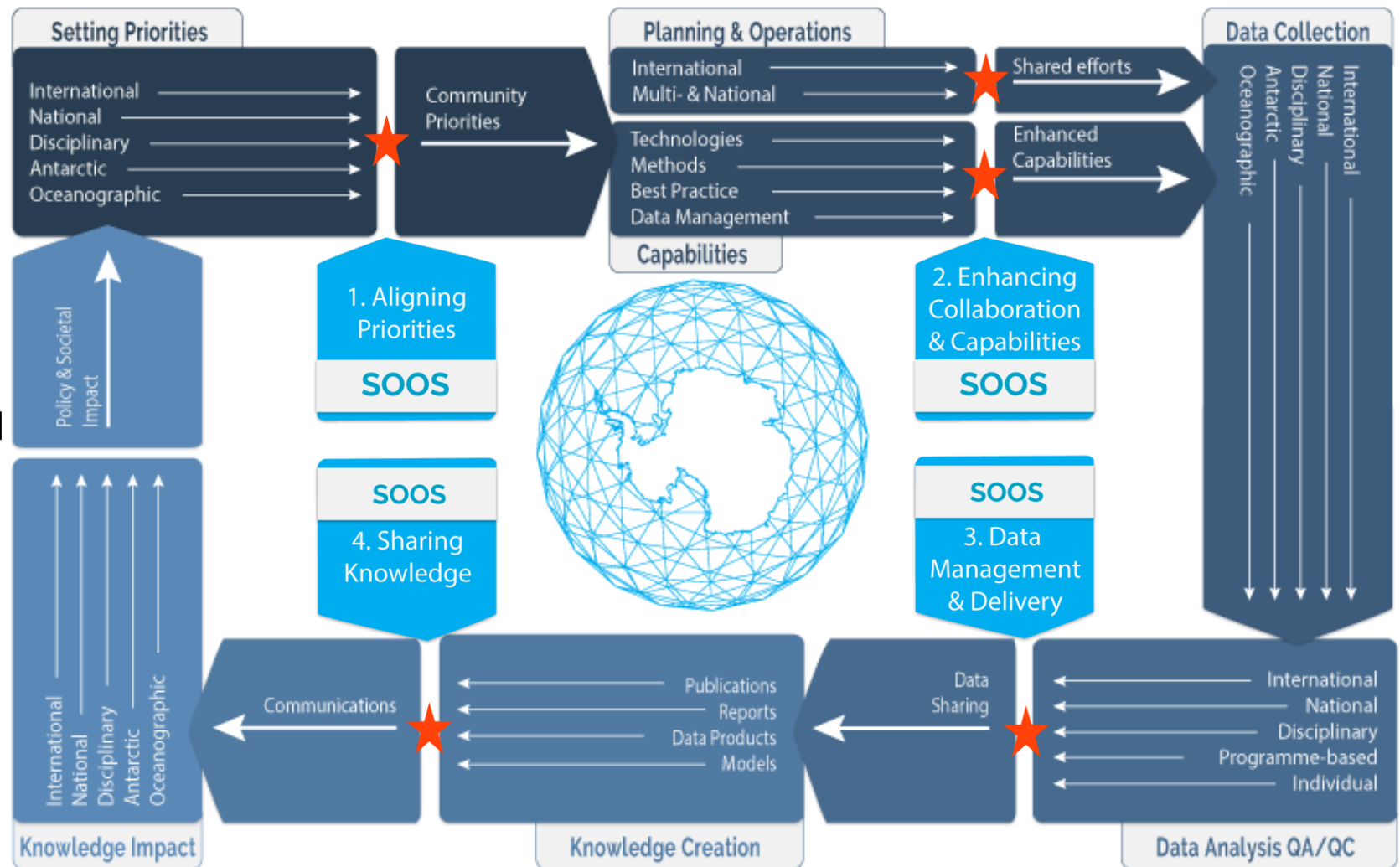
Southern Ocean Science Pathway

1. Aligning, advocating and supporting scientific and observational priorities
2. Enhancing collaboration and observational capabilities
3. Ensure the management and delivery of observational data



Southern Ocean Science Pathway

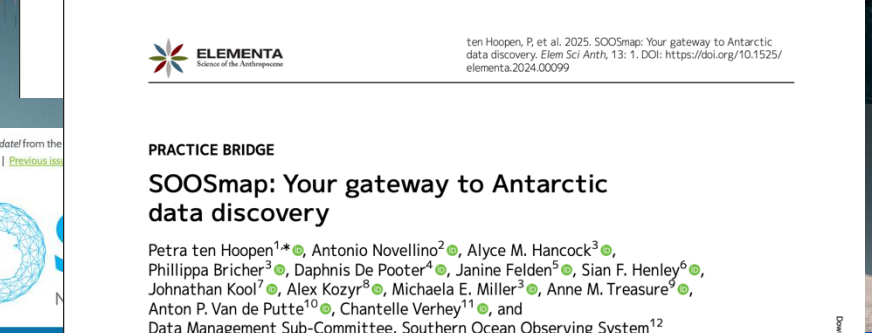
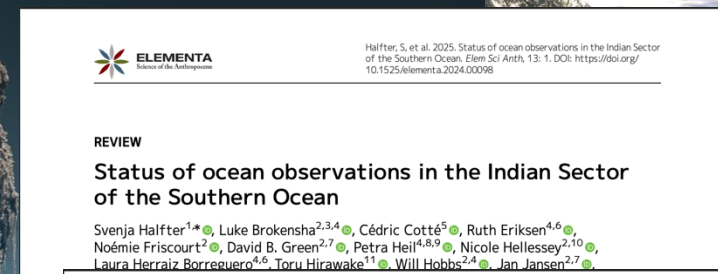
1. Aligning, advocating and supporting scientific and observational priorities
2. Enhancing collaboration and observational capabilities
3. Ensuring the management and delivery of observational data
4. Share knowledge with the Southern Ocean community and all stakeholders



Whole-of-SOOS outputs 2025

1014+ members from 55 countries

- **Publications: 7**
 - + 2 special issue (1 still being developed)
- **Newsletters: 9** (new ECR newsletter established)
- **Reports: 5**
- **Webinars and online meetings: 19**
- **Events: 7**
- **Non-SOOS meetings with SOOS representation: 29+**
 - COP29
 - OOSC/UN Ocean Conference
 - CCAMLR
- **Projects Proposals Endorsed: 6**
- **Grants awarded: 1**
- **New sponsors secured: 4** (2 still finalising contracts)



Facilitating and Enhancing Southern Ocean Observations

SOOS Update! Issue 32, August 2025
www.soos.aq

From the EO

This issue of SOOS Update! celebrates new leadership across the SOOS network, the launch of the first Early Career Newsletter, and fresh insights from the SOOS Symposium Special Issue. We also share highlights from SOOS's role in major international forums and point to exciting opportunities to connect through upcoming workshops, webinars, and conferences.

[Read the full editorial here...](#)

ENVIRONMENTS PORTAL

Antarctic Southern Ocean Future Challenges

Antarctic coastal waters are expected to experience more severe acidification than open ocean waters.

AN ACIDIFYING SOUTHERN OCEAN AFFECTS...

- Metabolism
- Biomineralization
- Reproduction

FUTURE STRATEGIES

- Maintain the current monitoring system and expand it by utilizing automated equipment to collect data in data-sparse regions and times
- Improve the representation of critical physical and biological processes in models, which control the simulated oceanic uptake of carbon

PH

Increasing atmospheric CO₂ → Lower, more acidic water pH → Harm to marine organisms

The Southern Ocean is acidifying faster than tropical or subtropical seas

Antarctic coastal waters host several dense water formation sites where vertical mixing is enhanced

Drifting reductions in sea-ice cover and enhanced freshwater input from melting sea ice, glaciers, and ice shelves act to amplify ocean acidification

Screenshot

SOOS Implementation Groups

Data Management Sub-Committee

Regional Working Groups (RWGs):

Southern Ocean Indian Sector (SOIS)

Ross Sea

Weddell Sea and Dronning Maud Land (WSDML) West

Antarctic Peninsula and Scotia Arc (WAPSA)

Amundsen/Bellingshausen Sea (ABS)

Capability Working Groups (CWGs):

Censusing Animal Populations from Space (CAPS).

Southern Ocean Fluxes (SOFLUX)

Observing System Design (OSD)

SOOS/GOA-ON Ocean Acidification Regional Hub (SO-OA)

Task Teams:

Polar Technology

Partnerships and Collaborations:

UN Ocean Decade Southern Ocean Decade Collaborative Centre

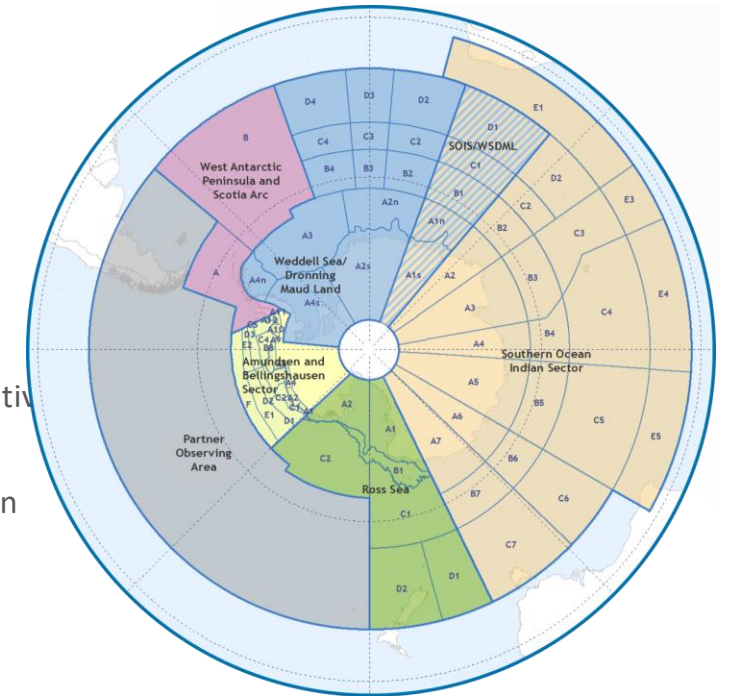
Marine Ecosystem Assessment of the Southern Ocean (MEASO)

Polar Data Discovery (POLDER)













Southern Ocean Regional Panel (SORP)

Antarctic bioDiVersity dAta iNfrastruCture (ADVANCE)

International Polar Year (IPY-5)

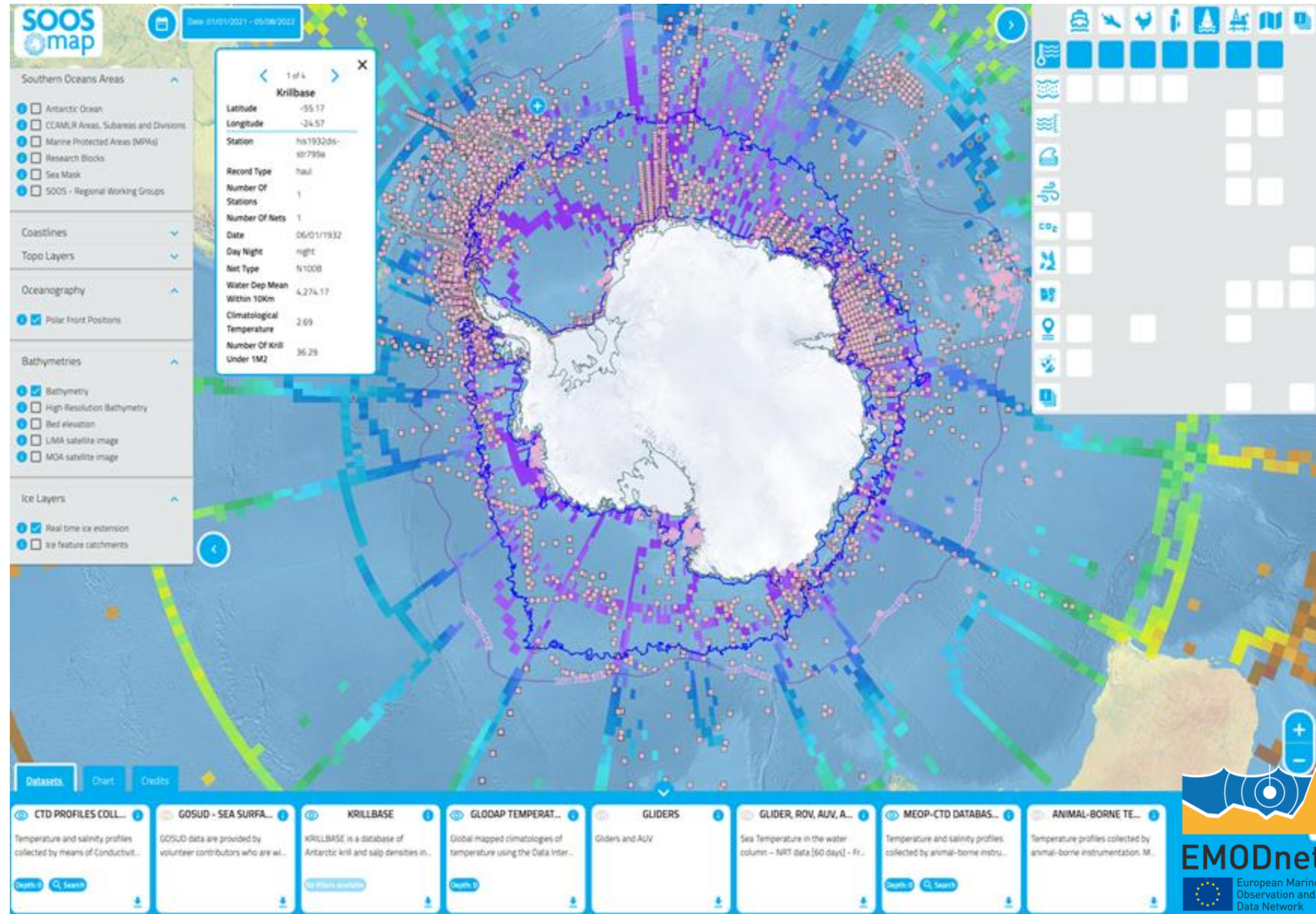


SOOSmap

 52 Million OBSERVATIONS	 >584,600 CTD MEASUREMENTS	 63 DATA LAYERS
 >14,500 KRILLBASE SAMPLES	 >4,600 PENGUIN SPECIES OCCURRENCE RECORDS	 814 SOOS MOORING NETWORK
 >149,100 CONTINUOUS PLANKTON RECORDER MEASUREMENTS	 1.7 Million MARINE MAMMAL OBSERVATIONS	 >26,600 SCAR ICEBERG OBSERVATIONS
 >669,200 DNA BARCODES	 >699,900 ARGO MEASUREMENTS	 114 SCAR PLASTICS SAMPLINGS

2024/25 Improvements:

- Full data cards
- SOOSmap GeoNetwork
- New datasets
- Improved data layering
- SOOSmap GitHub repository
- Tutorial



DueSouth

26 Nations Represented in

>700 Ship Expeditions



64
SCIENCE/NAP



86
FISHERIES



>550
TOURIST

34 Other Expeditions



32
FLIGHTS



2
TRAVERSE

POLARDEX

Field Facilities Vessels Aircraft Planned Routes

Antarctic expedition data provided by

SOOS SOUTH OCEAN OBSERVING SYSTEM

DUE SOUTH DIVISION OF ANTARCTIC OPERATIONS TO THE COMMONWEALTH OF AUSTRALIA

Visit SOOS.aq

Search

Data Sort: Start Date Descending

Status: Any Status

Transect Type: Any

Nation: Select...

Vehicle Type: Any

SOOS Region: Any

1 - 150 of 610

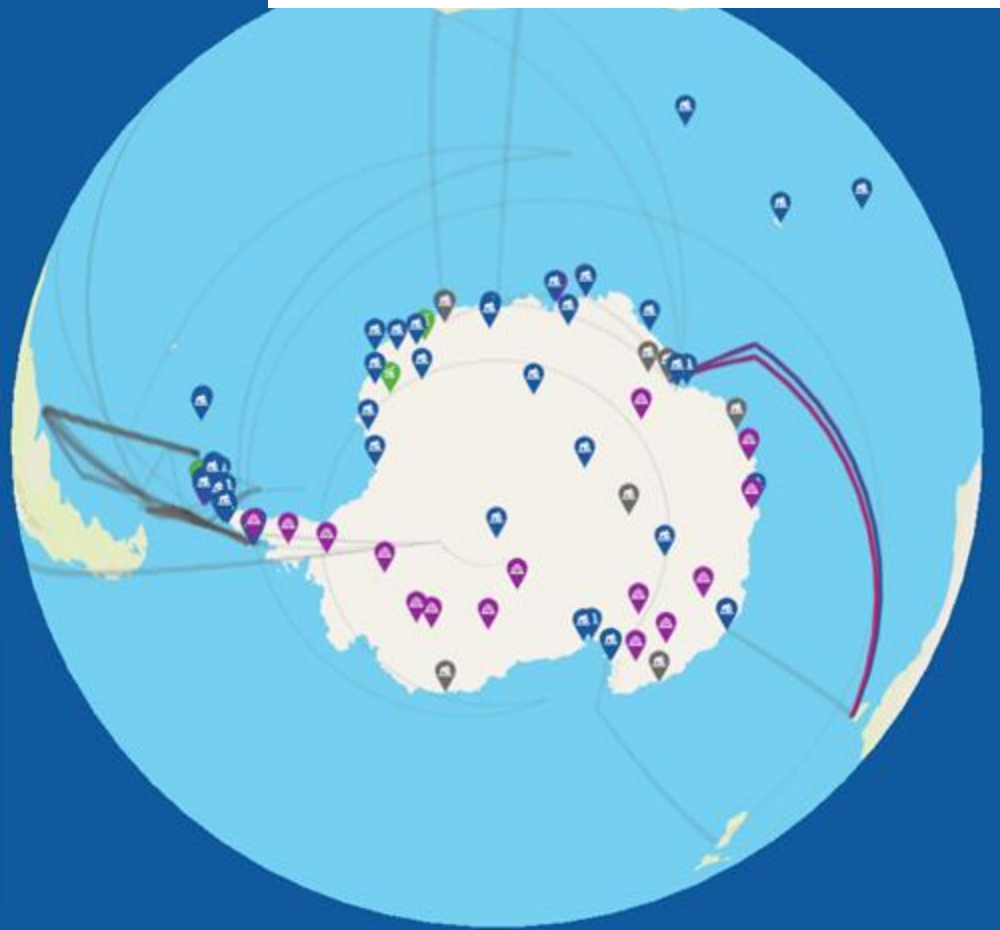
Australia_22/23_V07

Australia

Start End

Start Date: March 28th, 2023

End Date: April 16th, 2023



2024/25 Improvements:

- Enhanced functionality

2026 Planned Improvements:

- Working with Antarctica InSync on stakeholder needs for DueSouth to support Antarctica InSync and IPY logistical collaboration



EUROPEAN POLAR BOARD



CCAMLR

SOOS Funding Situation

The ongoing sponsorship and hosting of the SOOS International Project Office has been a major challenge for SOOS over recent years.

Much progress has been made in 2025 to secure stable and sustainable for SOOS for 2026 to 2030. **SOOS is 85% of the way to securing sufficient sponsorship for 2026 to 2030.**

The funding of SOOS for 2026-2030 is a more distributed model than SOOS historic sponsorship. It includes:

- International country/institute sponsorship (4 sponsors)
- Australian partnership sponsorship (reduced from previous years)
- Fondation Prince Albert II de Monaco Grant
- European funding



SOOS is still seeking ~\$30,000 USD per year for 5 years (2026-2030) to continue its full operations across 2026-2030.

SOOS Plans for 2025/2026

Amendment to the SOOS 2021-2025 Science Plan

New 5-Year Strategy and Implementation(2026-2030)

Finalise SOOS Symposium Special Feature in Elementa,

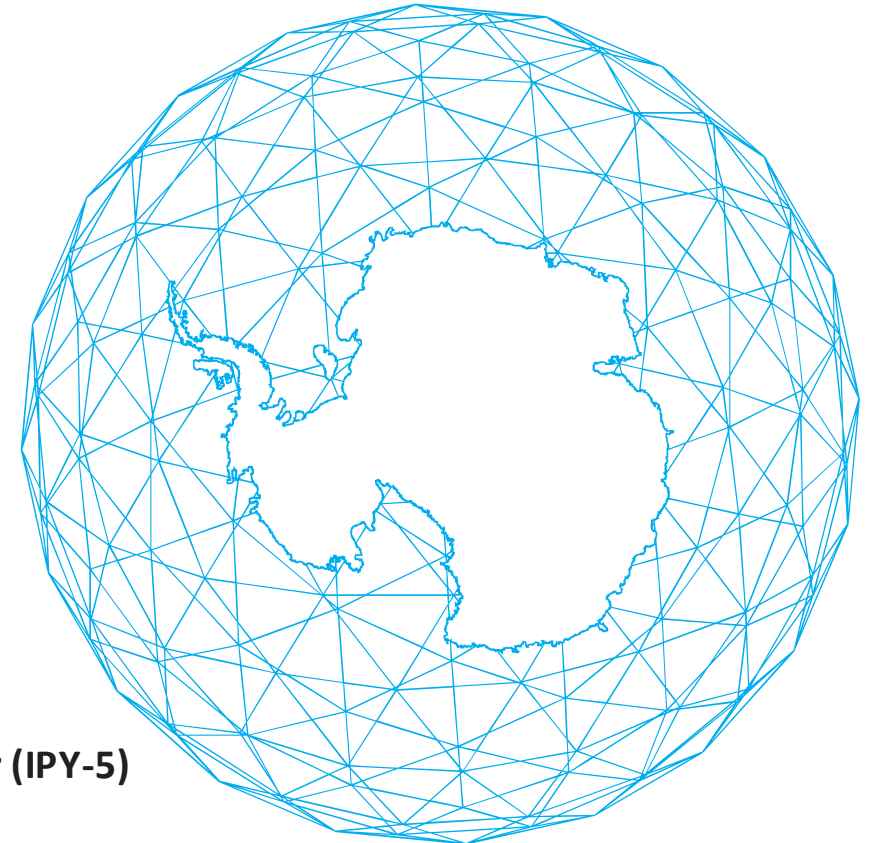
**“Understanding the Trajectory and Implication of a Changing Southern Ocean:
the Need for an Integrated Observing System”**

- SOOS commentary style article on future priorities for Southern Ocean observations

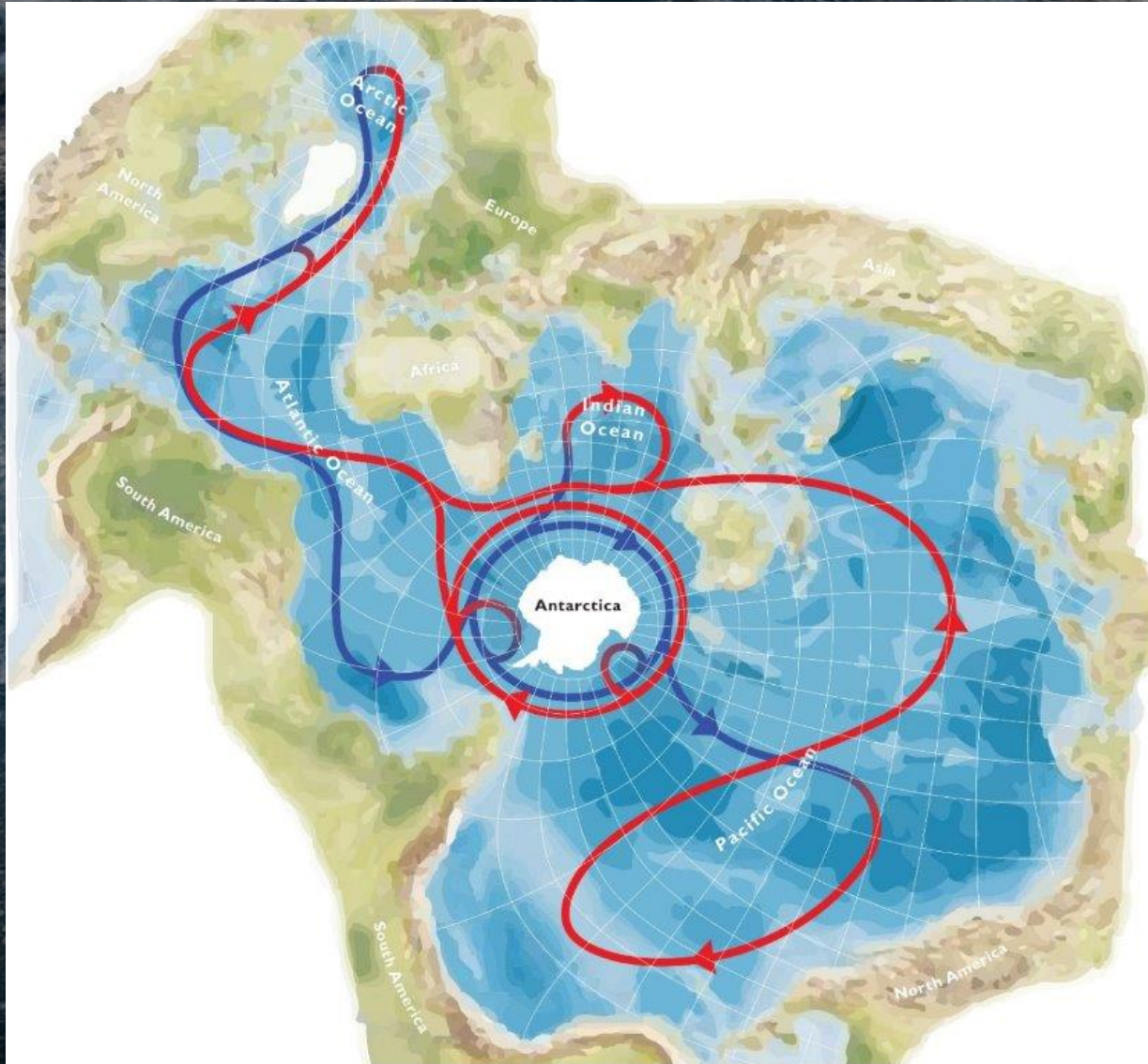
Commence work on the Fondation Prince Albert II de Monaco project

Continue support of the Antarctica InSync initiative and International Polar Year (IPY-5)

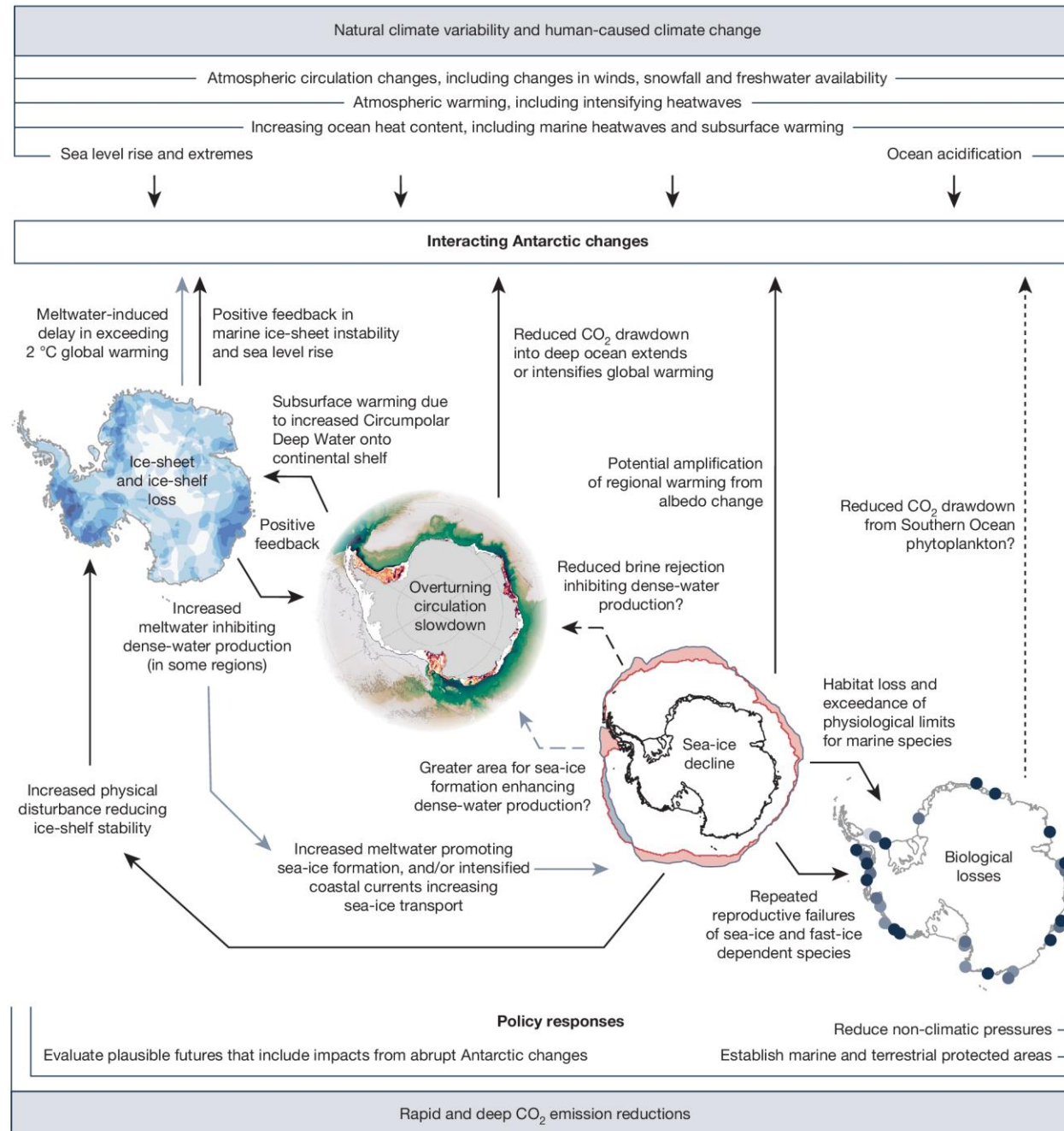
Begin planning for a SOOS Symposium in 2027



Southern Ocean is disproportionately important in the global climate system



Yet, the Southern Ocean is rapidly changing



→ Positive feedback - - → (uncertain)
 → Negative feedback - - → (uncertain)

SOOS Science Plan 2026-2030

Reframed with an overarching focus on critical changes being observed in the Southern Ocean

1. Threshold crossed/state shifts e.g., sea-ice extent
2. Extreme events e.g., marine heat wave
3. Longer, slower changes e.g., ocean acidification

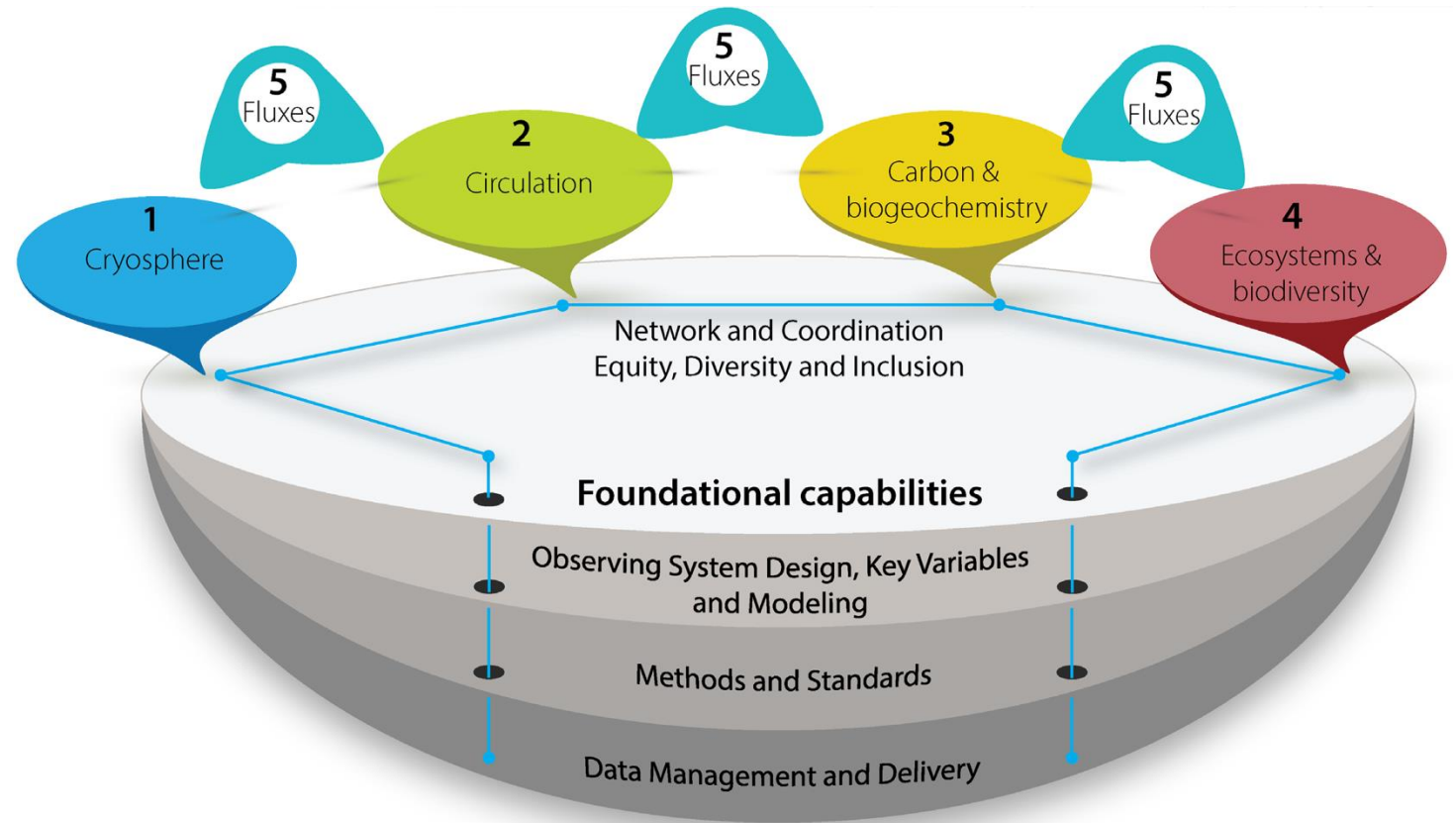
SOOS Science Plan 2026-2030

Science Themes:

- Cryosphere
- Circulation
- Carbon & Biogeochemistry
- Ecosystems & Biodiversity
- Southern Ocean – Sea Ice – Atmosphere Fluxes

Foundational Capabilities:

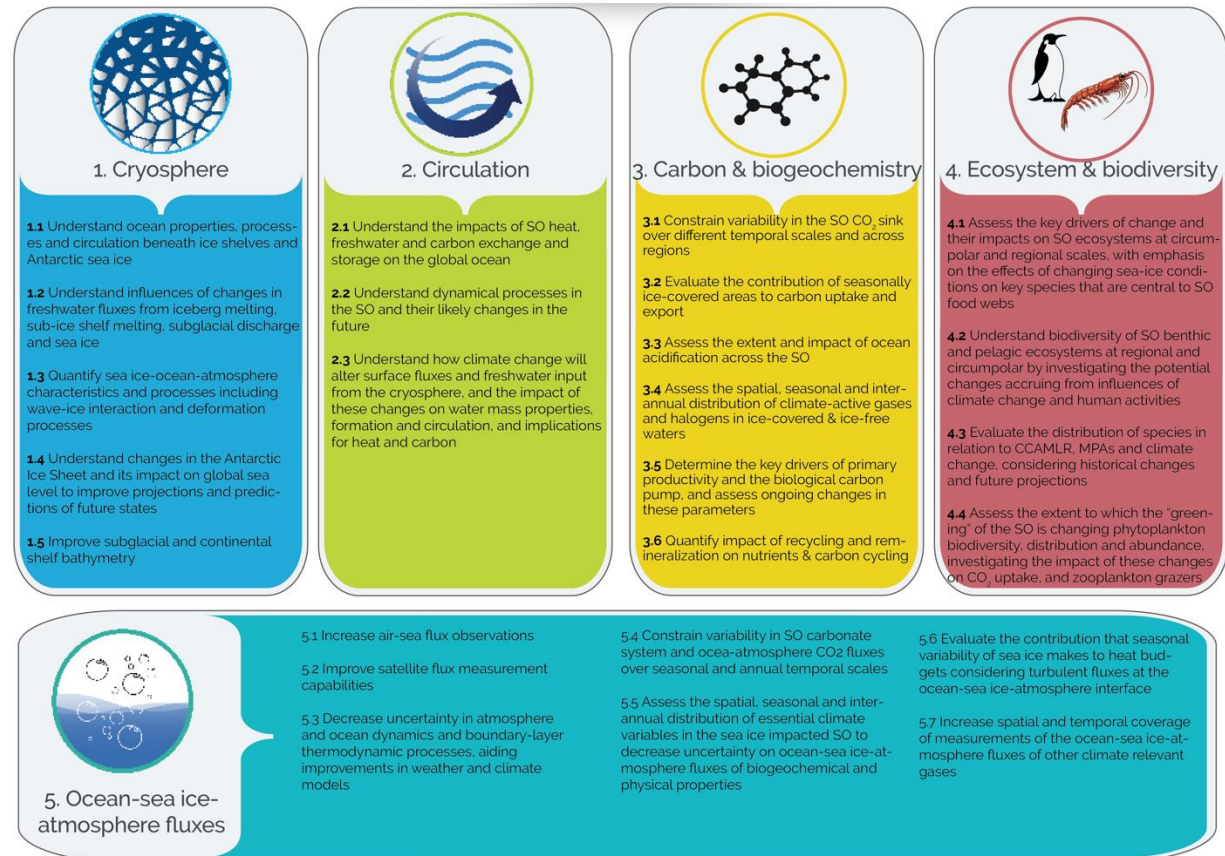
- Observing System Design, Key Variables and Modelling
- Methods and Standards
- Data Management and Delivery



SOOS Science Plan 2021-2025 Key Challenges 2026-2030 – Review and Update of Key Challenges In Progress

Science Themes:

- Cryosphere
- Circulation
- Carbon & Biogeochemistry
- Ecosystems & Biodiversity
- Southern Ocean – Sea Ice – Atmosphere Fluxes



SOOS Strategy and Implementation 2026-2030

SOOS 2026-2030 Strategy and Implementation Plan

5 Key Objectives:

1. **Align, advocate, and support observational priorities, gaps and inefficiencies** to provide a unified voice to funders, national programs, and intergovernmental agencies
2. **Enhance collaboration and observational coordination** by facilitating inclusive networks
3. **Ensure the management and delivery of observational data** by connecting data repositories, providing synthesis activities/products, integrating data, and encouraging the use of open science and FAIR data principles
4. **Develop and deliver interactive maps of observational coverage and summary visualisations** of Southern Ocean available data
5. **Sharing knowledge** with all stakeholder groups, including policymakers, to provide visibility and enhance the impact of Southern Ocean research and the knowledge created from it, through summary reports, communication strategies, workshops, publications, and community coordination efforts

SOOS 2026-2030 Strategy and Implementation Plan

High priority, core SOOS actions

- Actions
- Deliverables
- Overarching mapping figure of deliverables to actions to objectives

SOOS supported actions and tasks in collaboration with the broader community

SOOS governance and International Project Office operations

New tools to support environmental monitoring in the Southern Ocean

Development of interactive maps of observational coverage of important Southern Ocean data and dashboard summaries to be used by a wide range of Southern Ocean stakeholders

Main Goals:

1. Develop and delivery maps of observational coverage of essential Southern Ocean variables
2. Improve visibility and accessibility of this data through SOOSmap
3. Develop and deliver summary visualisations e.g., report cards of policy relevant data



**FONDATION
PRINCE ALBERT II
DE MONACO**

SOOS supports CCAMLR and ATCM work

Recognition of SOOS as a resource to CEP ATCM and SC-CAMLR work:

- Acknowledged for its key coordinating role in sustained Southern Ocean observations
- Recognition of SOOSmap and its expanded data layers as valuable resources
- Development of ocean-related indicators

Future work with CEP ATCM and SC-CAMLR:

- Environmental monitoring, identification key environmental variables/indicators, data flow
 - State of the Antarctic Environment and Climate Change reporting
 - Joint ATCM CEP/SC-CAMLR Workshop on Climate Change and Monitoring, May 2026 in Japan

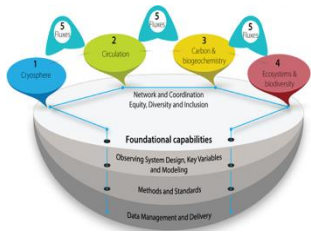


Antarctica InSync

Antarctica International Science & Infrastructure for Synchronous Observation

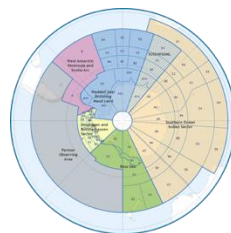


SOOS is an institutional partner



Support development of science and observational priorities e.g., recent SOOS/OCEAN ICE workshop future priorities for ice covered ocean observations

Enhance regional coordination of observational efforts e.g., SOOS Regional Working Group workshops and meetings



International Polar Year 2032-33

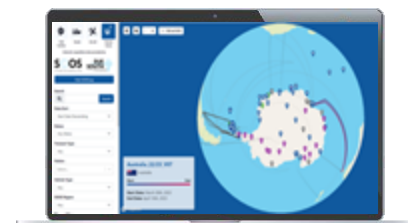


SOOS is a member of the IPY Planning Group



Coordinate delivery of coordinated, visible and accessible data – SOOS is working with SCAR, the Arctic Data Committee and others on data task teams for Antarctica InSync and the IPY

Enhance logistical collaboration – SOOS' logistical tool, DueSouth will be used as a logistical planning and sharing tool for both Antarctica InSync and IPY





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