

Southern Ocean Observing System

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Whole-of-SOOS outputs 2022 - 2023

- Publications: 4
 - + 2 special issues due for release by the end of 2023
 - + 2 special issues commenced in 2023
- Reports: 12
 - SOOS 5-Year Report (2016-2020)
- Newsletters: 13
- Video Presentations: 10
 - 3 webinar series
 - 1 presentation series
- Media releases: 2
 - Resulting in over 40 media outputs
- SOOS Events: 32
 - Including the SOOS Symposium 2023 and 4th Ross Sea International Conference
- Non-SOOS meetings with SOOS representation: 30+
 - COP27
- Successful Projects Endorsed: 5
- Polar Federated Search Tool released (output of the POLDER Group)



communications earth & environment

ARTICLE

<https://doi.org/10.1038/s43247-023-00927-x>

OPEN

Check for updates

Record low 2022 Antarctic sea ice led to catastrophic breeding failure of emperor penguins

Peter T. Fretwell^{1✉}, Aude Boutet² & Norman Ratcliffe¹

The spring season throughout the year with the all-time low was in the central where, during November, we provide evidence of ice loss using Sentinel-1 experienced total breeding of the 2022 breeding failure of emperor extent.

STATE OF THE CLIMATE IN 2022

ANTARCTICA AND THE SOUTHERN OCEAN

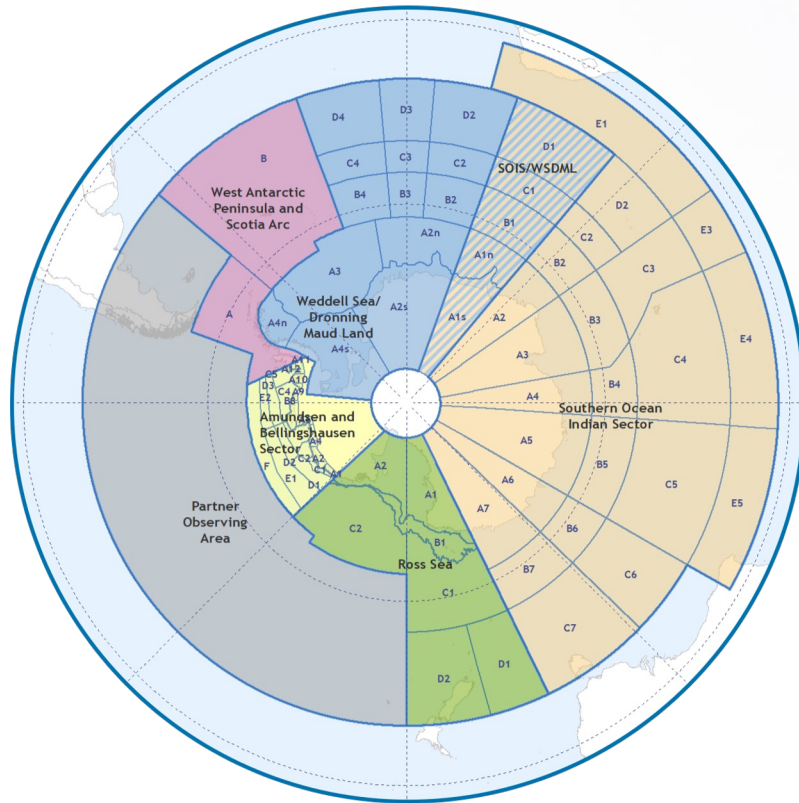
Kyle R. Clem and Marilyn N. Raphael, Eds.



Special Online Supplement to the *Bulletin of the American Meteorological Society* Vol. 104, No. 9, September, 2023

<https://doi.org/10.1175/BAMS-D-23-0077.1>

Knowledge delivery to address challenges



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 Flux (SOFLUX)

Observing System Design (OSD)

SOOS-GOA-ON Ocean Acidification Southern Ocean Regional Hub – in development

Task Teams:

Polar Technology

Ecosystem Essential Ocean Variables (eEOVs) – completed in 2023

Autonomous Underwater Vehicles (AUVs) – completed in 2023

SOOS-Swedish Southern Ocean National Network

Equity Diversity and Inclusion Group

Partnerships and Collaborations:

UN Ocean Decade Southern Ocean Task Force

Marine Ecosystem Assessment of the Southern Ocean (MEASO)

Polar Data Discovery (POLDER)

Southern Ocean Regional Panel (SORP)

Antarctic bioDiVersity dAtA iNfrastruCture (ADVANCE)



MEASO

MARINE ECOSYSTEM ASSESSMENT FOR THE SOUTHERN OCEAN

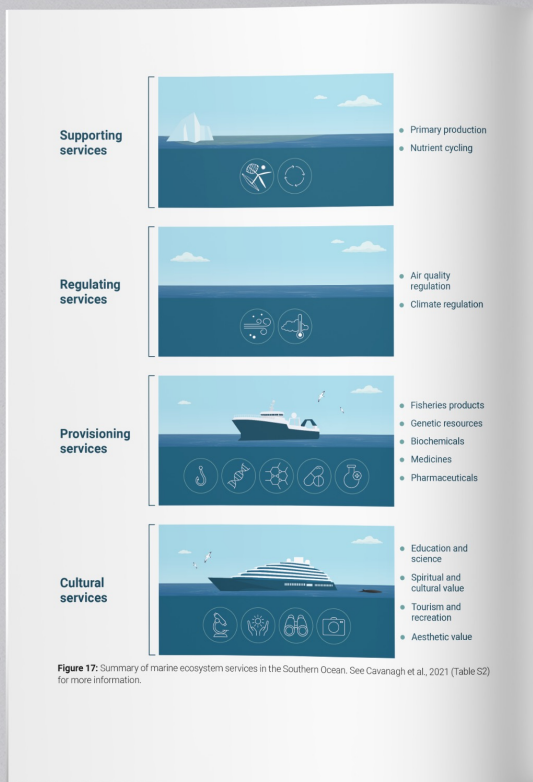


Figure 17: Summary of marine ecosystem services in the Southern Ocean. See Cavanagh et al., 2021 (Table S2) for more information.

Confidence level
 ● Low confidence
 ●● Medium confidence
 ●●● High confidence
 ●●●● Very high confidence

05

Priorities for improving future assessments and policy-relevant advice

5.1

MEASO has demonstrated the array of existing knowledge, data, tools, and approaches available for informing decisions on conserving and sustaining the marine ecosystems in the region and the services they provide, and how implementation of those processes could be improved....^(4, 7, 11, 12, 35, 42, 46, 44, 48, 74, 82, 105, 112)

5.1.1

Assessments of change and the design of future field programs will be facilitated by archiving, curating and openly sharing data, algorithms, and tools based on the FAIR principles for data, which are for them to be Findable, Accessible, Interoperable and Reusable....^(49, 109, 112)

5.1.2

Availability of existing data, including fisheries data through CCAMLR, could be improved using existing data networks...., such as in SCAR¹¹¹² and SOOS⁷⁰, which have connections to other global and regional networks⁽⁷¹⁾.

5.1.2.1

Existing platforms and standards need to be transparent and traceable....⁽¹¹⁰⁾

5.2.1.2

International coordination is needed to facilitate the matching, aggregation and integration of datasets using common methodologies for comparative analyses of current and future ecosystem risks....^(21, 48, 112)

5.2.1.3

Data from fishing vessels provide the most comprehensive time series of data available on many fish and krill species in the main fishing grounds and could help inform assessments of ecosystem change....⁽¹⁰²⁾ mechanisms for appropriately making these data available to the scientific community would be a valuable contribution to future assessments....

5.1.3

Syntheses of information and analyses of existing data for different MEASO areas would enable planning and development of future assessments....⁽⁹⁾. A system to support future assessments in the Southern Ocean will need to address the knowledge and data gaps caused by sampling bias, non-standardised sampling methods and data management processes, and by data being kept out of the public domain....⁽¹¹⁰⁾

5.1.4

Modelling tools are available and can be readily developed further for assessing risks to the region and their implications for ecosystem services and for managing fisheries and onshore activities...., including (i) assessing implications of change for food web interactions affected by fisheries and other activities....⁽¹⁴⁾ and (ii) how to spatially distribute fishery catches to lessen risks for food webs and biodiversity....⁽¹¹⁴⁾ and ecosystem services more generally....⁽¹¹⁵⁾

MEASO
Marine Ecosystem Assessment
for the Southern Ocean

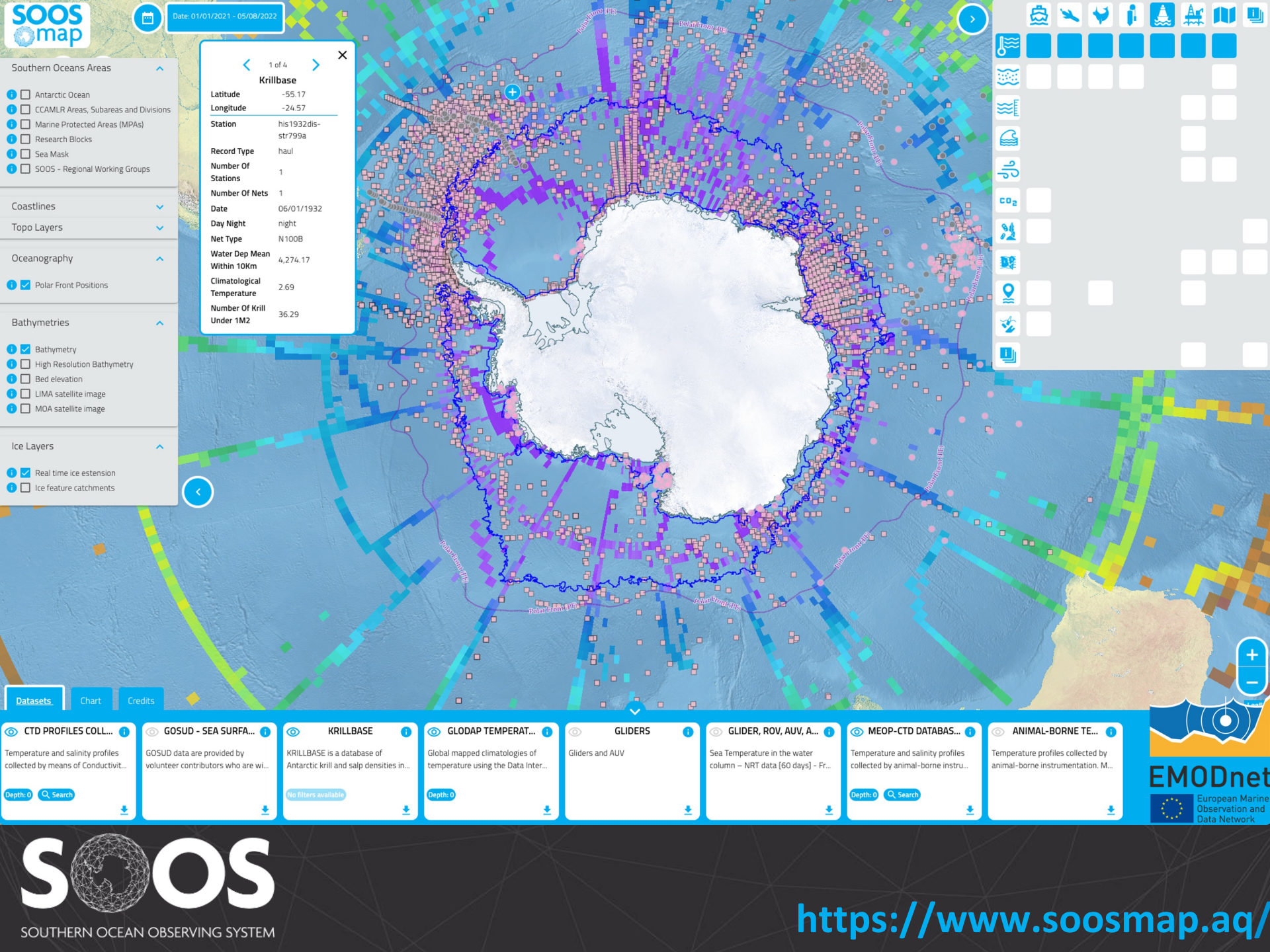
Summary for Policymakers

Marine Ecosystem Assessment
for the Southern Ocean



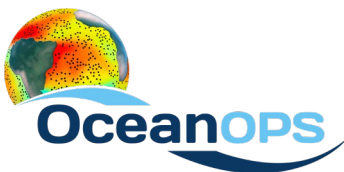
<https://zenodo.org/record/8359585>





DUE SOUTH

DATABASE OF UPCOMING EXPEDITIONS
TO THE SOUTHERN OCEAN



Field Facilities Vessels Aircraft Planned Routes

Antarctic expedition data provided by

SOOS **DUE SOUTH**
SOUTHERN OCEAN OBSERVING SYSTEM DATABASE OF UPCOMING EXPEDITIONS TO THE SOUTHERN OCEAN

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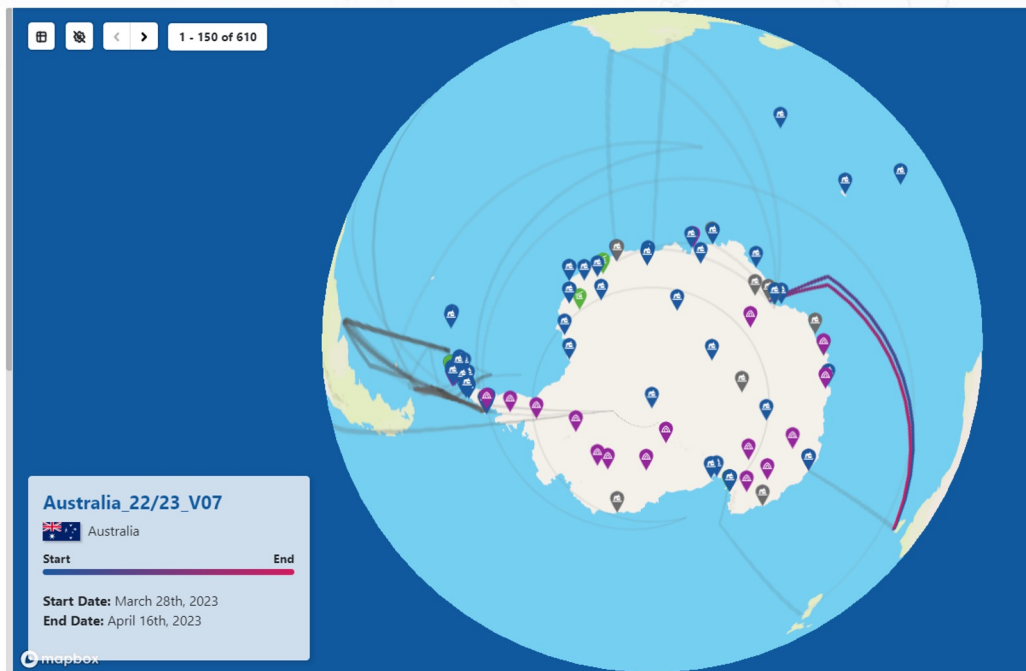
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SOOS Region

Any

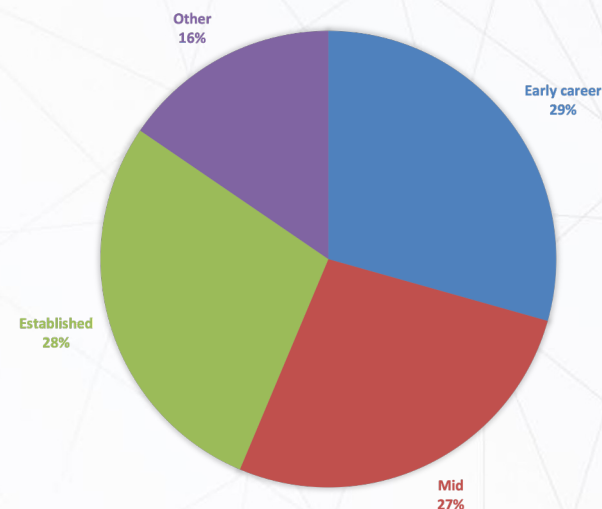
Planned Date



**EUROPEAN
POLAR BOARD**

<https://polar dex.org/due-south>

- Program:
 - 12 parallel presentations including 4 panel discussions and ECR perspectives
 - 17 parallel sessions and 4 parallel workshops
 - 5 lunch time meetings
 - Poster session
 - Trade exhibition
 - Data helpdesk
 - Symposium dinner
 - ECR networking event
- 296 Registrations from 25 countries and 133 institutes
 - 245 presentations
 - 57 posters
- 5 side workshops and meetings
- SOOS Symposium Online:
 - 7 online live streamed sessions
 - Daily summaries published
 - Access to recordings of all plenaries
 - Access to all presentations slides and poster PDFs provided with consent by presenters
- 7 ECRs from developing countries supported to attend with travel sponsorship provided by SCOR and POGO



Thank you to the SOOS Symposium Sponsors and Exhibitors



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.

<https://soos.aq/soos-symposium-2023>

- Statement translated into 12 languages
- Full media release into 7 languages



Thank You!

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Acknowledgements

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