Southern Ocean & Antarctica Joint Workshop

A collaborative event organised by OCEAN:ICE and SO-CHIC

8 November 2022, Paris and online

Proceedings

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This report has been edited by the OCEAN:ICE and SO-CHIC Project Offices.

Project Office:

For OCEAN:ICE: Sarah Coombs (BAS) sambs@bas.ac.uk and Chiara Bearzotti (DMI) chb@dmi.dk

For SO-CHIC: Jean-Baptiste-Sallée contact@so-chic-h2020.eu

Web:

www.ocean-ice.eu

http://www.sochic-h2020.eu

Socials:

OCEAN:ICE (@OCEANICE_EU) / Twitter

https://www.linkedin.com/company/euoceanice/

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Foreword

The Southern Ocean & Antarctica joint workshop was a collaboration between the projects OCEAN:ICE and SO CHIC. The workshop was the kick off event for the Horizon Europe OCEAN: ICE project and also included a contribution from the EU Polar Cluster of which the two projects are members of.

The goal of the workshop was to foster scientific exchanges and collaborations on research on the Southern Ocean, including research on:

- Southern Ocean Circulation
- Global and societal impact of Southern Ocean and Antarctica
- Antarctic ice-sheet & sea level

Additionally, there were 4 breakout sessions to drive conversations about overlapping topics, these were:

- Southern Ocean dynamics and change
- Ocean - cryosphere interactions
- Ice sheet dynamics and change
- Global implications and link to the society

Everyone from SO-CHIC and OCEAN:ICE and additional projects was invited to attend this joint day. The programme included presentations from related projects, from the EU Polar Cluster and beyond. Post-docs and PhD students were encourage to present talks and posters.

Workshop Organisers

Ruth Mottram, OCEAN:ICE Coordinator
Andrew Meijers, OCEAN:ICE UK Grant Coordinator and PI
Jean-Baptiste Sallée, SO-CHIC Coordinator



European Funded Projects and Initiatives

Horizon Europe EPOC project
Eleanor Frajka-Williams, Coordinator
University Hamburg

Ocean currents play key roles in regulating the distribution of heat on the Earth, yet there is still much to be learned about how they interact with the planet as a whole. The EU-funded EPOC project seeks to create a new framework for how the Atlantic meridional overturning circulation (AMOC) impacts the weather and climate. Besides transferring heat, the AMOC is associated with the ventilation of anthropogenic carbon. While existing models rely on very long timescales of thousands of years, EPOC will develop a model that can be used on human timescales of days and years. Doing so can help better explain the AMOC's role in rapid climate change. EPOC will generate a new conceptual framework for the Atlantic meridional overturning circulation, to understand how it functions in the Earth system and impacts weather and climate. The AMOC is a key component of the climate system, responsible for ocean heat and freshwater transport, associated with the ventilation of anthropogenic carbon, and anticipated to experience or drive climate tipping points. However, the link between ocean transport, ventilation and tipping points relies on the common conceptual view of the AMOC as a 'great ocean conveyor' which was developed to explain very long timescale (glacial-interglacial) fluctuations in climate. The conveyor-belt schematic conflates millennial timescales with human timescales (days to 100 years), leading to misconceptions by the observing and modelling communities, and misplaced expectations about the AMOC's role in climate. EPOC will capitalise on new understanding about the AMOC variability and coherence from two decades of AMOC observations and advances in ocean observing technology and climate modelling, to develop new tools and approaches to quantify and explain past AMOC change and how its connectivity or lack thereof imprint on the Earth system. Through joined-up observational and model experiments, focussing on next generation high resolution coupled models, machine learning techniques and critical re-assessment of paleo proxies, EPOC will generate a new conceptual framework for the AMOC, its meridional connectivity, feedbacks and the relationship between ventilation and overturning on human timescales. This will lead to better predictions of the AMOC and related climate evolution, including the risk of rapid change.

European Polar Cluster
Griffith Couser
European Polar Board

The EU Polar Cluster is a network of collaborative polar projects, which are funded by the European Commission, and three permanent members: the EPB, APECS and SIOS. This presentation gave an overview of the EU Polar Cluster, how it originated and its objectives https://doi.org/10.5281/zenodo.7446460

H2020 PROTECT project- Projecting sea-level rise: From ice sheets to local implications

Gael Durand
CNRS, Université Grenoble Alpes

This presentation provided the OCEAN:ICE consortium with a summary of the objectives of the PROTECT. It also allowed to highlight the most recent results of interest to OCEAN:ICE. Sea level rise (SLR) due to climate change is a serious global threat that can result in land ice loss and ocean thermal expansion. It also results in catastrophic consequences for the future of coastal regions. As land ice contribution is increasing, policymakers are concerned about the threats ice sheet change represents. The EU-funded PROTECT project drives SLR projections beyond the state of the art and provide a long-standing scientific and social contribution. It significantly improves our understanding and model representation of ice sheet processes and offer a new approach in modelling the interactions between atmosphere, ocean and ice sheets. PROTECT also improves the strength of the resulting SLR projections, envision the future social impact of SLR and train the next generation of sea level scientists. https://doi.org/10.5281/zenodo.7446506

H2020 PolarRES project- Polar Regions in the Earth System

Priscilla Mooney
Norwegian Research Center

The PolarRES project aims to provide more reliable and more confident climate information for impact assessments in the Arctic and Antarctic in the following two ways: 1) by improving our understanding of the polar climate systems and its role or position in the global climate system, and 2) by applying a new, innovative “storylines” approach to improve the way we deal with and communicate uncertainty to broader audiences and end-users. PolarRES takes a holistic approach and recognizes the multi-scale nature of the climate system to achieve its objectives.

PolarRES is using state-of-the-art regional climate models, cutting edge observations from ESA, and targeted observational campaigns from the YOPP to deliver new knowledge on the following Antarctic processes at the atmosphere-ocean-sea ice interface:

1. Aerosol-cloud interactions over Polynyas
2. Atmospheric Boundary Layer over sea ice, ice sheet, and ice shelf.
3. Extreme events over coastal West Antarctica
4. Sea-ice albedo and surface energy budget
5. Wind-driven sea ice drift and thermodynamics
6. Ice shelf-ocean interactions and bottom water formation
7. Interactions between ocean physics and biogeochemistry

Improved understanding of the role of polar processes in the global climate system will be delivered using variable resolution global models such as MPAS, ICON and CESM-VR. A common experiment protocol has been developed which will use high resolutions over Antarctic.

PolarRES has identified pairs of storylines of global climate change from CMIP6 that influence the climate of Antarctica. These storylines will be downscaled by the most advanced regional climate models available for Antarctica at unprecedented spatial resolutions. The collaborative framework involving regional climate modelers and members of the impacts modelling community is an important novelty in the development of the regional climate model experiment protocol. This framework ensures that the downscaled data from PolarRES is fit for purpose and can serve a broad community of users assessing the impact of climate change in the polar regions.

H2020 TiPACCs- Tipping Points in Antarctic Climate Components

Svein Østerhus
Norwegian Research Center

The TiPACCs project investigates the probability of sudden and large changes in the sea-level contribution from the Antarctic Ice Sheet that would result from passing tipping points in the marginal seas and at the grounding lines of the floating ice shelves that fringe the ice sheet. A comprehensive study of the triggering processes reveals the likelihood of reversibility, while the study of ice-ocean feedbacks will provide insight into the threat of sudden sea-level rise. Modelling work delivers parameter estimates of safe operating spaces, and linking these with Southern Ocean observations contributes to the launch of early-warning indicators for dangerous levels of ocean-induced basal melting of the ice shelves. We achieve these objectives using a suite of state-of-the art ocean-circulation and ice-flow models run by leading European research groups, greatly enhancing confidence in the results. The combination of numerical work with existing remote sensing and in-situ observations and paleo-reconstructions is ideal for defining the proximity of the simulated tipping points. With this work, we aim to provide a better understanding of key processes controlling the climate-Earth system that are critical for further improvement in climate projections and reducing uncertainty in climate sensitivity calculations. We also assess more accurately the impacts of climate change related to the proximity, rate, and reversibility of tipping points in Antarctic climate components. Furthermore, future climate projections will benefit from our combined use of numerical models and paleo-reconstructions as they allow a better understanding of how the climate system worked during abrupt climatic transitions and under warmer or colder than present-day conditions. Thus, the project will dramatically improve our knowledge of sudden sea-level rise caused by tipping points in Antarctic climate components.

Southern Ocean Circulation

NERC-funded project DEFIANT- Understanding recent changes in Antarctic Sea ice and its interactions with the Southern Ocean

Kaitlin Naughten
British Antarctic Survey

Antarctic Sea ice has behaved strangely in recent decades. After almost 40 years of gradual expansion, the sea ice plummeted to record lows in 2016/2017 and again in 2022. This presentation summarises what is known, and not known, about the drivers of such sudden decline events. A complex interplay of modes of variability, storms, and open ocean convection likely caused the observed sea ice loss, but it is not well understood how these drivers may change in the future. Global climate models, which struggle to accurately represent observed trends in Antarctic sea ice, are currently of limited use to untangle this problem. Finally, this presentation summarises the activities of DEFIANT, a new programme of UK Antarctic sea ice research which will deliver a step-change in both observations and modelling over the next four years. https://doi.org/10.5281/zenodo.7446578

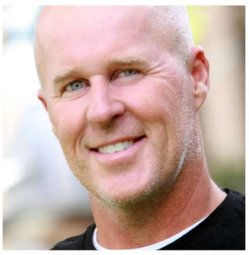
Southern Ocean Carbon and Climate Observations and Modeling SOCCOM- Observing the Southern Ocean Carbon Cycle with Autonomous Floats

Channing Prend
University of Washington

The Southern Ocean plays an outsized role in the global overturning circulation and climate system by transporting mass, heat, and tracers between basins, as well as between the surface and abyssal oceans. Consequently, the Southern Ocean accounts for a disproportionately large percentage of the total oceanic carbon uptake. Historically, studying the Southern Ocean has been limited by the paucity of observational data from this remote environment. However, autonomous floats deployed since 2014 by the Southern Ocean Carbon Climate Observations and Modeling (SOCCOM) project have provided unprecedented spatial and temporal coverage of subsurface biogeochemical (BGC) measurements in the region. In this presentation, I gave an overview of major results from the SOCCOM program and discussed how this novel dataset can be leveraged to provide new insights into the Southern Ocean carbon cycle. Some advantages of the float dataset include expanded spatial and temporal coverage, availability of subsurface measurements, and co-location of biogeochemical and physical information. Leveraging these advantages, SOCCOM results showed that carbon outgassing occurs primarily in winter in the Indo-Pacific sector of the Southern Ocean. Still, it is important to recognize that float data are associated with large uncertainties and potential biases compared to shipboard data, as well as sampling alias linked to the float cycle time. My goal in this presentation was to illustrate both the advantages and challenges of using float data to investigate carbon system parameters. Understanding these pros and cons is necessary to effectively use the data and integrate it into the larger global ocean observing system. https://doi.org/10.5281/zenodo.7446696

How change in AA and atmospheric circulation impact change in SO circulation and feedback onto AA

Matt England
UNSW Sydney



Matt England explores large-scale ocean circulation and its influence on regional - global climate, with a particular focus on the Southern Hemisphere, including Antarctic climate processes. Using ocean and coupled climate models in combination with observations and theoretical approaches, he studies what controls ocean currents and how these currents affect climate and climate variability on time-scales of seasons to millennia.

Global and Societal Impact of Southern Ocean and Antarctica

Copernicus marine service in polar regions

Gilles Garric
Mercator Ocean

Implemented by Mercator Ocean International, the Copernicus Marine Service (or Copernicus Marine Environment Monitoring Service) is the marine component of the Copernicus Programme of the European Union. It provides free, regular and systematic authoritative information on the state of the Blue (physical), White (sea ice) and Green (biogeochemical) ocean, on a global and regional scale. This service takes into account the monitoring of the polar oceans including the sea ice cover. The service provided on the Arctic Ocean is widely developed, with many users, tailored application, and various areas of benefit. Due essentially to the lack of users, service on the Southern Ocean is not well developed and domains of applications only concern climate and environment. https://doi.org/10.5281/zenodo.7448137

H2020 EU-PolarNet 2 - Aligning science objectives with decision maker's needs

Nicole Biebow
Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research

The presentation on aligning science objectives with decision maker needs gives a short information on how EU-PolarNet 2 works with decision makers. EU-PolarNet 2 is a coordination and support action which is implemented by the European Commission to provide advice on many different themes important for or in the Polar regions. In its first phase, EU-PolarNet 1, developed a European Polar Research Programme (EPRP). EU-PolarNet 2 will be specify the research themes of the EPRP, prioritise them and propose them to decision-makers for funding. The presentation shows how EU-PolarNet 2 intends to achieve this goal. https://doi.org/10.5281/zenodo.7448045

Diversity and inclusion in Polar science

Renuka Badhe
European Polar Board

This presentation covered the barriers of diversity, both real and perceived, what is the meaning of Diversity and how we are working to retain researchers. Renuka Badhe made this presentation on behalf of Women in in Polar Science.https://doi.org/10.5281/zenodo.7447978

Antarctic Ice-Sheet & Sea Level

Latest advance in our understanding from observations: The ESA funded SO-ICE and Polar+ Ice Shelves projects

Anna Hogg
University of Leeds

The European Space Agency (ESA) Southern Ocean-Ice Shelf Interactions (SO-ICE) project is a collaborative research project bringing together the ESA Polar+ Ice Shelves and 4D Antarctica projects, and the European Commission Southern Ocean Carbon and Heat Impact on Climate (SO-CHIC) project, in order to improve understanding of the processes controlling ice-ocean interactions in Antarctica. This project will use state-of-the-art Earth Observation techniques to measure the flow and thickness of ice shelves in the Weddell Sea region of Antarctica. Observations and modelling of ocean circulation will then be used investigate how the ocean is both driving and responding to these ice shelf changes. By bringing together these ocean and ice systems, this project will lead to substantial improvements in our understanding of ice shelf-ocean interactions across a range of spatial and temporal scales, which is critical to understanding and predicting the response of the ice sheet to a changing climate. The aim of this project is improve our understanding of the processes controlling the rate at which the ocean melts Antarctic ice shelves, and how that meltwater in turn affects ocean circulation. The project consortium is led by the University of Leeds (UK), in collaboration with the British Antarctic Survey (BAS) (UK), Sorbonne Université (FR), the Norwegian Research Centre (NO), EarthWave (UK) and the University of Edinburgh (UK). The project kicked off on the 1st September 2021, and is funded until August 2023.She is deeply connected to the international Earth Observation community, and through my role on the UK Space Agencies (UKSA) Earth Observation Advisory Committee (EOAC).

The European Space Agency (ESA) Polar+ Ice Shelves project exploit the 25-year record of ESA satellite observations to generate new measurements of ice shelf thickness change, ice speed, crack propagation, area change, and surface and basal melt across Antarctic Ice Shelves. These new datasets reveal small scale ice shelf features such as the propagation of cracks along the ice shelf surface, deep sub-shelf meltwater channels that can erode ice locally by up to 200 meters, and changes in the calving front and grounding line location. These datasets will improve our understanding of the way in which ice shelves around Antarctica are changing today, which we will use to discover new insights about the physical mechanisms driving change and affecting the future stability of ice shelves in this remote and inaccessible continent. The aim of this project is to produce a suite of Earth Observation datasets to characterise how ice shelves in Antarctica have changed over the last decade, and to make use of these data sets to investigate the physical processes driving this evolution. The project consortium is led by the University of Leeds (GB), in collaboration with DLR (DE), Finnish Meteorological Institute (FMI) (FI), ENVEO (AT), EarthWave (GB) and the University of Edinburgh (GB). The project kicked off on the 1st September 2020, and is funded until 2022.

Toward coupled modelling of the Antarctic Ice Sheet

William Lipscomb
National Center for Atmospheric Research

The Antarctic Ice Sheet response to climate change remains uncertain, in part because of coupled ice–ocean processes that are hard to model. I describe recent progress in coupling oceans and ice sheets in three global models: the Community Earth System Model (CESM), the UK Earth System Model (UKESM), and the Energy Exascale Earth System Model (E3SM). CESM supports an interactive Greenland Ice Sheet and has added support for coupling multiple ice sheets, including Antarctica; the ice–ocean coupling is still being tested. UKESM is the first complex ESM to support fully interactive coupling with both major ice sheets. In high-emissions scenarios to 2100 and beyond, warm-water intrusions drive large melt increases for the Filchner-Ronne and Ross Ice Shelves, but only modest retreat of grounded ice. E3SM has introduced ocean circulation and melting in sub-ice-shelf cavities with a regionally refined ocean grid. The magnitudes and spatial patterns of basal melting agree well with observations. Development is ongoing in all three models. Among the major challenges are (1) simulating the transition from cold to warm cavities, (2) determining the conditions for the collapse of Thwaites Glacier, (3) parameterizing coupled small-scale processes, and (4) initializing the coupled ocean–sea ice–ice sheet system. https://doi.org/10.5281/zenodo.7447948

Projecting SL based on improved AA understanding

Sophie Nowicki
University of Buffalo

Sophie Nowicki is an Empire Innovation Professor in the Department of Geology and RENEW Faculty. Her research focuses on the Greenland and Antarctic ice sheets, their connections to the Earth's climate system and their impact on sea level. Her work is aligned with the RENEW Climate Change and Socioeconomic Impacts focus areas. Through applied mathematics, remote sensing observations and numerical modelling, her work spans the spectrum of local processes, such as understanding the physics of ice sheet grounding lines, or the impact of bedrock topography on ice dynamics, to that of large-scale continental ice sheet models and their use in projections of sea level change. As sea level projections from ice sheet models require knowledge of atmospheric and oceanic conditions that drive ice sheet evolution, Dr. Nowicki is also interested in how to improve climate models in the polar regions, as well as the use of multiple models for projections.

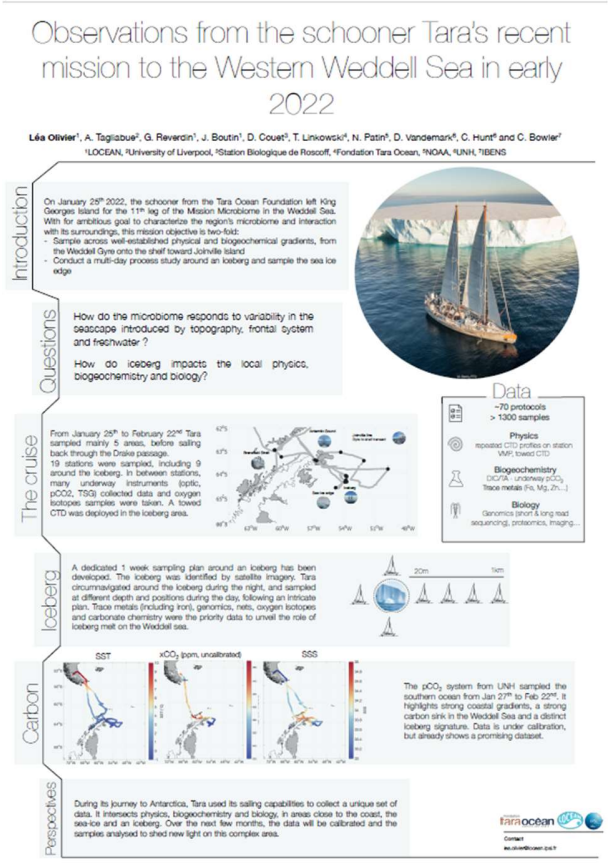
Posters

Observations from the schooner Tara's recent mission to the Western Weddell Sea in early 2022

Authors: Léa Olivier[1], A. Tagliabue[2] , G. Reverdin[1], J. Boutin[1], D. Couet[3], T. Linkowski[4], N. Patin[5], D. Vandemark[6], C. Hunt[6] and C. Bowler[7]

[1]LOCEAN, [2]University of Liverpool, [3]Station Biologique de Roscoff, [4]Fondation Tara Ocean, [5]NOAA, [6]UNH, [7]IBEN

Summary: On January 25th 2022, the schooner from the Tara Ocean Foundation left King Georges Island for the 11th leg of the Mission Microbiome in the Weddell Sea. With for ambitious goal to characterize the region's microbiome and interaction with its surroundings, this mission objective is two-fold: - Sample across well-established physical and biogeochemical gradients, from the Weddell Gyre onto the shelf toward Joinville Island - Conduct a multi-day process study around an iceberg and sample the sea ice edge



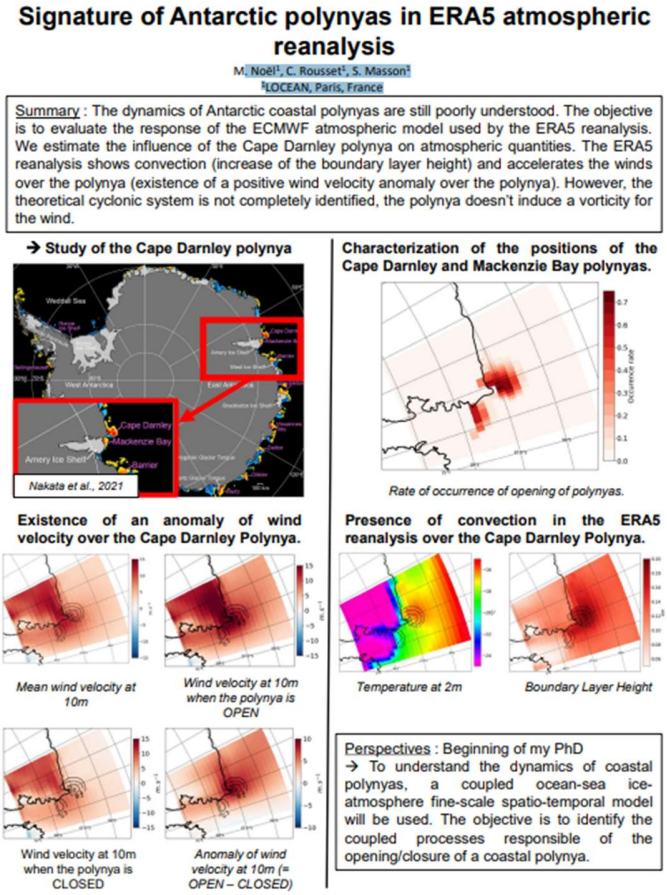
Link: https://doi.org/10.5281/zenodo.7372640

Signature of Antarctic polynyas in ERA5 Atmospheric Reanalysis

Authors: M. Noël[1] , C. Rousset[1] , S. Masson[1]

[1] LOCEAN, Paris, France

Summary: The dynamics of Antarctic coastal polynyas are still poorly understood. The objective is to evaluate the response of the ECMWF atmospheric model used by the ERA5 reanalysis. We estimate the influence of the Cape Darnley polynya on atmospheric quantities. The ERA5 reanalysis shows convection (increase of the boundary layer height) and accelerates the winds over the polynya (existence of a positive wind velocity anomaly over the polynya). However, the theoretical cyclonic system is not completely identified, the polynya doesn't induce a vorticity for the wind.



Link: https://doi.org/10.5281/zenodo.7448156

How are Synoptic Scale Wind Bursts Impacting the FCO_2 Through the ΔpCO_2 in the Sub-Antarctic Southern Ocean

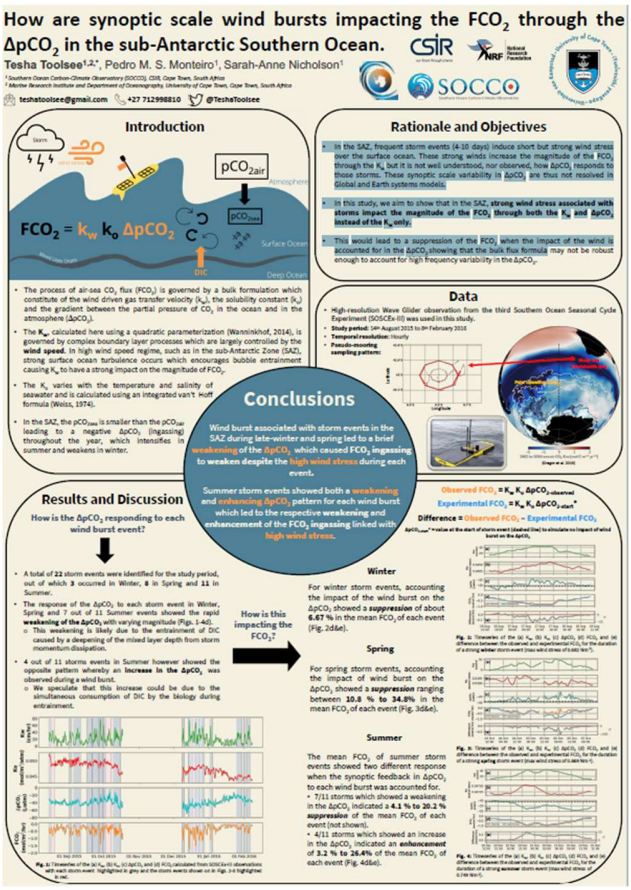
Authors: Tesha Toolsee[1,2,*], Pedro M. S. Monteiro[1], Sarah-Anne Nicholson[1]

[1] Southern Ocean Carbon-Climate Observatory (SOCCO), CSIR, Cape Town, South Africa, [2] Marine Research Institute and Department of Oceanography, University of Cape Town, Cape Town, South Africa

Summary: In the SAZ, frequent storm events (4-10 days) induce short but strong wind stress over the surface ocean. These strong winds increase the magnitude of the FCO2 through the Kw but it is not well understood, nor observed, how ΔpCO2 responds to those storms. These synoptic scale variability in ΔpCO2 are thus not resolved in Global and Earth systems models.

In this study, we aim to show that in the SAZ, strong wind stress associated with storms impact the magnitude of the FCO2 through both the Kw and ΔpCO2 instead of the Kw only.

This would lead to a suppression of the FCO2 when the impact of the wind is accounted for in the ΔpCO2 showing that the bulk flux formula may not be robust enough to account for high frequency variability in the ΔpCO2.



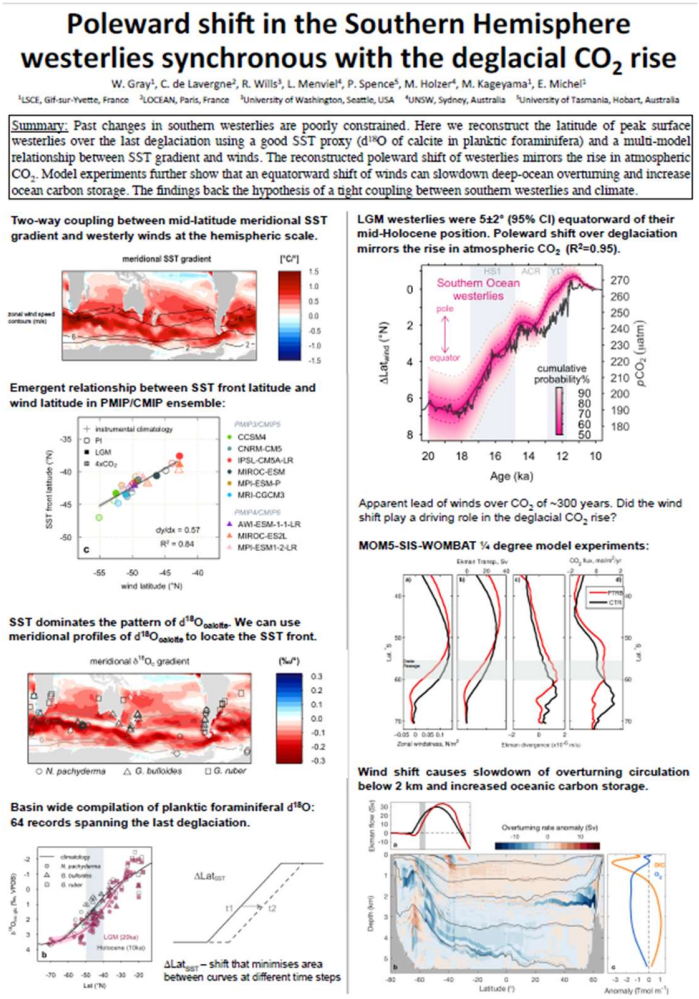
Link: https://doi.org/10.5281/zenodo.7372516

Poleward Shift in the Southern Hemisphere Westerlies Synchronous with the Deglacial CO_2 Rise

Authors: William Gray [1], C. de Lavergne [2], R. Wills [3], L. Menviel [4], P. Spence [5], M. Holzer [4], M. Kageyama [1], E. Michel [1]

[1] LSCE, Gif-sur-Yvette, France, [2] LOCEAN, Paris, France, [3] University of Washington, Seattle, USA, [4] UNSW, Sydney, Australia, [5] University of Tasmania, Hobart, Australia

Summary: Summary: Past changes in southern westerlies are poorly constrained. Here we reconstruct the latitude of peak surface westerlies over the last deglaciation using a good SST proxy (d18O of calcite in planktic foraminifera) and a multi-model relationship between SST gradient and winds. The reconstructed poleward shift of westerlies mirrors the rise in atmospheric CO_2. Model experiments further show that an equatorward shift of winds can slowdown deep-ocean overturning and increase ocean carbon storage. The findings back the hypothesis of a tight coupling between southern westerlies and climate.



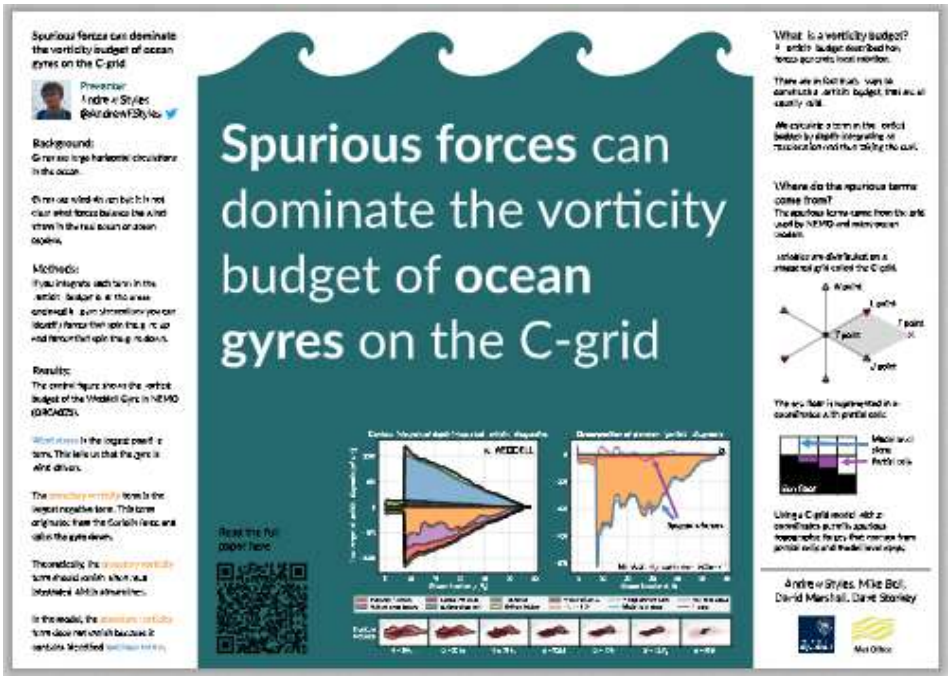
Link: https://doi.org/10.5281/zenodo.7357496

Spurious Forces Can Dominate the Vorticity Budget of Ocean Gyres on the C-Grid

Authors: Andrew Styles, Mike Bell, David Marshall, Dave Storkey

University of Oxford, UK Met Office

Summary: Gyres are large horizontal circulations in the ocean. They are wind-driven but it is not clear what forces balance the wind stress in the real ocean or ocean models. If you integrate each term in the velocity budget over the areas enclosed by the gyre streamlines, you can identify forces that spin the gyre up and forces that spin the gyre down. Results are show in the poster below.



Link: https://doi.org/10.5281/zenodo.7357485

Cross Cutting Themes

Theme 1. Southern Ocean dynamics and change

Facilitators: Alberto Naveira Garabato, Malin Ödalen

The potential key gaps in understanding related to Southern Ocean dynamics and change were discussed. First, the participants considered the certainty with which they actually know the rate of Antarctic Bottom Water (AABW) formation, given the very sparse measurements, and raised the need for technological breakthroughs that may enable much denser or integrated observations. The participants also suggested that evaluation of the significance of submesoscale and high-frequency atmospheric forcing for AABW production and long-term AABW property changes is a major outstanding challenge. Second, the participants identified the upper-ocean processes governing the transformation of upwelling CDW to subducting mode and intermediate waters as little understood, and proposed that future research efforts should be devoted to unravelling those processes. Third, very little is known about the long-term fate of the increasing amounts of freshwater discharged by the Antarctic Ice Sheet into the Southern Ocean, so that evaluating that fate and its controlling processes poses an important future research target.

Theme 2. Ocean —Ccryosphere interactions

Facilitators: Nadine Steiger, Peter Davis

One of the main challenges within the topic of ocean-ice interaction is the gap between large-scale processes, resolved by climate models, and the unresolved smaller scale processes. While most global climate models can barely resolve more than the evolution of the ice sheets, research on the smaller scale processes occurring inside ice shelf cavities and within the ice-ocean interface increasingly pinpoints the importance of these processes. The question remains how we can feed and improve climate models with the knowledge that we gain on small scale processes? Should we focus on improving the parametrization based on observations/high-resolution models that are included in climate models? Or is it better to identify the least important small-scale processes and focus on resolving most critical ones? Is perhaps nesting the best solution to resolve for example ice shelf cavities or boundary layers? One example of a small-scale process that needs to be better understood from observations is the empirical parameters in three-equation parametrization for ice shelf basal melt, as observations show a large variation in parameters among different regions and ice shelves types. The aim is to provide parameters for different typical environments to be used in models with active cavities.

Another topic that was discussed in the group (the majority of whom were observational oceanographers) was how much detail ice sheet models require from the ocean. Can our knowledge of fine-scale ocean processes be implemented in these models or does a best estimate of ocean heat transfer to the ice sheet suffice? The most critical input from oceanographers for ice sheet models is possibly the regime shift from cold to warm ice shelf cavities. The necessary tool to understand these regime shifts is high-resolution regional (or, better, circumpolar) models to understand and predict whether, where and when a shift might happen.

Despite the challenge of including ice shelf cavities in climate models, the mass balance of ice shelves plays a crucial role for ice sheet mass loss. While in-situ measurements of ice shelf basal melt remain scarce, satellite-retrieved products of ice shelf basal melt and thinning rates are available circum-Antarctic. Yet, a better coverage of observations from beneath the ice shelves is needed to validate the satellite-based melt rates and to link the observed melt rates to the ambient ocean conditions. Another satellite product that urgently needs to be provided/improved is estimates of ice-thickness.

Theme 4. Global implications and links to the society

Facilitators: Renuka Badhe, Ricarda Winkelmann, Chiara Bearzotti, Griffith Couser

Discussion started on aspects of polar science of particular importance to Europe, and European member states, with an example of sea level rise (arising from Antarctic) being disproportionately important for European low-lying countries. Ideas for policy briefings were also discussed, both individually as SO-CHIC and OCEAN:ICE and together. These policy briefings could underline the importance of these topics to policymakers at all levels, including local, national, regional and international. Relevant events for holding these policy briefing events were also identified, including for instance UNFCCC COP, SOOS Conference, IUGG Conference, EU Polar Cluster - ESA Polar Cluster conference, etc. Additionally, partners within SO-CHIC and OCEAN:ICE are already involved within a large number of high-level international initiatives, such as the IPCC Special Report on Tipping Points, the Earth Commission, UN Decade of Ocean Sciences, G7/Science7 Statement on Ocean and Cryosphere, etc. The discussion focused on understanding existing collaborations, and identifying potentially useful contact points for further collaborations.