Marcel du Plessis

Ocean & Climate Science Researcher
Göteborgs Universitiet

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Deptartment of Marine Science, Göteborgs Universitiet
Medicinaregatan 7B, 413 90, Gothenburg, Sweden

EMPLOYMENT

Researcher *2023-present*
Department of Marine Sciences, University of Gothenburg

Marie Skłodowska Curie Research Fellow *2021-2023*
Department of Marine Sciences, University of Gothenburg

Postdoctoral Researcher *2019-2021*
Department of Marine Sciences, University of Gothenburg
Southern Ocean Carbon-Climate Observatory, CSIR

EDUCATION

PhD Ocean & Atmosphere Dynamics *2015 - 2018*
Department of Oceanography, University of Cape Town
Thesis: The Impact of Submesoscales on the Stratification Dynamics in the Southern Ocean

Master of Science in Physical Oceanography *2013 - 2014*
Department of Oceanography, University of Cape Town

Bachelor of Science in Ocean, Atmospheric and Environmental Science *2009 - 2012*
University of Cape Town

PUBLICATIONS

See my Google Scholar profile.

39. Wang, X., Naveira Garabato, A.C., Fernandez Castro, B., Wang, X., Swart, S., **du Plessis, M.**, Narayanan, A., Silvano, A., Clement, L., Lindeman, M.R. Preconditioning of polynya formation by ocean mixing at the Maud Rise, Antarctica. *Journal of Geophysical Research: Oceans* (submitted/in review).

38. Spira, T., **du Plessis, M.D.**, Haumann, F.A., Giddy, I.S., Narayanan, A., Silvano, A., Swart, S., 2025. Wind-triggered Antarctic sea ice decline preconditioned by thinning Winter Water. *Nature Climate Change* (submitted/in review).

37. Koets, R., Swart, S., Donohue, K., **du Plessis, M.D.**. Observations of tracer ventilation in the Cape Basin, Agulhas Current Retroflection. *EGU Ocean Science*, accepted.

36. **du Plessis, M.D.**, Nicholson, S.A., Giddy, I.S., Monteiro, P.M., Prend, C.J., Swart, S., 2025. Southern Ocean summer warming regulated by storm-driven mixing. *Nature Geoscience*, pp.1–9. doi: 10.1038/s41561-025-01857-3.

35. Ducrocq, B., Steiger, N., **du Plessis, M.D.**, Sallée, J.B., Moreau, S., Swart, S., 2025. A Chlorophyll Halo over Maud Rise in the Southern Ocean. *Nature Communications*. doi: 10.1038/s41467-025-66458-5.

34. Cai, Y., Lei, R., Chen, D., **du Plessis, M.D.**, Han, X., Wu, L., 2025. Anticyclonic component of eddy dipoles traps sea ice within the Marginal Ice Zone. *Geophysical Research Letters*, 130(10), p.e2025JC022426. doi: 10.1029/2025JC022426.

33. Edholm, J.E., **du Plessis, M.D.**, Biddle, L.C., Gille, S.T., Mazloff, M.R., Rosenthal, H.S., Swart, S., 2025. From synoptic to submesoscale: Understanding sensible heat flux variability in the Southern Ocean. *Journal of Geophysical Research: Oceans*, 130(10), p.e2024JC022292. doi: 10.1029/2024JC022292.

32. Prend, C.J., Swart, S., Stewart, A.L., **du Plessis, M.D.**, Manucharyan, G.E., Thompson, A.F., 2025. Observed regimes of submesoscale dynamics in the Southern Ocean seasonal ice zone. *Nature Communications*, 16, 8334. doi: 10.1038/s41467-025-63775-7.

31. Chang, N., Nicholson, S.A., **du Plessis, M.D.**, Lebehot, A.D., Mashifane, T., Moalusi, T.C., Mongwe, N.P., Monteiro, P.M., 2025. BIOPERIANT12: a mesoscale resolving coupled physics–biogeochemical model for the Southern Ocean. *Geoscientific Model Development*, 18, 6415–6438. doi: 10.5194/gmd-18-6415-2025.

30. Thomalla, S.J., Hancock, A.M., Beadling, R.L., Josey, A., Milward, J., Mohamed, A., Pezzi, L.P., **du Plessis, M.**, Ryan-Keogh, T.J., Schulz, C., Shi, J.-R., Souza, E., 2025. Southern Ocean. In: "State of the Climate in 2024". *Bulletin of the American Meteorological Society*, 106(8), S384–S387. doi: 10.1175/BAMS-D-25-0087.1.

29. Naëck, K., Boutin, J., Swart, S., **du Plessis, M.D.**, Merlivat, L., Beaumont, L., Lourenco, A., d'Ovidio, F., Rousselet, L., Ward, B., Sallée, J.B., 2025. Anomalous summertime CO_2 sink in the subpolar Southern Ocean promoted by early 2021 sea-ice retreat. *Biogeosciences*, 22(8), 1947–1968. doi: 10.5194/bg-22-1947-2025.

28. Prend, C.J., **du Plessis, M.D.**, Mazloff, M.R., Sunnercrantz, L., Swart, S., Gille, S.T., 2025. Observing system requirements for measuring high-frequency air–sea fluxes in the Southern Ocean. *Elementa: Science of the Anthropocene*, 13(1), 00061. doi: 10.1525/elementa.2024.00061.

27. Patterson, R.G., Cronin, M.F., Swart, S., Beja, J., Edholm, J.M., McKenna, J., Palter, J.B., Parker, A., Addey, C.I., Boone, W., Bhuyan, P., **du Plessis, M.D.**, and others, 2025. Uncrewed surface vehicles in the Global Ocean Observing System: a new frontier for observing and monitoring at the air–sea interface. *Frontiers in Marine Science*, 12, 1523585. doi: 10.3389/fmars.2025.1523585.

26. Jacob, B., Queste, B.Y., **du Plessis, M.D.**, 2024. Turbulent heat-flux dynamics along the Dotson and Getz ice-shelf fronts (Amundsen Sea, Antarctica). *Ocean Science*, 21, 359–381. doi: 10.5194/os-21-359-2025.

25. Spira, T., Swart, S., Giddy, I., **du Plessis, M.D.**, 2024. The observed spatiotemporal variability of Antarctic Winter Water. *Journal of Geophysical Research: Oceans*, 129(10), e2024JC021017. doi: 10.1029/2024JC021017.

24. Patmore, R.D., Ferreira, D., Marshall, D.P., **du Plessis, M.D.**, Brearley, J.A., Swart, S., 2024. Evaluating existing ocean glider sampling strategies for submesoscale dynamics. *Journal of Atmospheric and Oceanic Technology*, 41(7), 647–663. doi: 10.1175/JTECH-D-23-0055.1.

23. Gutiérrez-Loza, L., Cronin, M.F., Marandino, C., Swart, S., Bourassa, M.A., **du Plessis, M.D.**, Edholm, J.M., Fairall, C.W., Gille, S.T., Karstensen, J., Looney, L.B., 2024. The need for a community of practice for air–sea flux observations. *Marine Technology Society Journal*, 58(1–2), 20–25. doi: 10.4031/MTSJ.58.1.3.

22. Oelerich, R., Heywood, K.J., Damerell, G.M., **du Plessis, M.D.**, Biddle, L.C., Swart, S., 2023. Stirring across the Antarctic Circumpolar Current's southern boundary at the Greenwich Meridian, Weddell Sea. *Ocean Science*, 19, 1465–1487. doi: 10.5194/os-19-1465-2023.

21. Clem, K.R., Adusumilli, S., Baiman, R., Banwell, A.F., Barreira, S., Beadling, R.L., Bozkurt, D., Colwell, S., Coy, L., Datta, R.T., De Laat, J., **du Plessis, M.D.**, and others, 2023. Antarctica and the Southern Ocean. *Bulletin of the American Meteorological Society*, 104(9), S322–S365. doi: 10.1175/BAMS-D-23-0077.1.

20. Narayanan, A., Gille, S.T., Mazloff, M.R., **du Plessis, M.D.**, Murali, K., Roquet, F., 2023. Zonal distribution of Circumpolar Deep Water transformation rates and its relation to heat content on Antarctic shelves. *Journal of Geophysical Research: Oceans*, 128(6), e2022JC019310. doi: 10.1029/2022JC019310.

19. Thomalla, S.J., **du Plessis, M.D.**, Fauchereau, N., Giddy, I., Gregor, L., Henson, S., Joubert, W.R., Little, H., Monteiro, P.M., Mtshali, T., Nicholson, S., 2023. Southern Ocean phytoplankton dynamics and carbon export: insights from a seasonal cycle approach. *Philosophical Transactions of the Royal Society A*, 381(2249), 20220068. doi: 10.1098/rsta.2022.0068.

18. Swart, S., **du Plessis, M.D.**, Nicholson, S.A., Monteiro, P.M., Dove, L.A., Thomalla, S., Thompson, A.F., Biddle, L.C., Edholm, J.M., Giddy, I., Heywood, K.J., 2023. The Southern Ocean mixed layer and its boundary fluxes: fine-scale observational progress and future research priorities. *Philosophical Transactions of the Royal Society A*, 381(2249), 20220058. doi: 10.1098/rsta.2022.0058.

17. SO-CHIC consortium, Sallée, J.B., Abrahamsen, E.P., Allaigre, C., Auger, M., Ayres, H., Badhe, R., Boutin, J., Brearley, J.A., de Lavergne, C., ten Doeschate, A.M.M., **du Plessis, M.D.**, and others, 2023. Southern Ocean carbon and heat impact on climate. *Philosophical Transactions of the Royal Society A*, 381(2249), 20220056. doi: 10.1098/rsta.2022.0056.

16. Cronin, M.F., Swart, S., Marandino, C.A., Anderson, C., Browne, P., Chen, S., Joubert, W.R., Schuster, U., Venkatesan, R., Addey, C.I., Alves, O., **du Plessis, M.**, and others, 2023. Developing an observing air–sea interactions strategy (OASIS) for the global ocean. *ICES Journal of Marine Science*, 80(2), 367–373. doi: 10.1093/icesjms/fsac149.

15. Edholm, J.M., Swart, S., **du Plessis, M.D.**, Nicholson, S.A., 2022. Atmospheric rivers contribute to summer surface buoyancy forcing in the Atlantic sector of the Southern Ocean. *Geophysical Research Letters*, 49(17), e2022GL100149. doi: 10.1029/2022GL100149.

14. **du Plessis, M.D.**, Swart, S., Biddle, L.C., Giddy, I.S., Monteiro, P.M., Reason, C.J.C., Thompson, A.F., Nicholson, S.A., 2022. The daily-resolved Southern Ocean mixed layer: regional contrasts assessed using glider observations. *Journal of Geophysical Research: Oceans*, 127(4), e2021JC017760. doi: 10.1029/2021JC017760.

13. Nicholson, S.A., Whitt, D.B., Fer, I., **du Plessis, M.D.**, Lebéhot, A.D., Swart, S., Sutton, A.J., Monteiro, P.M., 2022. Storms drive outgassing of CO_2 in the subpolar Southern Ocean. *Nature Communications*, 13(1), 158. doi: 10.1038/s41467-021-27780-w.

12. Stammerjohn, S., Scambos, T.A., Adusumilli, S., Barreira, S., Bernhard, G.H., Bozkurt, D., Bushinsky, S.M., Clem, K.R., Colwell, S., Coy, L., De Laat, J., **du Plessis, M.**, 2021. Antarctica and the Southern Ocean. In: State of the Climate 2020. *Bulletin of the American Meteorological Society*, 102(8), S317–S356. doi: 10.1175/BAMS-D-21-0081.1.

11. Giddy, I., Swart, S., **du Plessis, M.**, Thompson, A.F., Nicholson, S.A., 2021. Stirring of sea-ice meltwater enhances submesoscale fronts in the Southern Ocean. *Journal of Geophysical Research: Oceans*, 126(4), e2020JC016814. doi: 10.1029/2020JC016814.

10. Abrahamsen, E.P., Barreira, S., Bitz, C.M., Butler, A., Clem, K.R., Colwell, S., Coy, L., de Laat, J., **du Plessis, M.D.**, Fogt, R.L., Fricker, H.A., and others, 2020. Antarctica and the Southern Ocean. In: State of the Climate 2019. *Bulletin of the American Meteorological Society*. doi: 10.1175/BAMS-D-20-0090.1.

9. Swart, S., **du Plessis, M.D.**, Thompson, A.F., Biddle, L.C., Giddy, I., Linders, T., Mohrmann, M., Nicholson, S.A., 2020. Submesoscale fronts in the Antarctic marginal ice zone and their response to wind forcing. *Geophysical Research Letters*, 47(6), e2019GL086649. doi: 10.1029/2019GL086649.

8. Gregor, L., Ryan-Keogh, T.J., Nicholson, S.A., **Du Plessis, M.**, Giddy, I., Swart, S., 2019. GliderTools: a Python toolbox for processing underwater glider data. *Frontiers in Marine Science*, 6, 738. doi: 10.3389/fmars.2019.00738.

7. Swart, S., Gille, S.T., Delille, B., Josey, S., Mazloff, M., Newman, L., Thompson, A.F., Thomson, J., Ward, B., **du Plessis, M.D.**, Kent, E.C., 2019. Constraining Southern Ocean air–sea–ice fluxes through enhanced observations. *Frontiers in Marine Science*, 6, 421. doi: 10.3389/fmars.2019.00421.

6. **du Plessis, M.**, Swart, S., Ansorge, I.J., Mahadevan, A., Thompson, A.F., 2019. Southern Ocean seasonal restratification delayed by submesoscale wind–front interactions. *Journal of Physical Oceanography*, 49(4), 1035–1053. doi: 10.1175/JPO-D-18-0136.1.

5. Dike, V.N., Addi, M., Andang'o, H.A., Attig, B.F., Barimalala, R., Diasso, U.J., **du Plessis, M.**, Lamine, S., Mongwe, P.N., Zaroug, M., Ochanda, V.K., 2018. Obstacles facing Africa's young climate scientists. *Nature Climate Change*, 8(6), 447–449. doi: 10.1038/s41558-018-0178-x.

4. Morris, T., Hermes, J., Beal, L., **du Plessis, M.**, Rae, C.D., Gulekana, M., Lamont, T., Speich, S., Roberts, M., Ansorge, I.J., 2017. The importance of monitoring the Greater Agulhas Current and its inter-ocean exchanges using large mooring arrays. *South African Journal of Science*, 113(7–8), 1–7. doi: 10.17159/sajs.2017/20160330.

3. **du Plessis, M.**, Swart, S., Ansorge, I.J., Mahadevan, A., 2017. Submesoscale processes promote seasonal restratification in the Subantarctic Ocean. *Journal of Geophysical Research: Oceans*, 122(4), 2960–2975. doi: 10.1002/2016JC012494.

2. Ansorge, I.J., Brundrit, G., Brundrit, J., Dorrington, R., **du Plessis, M.D.**, Fawcett, S., Gammon, D., Henry, T., Hermes, J., Hölscher, B., d'Hotman, J., Meiklejohn, I., 2016. SEAmester – South Africa's first class afloat. *South African Journal of Science*, 112(9–10), 1–4. doi: 10.17159/sajs.2016/a0171.

1. Fraser, C.I., Kay, G.M., **du Plessis, M.D.**, Ryan, P.G., 2017. Breaking down the barrier: dispersal across the Antarctic Polar Front. *Ecography*, 40(1), 235–237. doi: 10.1111/ecog.02449.

FUNDED RESEARCH GRANTS

European Research Council Starting Grant (2.5 million Euros + 3.75 million SEK GU co-financing)	*2026-2031*
Carl Tryggers Foundation Grant for Ocean Instrumentation (830,000 SEK)	*2026-2028*
Vetenskapsrådet (Swedish Research Council) Establishment Grant (4.4 million SEK)	*2025-2028*
Marie Skłodowska Curie European Individual Fellowship (2 million SEK)	*2021-2023*
King Carl XVI Gustaf Foundation's Award for science, technology and the environment (100,000 SEK)	*2023*
PhD Funding support: Department of Marine Science, University of Gothenburg Internal Call (2 million SEK)	*2023*

SEMINARS / INVITED TALKS

International Meetings:

International Underwater Glider Conference, Gothenburg, Sweden *2024*
Talk: Storms regulate Southern Ocean surface warming

AGU Ocean Sciences Meeting, New Orleans, USA *2024*
Talk: Surface Ocean Warming Rates Controlled by Storms in the Southern Ocean

SOOS Symposium, Hobart, Australia *2023*
Talk: Summer upper ocean warming controlled by storms in the subpolar Southern Ocean

EGU General Assembly, Vienna, Austria *2022*
Talk: The Daily Resolved Southern Ocean Mixed Layer

Meeting of the Royal Society: Heat and carbon uptake in the Southern Ocean: the state of the art and future priorities, London, UK *2022*
Poster: Air-sea and oceanic turbulent heat flux response to storms in the subpolar Southern Ocean.

Ocean Sciences, San Diego, United States *2020*
Talk: Regional contrasts of the Southern Ocean mixed layer in response to summer forcing.

SCAR Biennial Meetings & Open Science Conference, Davos, Switzerland *2018*
Poster: Submesoscale restratification delayed by wind-front interactions.

Ocean Sciences, Portland, United States *2018*
Talk: Submesoscale instabilities drive enhanced variability of the Southern Ocean mixed layer.

Liège Colloquium of Submesoscale Ocean Dynamics, Liège, Belguim *2018*
Talk: Characterising the atmospheric interactions on the submesoscale instability in the Southern Ocean and their impacts on mixed layer stability.

IAPSO Open Science Conference, Cape Town, South Africa *2017*
Talk: Glider experiment reveals enhanced submesoscale mixed layer instabilities in the Southern Ocean.

CLIVAR Open Science Conference, Qingdao, China *2016*
Talk: Ocean-atmosphere interactions on the submesoscale field of the Southern Ocean and its associated impacts on the mixed layer variability. *Attended the two-day CLIVAR Early Career Scientists Symposium

SCAR Biennial Meetings & Open Science Conference, Auckland, New Zealand *2014*
Talk: Using high-frequency glider data to understand the effects of submesoscale processes and atmospheric forcing on the mixed layer. *Attended the APECS Workshop on the Antarctic Environments Portal

South African Marine Science Symposium Stellenbosch, South Africa *2014*
Talk: Using high-frequency glider data to understand the effects of submesoscale processes and atmospheric forcing on the mixed layer.

Invited Talks:

European Spacae Agency EU Polar Week, Copenhagen, Denmark *2024*
Talk: Air-sea flux priorities for Antarctica InSync

Observing Air-Sea Interactions Strategy USV webinar *2023*
Talk: Storm-ocean interactions in the Cape Cauldron from USVs

Marine Colloquium, University of Gothenburg Marine Science Dept *2020*
Talk: Introductory Seminar

Department of Oceanography Donut Talk, University of Cape Town *2018*
Seminar: Ocean seasonal restratication delayed by wind-front interactions: a four-year glider experiment

Southern Ocean Workshop. Bolin Center, Stockholm University. *2017*
Talk: Submesoscale instabilities enhance the variability of the SO mixed layer

Training Internationally on Gliders course *2017*
Invited Seminar: Using gliders to observe mixed layer dynamics

Meteorological Institute of Stockholm *2016*
Seminar: Submesoscale processes in the Southern Ocean

Department of Oceanography, University of Cape Town *2013*
Seminar: Subantarctic mixed layer dynamics using ocean gliders

Workshops:

FilaChange: The ocean fine scales and the climate system *2022*
Talk: Storm-driven modification of the turbulent heat fluxes in the Southern Ocean

SOOS-Sweden Symposium *2022*
Flash talk: Storm-driven modification of the turbulent heat fluxes in the Southern Ocean
Flash talk:: Gliders in the Southern Ocean

SOOS Weddell Sea Workshop, Online *2020*
Flash talk: A high-resolution view of the processes that modulate the Southern Ocean mixed layer.

Southern Ocean Seasonal Experiment Symposium, Cape Town *2019*
Flash talk: Robotics in SCALE: seasonal ice melt to storm-ocean-biological interactions: unlocking new domains with robotic platforms.

CSIR National Resources and Environment Science Week, Pretoria, South Africa *2016*
Flash talk: Seasonal cycle dynamics and variability of mixed layer submesoscale processes and phytoplankton biomass in the Southern Ocean.

Ocean & Climate Change Institute Retreat. Woods Hole Oceanographic Institute *2015*
Flash talk: Southern Ocean Seasonal Cycle Experiment.

HONOURS AND AWARDS

European Union Erasmus Staff Mobility for attending ESA Living Planet Symposium, Vienna (EUR 1800) *2025*

OASIS-SCOR Travel Grant for attending OASIS Face2Face Workshop, New Orleans (USD 2000) *2024*

Honorarium from Observing Air-Sea Interactions Strategy (OASIS) for leadership services (USD 500) *2023*

International Meteorological Institute of Stockholm Guest Travel Funding (23 000 SEK) *2019*

World Meteorological Organisation Conference Travel Grant (USD 1 000) *2016*

SCOR Conference Travel Grant (USD 1 225) *2016*

South African National Antarctic Program PhD Scholarship (R600 000) *2015*

South African National Research Foundation Scholarship award (R70 000) *2013*

South African National Research Foundation travel award (R10 000) *2013*

University of Cape Town Marine-Research Institute travel award (R15 000) *2013*

SERVICE

Interim Steering Committee, GOOS Network Surface Uncrewed Fleet (SUN Fleet) *2025-present*

Steering Committee Member, UN Decade Program Observing Air-Sea Observations Strategy (OASIS) *2024-present*

Leadership Committee, Southern Ocean Flux (SOFLUX) Working Group of SOOS *2025-present*

Co-Lead of FAIR Data Task Team, OASIS *2021-present*

PhD Defense Examinations, 1 (L'OCEAN, Paris) *2025*

Co-Chair, SOFLUX Working Group of SOOS *2021-2025*

APECS Representative, SOFLUX Working Group of SOOS *2019-2021*

Reviewer for EU Horizon Polar Research Infrastructure Network (POLARIN) Support Applications *2025-2026*

Reviewer for *Springer Nature's Theoretical and Applied Climatology, Geophysical Research Letters, Journal of Advances in Modeling Earth Systems, Journal of Physical Oceanography, Journal of Geophysical Research, Frontiers of Marine Science – Physical Oceanography, and Estuarine, Coastal and Shelf Science.*

MEETING ORGANISATION

CONVENER:

Process Studies, model improvement and Observing Network design that Feed into Improved Earth Systems Model Forecasts, OASIS Face2Face Meeting, Ocean Sciences Meeting, New Orleans, USA *2024*

Observing Air-Sea Interactions Using Autonomous Technologies: Advancements, Challenges, and Implications for a Practical and Integrated Observing System, AGU Ocean Sciences, New Orleans, USA *2024*

Air-Sea Interactions and Climate Variability in the Southern Ocean, SOOS Symposium, Hobart, Australia *2023*

HOSTED WORKSHOPS & WEBINARS:

OASIS Face2Face Meeting, Ocean Sciences Meeting, New Orleans, USA *2024*

SOFLUX Webinar Series co-organizer. Find Webinar Recordings. *2021-present*

OASIS "Ocean Shots" for a Predicted Ocean Satellite Event. Workshop Report. *2021*

APECS South Africa Career Development Workshop. Workshop Summary. *2020*

TEACHING

Observing the Ocean from Micro to Macro Scale (OC4920), University of Gothenburg *2020, 2023, 2025*
Module: Ocean buoyancy forcing and observing air-sea fluxes. Visit my course notes hosted on Github Pages. Includes 3 days at sea in the Kattegat on board the Skagerak teaching on board ocean instrumentation and cruise planning (2 weeks).

SOLAS Summer School Tutorial on CO2 fluxes *2022*
Module: Practical session on the calculation and interpretation of air-sea carbon fluxes from ship and mooring observations. Practical and code available here.

"From idea to action" - designing and implementing ship-based fieldwork (MAR440), University of Gothenburg *2020-2024*
Includes 3 days at sea teaching onboard ocean instrumentation and cruise planning and implmentation (2 weeks).

Applied Ocean Sciences Masters level course, University of Cape Town *2019-2021*
Module: Introduction to mixed layer physics (Guest lecture).

Marine Systems (SEA2005S), University of Cape Town *2019*
Module: Introduction to the Southern Ocean (1 week).

Antarctic Circumpolar Expedition Maritime University, R/V S. Akademik Tryoshnikov *2018*
Module: Co-convener & lectured Introduction to Oceanography to 50 students from 12 countries, sailing from Bremerhaven to Cape Town over 28 days.

SEAmester Research School at Sea, R/V S.A. Agulhas II *2016*
Module: Ocean Instrumentation and Satellite Oceanography (10 days)

Teaching Assistant:

Observing the Ocean from Micro to Macro Scale (OC4920), University of Gothenburg *2018*

MATLAB, Marine Masters Program, Department of Oceanography, University of Cape Town *2016*

Ocean and Atmosphere Dynamics (SEA3004F), University of Cape Town, Graduate Level Course *2016*

MENTORING

CURRENT STUDENTS:

Paula Damke, PhD Candidate, University of Gothenburg. Co-supervisor: S. Swart. *2026-present*
Atmospheric storms impacts on air-sea carbon exchange in the Southern Ocean

Julia Noack, PhD Candidate, University of Gothenburg. Co-supervisor: S. Swart. *2026-present*
Regional variability of fine-scale dynamics and their role on ocean heat uptake in the Southern Ocean

Lovisa Sunnercrantz, Masters, University of Gothenburg. Co-supervisor: S. Swart, E. Carli. *2025-present*
Thesis: Observed vertical velocities in the Cape Basin from ocean glider data

Neha Ramsarup, PhD Candidate, SAEON. Co-supervisors: T. Morris, J. Hermes, S. Swart. *2025-present*
Agulhas Current on Coastal and Downstream Regions: Meanders, Cyclonic Eddies, and Upwelling in Algoa Bay

Johan Edholm, PhD Candidate, University of Gothenburg. Co-supervisor: S. Swart. *2023-present*
Quantifying uncertainties in air-sea heat flux estimates using a sailing USV

Vincent Doriot, PhD Candidate, University of Gothenburg. Co-supervisor: S. Swart. *2024-present*
Upper ocean dynamics in the Southern Ocean

GRADUATED:

Theo Spira, PhD, University of Gothenburg. Co-supervisor: S. Swart. *2025*
Observations of ventilation in the Southern Ocean

Renske Koets*, Masters, University of Gothenburg. Co-supervisor: S. Swart. *2025*
Vertical circulation in the Cape Cauldron using Apparent Oxygen Utilization

Gonzalo Ruiz, Masters, University of Gothenburg. Co-supervisors: S. Swart, S. Nicholson. *2025*
Drivers of CO_2 variability in the Cape Cauldron using Wave Glider data

Daniel Clason, Bachelors, University of Gothenburg. Co-supervisors: S. Swart. *2025*
Storm dynamics in the Agulhas Current

Michaela Edwinson*, Masters, University of Gothenburg. Co-supervisor: S. Swart. *2024*
Drivers of Air-sea heat flux in the Cape Basin

Blandine Jacobs*, Masters, University of Gothenburg. Co-supervisor: B. Queste. *2024*
Thesis: Time and space variability of air-sea heat fluxes in the Amundsen Sea

Lovisa Sunnercrantz*, Bachelors, University of Gothenburg. Co-supervisor: J. Edholm. *2024*
Thesis: Storm impacts on the Southern Ocean air-sea heat and carbon flux

Bongiwe Jojo, Masters, University of Cape Town. Co-supervisor: S. Nicholson. *2024*
Drivers of Air-sea heat flux in the Cape Basin

David Hagman*, Masters, University of Gothenburg. Co-supervisor: S. Swart. *2021*
Unraveling the uncertainties of bulk-derived heat fluxes: A case study for the Southern Ocean

Sean Evans, Masters, University of Cape Town. Co-supervisors: I.J. Ansorge, M. Wege, N. de Bruyn. *2021*
Seal-borne sensors reveal fine-scale foraging ecology and evidence for topographically enhanced downstream restratification at Marion Island

Johan Edholm*, Masters, University of Gothenburg. Co-supervisors: S. Swart, S.A. Nicholson. *2020*
Atmospheric rivers contribute to summer surface buoyancy forcing in the Atlantic sector of the Southern Ocean

**Graduated with distinction.*

RESEARCH EXPEDITIONS

R/V S.A. Agulhas II (Southern Ocean Carbon and Heat Impact on Climate, SO-CHIC) *2022*
Penguin Bukta, Antarctica - Weddell Sea, Southern Ocean, 1 month
I lead the deployment of several autonomous underwater & surface vehicles and assisted with the hydrographic CTD survey. PI: Dr. J.B. Salleé (L'OCÉAN).

R/V Akademik Tryoshnikov (ACE Maritime University) *2016*
Bremerhaven, Germany to Cape Town, South Africa, 4 weeks
I co-coordinated a Maritime University, with 50 students from 12 countries. I also ran the Intro to Physical Oceanography module. PI: D. Walton.

R/V S.A. Agulhas II (SOSCEX III, SAMOC-SA, GEOTRACES) *2015*
Weddell Sea, Southern Ocean, 5 weeks
I assisted with the deployment of an autonomous profiling Seaglider and surface Wave Glider that were used to collect the data for my PhD. PI: Dr. P. Monteiro (Southern Ocean Carbon-Climate Observatory).

R/V S.A. Agulhas I (Southern Ocean Seasonal Cycle Experiment) *2013*
South Atlantic Ocean, 5 weeks
I lead the underway CTD hydrographic survey. PI: S. Thomalla (Southern Ocean Carbon-Climate Observatory).

R/V S.A. Agulhas I (The Coldest Journey) *2013*
Weddell Sea, Antarctica, 6 weeks
I lead the opportunistic underway CTD survey along Goodhope Line from Cape Town to Antarctica. Expedition to Antarctica with Sir Ranulph Fiennes. PI: Dr. P. Monteiro (Southern Ocean Carbon-Climate Observatory).

R/V S.A. Agulhas II (South African National Antarctic Program) *2012*
Weddell Sea, Antarctica, 5 weeks
Assisted with the underway CTD survey along Goodhope Line. PI: Prof. I. Ansorge (University of Cape Town).

RESEARCH VISITS

Dr Sarah Nicholson *2025*
Southern Ocean Carbon-Climate Observatory, CSIR, South Africa, Visiting Reseracher (3 months)
Investigating the role of storms on Southern Ocean sea surface warming.

Prof Sabrina Speich *2023*
École Normale Supériere, Département de Physique, Visiting Reseracher (1 month)
Air-sea heat fluxes from Saildrone data in the Subtropical Atlantic.

Dr Brian Ward *2023*
National University of Ireland, Galway, Visiting Reseracher (1 month)
Processing of eddy covariance heat fluxes for the BENFLEx experiment.

Dr Amala Mahadevan *2013, 2015 & 2018*
Woods Hole Oceanographic Institute, Guest Student (6 months total)

During my Masters & PhD to apply submesoscale theory to glider observations.

TRAINING

Teaching and Learning in Higher Education *2022*
3.5 weeks, virtual course, given by University of Gothenburg (course code: PIL101)

SeaExplorer Glider Pilot training course *2020*
1 week, at Voice of the Ocean Foundation, given by ALSEMAR

Supervision in Postgraduate Programs *2020*
3.5 weeks, virtual course, given by University of Gothenburg (course code: HPE201)

Autonomous Surface Vehicle Sailbuoy pilot training course *2018*
1 week, at University of Gothenburg, given by Offshore Sensing

Seaglider pilot training course *2016*
2 weeks, at University of Gothenburg, given by Kongsberg Underwater Technologies

SOFTWARE

Co-developed live data display of autonomous robtoics for several research projects *2019-2025*
Real-time data processing and online display of key science parameters from our deployed autonomous vehicles, allowing monitoring and a basis for science sampling decisions. Link to page at www.obs.polargliders.com.

GliderTools *2019*
Assisted with the development of an open-source interactive Python toolkit for processing ocean glider data. All code is available at https://github.com/GliderToolsCommunity.