

CV of Céline Heuzé, as of 10 Sept. 2021

PERSONAL INFORMATION

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I am an Associate Senior Lecturer and Docent in climatology at the University of Gothenburg, Sweden, with 10 years of experience in polar research. I obtained my PhD in physical oceanography in 2015 from the University of East Anglia, UK, in collaboration with the UK Met Office. My research focusses on the transport of heat and salt by global deep waters and their interaction with the rest of the climate system at high latitudes, using global climate modelling, in-situ hydrographic data, and satellite remote sensing. I have so far received ca 1.5 M€ in competitive grants as main applicant. I participated in four Antarctic and Arctic field campaigns, two as PI of the physical oceanography group. I am a member of the Northern Oceans Regional Panel (NORP) sponsored by CLIVAR/CliC, and PI for the [MOSAiC](#) and [Synoptic Arctic Survey](#) international expeditions. I have supervised 4 BSc, 5 MSc, and 3 PhD students as well as 3 postdoctoral researchers.

CURRENT POSITION

2018 – Associate Senior Lecturer (biträdande Universitetslektor) in climatology, Department of Earth Sciences, University of Gothenburg, Sweden.

ACADEMIC DEGREES

2020 Habilitation (Docentur) in climatology, Department of Earth Sciences, University of Gothenburg, Gothenburg, Sweden.

2015 PhD ‘Antarctic Bottom Water in CMIP5 models: characteristics, formation, evolution’ School of Environmental Sciences, University of East Anglia (UEA) and UK Met Office Hadley Centre. Supervisors: Profs Karen Heywood and David Stevens, and Dr. Jeff Ridley

2011 Master/Engineering degree ‘Analysis of Southern Ocean mixed layer interannual variability’ Hydrodynamics and Ocean Engineering, Ecole Centrale de Nantes, France and Physical Oceanography, LOCEAN Université Pierre et Marie Curie, France.

PREVIOUS POSITIONS AND FELLOWSHIPS

2015 – 2018 VINNMER Marie Curie Cofund, Incoming research fellow (postdoc), Dpt Marine Sciences, U. Gothenburg, Sweden and Dpt Earth Sciences, University of Oxford, UK.

2015 – 2017 Consultant in ocean remote sensing; Dpt Space, Earth and Environment, Chalmers University of Technology, Sweden.

2015 – 2015 Post-doctoral researcher; LOCEAN, Université Pierre et Marie Curie, France.

2011 – 2015 NERC-CASE industrial PhD fellowship, School of Environmental Sciences, University of East Anglia, United Kingdom, and UK Met Office Hadley Centre, United Kingdom.

2011 – 2011 Research assistant; LOCEAN, Université Pierre et Marie Curie, France.

2010 – 2010 Research assistant; Centre Eau, Terre et Environnement, INRS, Canada.

FUNDED RESEARCH GRANTS – total 17.5 MSEK (ca 2 M€)

2021 – 2024 **FORMAS** ‘Would the Northern European Enclosure Dam really protect Sweden from sea level rise? (NEEDS)’, PI, 4.0 MSEK

2019 – 2022 **Vetenskapsrådet** ‘Why is the deep Arctic Ocean Warming? (WAOW)’, PI, 3.6 MSEK

2019 – 2022 **Rymdstyrelsen** ‘Warm oceanic Inflows for Near-real time Detection Of Weddell polynya from Space (WINDOWS)’, PI, 4.5 MSEK

2019 – 2020 **Swedish Polar Research Secretariat**, PI, 1 MSEK for joining the [MOSAiC expedition](#)

2015 – 2018 **VINNOVA**, VINNMER Marie Curie Cofund Incoming research fellowship ‘Is Greenland meltwater going to stop the Atlantic overturning circulation?’, PI, 2.3 MSEK

2018 **UGOT climate fund**, CI (PI Sebastiaan Swart), 0.6 MSEK to purchase autonomous sensors

2017 **UGOT climate fund**, CI (PI Anna Wählin), 0.8 MSEK to purchase autonomous sensors

2016 – 2017 **Stiftelse Olle Engkvist Byggmästare**, PI, 0.3 MSEK to purchase sensors

SUPERVISION OF POSTDOCTORAL RESEARCHERS AND STUDENTS

2021 – Postdoctoral researcher L. Poropat, Dpt Earth Sciences, U. Gothenburg.

- 2021 – **Postdoctoral researcher** L. Zhou, Dpt Earth Sciences, U. Gothenburg.
- 2020 – 2020 **Postdoctoral researcher** A. Lemos, Dpt Earth Sciences, U. Gothenburg.
- 2019 – **PhD student** S. Karam, Dpt Earth Sciences, U. Gothenburg; main supervisor.
- 2018 – **PhD student** M. Mohrmann, Dpt Marine Sciences, U. Gothenburg; assistant supervisor.
- 2016 – 2020 **PhD student** W. Aldenhoff, Chalmers University of Technology; assistant supervisor.
- 2015 – **In total 5 master's and 4 bachelor's students**

TEACHING ACTIVITIES

At the Department of Earth Sciences, University of Gothenburg (ca 40% of my time):

- 2021 – “Big Data and Deep Learning for Climate Science” (PhD course)
- 2021 – “Advanced climate data analysis” (First cycle) + **Course responsible**
- 2018 – “Climate Modelling” (Second cycle) + **Course responsible**
- 2018 – “Introduction to Geosciences” (First cycle, in Swedish) + **Course responsible**
- 2018 – “Arctic in a changing climate” (PhD course).

Before October 2018:

- 2016 – 2018 Lecturer for “Marine models and databases” (First cycle, in Swedish) and “Ocean mixing” (Second cycle), Dpt of Marine Sciences, U. Gothenburg

REVIEWING ACTIVITIES

External opponent at PhD defences: two at University of Bergen, Norway; one at LOCEAN-IPSL, France

Reviewer: Natural Environment Research Council (NERC), UK; Natural Sciences and Engineering Research Council (NSERC), Canada; Agence Nationale de la Recherche (ANR), France.

- 2021 – Guest Editor, [MOSAiC special issue](#), Elementa Science of the Anthropocene
- 2018 – 2020 Associate Editor, Journal of Physical Oceanography.

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

- 2018 – Swedish PI of the physical oceanography programme, [Synoptic Arctic Survey](#).
- 2017 – 2018 Executive secretary of Sweden's national committee of the international Association of Polar Early Career Scientists ([APECS](#)), then National committee representative for APECS Sweden within APECS international.
- 2017 – Co-lead of the Ocean Group for the one-year long scientific [MOSAiC expedition](#) in the Central Arctic Ocean with the German research icebreaker *R/V Polarstern*
- 2017 – Member CliC (Climate and Cryosphere) and CLIVAR (Climate and Ocean: Variability, Predictability and Change) [Northern Oceans Regional Panel](#).
- 2016 – 2019 Regular author, Cryosphere Division, European Geophysical Union [blog](#).

ORGANISATION OF SCIENTIFIC MEETINGS

- 2020, 2021 Convenor of session “Changes in the Arctic Ocean, sea ice and subarctic seas systems: Observations, Models and Perspectives”, EGU meetings online
- 2018 Convenor of session “North Atlantic – Nordic seas – Arctic Ocean heat exchanges: Processes and Impacts”, Ocean Sciences meeting (15 000 participants), 25 presentations accepted.
- 2017 Organiser and lecturer, EGU short course “Communicating climate change”, 50 students.
- 2016 – 2018 Main organiser of the annual Gothenburg Polar Conference, 30 participants, Sweden.
- 2016 Main organiser of 30th international Forum for Research into Ice-Shelf Processes, 90 participants, Sweden.

FIELDWORK EXPERIENCE

- 2017 Physical Oceanography PI, *R/V Polarstern*, Alfred Wegener Institute, Arctic.
- 2015 *I/B Oden*, Swedish Polar Research Secretariat, Nares Strait north-west Greenland.
- 2013 *R/V Lance*, Norwegian Polar Institute, Fram Strait.
- 2012 Physical Oceanography PI, *RRS James Clark Ross*, British Antarctic Survey, Weddell Sea.
- 2011 *Thétys II*, CNRS, Western Mediterranean Sea.

BIBLIOMETRIC DATA (per 10 Sept 2021)

Publications 25 + 2 monographs, **citations 691**, **H-index 11**, i10-index 11 (Google Scholar)

Also published >30 popular science articles, presented >50 invited lectures and presentations at international scientific meetings, and interviewed regularly for newspaper article and TV programmes.

See the full, most up-to-date lists on <http://cheuze.com>

FULL LIST OF PUBLICATIONS

Publications with an asterisk * were led by a PhD student under my supervision.

Monographs

C. Heuzé (2015) Antarctic Bottom Water in CMIP5 models: characteristics, formation, evolution, *PhD thesis, University of East Anglia*.

C. Heuzé (2011) Analyse de la variabilité interannuelle de la couche de mélange de l'Océan Austral / Analysis of Southern Ocean mixed layer interannual variability, *Master thesis, LOCEAN Université Pierre et Marie Curie and Ecole Centrale de Nantes*.

Peer reviewed articles

[25*] M. Mohrmann, **C. Heuzé**, and S. Swart (2021) Southern Ocean polynyas in CMIP6 models, *The Cryosphere* **15**, 4281–4313.

[24] A. Solomon, **C. Heuzé**, B. Rabe, S. Bacon, L. Bertino, P. Heimbach, J. Inoue, D. Iovino, R. Mottram, X. Zhang, Y. Aksenov, R. McAdam, A. Nguyen, R. Raj, and H. Tang (2021) Freshwater in the Arctic Ocean 2010-2019, *Ocean Science* **17**, 1081–1102

[23] **C. Heuzé**, L. Zhou, M. Mohrmann, and A. Lemos (2021) Spaceborne infrared imagery for early detection of Weddell Polynya openings, *The Cryosphere* **15**, 3401–3421

[22] **C. Heuzé** (2021) Antarctic Bottom Water and North Atlantic Deep Water in CMIP6 models, *Ocean Science* **17**, 59-90.

[21*] W. Aldenhoff, L.E.B. Eriksson, Y. Ye and **C. Heuzé** (2020), First-year and Multiyear Sea Ice Incidence Angle Normalization of Dual-polarized Sentinel-1 SAR Images in the Beaufort Sea, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* **13**, 1540-1550

[20] A. Wählin, N. Steiger, E. Darelus, K.M. Assmann, M.S. Glessmer, H.K. Ha, L. Herraiz-Borreguero, **C. Heuzé**, A. Jenkins, T.W. Kim, A.K. Mazur, J. Sommeria, and S. Viboud (2020) Ice front blocking of ocean heat transport to an Antarctic ice shelf. *Nature* **578**, 568–571

[19*] W. Aldenhoff, **C. Heuzé**, and L.E.B. Eriksson (2019) Sensitivity of Radar Altimeter Waveform to Changes in Sea Ice Type at Resolution of Synthetic Aperture Radar, *Remote Sensing special issue Combining Different Data Sources for Environmental and Operational Satellite Monitoring of Sea Ice Conditions*, **11**, 2602

[18*] W. Aldenhoff, L.E.B. Eriksson, and **C. Heuzé** (2019) Comparison of Sentinel-1 SAR And Sentinel-3 Altimetry Data For Ice Type Discrimination, *Geoscience and Remote Sensing Symposium (IGARSS), 2019 IEEE International*

[17] **C. Heuzé** and M. Årthun (2019) The Atlantic inflow across the Greenland-Scotland ridge in CMIP5 models, *Elementa Science of the Anthropocene*, **7**(1), p.16

[16] **C. Heuzé**, G. Garric, and T. Lavergne (2019) The Weddell Polynya [in Copernicus Marine Environment Monitoring Service Ocean State Report issue 3], *Journal of Operation Oceanography*

[15] B.T. Hassett, T.V. Vonnahme, X. Wang, G.B. Jones, and **C. Heuzé** (2019) Review of pelagic marine fungi - global analysis of cultured and high-throughput sequencing diversity, *Botanica Marina* **63**, 121-139

[14] S. Swart, E.C. Campbell, **C. Heuzé**, K. Johnson, J.L. Lieser, R. Massom, M. Mazloff, M. Meredith, P. Reid, J.-B. Sallée and S. Stammerjohn (2018), Return of the Maud Rise polynya: climate litmus or sea ice anomaly? [in State of the Climate in 2017 chapter 6], *Bulletin of the American Meteorological Society* **99** S188-S189.

[13] **C. Heuzé** and W. Aldenhoff (2018), Near-Real Time Detection of the Re-Opening of the Weddell Polynya, Antarctica, from Spaceborne Infrared Imagery, *Geoscience and Remote Sensing Symposium (IGARSS), 2018 IEEE International*.

[12*] W. Aldenhoff, **C. Heuzé** and L.E.B. Eriksson (2018), Comparison of ice/water classification in Fram Strait from C- and L-band SAR imagery, *Annals of Glaciology* 1-18.

[11] **C. Heuzé**, G.K. Carvajal and L.E.B. Eriksson (2017), Optimisation of sea surface current retrieval using a maximum cross correlation technique on modelled sea surface temperature, *Journal of Atmospheric and Oceanic Technology* **34** 2245–2255.

[10] **C. Heuzé** (2017), North Atlantic deep water formation and AMOC in CMIP5 models, *Ocean Science* **13** 609-622.

- [9] **C. Heuzé**, G.K. Carvajal, L.E.B. Eriksson and M. Soja-Woźniak (2017), Sea Surface Currents Estimated from Spaceborne Infrared Images Validated against Reanalysis Data and Drifters in the Mediterranean Sea, *Remote Sensing* **9** 422
- [8] **C. Heuzé**, A. Wåhlin, H.L. Johnson and A. Münchow (2017), Pathways of meltwater export from Petermann Glacier, Greenland, *Journal of Physical Oceanography* **47**, 405-418.
- [7] M. Reeve, **C. Heuzé**, W.T. Ball, R.H. White, G. Messori, K. van der Wiel, I. Medhaug, A.H. Eckes, A. O'Callaghan, M.J. Newland, S.R. Williams, M. Kasoar, H.E. Wittmeier and V. Kumer (2016), Improving together: better science writing through peer learning, *Hydrology and Earth System Sciences* **20**, 2965-2973.
- [6] G.K. Carvajal, M. Woźniak, **C. Heuzé**, L.E.B Eriksson, J. Kronsell and B. Rydberg (2016): Assessment of satellite and ground-based estimates of surface currents, *Geoscience and Remote Sensing Symposium (IGARSS), 2016 IEEE International*, 4675-4678.
- [5] **C. Heuzé**, F. Vivier, J. Le Sommer, J.-M. Molines and T. Penduff (2015), Can we map the interannual variability of the whole upper Southern Ocean with the current database of hydrographic data?, *Journal of Geophysical Research Oceans* **120**, 7960-7978.
- [4] **C. Heuzé**, K.J. Heywood, D.P. Stevens and J.K. Ridley (2015), Changes in global ocean bottom properties and volume transports in CMIP5 models under climate change scenarios, *Journal of Climate* **28**, 2917-2944. Part of my PhD work.
- [3] **C. Heuzé**, J. Ridley, D. Calvert, D. Stevens and K. Heywood (2015), Increasing vertical mixing to reduce Southern Ocean deep convection in NEMO3.4, *Geoscientific Model Development* **8**, 3119-3130. Part of my PhD work.
- [2] K.J. Heywood, S. Schmitdko, **C. Heuzé**, J. Kaiser, T.D. Jickells, B.Y. Queste, D.P. Stevens, M. Wadley, A.F. Thompson, S. Fielding and D. Guihen (2014), Ocean processes at the Antarctic continental slope, *Philosophical Transactions of the Royal Society A* **372**, 20130047.
- [1] **C. Heuzé**, K.J. Heywood, D.P. Stevens and J.K. Ridley (2013), Southern Ocean Bottom Water Characteristics in CMIP5 models, *Geophysical Research Letters* **40**, 1409-1414. Part of my PhD work.

Other

Other articles with a DOI:

- [c] M. D. Shupe, M. Rex, K. Dethloff, E. Damm, A. A. Fong, R. Gradinger, **C. Heuzé**, B. Loose, A. Makarov, W. Maslowski, M. Nicolaus, D. Perovich, B. Rabe, A. Rinke, V. Sokolov, A. Sommerfeld, (2020) A year drifting with the Arctic sea ice. *Arctic Report Card 2020*, doi: 10.25923/9g3v-xh92.
- [b] **C. Heuzé**, M. Mohrmann, E. Andersson and E. Crafoord (2020). Global decline of deep water formation with increasing atmospheric CO₂. *EarthArXiv*, doi:10.31223/X56K6D
- [a] L. Waldrop Bergman and **C. Heuzé** (2018), Influence of initial stratification, wind and sea ice on the modelled oceanic circulation in Nares Strait, northwest Greenland, *Ocean Science Discussion*, doi:10.5194/os-2018-122

Popular scientific articles/presentations: 37 (17 for the [EGU](#), 6 for [SciSnack](#), 14 for [Polarfever](#))

Updated CV, list of publications and conference presentations, are available at
<http://cheuze.com>