

ASTRID PACINI

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EDUCATION

- MIT-WHOI Joint Program** 2016-2021
PhD in Physical Oceanography advised by Dr. Robert S. Pickart
Structure, variability, and dynamics of the West Greenland boundary current system
- Yale University** 2012-2016
B.S. in Mechanical Engineering; B.S. in Geology & Geophysics, both with distinction
Certificate in Energy Studies

RESEARCH EXPERIENCE

- NSF OPP Postdoctoral Fellow**, UW Applied Physics Laboratory Sept 2022 - present
Hosted by Dr. Mike Steele
- Postdoctoral Investigator**, WHOI Physical Oceanography Department Jan - July 2022
Hosted by Dr. Robert S. Pickart
- Graduate Research Assistant**, MIT-WHOI Joint Program in Oceanography 2016-2021
Advised by Dr. Robert S. Pickart
- Undergraduate Research Assistant**, Yale University G&G Department 2015-2016
Advised by Dr. Mark Brandon & Dr. David Colwyn
- Summer Student Fellow**, WHOI, Physical Oceanography Department 2015
Hosted by Dr. Robert S. Pickart
- Guest Student**, University of Oxford Mathematical Institute 2014
Hosted by Dr. Andrew Fowler

GRANTS & FELLOWSHIPS

- NSF Office of Polar Programs Postdoctoral Research Fellowship** 2022-2024
- NOAA/UW CICOES Fellowship Postdoctoral Program** awarded 2022

PUBLICATIONS

- [15] Pickart, R.S., Lin, P., Bahr, F., McRaven, L.T., Huang, J., **Pacini, A.**, and 28 co-authors. 2023. The Pacific Water flow branches in the eastern Chukchi Sea. *Progress in Oceanography*, 219, 103169. <https://doi.org/10.1016/j.pocean.2023.103169>
- [14] Fu, Y. et al., 2023. Seasonality of the Meridional Overturning Circulation in the Subpolar North Atlantic. *Communications Earth & Environment*, 4, 181. <https://doi.org/10.1038/s43247-023-00848-9>
- [13] **Pacini, A.** and Pickart, R.S., 2023. Wind-forced upwelling along the West Greenland shelfbreak: Implications for Labrador Sea Water formation. *Journal of Geophysical Research: Oceans*, 128, e2022JC018952. <https://doi.org/10.1029/2022JC018952>
- [12] **Pacini, A.** and Pickart, R.S., 2022. Meanders of the West Greenland Current near Cape Farewell. *Deep-Sea Research I*, 179, 103664. <https://doi.org/10.1016/j.dsr.2021.103664>

- [11] **Pacini, A.**, Pickart, R.S., Le Bras, I.A., Straneo, F., Holliday, N.P., and Spall, M.A., 2021. Cyclonic eddies in the West Greenland Boundary Current System. *Journal of Physical Oceanography*, 51, 2087-2102. <https://doi.org/10.1175/JPO-D-20-0255.1>
- [10] Li, F. and 31 co-authors, 2021. Subpolar North Atlantic western boundary density anomalies and the Meridional Overturning Circulation. *Nature Communications*, 12, 3002. <https://doi.org/10.1038/s41467-021-23350-2>
- [9] Tian, F., Pickart, R.S., Lin, P., **Pacini, A.**, Moore, G.W.K., Stabeno, P., Weingartner, T., Itoh, M., Kikuchi, T., Dobbins, E., Bell, S., Woodgate, R., and Wang, Z., 2021. Mean and seasonal circulation of the eastern Chukchi Sea from moored timeseries in 2013-2014. *Journal of Geophysical Research: Oceans*, 126, e2020JC016863. <https://doi.org/10.1029/2020JC016863>
- [8] **Pacini, A.**, Pickart, R.S., Bahr, F., Torres, D.J., Ramsey, A.L., Holte, J., Karstensen, J., Oltmanns, M., Straneo, F., Le Bras, I.A., Moore, G.W.K., and de Jong, M. F., 2020. Mean conditions and seasonality of the West Greenland Boundary Current System near Cape Farewell. *Journal of Physical Oceanography*, 50, 2849-2971. <https://doi.org/10.1175/JPO-D-20-0086.1>
- [7] **Pacini, A.**, Moore, G.W.K., Pickart, R.S., Nobre, C., Bahr, F., Våge, K., and Arrigo, K.R., 2019. Characteristics and transformation of Pacific winter water on the Chukchi Sea shelf in late spring. *Journal of Geophysical Research: Oceans*, 124, 7153– 7177. <https://doi.org/10.1029/2019JC015261>
- [6] Creamean, J.M., Cross, J.N., Pickart, R.S., McRaven, L.T., Lin, P., **Pacini, A.**, Hanlon, R., Schmale, D.G., Cenicerros, J., Aydell, T., Colombi, N., Bolger, E., and DeMott, P.J., 2019. Ice nucleating particles carried from below a phytoplankton bloom to the Arctic atmosphere. *Geophysical Research Letters*, 46, 8572-8581. <https://doi.org/10.1029/2019GL083039>
- [5] Colwyn, D.A., Brandon, M.T., Hren, M.T., Hourigan, J., **Pacini, A.**, Cosgrove, M.G., Midzik, M., Garreaud, R., and Metzger, C., 2019. Growth and steady state of the Patagonian Andes. *American Journal of Science*, 319, 431-472. <https://doi.org/10.2475/06.2019.01>
- [4] Renfrew, I., and 64 co-authors, 2019. The Iceland Greenland Seas Project. *Bulletin of the American Meteorological Society*, 100, 1795-1817. <https://doi.org/10.1175/BAMS-D-18-0217.1>
- [3] Pratt, L.J., Voet, G., **Pacini, A.**, Tan, S., Alford, M.H., Carter, G.S., Girton, J.B., and Menemenlis, D., 2019. Pacific abyssal transport and mixing: through the Samoan Passage vs. around the Manihiki Plateau. *Journal of Physical Oceanography*, 49, 1577-1592. <https://doi.org/10.1175/JPO-D-18-0124.1>
- [2] Lin, P., Pickart, R.S., Torres, D.J., and **Pacini, A.**, 2018. Evolution of the Freshwater Coastal Current at the southern tip of Greenland, *Journal of Physical Oceanography*, 48, 2127-2140. <https://doi.org/10.1175/JPO-D-18-0035.1>
- [1] Lowry, K.E., Pickart, R.S., Mills, M.N., **Pacini, A.**, Selz, V., Lewis, K.M., Joy-Warren, H., Nobre, C., van Dijken, G.L., and Arrigo, K.R., 2018. Under-ice phytoplankton bloom dynamics controlled by spring convective mixing in refreezing leads of open water. *Journal of Geophysical Research: Oceans*, 123, 90-109. <https://doi.org/10.1002/2016JC012575>

FIELD WORK

USCG C-130 aircraft: Role: Science team member Summer 2023 [**1 flight**]
Fly with the Seasonal Ice Zone Reconnaissance Surveys US Coast Guard C-130 flight to deploy oceanic drifters and atmospheric profiling equipment (**SIZRS**).

RV Sikuliaq: Role: Science team member Summer 2023 [**7 days**]
Train as an early career future chief scientist through the NSF-funded University National Oceanographic Laboratory System/Arctic Icebreaker Coordinating Committee (**UNOLS/AICC**) field program.

RV Sikuliaq: Role: Hydrography lead Fall 2022 [34 days]
 Service mooring and perform high-resolution hydrographic survey of freeze-up period in the Beaufort and Chukchi Seas as part of the Arctic Observing Network ([AON](#)).

USCGC Healy: Role: Hydrography lead Fall 2021 [32 days]
 Perform an extensive hydrographic survey in Baffin Bay to understand the heat and freshwater transport through Davis Strait and into glacial fjords from the West Greenland Current.

R/V Neil Armstrong: Role: Watch lead Summer 2020 [37 days]
 Service moorings and perform high-resolution hydrographic survey of Cape Farewell as part of the Overturning of the Subpolar North Atlantic Program ([OSNAP](#)).

R/V Neil Armstrong: Role: Watch lead Fall 2019 [5 days]
 Perform rigorous CTD conductivity calibration, test Active Heave Compensation (AHC) on CTD winch, test X-Spar buoy, test EcoCTD, and calibrate Multibeam.

R/V Neil Armstrong: Role: Co-chief scientist Fall 2019 [3 days]
 Characterize properties and dynamics of frontal zone in LTER line on Northeast U.S. Shelf. Training cruise for first-year graduate students.

USCGC Healy: Role: Hydrography lead Fall 2018 [25 days]
 Service moorings and perform high-resolution hydrographic survey of Chukchi and Beaufort Shelf as part of the Arctic Observing Network ([AON](#)).

R/V Neil Armstrong: Role: Watch lead Summer 2018 [37 days]
 Service moorings and perform high-resolution hydrographic survey of Cape Farewell as part of the Overturning of the Subpolar North Atlantic Program ([OSNAP](#)).

NRV Alliance: Role: Watchstander Winter 2018 [27 days]
 Storm-chasing cruise to conduct coupled air-sea measurements in the Nordic Seas during active convection. Perform high resolution CTD and XCTD surveys, deploy mooring, deploy and recover gliders as part of the Iceland-Greenland Seas Project ([IGP](#)).

USCGC Healy: Role: Watchstander Summer 2017 [22 days]
 Characterize changing Pacific-Arctic ecosystem from interdisciplinary sampling approach as part of the Distributed Biological Observatory ([DBO](#)).

R/V Neil Armstrong: Role: Watchstander Summer 2016 [40 days]
 Service moorings and perform high-resolution hydrographic survey of Cape Farewell as part of the Overturning of the Subpolar North Atlantic Program ([OSNAP](#)).

R/V Bjarni Sæmundsson: Role: Watchstander [16 days]
 Service moorings and perform high-resolution hydrographic survey of ocean conditions around Iceland.

Patagonia Field Program: Role: Field scientist [17 days]
 Geologic survey of central Andes to understand generation timescale of the range during winter 2016 ([Yale Geology & Geophysics](#)).

USCGC Healy: Role: Watchstander Spring 2014 [42 days]
 Characterize early spring conditions in the Chukchi Sea and how the spring phytoplankton bloom forms as part of the Study of Under-Ice Blooms in the Chukchi Ecosystem ([SUBICE](#)).

TALKS

Pacini, A., Steele, M. A., and Schreck, M.B. Gridding and validation of a sea ice cover data set from the National Weather Service's Alaska Sea Ice Program. *Pacific Arctic Group Annual Meeting*. November 2023.

- Pacini, A.** and Steele, M. A. Ocean conditions seaward of the ice edge. *SASSIE Working Group Meeting*. April 2023.
- Pacini, A.**, Steele, M. A., and Schreck, M.B. Sea ice from multi-product before SASSIE. *SASSIE Working Group Meeting*. April 2023.
- Pacini, A.** Structure, variability, and dynamics of the West Greenland Boundary Current system *University of Washington Applied Physics Laboratory Seminar*. March 2023.
- Pacini, A.** Structure, variability, and dynamics of the West Greenland Boundary Current system *University of Washington School of Oceanography, Physical Oceanography Lunch Seminar*. February 2023.
- Pacini, A.** Structure, variability, and dynamics of the West Greenland Boundary Current system *Physical Oceanography Dissertation Symposium*. October 2022.
- Pacini, A.** and Pickart, R.S., Wind-forced upwelling along the West Greenland shelfbreak. *OSNAP Workshop*. June 2022.
- Pacini, A.** and Pickart, R.S., Wind-forced upwelling along the West Greenland shelfbreak. *Arctic-Subarctic Ocean Fluxes Meeting*. May 2022.
- Pacini, A.**, Pickart, R.S., and Moore, G.W.K., Wind-forced upwelling along the West Greenland shelf and shelfbreak. *Ocean Sciences Meeting*. February 2022.
- Pacini, A.** Eddy variability in the West Greenland Current and its impact on the Labrador Sea. *Arctic-Subarctic Ocean Fluxes Meeting*. October 2021.
- Pacini, A.** Mean conditions and seasonality of the West Greenland Boundary Current system near Cape Farewell. *MIT Sack Lunch Seminar*. September 2021.
- Pacini, A.**, Pickart, R.S., Le Bras, I.A., Straneo, F., Holliday, N.P., and Spall, M.A. Cyclonic eddies in the West Greenland Boundary Current System. *European Geosciences Union General Assembly*. vPICO. April 2021.
- Pacini, A.**, and Pickart, R.S., Meanders of the West Greenland Current *OSNAP Early Career Meeting*. Mar. 2021. Recording available [here](#).
- Pacini, A.**, Pickart, R.S., Bahr, F., Ramsey, A., Torres, D.J., Karstensen, J., Oltmanns, M., Holte, J., de Jong, F., le Bras, I., Straneo, F., and Moore, K., Deconstructing the seasonality of the West Greenland boundary current system. *Ocean Sciences Meeting*. Feb. 2020.
- Li, F. and the OSNAP Observations Team, Volume, heat and freshwater transports across the OSNAP array: 2014-2018. *Ocean Sciences Meeting*. Feb 2020.
- Creamean, J.M., Cross, J.N., Pickart, R.S., McRaven, L.T., Lin, P., **Pacini, A.**, Hanlon, R., Schmale, D.G., Cenicerros, J., Aydele, T., Colombi, N., Bolger, E., and DeMott, P.J., From the Ocean Floor to the Air: Biological Processes As a Source of Seeds for Cloud Ice Formation in the Arctic. *15th Conference on Polar Meteorology and Oceanography; American Meteorological Society*. May 2019.
- Pacini, A.**, Pickart, R.S., Bahr, F., Ramsey, A.L., Torres, D.J., and Karstensen, J., Structure and variability of the West Greenland boundary current system. *European Geosciences Union General Assembly*. April 2019.
- Bower, A.S., **Pacini A.**, le Bras, I.A., Furey, H.H., Lozier, M.S., Pickart, R.S., Ramsey, A.L., Straneo, F., and Zou, S., Abundant Cyclonic Eddies in the Deep Boundary Current around southern Greenland. *European Geosciences Union General Assembly*. April 2019.
- Auerbach, D., Brandon, M.T., Hren, M.T., Hourigan, J.K., **Pacini, A.**, Cosgrove, M., Midzik, M., Garreaud, R., and Metzger, C., New evidence for long-lived Cenozoic topography in the Patagonian

Andes. *Geological Society of America Fall Conference*. Oct. 2017.

Auerbach, D., Hren, M.T., and **Pacini, A.**, Abrupt Terrestrial Cooling at the Eocene-Oligocene Transition in the Southern Hemisphere. *American Geophysical Union Fall Meeting*. Dec. 2016.

Lowry, K.E., Pickart, R.S., Mills, M.M., **Pacini, A.**, Nobre, C., and Arrigo, K.R., Does active convection within leads in sea ice delay phytoplankton blooms? *Ocean Sciences Meeting*. Feb. 2016.

POSTER PRESENTATIONS

Pacini, A., and Pickart, R.S., Wind-forced upwelling along the West Greenland shelfbreak. *US AMOC Science Team Meeting*. April 2022.

Freilich, M., **Pacini, A.**, Suca, J., Lobert, L., Crockford, E.T., Granzow, B.N., Chen, J., Cones, S., Duffy, F., Gaul, A., Gong, J., Hersh, C., Jahns, M., Jones, A., Krinos, A., Ma, L/, Poemnamthip, P., Santos, M., Streanga, I., Sun, R., Taenzer, L., and Gawarkiewicz, G., Hurricane Dorian impacts on Northeast US shelf marine hydrography and ecosystem. *Ocean Sciences Meeting*. Feb. 2020.

Colwyn, D.A., Brandon, M.T., Hren, M.T., Hourigan, J.K., **Pacini, A.**, Cosgrove, M., Midzik, M., Garreaud, R., and Metzger, C., A Cenozoic water isotope record of the evolution of the Patagonian Andes. *American Geophysical Union Fall Meeting*. Dec. 2017.

Pacini, A., Pickart, R.S., Moore, G.W.K., and Våge, K., Hydrographic Structure and Modification of Pacific Witner Water on the Chukchi Sea Shelf in Late Spring. *Ocean Outlook Meeting*. April 2017.

Lowry, K.E., Pickart, R.S., Mills, M.M., **Pacini, A.**, Selz, V., Lewis, K.M., Joy-Warren, H., Nobre, C., van Dijken, G.L., and Arrigo, K., Under-ice phytoplankton bloom dynamics controlled by convective mixing in refreezing leads. *Gordon Research Conference on Polar Marine Science*. Mar. 2017.

Auerbach, D., Hren, M.T., **Pacini, A.**, A global terrestrial climate shift at the Eocene-Oligocene transition: evidence from mid-latitude South America. *Geologic Society of America Fall Conference*. Sept. 2016.

Auerbach, D. Hren, M.T., **Pacini, A.**, Breen P., Garreaud, R., and Brandon, M.T., A large shift in the hydrologic cycle associated with the Eocene-Oligocene transition in Patagonia. *Northeastern Geobiology Symposium*. April 2016.

Pacini, A., Pickart, R.S., Moore, G.W.K., and Våge, K., Hydrographic Structure and Modification of Pacific Winter Water on the Chukchi Sea Shelf in Late Spring. *Ocean Sciences Meeting*. Feb. 2016.

Cosgrove, M.G.*, **Pacini, A.***, Auerbach, D.J., Brandon, M.T., and Hren, M.T. A Paleoelevation History of the Patagonian Andes from Hydrated Volcanic Glass. *Geologic Society of America Fall Conference*. Nov. 2015.

* indicates equal contribution

TEACHING, MENTORING, & SERVICE

APL Seminar Committee 2023 - present
Help to plan and coordinate weekly departmental seminar for UW Applied Physics Lab.

AGU LANDInG 2023 - present
Participant in the American Geophysical Union Leadership Academy and Network for Diversity and Inclusion in the Geosciences ([AGU LANDInG](#)) program designed to train postdoctoral fellows on leadership, especially in the field of diversity, equity, and inclusion.

Program on Climate Change Summer Institute Sept 2023
Chaired session on *sea ice and polar observations*; overall workshop theme was Climate Change at the Poles.

- Polar Postdocs Leadership Workshop** Spring 2023
 Selected to be part of a 20-person cohort of polar postdocs for a one-week workshop led by the NSF-funded Polar Sciences Early Career Community Office ([PSECCO](#)). Training and discussions centered around co-production of knowledge, diversity, equity, and inclusion, and inclusive mentorship.
- Kaufman Teaching Certificate Program** Fall 2020
 Semester-long teaching training course through the MIT Teaching and Learning Lab.
- 12.808 Introduction to Observational Physical Oceanography** Fall 2019
 Teaching assistant for the 25 students. Held office hours, provided a coding tutorial, graded assignments and exams. *Overall rating: 6.6/7.0.*
- Graduate mentor**
- | | |
|-----------------------------------------------------------------------------|-------------|
| Katy Abbott (<i>MIT-WHOI student</i>) | 2020-2022 |
| Jeff Grabon (<i>MIT-WHOI Navy Masters student</i>) | 2018-2020 |
| Mari McCarthy (<i>High school student working with Glen Gawarkiewicz</i>) | Summer 2019 |
| Riely Wadehra (<i>Summer Student Fellow working with Chris Piecuch</i>) | Summer 2019 |
- Resource for Easing Friction and Stress (REFS)** 2019 - 2021
 MIT and WHOI REFS ([EAPS REFS](#) and [WHOI REFS](#)): trained in conflict management, we offer confidential peer-to-peer mentorship, support, and coaching for students.
- JP Applicant Support & Knowledgebase (JP ASK)** 2019-2021
 Mentor for prospective graduate students through the [JP ASK](#) program, which seeks to increase the diversity of future admitted classes by supporting and advising prospective students from underrepresented backgrounds.

OUTREACH

- University of Washington Aquatic Sciences Open House** May 2023
 Spoke to the general public about salinity and Arctic Oceanography. Performed an interactive demonstration with families aimed at tasting the salt concentration of different ocean basins.
- University of Washington Math Day** March 2023
 Presented to 90 high school students (3 groups of 30) at University of Washington Math Day about the role of mathematics in oceanography as the Applied Physics Lab representative
- USCGC Healy Science Lecture** October 2021
 Spoke at science lecture onboard USCGC Healy. Lecture is targeted to the general public, with both Coast Guard and science party in attendance. Title: The West Greenland Current: Observations from the windiest place in the world ocean.
- WHOI PO Buoy Lunch** January 2021
 Spoke at informal monthly physical oceanography lunch meeting: Al Plueddemann, Astrid Pacini, and Isabela le Bras: Pandemic sea stories.
- MIT EAPS Takeover** August 2020
 Performed an [EAPS Takeover](#), where a student takes over the social media accounts of the MIT Earth, Atmosphere, Planetary Sciences department and presents their research and daily life for a broader audience.
- WHOI School Visits**
 Assisted in various school visits to WHOI, including giving a presentation about the Arctic (working with [WHOI Broader Impacts Group](#)), another about how we take velocity measurements (working with [WHOI Sea Grant](#)), and providing tours of the *R/V Neil Armstrong*.
- MIT Museum Girls Day** March 2018
 Presented on the Gulf Stream at [MIT Museum Girls Day](#).

MIT EAPS feature

February 2019

Participated in a [story](#) for MIT EAPS on participation in an October-November cruise aboard the USCGC Healy.

ISNAO Summer School

July 2017

Participant at International Summer School on the Labrador Sea and the North Atlantic Subpolar Gyre (ISNAO), supported by VITALS, NAVIS, and OSNAP. Bonne Bay Marine Station, Western Newfoundland.

SUBICE outreach effort

May 2014

Participated in a [story](#) for the Study of Under Ice Blooms in the Chukchi Ecosystem (SUBICE) outreach effort.

Yale University interviewer

2016-2021

Interview candidates for the Yale University admissions office (~5 candidates per year).

AWARDS AND PROFESSIONAL ACTIVITIES

Arctic Service Medal, *United States Coast Guard*.

Early Career Scientist Travel Support, *European Geophysical Union*

William R. Belknap Prize, *Yale University*, awarded "to a senior for excellence in geological studies." May 2016.

Reviewer: *Journal of Geophysical Research: Oceans; Geophysical Research Letters; Nature Climate Change*

Languages: English (fluent), Italian (native), Spanish (full professional fluency)