

ASTRID PACINI

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EDUCATION

MIT-WHOI Joint Program

2016-2021

PhD in Physical Oceanography

Thesis: Structure, variability, and dynamics of the West Greenland boundary current system

Advisor: Dr. Robert S. Pickart

Yale University

2012-2016

B.S. in Mechanical Engineering, with distinction

B.S. in Geology & Geophysics, with distinction

Certificate in Energy Studies

ACADEMIC POSITIONS

Postdoctoral Investigator, Woods Hole Oceanographic Institution

2022-present

Physical Oceanography Department

with Dr. Robert S. Pickart

PUBLICATIONS

- [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., Olmanns, 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

USCGC Healy: Chief Scientist: Robert S. Pickart 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: Chief Scientist: Robert S. Pickart 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: Chief Scientists: Leah McRaven & Mathieu Dever Fall 2019 [5 days]
 Perform rigorous CTD conductivity calibration, test AHC on CTD winch, test X-Spar buoy, test EcoCTD, calibrate Multibeam.

R/V Neil Armstrong: Chief Scientists: **Astrid Pacini** & Mara Freilich 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: Chief Scientist: Robert S. Pickart. 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: Chief Scientist: Robert S. Pickart. 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: Chief Scientist: Robert S. Pickart. 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: Chief Scientist: Robert S. Pickart. 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: Chief Scientist: Robert S. Pickart. 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: Chief Scientist: Héðinn Valdimarsson & Steingrímur Jónsson. [16 days]
Service moorings and perform high-resolution hydrographic survey of Iceland during summer 2015.

Patagonia Field Program: Chief Scientists: Mark Brandon & David Colwyn. [17 days]
Geologic survey of central Andes to understand generation timescale of the range during winter 2016
([Yale Geology & Geophysics](#)).

USCGC Healy: Chief Scientists: Kevin Arrigo & Robert S. Pickart. 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. 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., Aydell, 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., Stra-
neo, 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 Tran-
sition 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.

POSTERS

- 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

PAST RESEARCH EXPERIENCE

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|---|-------------------|
| Undergraduate research assistant, Yale University
Advisor: Mark Brandon & David Colwyn
Perform volcanic glass extraction in mineral separation laboratory. | Jan 2015-May 2016 |
| Summer student fellow, Woods Hole Oceanographic Institution
Advisor: Robert S. Pickart
Investigate water mass transformation in the Chukchi Sea. | May-August 2015 |
| Guest student, Oxford University
Advisor: Andrew Fowler
Explore ice sail formation and how to model these features. | July-August 2014 |

TEACHING & MENTORING

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|---|-----------|
| Kaufman Teaching Certificate Program
Semester-long teaching training course through the MIT Teaching and Learning Lab. | Fall 2020 |
| 12.808 Introduction to Observational Physical Oceanography
Teaching assistant for the 25 students. Held office hours, provided a coding tutorial, graded assignments and exams. <i>Overall rating: 6.6/7.0.</i> | Fall 2019 |

Graduate mentor

Katy Abbott (<i>MIT-WHOI student</i>)	2020-present
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 - present

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-present

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

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.

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-present

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*

Participant at the International Summer School on the Labrador Sea and the North Atlantic Subpolar Gyre (ISNAO), Bonne Bay Laboratory, Western Newfoundland. July 2017.

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*