

ASTRID PACINI

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EDUCATION

MIT-WHOI Joint Program	2016-2021
PhD in Physical Oceanography advised by Dr. Robert S. Pickart <i>Structure, variability, and dynamics of the West Greenland boundary current system</i>	
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 Hosted by Dr. Mike Steele	Sept 2022 - present
Postdoctoral Investigator , WHOI Physical Oceanography Department Hosted by Dr. Robert S. Pickart	Jan - July 2022
Graduate Research Assistant , MIT-WHOI Joint Program in Oceanography Advised by Dr. Robert S. Pickart	2016-2021
Undergraduate Research Assistant , Yale University G&G Department Advised by Dr. Mark Brandon & Dr. David Colwyn	2015-2016
Summer Student Fellow , WHOI, Physical Oceanography Department Hosted by Dr. Robert S. Pickart	2015
Guest Student , University of Oxford Mathematical Institute Hosted by Dr. Andrew Fowler	2014

GRANTS & FELLOWSHIPS

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

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., 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/JP0-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., Girtton, 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/JP0-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/JP0-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

RV Sikuliaq: Chief Scientist: Robert S. Pickart 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: 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. 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., 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., 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.

POSTERS

- 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

- 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**
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| 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

- 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*

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