

**CURRICULUM VITAE**  
**Leah Trafford McRaven**

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**Education**

M.A. in Earth and Environmental Science, Columbia University, 2016

Thesis Title, *Interannual Surface Salinity Variability of the South China Sea*, advisor Prof. Arnold Gordon

B.S. in Physics and B.S. in Mathematics, The University of Oklahoma, 2010

**Professional Experience**

**Research Associate III, Woods Hole Oceanographic Institution, 2019 – present**

**Research Associate II, Woods Hole Oceanographic Institution, 2017 – 2019**

**Research Assistant II, 2010-2014**

**Research Assistant I, 2010**

*Field Experience:*

- Coordinate at-sea operations for cruises with many collaborating groups and scientific objectives
- Manage foreign clearances, state department reports, shipping logistics, and communications with marine operation managers
- Serve as CTD and shipboard ADCP processor (at sea and on-shore), lead various teams, support sea-ice navigation efforts

*Data Processing:*

- Process, calibrate, and analyze shipboard and moored hydrographic data: specialized in calibration of CTD conductivity and oxygen sensors, shipboard ADCP, MicroCAT, McLane Moored Profiler data
- Produce processing reports and prepare data for long-term archive facilities
- Write code to manipulate, visualize, and analyze oceanographic data

*Research:*

- Contribute to publications, proposals, and annual reports, and present research at conferences
- Design and edit scientific schematics for publications
- Research CTD calibration and hydrographic methods for high latitude applications

**Graduate Research Assistant, Columbia University, 2014-2016, Advisor: Arnold Gordon**

*Surface salinity of the South China Sea:*

- Utilized remote sensing and model products to explore upper ocean salinity-dependent dynamics of the South China Sea and oceanic heat transport through the Southeast Asian Seas

*Salinity Processes in the Upper Ocean Regional Study 2 (SPURS-2):*

- Investigated the impact of precipitation on surface salinity dilution and near-surface turbulence/mixing, and the subsequent impact on sea surface salinity representation in satellite products

**Teaching Assistant, Columbia University, 2015-2016**

**Summer Intern, German Academic Exchange Program, University of Stuttgart, Germany, 2009**

**Visiting Student, The National Research Council, Ottawa, Ontario, Canada, 2008**

**National Science Foundation REU Participant, The University of Oklahoma, 2007**

**Laboratory Research Assistant, The University of Oklahoma, 2007**

**Department Tutor, The University of Oklahoma, 2007-2010**

## **At-Sea Experience**

### **Monitoring the Western Arctic Boundary Current in a Warming Climate: Atmospheric Forcing and Oceanographic Response**

- October 2020, Chief Scientist: Robert Pickart  
Sailing position: Logistics Manager, CTD data processor

### **Overturning in the Subpolar North Atlantic Program (OSNAP)**

- July 2020, Chief Scientist: Robert Pickart  
Sailing position: Logistics Manager, CTD data processor

### **WHOI Internal Ship Time (AR41)**

- November 18 – 22, 2019  
Sailing position: Chief Scientist

### **Distributed Biological Observatory – Northern Chukchi Integrated Study (DBO-NCIS)**

- Aug 2019, Chief Scientist: Robert Pickart  
Sailing position: CTD and SADCPC data processor

### **Overturning in the Subpolar North Atlantic Program (OSNAP)**

- Sep 2018, Chief Scientist: Robert Pickart  
Sailing position: CTD data processor

### **Distributed Biological Observatory – Northern Chukchi Integrated Study (DBO-NCIS)**

- Aug 2018, Chief Scientist: Robert Pickart  
Sailing position: CTD and SADCPC data processor

### **Iceland-Greenland Seas Project**

- Feb 2018, Chief Scientist: Robert Pickart  
Sailing position: CTD and SADCPC data processor

### **Distributed Biological Observatory – Northern Chukchi Integrated Study (DBO-NCIS)**

- Aug 2017, Chief Scientist: Robert Pickart  
Sailing position: CTD and SADCPC data processor

### **Salinity Processes in the Upper Ocean Regional Study 2 (SPURS)**

- Aug 2016, Chief Scientist: Andrew Jessup, APL-UW  
Sailing position: CTD watch stander

### **Line W**

- May 2014, Chief Scientist: John Toole  
Sailing position: CTD data processor

### **Line W**

- May 2013, Chief Scientist: John Toole  
Sailing position: CTD data processor

### **Line W**

- Aug 2012, Chief Scientist: John Toole  
Sailing position: CTD data processor

### **CLIVAR Repeat Hydrography Section A22**

- Mar 2012, Chief Scientist: Ruth Curry  
Sailing position: CTD watch stander

### **Dynamics of Abyssal Mixing and Interior Transports Experiment (DynaMITE)**

- May 2012, Chief Scientist: Ruth Curry  
Sailing position: CTD data processor

### **KAUST: Coastal Hydrography and Circulation of the Red Sea**

- Sept 2011, Chief Scientist: Amy Bower  
Sailing position: CTD and SADCPC data processor

### **Line W**

- July 2011, Chief Scientist: John Toole  
Sailing position: CTD data processor

### **Dynamics of Abyssal Mixing and Interior Transports Experiment (DynaMITE)**

- May 2011, Chief Scientist: Ruth Curry  
Sailing position: CTD watch stander

## **Publications**

### **Peer-Reviewed Publications**

- Anderson, D. M., E. Fachon, R. S. Pickart, P. Lin, A. D. Fischer, M. L. Richlen, V. Uva, M. L. Borsnahan, **L. McRaven**, F. Bahr, K. Lefebvre, J. M. Grebmeier, S. L. Danielson, Y. Lyu, and Y. Fukai, 2021. Evidence for massive and recurrent toxic blooms of *Alexandrium catenella* in the Alaskan Arctic. *Proceedings of the National Academy of Sciences*, <https://doi.org/10.1073/pnas.2107387118>
- Zippel, S., J.T. Farrar, C. Zappa, U. Miller, L. St. Laurent, T. Ijichi, R. Weller, **L. McRaven**, S. Nylund, and D. Le Bel, 2021. Moored Turbulence Measurements using Pulse-Coherent Doppler Sonar, *J. Atmos. Ocean. Technol.*, <https://doi.org/10.1175/JTECH-D-21-0005.1>
- Pickart, R.S., M.A. Spall, P. Lin, F. Bahr, **L.T. McRaven**, K.R. Arrigo, J.M. Grebmeier, 2021. Physical Controls on the Macrofaunal Benthic Biomass in Barrow Canyon, Chukchi Sea. *Journal of Geophysical Research: Oceans*, 126. <https://doi.org/10.1029/2020JC017091>
- Huang, J., R.S. Pickart, F. Bahr, **L.T. McRaven**, F. Xu, 2021. Wintertime water mass transformation in the western Iceland and Greenland Seas. *Journal of Geophysical Research: Oceans*, 126. <https://doi.org/10.1029/2020JC016893>
- Creamean, J.M., J.N. Cross, R.S. Pickart, **L.T. McRaven**, P. Lin, A. Pacini, R. Hanlon, D.G. Schmale, J. Cenicerros, T. Aydell, N. Colombi, E. Bolger, and P.J. DeMott, 2019. Ice nucleating particles carried from below a phytoplankton bloom to the Arctic atmosphere. *Geophysical Research Letters*, 46. <https://doi.org/10.1029/2019GL083039>
- Renfrew, I.A., R.S. Pickart, and 56 co-authors, 2019. The Iceland-Greenland Seas Project. *Bulletin of the American Meteorological Society*. <https://doi.org/10.1175/BAMS-D-18-0217.1>
- Lin, P., R. S. Pickart, **L.T. McRaven**, K. R. Arrigo, F. Bahr, K. E. Lowry, D. A. Stockwell, and C. W. Mordy, 2019. Water mass evolution and circulation of the northeastern Chukchi Sea in summer: Implications for nutrient distributions. *Journal of Geophysical Research: Oceans*, 124. <https://doi.org/10.1029/2019JC015185>
- Aghajani-Talesh, A., M. Falkenau, V.V. Volchkov, **L. Trafford**, A. Griesmaier and T. Pfau, 2010, Laser cooling of a magnetically guided ultracold atom beam, *New Journal of Physics*, 12

## Talks (presenter underlined)

- McRaven, L.T., 2022. *Improvements to OOI Irminger Sea Array shipboard hydrographic data*, Ocean Observatories Initiative Lunch and Learn, Woods Hole, MA, 2022.
- de Jong, F., I.A. Le Bras, L.T. McRaven, M. Sterl, E. Duyck, N. Fried, 2022. *Variability in Irminger Sea convection and hydrography from 2003 through 2020*, EGU General Assembly, Vienna, Austria & Online, May 2022.
- de Jong, F., I.A. Le Bras, L.T. McRaven, M. Sterl, E. Duyck, N. Fried, 2022. *Variability in Irminger Sea convection and hydrography*, 2022 US AMOC Meeting, Woods Hole, MA, April 2022.
- Fogaren, K.E., H.I. Palevsky, I.A. Le Bras, L.T. McRaven, D. Nicholson, 2022. Influence of biological and physical processes on carbon uptake over annual cycles in the Irminger Sea, Ocean Sciences Meeting, Online, Feb 2022.
- Pickart, R.S., M.A. Spall, P. Lin, F. Bahr, L.T. McRaven, K.R. Arrigo, J.M. Grebmeier, 2022. *Physical controls on the macrofaunal benthic biomass in Barrow Canyon, Chukchi Sea*, Ocean Sciences Meeting, Online, Feb 2022.
- McRaven L.T., 2022. *Optimizing hydrographic data collection in the Arctic and Subarctic: Lessons from five years of shipboard surveys*, PO Buoy Lunch Talks, Woods Hole, MA, 2022.
- McRaven L.T., 2022. *Optimizing hydrographic data collection in the Arctic and Subarctic: Lessons from five years of shipboard surveys*, Pickart Lab retreat, Bergen, Norway, 2022.
- McRaven L.T., 2020. *Two weeks of science in four days at sea*, PO Buoy Lunch Talks, Woods Hole, MA, 2020.
- McRaven L.T. and R.S. Pickart, 2017. *Highlights of DBO 2010-2017 data time series: Physical Oceanography*, Distributed Biological Observatory Meeting, Seattle, WA, 2017.
- McRaven L.T. and R. Pickart, 2017. *DBO data access and management: Physical Oceanography*, Distributed Biological Observatory Meeting, Seattle, WA, 2017.
- Gordon A., L. Trafford, and C.F. Giulivi, 2015. *Southeast Asian Seas: surface layer salinity and interocean exchange*, Ocean Science Conference on Salinity and Freshwater Changes in the Ocean, Hamburg Germany, 2015.
- Trafford L. and P. White, 2011. *PO Instrument and Mooring Databases*, PO Data Management Talks, Woods Hole, MA, 2011.
- Tupper, G., L. Trafford, and C. Nobre, 2011. *Salinity Now: Salinometry, Data Acquisition and CTD data Calibration*, PO Data Management Talks, Woods Hole, MA, 2011.
- Farrar, J.T., C.J. Zappa, R.A. Weller, and L. Trafford, 2011. *A long time series of upper-ocean turbulent dissipation from a deep-ocean surface mooring equipped with Nortek HR Profilers*, Nortek User Symposium, Newport, RI., 2011.
- Trafford, L., 2009. *Modeling a high flux atom guide for continuous loading of a Cr trap*, 1<sup>st</sup> Annual Meeting of the University Nebraska's Conference for Undergraduate Women in Physics, Lincoln, Nebraska, 2009.
- Trafford, L., 2007. *Temperature control for an in-vacuum effusive beam source of radicals*, University of Oklahoma Physics Research Experience for Undergraduates Presentation Series, Norman, Oklahoma, 2007.

## Posters (presenter underlined)

- McRaven L.T., R.S. Pickart, P. Lin, and D. Torres, 2022. Hydrography and circulation of Mackenzie Canyon during autumn freeze-up: results from a synoptic shipboard survey, Ocean Sciences Meeting, Feb 2022.

- Andres, M., K. Strøm, and L.T. McRaven, 2021. Transforming Ocean Science: Fostering a Network for Cooperative Science Research on Commercial Ships (Science RoCS), *Marine Technology Society Journal*, 55(3), 126-127, <https://doi.org/10.4031/MTSJ.55.3.6>
- Strøm, K., L.T. McRaven, M. Andres, A. Macdonald, L. Stolp, J. Hummon, T Rossby, J. Herndon, 2021. Transforming Ocean Science: Fostering a Network for Cooperative: Science Research on Commercial Ships (Science RoCS), NAS Ocean Decade Ocean Shots, virtual meeting, 2021.
- McRaven, L.T., P. Lin, R.S. Pickart, K.R. Arrigo, F. Bahr, K.E. Lowry, D.A. Stockwell, and C.W. Mordy, 2020. Water Mass Evolution and Circulation of the Northeastern Chukchi Sea in Summer: Implications for Nutrient Distributions, Ocean Sciences Meeting, San Diego, CA, 2020.
- Pickart, R.S., M.A. Spall, P. Lin, K.R. Arrigo, J.M. Grebmeier, **L.T. McRaven**, 2020. Why is Barrow Canyon a Benthic Hotspot?, Alaska Marine Science Symposium, Anchorage, Alaska, 2020.
- Anderson, D., R.S. Pickart, E. Fachon, P. Lin, M. Richlen, M. Brosnahan, V. Uva, **L.T. McRaven**, F. Bahr, K. Hubbard, 2020. Evidence for Massive and Expanding Harmful Algal Blooms in the Alaskan Arctic, Alaska Marine Science Symposium, Anchorage, Alaska, 2020.
- Creamean, J.M., J.N. Cross, R.S. Pickart, **L.T. McRaven**, P. Lin, A. Pacini, R. Hanlon, D.G. Schmale, J. Cenicerros, T. Aydell, N. Colombi, E. Bolger, and P.J. DeMott, 2019. Ice nucleating particles carried from below a phytoplankton bloom to the Arctic atmosphere, Sixth International Symposium on Arctic Research, Japan 2020.
- Pickart, R.S., M.A. Spall, P. Lin, W-J. von Appen, D. Mastropole, H. Valdimarsson, T.W.N. Haine, M. Almansi, **L.T. McRaven**, 2019. *Dynamics of the high-frequency variability in Denmark Strait*, EGU General Assembly 2019, Vienna, Austria, 2019.
- Lin, P., R.S. Pickart, **L.T. McRaven**, 2019. *Circulation and Hydrography of the Northeastern Chukchi Sea in Summer*, Alaska Marine Science Symposium, 2019.
- Trafford, L., A.L. Gordon, and C.F. Giulivi, 2016. *Variability of Surface Salinity within the Southeast Asian Seas*, Ocean Sciences Meeting, New Orleans, Louisiana, 2016.
- Schwettmann, A., J. Sedlacek, **L. Trafford**, and J. P. Shaffer, 2009. *Atom-chip trap for Rydberg atom experiments*, Bulletin of the American Physical Society: 40th Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Charlottesville, Virginia, 2009.
- Sivakumar, P., C.P. McRaven, D. Combs, **L. Trafford**, and N. Shafer-Ray, 2007. *A continuous molecular beam source of Lead Monofluoride*, Bulletin of the American Physical Society: 38<sup>th</sup> Annual Meeting of the APS Division of Atomic, Molecular and Optical Physics, Calgary, Canada, 2007.

## Other Publications

### Proposals

- NSF Convergence Accelerator Track E: Designing an Integrated Platform for Science Research on Commercial Ships
  - o Co-Pi's A.M. Macdonald, R. Hudak, L. T. McRaven, K. Strøm

### WHOI Internal Proposals

- M. Andres, **L. McRaven**, L. Stolp, and K. Strom, 2022. Science Research on Commercial Ships (Science RoCS): Facilitating Caribbean and Gulf of Mexico (GoM) Measurements Using Instrumentation on the *MV Bulk Xaymaca*, *Access to the Sea Internal Proposal*, 2022.

- **McRaven, L.T.**, A. Pleuddemann, 2019. OOI Global Array shipboard CTD assessment, *Ocean Observatories Initiative Internal Proposal*, 2019.
- **McRaven, L.T.**, S. Wijffels, P. Robbins, J. Toole, H. Furey, J. Eaton, and M. Andres, 2019. WHOI Ship Time: Statistical Assessment of Salinity Sensors Experiment (SASSE), *WHOI Internal Proposal*, 2019.

### WHOI Technical Reports

- **McRaven L.T.**, **CTD biofouling impact on CTD data and usability**, *Technical Report*, Woods Hole Oceanographic Institution, 2021.
- **McRaven L.T.**, A. Pleuddemann. OOI Argentine Basin preliminary CTD calibration summary, *Technical Report*, Woods Hole Oceanographic Institution, 2019.
- Furey, H.H., **L. Trafford**, A.S. Bower. A Crossroads of the Atlantic Meridional Overturning Circulation: the Charlie-Gibbs Fracture Zone data report August 2010-June 2012, *Technical Report*, Woods Hole Oceanographic Institution, 2014.

### Cruise Reports

- Pickart, R.S., **L.T. McRaven**, D. Torres, E. Fachon, L. Juranek, S. Becker. SKQ2020-14S Cruise Report: **Monitoring the Western Arctic Boundary Current in a Warming Climate: Atmospheric Forcing and Oceanographic Response**, *cruise report*, 2020.
- Pickart, R.S., **L.T. McRaven**, F. Bahr, I. Le Bras. AR45 Cruise Report: Overturning in the Subpolar North Atlantic Program (OSNAP), *cruise report*, 2020.
- **McRaven, L.T.**, J. Edson, M. Dever, J. Eaton, K. Jerram. AR41 Cruise Report: WHOI Internal Ship Time, *cruise report*, 2019.
- Pickart, R.S., **L.T. McRaven**, F. Bahr, I. Le Bras. AR45 Cruise Report: Overturning in the Subpolar North Atlantic Program (OSNAP), *cruise report*, 2020.
- **McRaven, L.T.**, J. Edson, M. Dever, J. Eaton, K. Jerram. AR41 Cruise Report: WHOI Internal Ship Time, *cruise report*, 2019.
- Pickart, R.S., **L.T. McRaven**, D. Torres, I. Le Bras. AR30-06 Cruise Report: Overturning in the Subpolar North Atlantic Program (OSNAP), *cruise report*, 2018.
- Pickart, R.S., A. Pacini, **L.T. McRaven**, F. Bahr, J. Dunn. HLY1803 Cruise Report: Monitoring the Western Arctic Boundary Current in a Warming Climate: Atmospheric Forcing and Oceanographic Response, *cruise report*, 2018.
- Pickart, R.S., and 26 co-authors. Healy 1801 Cruise Report: Distributed Biological Observatory – Northern Chukchi Integrated Study, *cruise report*, 2018.
- Pickart, R.S., and 9 co-authors. ALL0118 Cruise Report: The Iceland-Greenland Seas Project, *cruise report*, 2018.
- Pickart, R.S., and 14 co-authors. Healy 1702 Cruise Report: Distributed Biological Observatory – Northern Chukchi Integrated Study, *cruise report*, 2017.
- **McRaven L.T.** and R.S. Pickart. AR07-02 Cruise Report: Overturning in the Subpolar North Atlantic Program (OSNAP), *cruise report*, 2017.

### Data Processing Reports

- **McRaven L.T.** AR69-01 (OOI Irminger Sea 9/OSNAP GDWBC) CTD Calibration Report, *data processing report*, 2022.
- **McRaven L.T.** HLY2101 CTD Calibration Report, *data processing report*, 2021.
- **McRaven L.T.** SKQ2021-08S CTD Calibration Report, *data processing report*, 2021.
- **McRaven L.T.** AR60 (OOI Irminger Sea 8/OSNAP GDWBC) CTD Calibration Report, *data processing report*, 2021.

- **McRaven L.T.** SKQ2020-14S (AON) CTD Calibration Report, *data processing report*, 2021.
- **McRaven L.T.** AR46 (OSNAP GDWBC) CTD Calibration Report, *data processing report*, 2021.
- **McRaven L.T.** AR45 (OSNAP) CTD Calibration Report, *data processing report*, 2020.
- **McRaven L.T.** HLY1803 (AON) CTD Calibration Report, *data processing report*, 2019.
- **McRaven L.T.** AR30-06 (OSNAP) CTD Calibration Report, *data processing report*, 2018.
- **McRaven L.T.** HLY17801 (DBO-NCIS) CTD Calibration Report, *data processing report*, 2018.
- **McRaven L.T.** ALL0118 (IGP) CTD Calibration Report, *data processing report*, 2018.
- **McRaven L.T.** HLY1702 (DBO-NCIS) CTD Calibration Report, *data processing report*, 2017.
- **McRaven L.T.** AR07-02 (OSNAP) CTD Calibration Report, *data processing report*, 2017.
- **McRaven L.T.** KN221 (OSNAP) CTD Calibration Report, *data processing report*, 2017.

## Website Design

- THOR: Transatlantic High-latitude Oceanography Retreat: <https://www2.whoi.edu/site/picarctic/thor/>
- The Iceland Greenland Seas Project website: <https://web.whoi.edu/all0118/>
- Distributed Biological Observatory – Northern Chukchi Integrated Study HLY1801 website: <https://web.whoi.edu/healy-1801/>
- Distributed Biological Observatory – Northern Chukchi Integrated Study HLY1702 website: <https://web.whoi.edu/healy-2017/>

## Committees and Leadership

- UNOLS CTD Best Practices working group member, present
- WHOI Physical Oceanography Buoy Lunch coordinator, present
- WHOI Room Naming Working Group, present
- WHOI Committee on Diversity and Inclusion, 2020-2022
  - Messaging and Implementation working group co-lead
- WHOI Physical Oceanography Buoy Lunch coordinator, fall 2019
- Columbia University Department of Earth and Environmental Sciences rep. for Women in Science, 2015 – 2016
- Columbia University Department of Ocean and Climate Physics seminar organizer, 2015 – 2016
- WHOI Women’s Committee web master and treasurer, 2012 – 2014

## Community Involvement

- Woods Hole Children’s School of Science volunteer
- WHOI Women on Ice 2019 outreach event panelist
- Volunteer yoga teacher for science party and crewmembers while at sea