

Dani C. Jones, Ph.D.

RESEARCH FACULTY MEMBER · ENVIRONMENTAL DATA SCIENTIST · PHYSICAL OCEANOGRAPHER

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Professional Experience

ACADEMIC AND RESEARCH APPOINTMENTS

- 2023- **Research Faculty Member**, Cooperative Institute for Great Lakes Research, University of Michigan
- 2013-2023 **Physical Oceanographer**, Polar Oceans Team, British Antarctic Survey, NERC, UKRI
- 2011-2013 **Research Scientist**, School of Earth and Atmospheric Sciences, Georgia Institute of Technology

TEACHING APPOINTMENTS

- 2011-2013 **Instructor of Mathematics and Sciences**, Atlanta Metropolitan State College
- 2007-2009 **Instructor of Physics**, Department of Physics, Georgia Southern University

AFFILIATIONS AND HONORARY APPOINTMENTS

- 2024- **Honorary Researcher**, British Antarctic Survey, NERC, UKRI
- 2020- **Affiliate Faculty**, Department of Mathematical Sciences, Georgia Southern University
- 2017- **Senior Member**, Darwin College, University of Cambridge

Publications

IN PREP

- Fitzpatrick, L., **Jones, D. C.**, McAnear, M., Mroczka, B., Hong, Y., and Fry, L. (in prep). A data-driven approach to building a water supply forecasting tool for the Great Lakes.
- Jones, D. C.**, Redding, E., Avula, S., Bernot, N., Miller, R. J., Brunner, S., and Ruberg, S. A. (in prep). Evaluating environmental observing system design using uncertainty-aware machine learning: A Great Lakes case study.
- Takano, Y., **Jones, D. C.**, Munday, D., Roussenov, V., Katavouta, A., Williams, R., Brown, P., Lauderdale, J., and Forget, G. (in prep). Modulation of the North Atlantic carbon sink in a warming world.

IN REVIEW

- Osumeje, J. O., Utekar, S. S., Li, M., and **Jones, D.** (2026). Groundwater potential mapping in Northwestern Nigeria: A comparison of the Analytic Hierarchy Process and Galileo-enhanced CAT-XGB. Preprint <https://doi.org/10.31223/X5MV5H>.
- Gururaj, S., Hughes, C. W., Bingham, R., Blaker, A. T., **Jones, D. C.**, Boland, E. J., and Styles, A. F. (submitted). Ocean boundary pressures link the global overturning circulation to the western boundary of the Antarctic Circumpolar Current.
- McAnear, M., Fitzpatrick, L., **Jones, D. C.**, Hong, Y., and Fry, L. M. (submitted). Probabilistic forecasting of Great Lakes water supply using Bayesian and machine learning approaches.
- Jones, D. C.**, Ward, J. L., Hutson, A., Ru, L., Wright, D. M., Young, A. H., and Fry, L. M. (submitted). Storm life cycle modulates extreme hydroclimate impact risk: a Great Lakes Region case study. *Geophysical Research Letters*. Preprint available at <https://doi.org/10.31223/X5QR28>.
- Styles, A., Boland, E., Hughes, C., Gururaj, S., and **Jones, D. C.** (submitted). Atmospheric drivers of basin-wide geostrophic transport in the Atlantic. *Journal of Geophysical Research: Oceans*.
- Boland, E., Kostov, Y., and **Jones, D. C.** (under revision). Local and remote drivers of liquid freshwater transport through Denmark Strait. *Journal of Geophysical Research: Oceans*.
- Ward, J. L., Mroczka, B. A., Wright, D. M., Fry, L. M., Hong, Y., **Jones, D. C.**, and Young, A. H. (submitted). Extratropical cyclone spatial variability in the Great Lakes region and its impacts on water supply. *Journal of Hydrometeorology*.

Thomas, S. D. A., **Jones, D. C.**, Mayo, T., Taylor, J. R., Moss, H. B., Munday, D., Haigh, I. D., and Gopinathan, D. (in review, preprint available). Finding the potential height of tropical cyclone storm surges in a changing climate using Bayesian optimization. *Environmental Data Science*. doi:10.31223/X57T5R.

PUBLISHED

Jones, D. C., Liu, J., Steinschneider, S., Fry, L. M., Mason, L., Vander Woude, A., Wang, J., Currie, W. S., Newell, S., Fox, N., Pringle, W. J., Phanikumar, M., Hong, Y., Kiledal, A., Fitzpatrick, L., Shin, S., Gronewold, A., Osborne, S., Wright, D. M., Titze, D., Roebber, P., Abdelhady, H. U., Young, A. H., Smith, J., Brunner, S., Langan, J., Xue, P., et al. (2026). A Community-centered Vision for Data-Intensive Great Lakes Research and Management. *Artificial Intelligence for the Earth Systems*, in press. <https://doi.org/10.1175/AIES-D-25-0096.1>.

Williams, R. G., Brown, P. J., Takano, Y., Forget, G., **Jones, D. C.**, Katavouta, A., McDonagh, E., and Roussenov, V. M. (2026). The biogeochemical transport by the Gulf Stream. *Communications Earth & Environment*, 7, 149. doi:10.1038/s43247-025-03118-y

Hutson, A., Ward, J. L., Fujisaki-Manome, A., **Jones, D. C.**, and Hansen, S. (2026). Relationships between Great Lakes extratropical cyclone characteristics and global teleconnections. *Journal of Geophysical Research: Atmospheres*, 131, e2025JD045180, doi:10.1029/2025JD045180.

Jones, D. C. and Coauthors (2025). Mapping out how machine learning and artificial intelligence will change Great Lakes observations, modeling, and forecasting in the coming decade. *Bulletin of the American Meteorological Society*, 106, E378–E385, doi:10.1175/BAMS-D-24-0304.1.

Yao, L., Taylor, J. R., **Jones, D. C.**, and Bachman, S. D. (2025). Identifying ocean submesoscale activity from vertical density profiles using machine learning. *Earth and Space Science*, 12, e2022EA002618, doi:10.1029/2022EA002618.

Pimm, C., Williams, R. G., **Jones, D. C.**, and Meijers, A. J. S. (2024). Surface heat fluxes drive a two-phase response in Southern Ocean mode water stratification. *JGR: Oceans*, 129, e2023JC020795, doi:10.1029/2023JC020795.

Furner, R., Haynes, P., **Jones, D. C.**, Munday, D., Paige, B., and Shuckburgh, E. (2024). The challenge of land in a neural network ocean model. *Environmental Data Science*, 3, e40, doi:10.1017/eds.2024.49.

Twelves, A. G., Goldberg, D. N., Holland, P. R., Henley, S. F., Mazloff, M. R., and **Jones, D. C.** (2024). Chlorophyll production in the Amundsen Sea boosts heat flux to atmosphere and weakens heat flux to ice shelves. *JGR: Oceans*, 129, e2024JC021121, doi:10.1029/2024JC021121.

Moat, B. I., Sinha, B., Berry, D. I., Drijfhout, S. S., Fraser, N., Hermanson, L., **Jones, D. C.**, Josey, S. A., King, B., Macintosh, C., Megann, A., Olmanns, M., Sanders, R., and Williams, S. (2024). Ocean heat convergence and North Atlantic multi-decadal heat content variability. *Journal of Climate*, 37, 4723–4742, doi:10.1175/JCLI-D-23-0370.1.

Poropat, L., **Jones, D. C.**, Thomas, S. D. A., and Heuzé, C. (2024). Unsupervised classification of the northwestern European seas based on satellite altimetry data. *Ocean Science*, 20, 201–215, doi:10.5194/os-20-201-2024.

Meijers, A. J. S., Meredith, M. P., Shuckburgh, E. F., Kent, E. C., Munday, D. R., Firing, Y. L., King, B., Smyth, T. J., Leng, M. J., Nurser, A. J. G., Hewitt, H. T., Abrahamsen, E. P., Weiss, A., Yang, M., Bell, T. G., Brearley, J. A., Boland, E. J. D., **Jones, D. C.**, Josey, S. A., Owen, R. P., Grist, J. P., Blaker, A. T., Biri, S., Yelland, M. J., Pimm, C., Zhou, S., Harle, J., Cornes, R. C., et al. (2023). Finale: Impact of the ORCHESTRA/ENCORE programmes on Southern Ocean heat and carbon understanding. *Philosophical Transactions of the Royal Society A*, 381(2249), 20220070, doi:10.1098/rsta.2022.0070.

Boland, E. J. D., Atkinson, E., and **Jones, D. C.** (2023). A novel heuristic method for detecting overfit in unsupervised classification of climate model data. *Environmental Data Science*, 2, e46, doi:10.1017/eds.2023.40.

Boland, E. J. D., Dittus, A. J., **Jones, D. C.**, Josey, S. A., and Sinha, B. (2023). Ocean heat content responses to changing anthropogenic aerosol forcing strength: Regional and multidecadal variability. *JGR: Oceans*, 128, e2022JC018725, doi:10.1029/2022JC018725.

McMonigal, K., Evans, N., **Jones, D. C.**, Brett, J., James, R. C., Arroyo, M. C., Gong, A.-b. Y., Miller, L. C., Kelly, C., Middleton, J., et al. (2023). Navigating gender at sea. *AGU Advances*, 4, e2023AV000927, doi:10.1029/2023AV000927.

Fahrin, F., **Jones, D. C.**, Wu, Y., Keeble, J., and Archibald, A. T. (2023). Technical note: Unsupervised classification of ozone profiles in UKESM1. *Atmospheric Chemistry and Physics*, 23, 3609–3627, doi:10.5194/acp-23-3609-2023.

Andersson, T., Bruinsma, W. P., Markou, S., Requeima, J., Coca-Castro, A., Vaughan, A., Ellis, A., Lazzara, M. A., **Jones, D. C.**, Hosking, J. S., and Turner, R. E. (2023). Environmental sensor placement with convolutional Gaussian neural processes. *Environmental Data Science*, 2, e32, doi:10.1017/eds.2023.22.

- Aguiar, W., Lee, S.-K., Lopez, H., Dong, S., Seroussi, H., **Jones, D. C.**, and Morrison, A. K. (2023). Antarctic Bottom Water sensitivity to spatiotemporal variations in Antarctic meltwater fluxes. *Geophysical Research Letters*, 50, e2022GL101595, doi:10.1029/2022GL101595.
- Jones, D. C.**, Sonnewald, M., Zhou, S., Hausmann, U., Meijers, A. J. S., Rosso, I., Böhme, L., Meredith, M. P., and Naveira Garabato, A. C. (2023). Unsupervised classification identifies coherent thermohaline structures in the Weddell Gyre region. *Ocean Science*, 19, 857–885, doi:10.5194/os-19-857-2023.
- Furner, R., Haynes, P., Munday, D., Paige, B., **Jones, D. C.**, and Shuckburgh, E. (2022). Sensitivity analysis of a regression model of ocean temperature. *Environmental Data Science*, 1, e11, doi:10.1017/eds.2022.10.
- Sanders, R. N. C., **Jones, D. C.**, Josey, S. A., Sinha, B., and Forget, G. (2022). Causes of the 2015 North Atlantic cold anomaly in a global state estimate. *Ocean Science*, 18, 953–969, doi:10.5194/os-18-953-2022.
- Morrison, A., Waugh, D., Hogg, A., **Jones, D. C.**, and Abernathy, R. (2022). Ventilation of the Southern Ocean pycnocline. *Annual Review of Marine Science*, 14(1), doi:10.1146/annurev-marine-010419-011012.
- Thomas, S. D. A., **Jones, D. C.**, Faul, A., Mackie, E., and Pauthenet, E. (2021). Defining Southern Ocean fronts using unsupervised classification. *Ocean Science*, 17, 1545–1562, doi:10.5194/os-17-1545-2021.
- Sonnewald, M., Leguensat, R., **Jones, D. C.**, Düben, P., Brajard, J., and Balaji, V. (2021). Bridging observations, theory and numerical simulation of the ocean using machine learning. *Environmental Research Letters*, 16, 073008, doi:10.1088/1748-9326/ac0eb0.
- Andersson, T., Hosking, J. S., Perez-Ortiz, M., Paige, B., Elliott, A., Russell, C., Law, S., **Jones, D. C.**, Wilkinson, J., Phillips, T., Byrne, J., Tietsche, S., Sarojini, B. B., Blanchard-Wrigglesworth, E., Aksenov, Y., Downie, R., and Shuckburgh, E. (2021). Seasonal Arctic sea ice forecasting with probabilistic deep learning. *Nature Communications*, 12, 5124, doi:10.1038/s41467-021-25257-4.
- Boland, E., **Jones, D. C.**, Meijers, A. J. S., Forget, G., and Josey, S. A. (2021). Local and remote influences on the heat content of Southern Ocean mode water formation regions. *JGR: Oceans*, 126, e2020JC016585, doi:10.1029/2020JC016585.
- Twelves, A., Goldberg, D. N., Henley, S. F., Mazloff, M. R., and **Jones, D. C.** (2021). Self-shading and meltwater spreading control the transition from light to iron limitation in an Antarctic coastal polynya. *JGR: Oceans*, 126, e2020JC016636, doi:10.1029/2020JC016636.
- Jones, D. C.**, Ceia, F. R., Murphy, E., Delord, K., Furness, R. W., Verdy, A., Mazloff, M., Phillips, R. A., Sagar, P. M., Sallée, J.-B., Schreiber, B., Thompson, D. R., Torres, L. G., Underwood, P. J., Weimerskirch, H., and Xavier, J. C. (2021). Untangling local and remote influences in two major petrel habitats in the oligotrophic Southern Ocean. *Global Change Biology*, 27, 5773–5785, doi:10.1111/gcb.15839.
- Mackie, E., Shuckburgh, E., **Jones, D. C.**, and Vaughan, D. (2020). How climate change is affecting sea levels. *Weather*, 75, 280–280, doi:10.1002/wea.3716.
- Jones, D. C.**, Boland, E., Meijers, A. J. S., Forget, G., Josey, S. A., Sallée, J.-B., and Shuckburgh, E. (2020). The sensitivity of Southeast Pacific heat distribution to local and remote changes in ocean properties. *Journal of Physical Oceanography*, 50, 773–790, doi:10.1175/JPO-D-19-0155.1.
- Jones, D. C.** and Ito, T. (2019). Gaussian mixture modeling describes the geography of the surface carbon budget. In *Proceedings of the 9th International Workshop on Climate Informatics (CI 2019)*, Paris, France, 108–113, doi:10.5065/y82j-f154.
- Duncan, D. I., Eriksson, P., Pfreundschuh, S., Klepp, C., and **Jones, D. C.** (2019). On the distinctiveness of observed oceanic raindrop distributions. *Atmospheric Chemistry and Physics*, 19, 6969–6984, doi:10.5194/acp-19-6969-2019.
- Jones, D. C.**, Holt, H. J., Meijers, A. J. S., and Shuckburgh, E. (2019). Unsupervised clustering of Southern Ocean Argo float profiles. *JGR: Oceans*, 124, 390–402, doi:10.1029/2018JC014629.
- Jones, D. C.**, Shuckburgh, E., and Hawkins, E. (2019). How is sea ice in the Arctic and Antarctic changing? *Weather*, 74, 30–30, doi:10.1002/wea.3381.
- Jones, D. C.**, Forget, G., Sinha, B., Josey, S. A., Boland, E., Meijers, A. J. S., and Shuckburgh, E. (2018). Local and remote influences on the heat content of the Labrador Sea: An adjoint sensitivity study. *JGR: Oceans*, 123, doi:10.1002/2018JC013774.
- Mackay, N., Ledwell, J. R., Messias, M.-J., Naveira Garabato, A. C., Brearley, J. A., Meijers, A. J. S., **Jones, D. C.**, and Watson, A. J. (2018). Diapycnal mixing in the Southern Ocean diagnosed using the DIMES tracer and realistic velocity fields. *JGR: Oceans*, 123, doi:10.1002/2017JC013536.

- Dittmar, T., Stubbins, A., Ito, T., and **Jones, D. C.** (2017). Comment on “Dissolved organic sulfur in the ocean: Biogeochemistry of a petagram inventory”. *Science*, 356(6340), 813, doi:10.1126/science.aam6039.
- Hammond, M. D. and **Jones, D. C.** (2016). Freshwater flux from ice sheet melting and iceberg calving in the Southern Ocean. *Geoscience Data Journal*, 3, 60–62, doi:10.1002/gdj3.43.
- Meijers, A. J. S., Meredith, M. P., Abrahamsen, E. P., Morales Maqueda, M. A., **Jones, D. C.**, and Naveira Garabato, A. C. (2016). Wind-driven export of Weddell Sea slope water. *JGR: Oceans*, 121, doi:10.1002/2016JC011757.
- Jones, D. C.**, Meijers, A. J. S., Shuckburgh, E., Sallée, J.-B., Haynes, P., McAufield, E. K., and Mazloff, M. R. (2016). How does Subantarctic Mode Water ventilate the Southern Hemisphere subtropics? *JGR: Oceans*, 121, doi:10.1002/2016JC011680.
- Jones, D. C.**, Ito, T., Birner, T., Klocker, A., and Munday, D. (2015). Planetary-geometric constraints on isopycnal slope in the Southern Ocean. *Journal of Physical Oceanography*, 45(12), 2991–3004, doi:10.1175/JPO-D-15-0034.1.
- Ceia, F. R., Ramos, J., Phillips, R., Cherel, Y., **Jones, D. C.**, Vieira, R., and Xavier, J. (2015). Analysis of stable isotope ratios in blood of tracked wandering albatrosses fails to distinguish a $\delta^{13}\text{C}$ gradient within their winter foraging areas in the southwest Atlantic Ocean. *Rapid Communications in Mass Spectrometry*, 29, 2328–2336, doi:10.1002/rcm.7401.
- Xavier, J., Raymond, B., **Jones, D. C.**, and Griffiths, H. (2015). Biogeography of cephalopods in the Southern Ocean using habitat suitability prediction models. *Ecosystems*, doi:10.1007/s10021-015-9926-1.
- Jones, D. C.**, Ito, T., Takano, Y., and Hsu, W.-C. (2014). Spatial and seasonal variability of the air–sea equilibration timescale of carbon dioxide. *Global Biogeochemical Cycles*, 28, 1163–1178, doi:10.1002/2014GB004813.
- Jones, D. C.**, Ito, T., and Lovenduski, N. S. (2011). The transient response of the Southern Ocean pycnocline to changing atmospheric winds. *Geophysical Research Letters*, 38, L15604, doi:10.1029/2011GL048145.

Essays and Commentary

- Jones, D. C. (2025). *A digital partner for the Great Lakes: Navigating the ethical and scientific future of artificial intelligence*. *Lakes Letter*, International Association for Great Lakes Research, No. 27, 18–19.

Datasets and Software

- Jones, D., Ward, J., and Mroczka, B. (2026). ETC impacts in the Great Lakes: code and data for storm classification and impact analysis (v1.0.1). Zenodo. <https://doi.org/10.5281/zenodo.19559386>
- Jones, D. (2023). SO-WISE Weddell Gyre Clusters: Third release (v1.2.0). Zenodo. <https://doi.org/10.5281/zenodo.7871183>
- Jones, D., and Zhou, S. (2022). SO-WISE South Atlantic Ocean and Indian Ocean Observational Constraints (0.1.1) [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.7468656>
- Jones, D., and Zhou, S. (2022). South Atlantic Ocean profile dataset: identification of near-Antarctic profiles using unsupervised classification [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.7465133>

Fellowships, Grants, & Awards

COMPETITIVE FELLOWSHIPS

2020–2023	UKRI Future Leaders Fellowship , UK Research and Innovation	7.0 FTE
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COMPETITIVE GRANTS

2023–2026	The Gulf Stream control of the North Atlantic carbon sink (C-STREAMS) , NERC-NSF	3.0 FTE
2023–2026	Oceanbound: Boundary pressure control on global ocean circulation , NERC	3.0 FTE

PROGRAMMATIC AND COOPERATIVE RESEARCH LEADERSHIP

2023–	Implementation of GLOS buoy and mobile platform observing systems, GLOS	
2023–	BIL-SA: Development of a Next Generation Water Level Prediction System, NOAA	
2023–	Synthesis, Observation, and Response (SOAR), NOAA	
2023–2028	Climate change in the Arctic - North Atlantic Region and Impacts on the UK (CANARI), NERC	4.0 FTE
2023–2028	Drivers and Effects of Fluctuations in sea Ice in the ANTArctic (DEFIANT), NERC	1.0 FTE
2020–2022	Environmental models: from surface to satellite (EnvSensors), The Alan Turing Institute	2.0 FTE
2020–2025	Drivers of Oceanic Change in the Amundsen Sea (DeCAdeS), NERC	5.0 FTE
2016–2021	North Atlantic Climate System (ACSIS), NERC	
2016–2021	Ocean Regulation of Climate by Heat and Carbon Sequestration and Transports (ORCHESTRA), NERC	

AWARDS AND HONORS

2021	Laws Prize, British Antarctic Survey
2020	Going the Extra Mile (GEM) Award, British Antarctic Survey
2010	Best Student Presentation Award, Colorado State University Research Symposium
2009–2010	Atmospheric Science Alumni Scholarship, Colorado State University
2005–2007	Dan R. Reedy Quality Fellowship Award, University of Kentucky
2001	Karl E. Peace Undergraduate Award, Georgia Southern University

Presentations

RECENT INVITED PRESENTATIONS

- Winter 2026. *ML/AI as a design partner for the Great Lakes Observing System*. Invited talk: Smart Great Lakes 2.0, Canada Centre for Inland Waters, Burlington, ON, Canada.
- Fall 2025. *Challenges in observing system design: Lessons from Antarctica to the North American Great Lakes*. Invited seminar: Oceanography Seminar, University of Washington and NOAA PMEL, Seattle, WA.
- Spring 2025. *The Great Lakes AI Lab: A collaborative community for Great Lakes research, management, safety, and health*. Invited talk: Great Lakes Commission Meeting, Washington, DC.
- Fall 2024. *Fresh perspectives: An oceanographer's view of machine learning in Great Lakes science*. Invited seminar: Physical Oceanography Seminar, University of Washington; NOAA Pacific Marine Environmental Laboratory, Seattle, WA.
- Winter 2021. *Overtuning: How the ocean and those who study it are changing*. Invited lecture: Laws Prize Lecture, British Antarctic Survey, Cambridge, UK.

CONFERENCE ABSTRACTS

- Thomas, S. D. A., **Jones, D. C.**, Mayo, T., Taylor, J. R., Moss, H., Munday, D. R., Haigh, I. D., and Gopinathan, D. (2026). Finding the potential height of tropical cyclone storm surges in a changing climate using Bayesian optimization. *AGU Ocean Sciences Meeting 2026*, Glasgow, United Kingdom. Oral presentation CC43B-03.
- Boland, E., Kostov, Y., **Jones, D. C.**, and Feltham, D. L. (2026). The impact of rapid sea ice loss on the Arctic influence on freshwater export to the subpolar North Atlantic. *AGU Ocean Sciences Meeting 2026*, Glasgow, United Kingdom. Poster HE24B-1172.
- Takano, Y., **Jones, D. C.**, Katavouta, A., Williams, R. G., Forget, G., Lauderdale, J. M., Munday, D. R., and Roussenov, V. M. (2026). Modulations of the North Atlantic Ocean carbon sink under a warming world. *AGU Ocean Sciences Meeting 2026*, Glasgow, United Kingdom. Poster OB44L-0602.
- Jones, D. C.**, Bernot, N., Redding, E., Miller, R., Brunner, S., Smith, J., and Ruberg, S. A. (2026). Informing Great Lakes observing system design with convolutional Gaussian neural processes. *AGU Ocean Sciences Meeting 2026*, Glasgow, United Kingdom. Poster OT34C-V3001.
- Styles, A., Boland, E., Hughes, C. W., Gururaj, S., and **Jones, D. C.** (2026). Boundary pressure: A unique window into Atlantic transport variability. *AGU Ocean Sciences Meeting 2026*, Glasgow, United Kingdom. Oral presentation PS11A-08.

- Hughes, C. W., Gururaj, S., Bingham, R. J., Blaker, A., Boland, E., Styles, A., and **Jones, D. C.** (2026). The global dynamical influence of, and on, ocean boundaries. *AGU Ocean Sciences Meeting 2026*, Glasgow, United Kingdom. Oral presentation PS41A-01.
- Fitzpatrick, L., **Jones, D. C.**, McAnear, M., Hong, Y., and Fry, L. M. (2025). Advancing seasonal-to-subseasonal predictions of net basin supply components in the North American Great Lakes using machine learning. *AGU Fall Meeting 2025*, New Orleans, LA, USA. Abstract H51T-0599.
- Parent, M., **Jones, D. C.**, Fry, L. M., and Hong, Y. (2025). Advancing streamflow prediction in ungauged basins of the Great Lakes region using LSTM. *AGU Fall Meeting 2025*, New Orleans, LA, USA. Abstract H41K-VR8874.
- Hong, Y., Parent, M., **Jones, D. C.**, Fitzpatrick, L., and Fry, L. M. (2025). Advancing 9-month hydrologic forecasts for large transboundary basins: A case study in the Great Lakes region. *AGU Fall Meeting 2025*, New Orleans, LA, USA. Abstract H14E-02.
- Fry, L. M., Seglenieks, F., Fielder, D., Steinschneider, S., Cannon, D., and **Jones, D. C.** (2025). Operationalization of hydro-climate research within Great Lakes adaptive management: Recent successes, challenges, and science priorities. *AGU Fall Meeting 2025*, New Orleans, LA, USA. Abstract H12F-03.
- Jones, D. C.**, Bernot, N., Redding, E., Miller, R. J., Brunner, S., Smith, J., and Ruberg, S. A. (2025). Informing Great Lakes observing system design with convolutional Gaussian neural processes. *AGU Fall Meeting 2025*, New Orleans, LA, USA. Abstract OS11E-VR8950.
- Jones, D. C.**, Redding, E., Miller, R. J., Brunner, S., and Ruberg, S. A. (2025). Informing Great Lakes sensor placement with convolutional Gaussian neural processes. *Annual Conference of the International Association for Great Lakes Research*, Milwaukee, WI, USA. doi:10.7302/27403.
- Jones, D. C.**, Ward, J., Mroccka, B., Hutson, A., Wright, D. M., Young, A. H., and Fry, L. M. (2024). Unsupervised storm classification model reveals key differences in Great Lakes impacts. *AGU Fall Meeting 2024*, Washington, DC, USA. Abstract A44B-08.
- Fitzpatrick, L., **Jones, D. C.**, McAnear, M., Mroccka, B., Hong, Y., and Fry, L. M. (2024). Improving subseasonal to annual water level forecasts in the North American Great Lakes using machine learning. *AGU Fall Meeting 2024*, Washington, DC, USA. Abstract A43W-07.
- Ward, J. L., Young, A. H., Mroccka, B., Wright, D. M., **Jones, D. C.**, Fry, L. M., and Hong, Y. (2024). How do teleconnections relate to Laurentian Great Lakes overlake precipitation, evaporation, and runoff? *AGU Fall Meeting 2024*, Washington, DC, USA. Abstract A14E-06.
- Fry, L. M., Fielder, D., Fitzpatrick, L., Gronewold, A., Hong, Y., **Jones, D. C.**, McAnear, M., Ravary, R., and Ward, J. L. (2024). Integration of advancements in water and climate predictions into subseasonal to annual water level forecasts for the Great Lakes through data-driven modeling and stakeholder engagement. *AGU Fall Meeting 2024*, Washington, DC, USA. Abstract H11N-0868.
- Jones, D. C.**, McMonigal, K., Evans, N., Brett, J., James, R., Arroyo, M., Gong, A.-b., Miller, E., Kelly, C., Middleton, J. T., Spear, C., Lane, D., and Holmes, W. (2023). Navigating gender at sea: Recommendations for making seagoing work safer for transgender and gender diverse scientists. *AGU Fall Meeting 2023*, San Francisco, CA, USA. Abstract ED42A-08.
- Jones, D. C.** (2022). Can unsupervised profile classification help create interpretable and robust oceanographic knowledge? *AGU Fall Meeting 2022*, Chicago, IL, USA. Abstract OS32C-1030.
- Jones, D. C.**, Sonnewald, M., Rosso, I., Zhou, S., Boehme, L., Meredith, M., and Naveira-Garabato, A. (2022). Unsupervised classification identifies coherent thermohaline structures in the Weddell Gyre. *Ocean Sciences Meeting 2022*.
- Thomas, S. D. A., and **Jones, D. C.** (2021). Cold tongue bias in CMIP6 spuriously causes mean state to move towards El Niño in response to warming over the historical period. *AGU Fall Meeting 2021*, New Orleans, LA, USA. Abstract A35O-1849.
- Boland, E., **Jones, D. C.**, Dittus, A., Sinha, B., and Josey, S. A. (2021). How sensitive is ocean heat uptake to aerosol forcing? *AGU Fall Meeting 2021*, New Orleans, LA, USA. Abstract GC24E-05.
- Boland, E., **Jones, D. C.**, Meijers, A., and Forget, G. (2021). The impact of model uncertainty in surface forcings on the properties of Southern Ocean mode waters. *AGU Fall Meeting 2021*, New Orleans, LA, USA. Abstract OS15D-1015.
- Jones, D. C.**, Zhou, S., Sonnewald, M., Rosso, I., and Boehme, L. (2021). Unsupervised classification identifies coherent thermohaline structures in the Weddell Gyre. *AGU Fall Meeting 2021*, New Orleans, LA, USA. Abstract OS15D-1016.

Teaching Experience _____

2025	Machine Learning in Oceanography (Summer Masterclass) , Instructor	<i>U-M</i>
2024–2025	Open and Reproducible Research (Summer Skills Workshop) , Instructor	<i>U-M</i>
2020–2022	Ocean Circulation, Ocean Data, and Machine Learning , Guest Lecturer	<i>U. CAM</i>
2014–2016	Statistical Mechanics , Tutorial Supervisor	<i>U. CAM</i>
2011–2013	Physical Oceanography (Upper-level Undergraduate) , Guest Lecturer	<i>GT</i>
2011–2013	College Algebra , Instructor	<i>AMSC</i>
2011–2013	Calculus I & II , Instructor	<i>AMSC</i>
2011–2013	Science for Educators , Instructor	<i>AMSC</i>
2010–2011	Atmospheric Dynamics (Graduate Level) , Teaching Assistant	<i>CSU</i>
2007–2009	Undergraduate Astronomy (Planetary Science) , Instructor	<i>GSU</i>
2007–2009	Undergraduate Astronomy (Stellar and Galactic Astronomy) , Instructor	<i>GSU</i>
2007–2009	Environmental Physics (Energy, Environment, and Climate) , Instructor	<i>GSU</i>
2007–2009	Introductory Mechanics with Laboratory , Instructor	<i>GSU</i>
2007–2009	Electricity and Magnetism with Laboratory , Instructor	<i>GSU</i>

Supervising and Mentoring

FACULTY FELLOWS

2025-2026 **Prof. Josef Osumeje**, Ahmadu Bello University, ML/AI for Groundwater Detection

RESEARCH STAFF

2026- **Jeremy Graham**, Observing system design, CIGLR
 2023- **Lindsay Fitzpatrick**, Data-driven water level forecasting, CIGLR
 2021-2023 **Tom Andersson**, AI for environmental sensor placement, BAS
 2020-2023 **Emma Boland**, Using adjoint models to study heat content, BAS

POSTDOCTORAL RESEARCHERS

2022-2023 **Ute Hausmann**, The structure of the Weddell Gyre, BAS
 2021-2022 **Rachael Sanders**, Using state estimates to study North Atlantic interannual variability, BAS

PH.D. RESEARCH STUDENTS

2021-2026 **Simon Thomas (lead)**, Using ML to quantify storm surge risk, U. Cambridge
 2018-2024 **Rachel Furner (co)**, Data-driven ocean modelling, U. Cambridge
 2018-2023 **Ciara Pimm (co)**, Adjoint modelling in the Southern Ocean. U. Liverpool
 2018-2022 **Andrew Twelves (co)**, Glacial meltwater iron and coastal biogeochem., U. Edinburgh

SUMMER FELLOWSHIP STUDENTS

2026 **Noah Barnes**, Data-driven bias correction methods, UW Madison
 2026 **Sarah Stafford**, Water impacts of data centers, U Delaware
 2025 **Noah Bernot**, Data-driven sensor placement in the Great Lakes, IU Bloomington
 2024 **Erin Redding**, Data-driven sensor placement in the Great Lakes, UC Berkeley

MASTERS RESEARCH STUDENTS

2023- **Matt McAnear**, Probabilistic, data-driven net basin supply forecasting, U. Michigan
 2024–2025 **Sai Avula**, Data-driven sensor placement with uncertainty-aware ML, U. Michigan
 2018–2021 **Fouzia Fahrin**, Unsupervised classification of ozone profiles, Georgia Southern U.
 2018-2019 **Petr Dolezal**, Applying ML to climate data, U. Cambridge
 2018-2019 **Edward Derby**, Oceanic eddy fluxes as (macro)turbulence, U. Cambridge
 2017-2018 **Shahel Khan**, ML and Southern Ocean structure, U. Cambridge
 2015-2016 **Mark Hammond**, Controls on polynya formation, U. Cambridge
 2013 **Wei-Ching Hsu**, Southern Ocean carobn flux variability, Georgia Tech

UNDERGRADUATE RESEARCH STUDENTS

- 2025-2026 **Oyin Abatan**, Custom cost functions for predictive models, UM UROP
2024-2025 **Linda Ru**, Unsupervised classification of extratropical cyclone impacts, UM UROP
2024-2025 **Zhichen (Tom) Yang**, ML bias correction of weather forecasts, UM UROP
2024-2025 **Haorui (Rae) Wang**, ML bias correction of weather forecasts, UM UROP
2018 **Lille Borresen**, Unsupervised classification in the Southern Ocean, NERC REP
2018 **Matthew Koster**, Oceanic particle tracking experiments in the North Atlantic, NERC REP
2017 **Ben Shreiber**, Controls on habitat locations for grey petrels, NERC REP
2017 **Harry Holt**, Machine learning and Southern Ocean heat content, NERC REP
2015 **Mark Hammond**, The impact of ice sheets and icebergs on freshwater, NERC REP
2013 **Loretta Lutackas**, Experimental carbonate chemistry, Dept. of Biology, Colorado State

Education

Colorado State University

Fort Collins, CO

PHD ATMOSPHERIC SCIENCE (OCEANOGRAPHY)

2009 - 2013

- Dissertation: Testing eddy compensation and eddy saturation in the Southern Ocean
- Advisor: Dr. Taka Ito

Georgia Southern University

Statesboro, GA

MS MATHEMATICAL SCIENCES

2007 - 2009

- Thesis: Stability analysis of the chaotic Lorenz system with a state-feedback controller
- Advisor: Dr. Yan Wu

University of Kentucky

Lexington, KY

MS PHYSICS

2005 - 2007

- Research focus: Numerical simulations of dark matter halo formation

Georgia Southern University

Statesboro, GA

BS PHYSICS

2001 - 2005

- Undergraduate research in galactic dynamics

Outreach

- 2018–2022 **The Climate Scientists Podcast**, Producer and Host, 82 Episodes *Online*
2015–2021 **Cambridge Science Festival**, Organizer and Host *UK*
2020–2021 **Polar Pride Day and LGBTQ+ in STEM Day**, Invited Speaker *Online*
2019–2021 **Climate Feedback**, Contributor and Reviewer *Online*
2016 **Cheltenham Science Festival**, Invited Speaker *UK*
2015–2019 **Primary School Science Outreach**, Guest Speaker *UK*

Service

2026	School for Environment and Sustainability (SEAS), University of Michigan , Select Committee Chair	<i>U-M</i>
2025-	Michigan Institute for Data and AI in Society (MIDAS) , Organizing Committee Member (Events); Fellowship Proposal Reviewer	<i>U-M</i>
2022-	Southern Ocean Observing System (SOOS) , Co-chair, Observing System Design Working Group	<i>Online</i>
2022–2023	Artificial Intelligence for Environmental Risk CDT, University of Cambridge , Member, Equity, Diversity, and Inclusion Committee	<i>U. CAM</i>
2013–2023	British Antarctic Survey , Web Editor; Library Representative; Seminar Series Coordinator	<i>UK</i>
2015–2016	Cambridge Centre for Climate Science , Network Coordinator	<i>UK</i>
2014–2018	Techniques, Advances, and Challenges in Ocean Modelling (TACOMA) , Founder and Workshop Organizer	<i>UK</i>
2014–2019	Darwin College, University of Cambridge , Volunteer Usher, Lecture Series	<i>UK</i>
2011–2013	Georgia Institute of Technology , Seminar Series Organizer; Symposium Judge; Journal Staff	<i>GT</i>
2009–2011	Colorado State University , Graduate Student Council Member; Committee Member; Outreach Volunteer	<i>CSU</i>
2007–2009	Georgia Southern University , Chair, Learner-Centered Teaching Community; Outreach Presenter	<i>GSU</i>
2005–2007	University of Kentucky , Graduate Student Council Member; Physics Subject Test Instructor	<i>UKY</i>

Computational and Data Science Skills

Scientific programming and data analysis: Python (xarray, pandas, numpy, scipy, scikit-learn); reproducible workflows for large geophysical datasets.

Machine learning: Unsupervised classification (Gaussian mixture models), predictive modeling, and uncertainty-aware methods for Earth system science applications.

Probabilistic modeling: Gaussian processes and convolutional Gaussian neural processes (ConvGNPs), including active learning and observing system design.

Ocean modeling: MITgcm (Fortran), including adjoint-enabled configurations for sensitivity analysis and observing system design.

Research software and infrastructure: Git/GitHub (including GitHub Actions), cloud-based workflows on Google Cloud Platform for data processing and model training.

Fieldwork Experience

2016	Oceanographic Research Cruise and Laboratory Work , Research Cruise Participant, RRS <i>James Clark Ross</i> (JR15006), Southern Ocean. Conducted CTD casts; bottle sampling for oxygen isotope and salinity analysis; shipboard ADCP data management; salinometer operation; sea ice coring; and surface sampling during small boat operations in the Weddell Sea, South Georgia Island, and Signy Island.
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Peer Review

Artificial Intelligence for the Earth Systems (Associate Editor)

Journal of Advances in Modeling Earth Systems (JAMES)

Communications Earth & Environment

Journal of Geophysical Research: Oceans

Journal of Great Lakes Research

Geophysical Research Letters
Journal of Physical Oceanography
Journal of Climate
Climate Dynamics