

Gerard D. McCarthy

Employment

Period	August 2020–present
Employer	Irish Climate Analysis and Research Units (ICARUS), Department of Geography, Maynooth University, Co. Kildare, Ireland
Job Title	Associate Professor
Period	November 2017–August 2020
Employer	Irish Climate Analysis and Research Units (ICARUS), Department of Geography, Maynooth University, Co. Kildare, Ireland
Job Title	Lecturer
Period	April 2012–October 2017
Employer	National Oceanography Centre, Southampton, UK
Job Title	Senior Research Scientist
Period	February 2011–April 2012
Employer	National Oceanography Centre, Southampton, UK
Job Title	Research Scientist

Highlighted Publications*

McCarthy, G., Joyce, T., & Josey, S. (2018). Gulf stream variability in the context of quasi-decadal and multi-decadal atlantic climate variability. *Geophysical Research Letters*.

McCarthy, G., Haigh, I. D., Hirschi, J. J.-M., Grist, J. P., & Smeed, D. A. (2015). Ocean impact on decadal Atlantic climate variability revealed by sea-level observations. *Nature*. 521, 508–510.

McCarthy, G., Smeed, D. A., Johns, W. E., Frajka-Williams, E., Moat, B. I., Rayner, D., Baringer, M. O., Meinen, C. S., Collins, J., & Bryden, H. L. (2015). Measuring the Atlantic meridional overturning circulation at 26°N. *Progress in Oceanography*, 130.

Smeed, D., **McCarthy, G.**, Cunningham, S., Frajka-Williams, E., Rayner, D., Johns, W., Meinen, C., Baringer, M., Moat, B., Duchez, A., et al. (2014). Observed decline of the Atlantic meridional overturning circulation 2004-2012. *Ocean Science*, 10(1), 29-38.

McCarthy, G., Frajka-Williams, E., Johns, W., Baringer, M., Meinen, C., Bryden, H., Rayner, D., Duchez, A., Roberts, C., & Cunningham, S. (2012a). Observed interannual variability of the Atlantic meridional overturning circulation at 26.5°N. *Geophysical Research Letters*, 39(19).

*Highlighted publications are in Top 1% most highly cited in the field of Geosciences based on age (Web of Science)

Funding and Grants

ROADMAP, JPI Oceans and Climate, PI, 2020-2023	
A4: Oceans in a changing climate, Lead PI	2019-2024
EirOOS: Irish Ocean Observing System, Co-PI	2019
PREDICT: Science Foundation Ireland, Co-I,	2018-2022
Horizon 2020 Blue-Action, PI & WP co-leader	2016-2021
NERC RAPID-AMOC, Senior Scientist	2014-2017
EC FP7 NACLIM, Principal Investigator	2012-2017
EC FP7 THOR, Researcher	2011-2012
CSSP, China, Co-Investigator	2015-2018
Atlantos, Horizon 2020	2015-2019

Teaching and Supervision

Lecturer	GY369: Oceanography, 2018-present GY667: Oceans and Climate Change, 2019-present GY671: SMART Sea School MSc field trip, 2018- GY206: Geography Undergraduate field trip, 2017-2018 GY659: Data analysis methods, 2018
Postdoctoral supervision	Levke Caesar, Maynooth University, 2019-present
PhD supervision	Samuel Diabate, Maynooth University, 2019-present Amin Shoari Nejad, Maynooth University, 2019-present Emma Worthington, University of Southampton, 2017-present Elizabeth Harris, University of Southampton, 2017-present Neela Moraji, University of Southampton, 2013-2018 Lola Perez, University of Las Palmas, 2013

Awards and Recognition

IAPSO Early Career Researcher Award	2019
Maynooth University Early Career Award	2019
Maynooth University, Faculty of Social Sciences, Early Career Award	2019
NOC Early Career Researcher Award	2016
Fellow of Royal Meteorological Society	2016-present
Member of <i>Weather</i> Editorial Board	2016-2018
NOCS PhD Scholarship for EU students	2007-2011
Michael P. Mortell Scholarship in Applied Maths	2004-2007
John A. Delaney Memorial Prize in Physics	2003/4
Reviewer for NSF, NSERC, Nature group and other journals	

Selected Talks and Conferences

Invited Speaker, CLIVAR International Webinar Series	online, 2020
Invited Speaker, Observing and Understanding the AMOC	Brest, 2017
Convener, IAPSO/IAMAS/IAGA Assembly	Cape Town, 2017
Convener, Challenger Society Meeting	Liverpool, 2016
Invited Speaker, Joint RAPID US-AMOC meeting	Bristol, 2015
Convener, Challenger Society Meeting	Plymouth, 2014
Keynote Speaker, RAPID-AMOC 10-year anniversary meeting	London, 2014
Keynote Speaker, US-AMOC Conference	Baltimore, 2013

Selected Seagoing Experience

RRS James Cook Cruise 145	Senior Scientist	Mar/Apr 2017
RRS Discovery Cruise 39	Senior Scientist	Oct-Dec 2015
RRS James Cook Cruise 103	Senior Scientist	Apr/May 2014
RRS Discovery Cruise 382	Principal Scientist	Oct/Nov 2012
RV Ronald H. Brown Cruise 1201	Senior Scientist	Feb 2012
RRS James Cook Cruise 64	Senior Scientist	Oct/Nov 2011
RRS Discovery Cruise 346	Watchleader	Jan/Feb 2010
RRS James Cook Cruise 32	Watchleader	April 2009
RRS Discovery Cruise 334	Junior Scientist	October 2008

Education

Period	October 2007-February 2011	
Degree	PhD Physical Oceanography	
Title	Variability of Intermediate and Thermocline Waters of the South Atlantic	
University	University of Southampton	UK
Period	October 2003-June 2007	
Degree	BSc Physics and Applied Maths	
University	University College Cork	Ireland

Outreach

Maynooth Geography Seminars	Organiser, 2018-present
NOC Friday Seminars	Co-organiser, 2016-2017
Syndicated Article (500k+ readership)	The Conversation, 2015
Physical Oceanography Seminars	Co-organiser, 2013
Outreach Roadshow	Oceans on Wheels, 2009

Skills

Data Processing	Calibration of moored and ship-board CTD LADCP, SADCP, Underway measurements
Computer Skills	Matlab, R, Linux/Unix, C Microsoft Office, LaTeX, Inkscape
Languages	Irish, English

Peer-reviewed Publications

Blaker, A. T., Hirschi, J. J.-M., **McCarthy, G.**, Sinha, B., Taws, S., Marsh, R., Coward, A., & de Cuevas, B. (2014). Historical analogues of the recent extreme minima observed in the Atlantic meridional overturning circulation at 26°N. *Climate Dynamics*, (pp. 1-17).

Bryden, H. L., King, B. A., & **McCarthy, G.** (2011). South Atlantic overturning circulation at 24 S. *Journal of Marine Research*, 69(1), 38-55.

Bryden, H. L., King, B. A., **McCarthy, G.**, & McDonagh, E. L. (2014). Impact of a 30% reduction in Atlantic meridional overturning during 2009-2010. *Ocean Science*, 11, 789-810.

Cunnningham, S. A., Roberts, C. D., Frajka-Williams, E., Johns, W. E., Hobbs, W., Palmer, M. D., Rayner, D., Smeed, D. A., & **McCarthy, G.** (2013). Atlantic meridional overturning circulation slowdown cooled the subtropical ocean. *Geophysical Research Letters*.

Duchez, A., Hirschi, J. J.-M., Blaker, A. T., Bryden, H. L., De Cuevas, B., Atkinson, C. P., **McCarthy, G.**, Frajka-Williams, E., Rayner, D., Smeed, D. A., et al. (2014). A new index for the Atlantic meridional overturning circulation at 26°N. *Journal of Climate*.

Frajka-Williams, E., Meinen, C. S., Johns, W. E., Smeed, D. A., Duchez, A., Lawrence, A. J., Cuthbertson, D. A., **McCarthy, G. D.**, Bryden, H. L., Moat, B. I., Rayner, D. (2016) Compensation between meridional flow components of the AMOC at 26°N *Ocean Science Discussions*

Matthews, T., Murphy, C., **McCarthy, G. D.**, Broderick, C., & Wilby, R. L. (2018). Super storm desmond: a process-based assessment. *Environmental Research Letters*, 13(1), 014024.

McCarthy, G. D., Brown, P. J., Flagg, C. N., Goni, G., Houpert, L., Hughes, C. W., Hummels, R., Inall, M., Jochumsen, K., Larsen, K., et al. (2020b). Sustainable observations of the amoc: Methodology and technology. *Reviews of Geophysics*, 58(1), e2019RG000654.

McCarthy, G. D., & Thorne, P. W. (2018). Atlantic slowdown boosts surface warming. *Nature*, 559(7714), 340–341.

McCarthy, G., Joyce, T., & Josey, S. (2018). Gulf stream variability in the context of quasi-decadal and multi-decadal atlantic climate variability. *Geophysical Research Letters*.

McCarthy, G. D., Menary, M. B., Mecking, J. V., Moat, B. I., Johns, W. E., Andrews, R. D., M. B., & Smeed, D. A. (2016). The importance of deep, basinwide measurements in optimised atlantic meridional overturning circulation observing arrays. *Journal of Geophysical Research: Oceans*, (DOI: 10.1002/2016JC012200).

McCarthy, G., Gleeson, E., Walsh, S. (2015). The influence of ocean variations on the climate of Ireland. *Weather*, 70(8), 242–245

McCarthy, G., King, B., Cipollini, P., McDonagh, E., Blundell, J., & Biastoch, A. (2012b). On the sub-decadal variability of South Atlantic Antarctic Intermediate Water. *Geophysical Research Letters*, 39(10).

McCarthy, G., McDonagh, E., & King, B. (2011). Decadal variability of thermocline and intermediate waters at 24S in the South Atlantic. *Journal of Physical Oceanography*, 41(1), 157–165.

McCarthy, G. (2011). *Variability of thermocline and intermediate waters in the South Atlantic*. Ph.D. thesis, University of Southampton.

McDonagh, E. L., King, B. A., Bryden, H. L., Courtois, P., Szuts, Z., Baringer, M. O., Cunningham, S. A., Atkinson, C. P., **McCarthy, G.** (2015). Continuous Estimate of Atlantic Oceanic Freshwater Flux at 26.5° N *Journal of Climate*, 28(22)

Moat, B. I., Josey, S., Sinha, B., Blaker, A., Smeed, D. A., **McCarthy, G. D.**, Johns, W., Hirschi, J., Frajka-Williams, E., Rayner, D., et al. (2016). Major variations in subtropical north atlantic heat transport at short timescales: Causes and consequences. *Journal of Geophysical Research: Oceans*.

Murphy, C., Broderick, C., Burt, T. P., Curley, M., Duffy, C., Hall, J., Harrigan, S., Matthews, T. K., Macdonald, N., **McCarthy, G.**, et al. (2018). A 305-year continuous monthly rainfall series for the island of Ireland (1711-2016). *Clim. Past*, 14, 413–440.

Murphy, C., Broderick, C., Burt, T. P., Curley, M., Duffy, C., Hall, J., Harrigan, S., Matthews, T. K., Macdonald, N., McCarthy, G., et al. (2018). A 305-year continuous monthly rainfall series for the island of Ireland (1711-2016).

Murphy, C., Wilby, R., Matthews, T., Thorne, P., Broderick, C., Fealy, R., Hall, J., Harrigan, S., Jones, P., McCarthy, G., et al. (2019). Wetter winters and drier summers in England and Wales precipitation explained by observational and sampling bias in early records. *International Journal of Climatology*.

Nejad, A. S., Parnell, A., Greene, A., Kelleher, B. P., & McCarthy, G. D. (2020). Recent rapid sea level rise in Dublin Bay based on tide gauge analysis. *EarthArXiv*, (<https://doi.org/10.31223/osf.io/z9hk2>).

Perez-Hernandez, M. D., **McCarthy, G.D.**, Velez-Belchi, P., Smeed, D. A., Fraile-Nuez, E., Hernandez-Guerra, A. (2015). The Canary basin contribution to the seasonal cycle of the Atlantic Meridional Overturning Circulation at 26°N *Journal of Geophysical Research: Oceans*, 120 (11), 7237–7252.

Roberts, C. D., Waters, J., Peterson, K. A., Palmer, M. D., **McCarthy, G.**, Frajka-Williams, E., Haines, K., Lea, D. J., Martin, M. J., Storkey, D., et al. (2013). Atmosphere drives recent interannual variability of the Atlantic meridional overturning circulation at 26.5°N. *Geophysical Research Letters*, (10.1002/grl.50930).

Robson, J., Sutton, R. T., Archibald, A., Cooper, F., Christensen, M., Gray, L. J., Holliday, N. P., Macintosh, C., McMillan, M., Moat, B., et al. incl **McCarthy** (2018). Recent multivariate changes in the North Atlantic climate system, with a focus on 2005–2016. *International Journal of Climatology*, 38(14), 5050–5076.

Sinha, B., Smeed, D., **McCarthy, G. D.**, Moat, B., Josey, S., Hirschi, J.-M., Frajka-Williams, E., Blaker, A., Rayner, D., & Madec, G. (2018). The accuracy of estimates of the overturning circulation from basin-wide mooring arrays. *Progress in Oceanography*, 160, 101–123.

Smeed, D. A., Josey, S. A., Beaulieu, C., Johns, W. E., Moat, B. I., Frajka-Williams, E., Rayner, D., Meinen, C. S., Baringer, M. O., Bryden, H. L., **McCarthy, G. D.** (2018). The North Atlantic Ocean is in a state of reduced overturning. *Geophysical Research Letters*, (DOI: 10.1002/2017GL076350).

Moat, B. I., Sinha, B., Josey, S. A., Robson, J., Ortega, P., Sévellec, F., Holliday, N., McCarthy, G., New, A., & Hirschi, J.-M. (2019). Insights into decadal North Atlantic sea surface temperature and ocean heat content variability from an eddy-permitting coupled climate model. *Journal of Climate*, 32(18), 6137–6161.

Sutton, R. T., **McCarthy, G. D.**, Robson, J., Sinha, B., Archibald, A., & Gray, L. J. (2018). Atlantic multi-decadal variability and the UK ACSIS programme. *Bulletin of the American Meteorological Society*, 99(<https://doi.org/10.1175/BAMS-D-16-0266.1>), 415–425.

Worthington, E. L., Frajka-Williams, E., & McCarthy, G. D. (2019). Estimating the deep overturning transport variability at 26° N using bottom pressure recorders. *Journal of Geophysical Research: Oceans*, 124(1).

Worthington, E. L., Moat, B. I., Smeed, D. A., Mecking, J. V., Marsh, R., & McCarthy, G. D. (2020). A 30-year reconstruction of the atlantic meridional overturning circulation shows no decline. *Ocean Science Discussions*, (pp. 1–23).

Climate Change Reports

McCarthy, G., Jackson, L., Cunningham, S., Holliday, N., Smeed, D., & Stevens, D. (2020a). Effects of climate change on the atlantic heat conveyor relevant to the uk. *MCCIP Science Review 2020*, (pp. 190–207).

McCarthy, G. D., Smeed, D. A., Roberts, C. D. & Cunningham, S. A. (2017). Atlantic Meridional Overturning Circulation *Marine Climate Change Impacts Report*.

Smeed, D., Wood, R., Cunningham, S., **McCarthy, G.**, Kuhlbrodt, T., & Dye, S. (2013). Impacts of climate change on the Atlantic heat conveyor. In *Marine Climate Change Impacts Partnership: Science Review*.

Baringer, M. O., Johns, W. E., **McCarthy, G.**, Willis, J., Garzoli, S., Lankhorst, M., Meinen, C. S., Send, U., Hobbs, W. R., Cunningham, S. A., et al. (2013). [Global Oceans] Meridional overturning circulation and heat transport Observations in the Atlantic ocean [in "State of the climate in 2012"]. *Bull. Amer. Meteor. Soc.*, 94(8), S65-S68.

Baringer, M. O., **McCarthy, G.**, Willis, J., Lankhorst, M., Smeed, D. A., Send, U., Rayner, D., Johns, W. E., Meinen, C. S., Cunningham, S. A., et al. (2014). [Global Oceans] Meridional overturning circulation and heat transport Observations in the Atlantic ocean [in "State of the climate in 2013"]. *Bulletin American Meteorological Society*, 95(7), S67-S69.

Baringer, M. O., **McCarthy, G.**, Willis, J., Smeed, D. A., Rayner, D., Johns, W. E., Meinen, C. S., Lankhorst, M., Send, U., Cunningham, S. A., Kanzow, T. (2015). [Global Oceans] Meridional overturning circulation and heat transport Observations in the Atlantic ocean [in "State of the climate in 2014"]. *Bulletin American Meteorological Society*, 96(7), S78-S80.

Baringer, M. O., Smeed, D. A., Willis, J., Lankhorst, M., Hobbs, W. R., Dong, S., McCarthy, G. D., Rayner, D., Johns, W. E., Goni, G., et al. (2017). [global oceans] meridional overturning circulation observations in the north atlantic ocean [in "state of the climate in 2016"]. *Bull. Amer. Meteor. Soc.*, 98(8), S84–S87.

Research Cruise Reports

McCarthy, G. (Principal Scientist) (2012). RRS Discovery cruise 382, 08 Oct-24 Nov 2012. RAPID moorings cruise report.

Cunningham, S. (Principal Scientist), **McCarthy, G.**, Collins, J., (eds.) (2012). RRS James Cook cruise JC064, 10 Sep-09 Oct 2011. RAPID moorings cruise report.