**Dr Róisín Moriarty**

**Research Fellow in Climate Science and Policy**

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# Professional Summary

Research Fellow at the Environmental Research Institute, University College Cork with +15 years of experience at the science-policy interface. Leading author on the Volume 4 of Ireland’s Climate Change Assessment Report a synthesis and scientific assessment of how climate action can be accelerated in Ireland. Experienced in climate science and environmental issues, including climate models, greenhouse gas emissions and their impacts, essential considerations for modelling and analysing policy scenarios. Dedicated to providing policymakers with analysis and insights that can aid in the transformation of the energy, land and food systems to tackle the dual crisis of climate change and biodiversity while enhancing human wellbeing and equity.

# Education

PhDin Environmental Sciences, 2005-2009, University of East Anglia, Norwich, UK. Thesis: The role of macrozooplankton in the global carbon cycle. Supervisor: Prof Corinne Le Quéré. Funded by Marie Skłodowska-Curie Fellowship

BScin Marine Sciences (Hons), 2000-2004, University of Galway. First Class Honours

# Professional Appointments

Research Fellow in Climate Science and Policy, 2022-present, *MaREI, Environmental Research Institute, University College Cork*

Climate Science and Policy Advisor, 2016-2019, Secretariat to the Irish Climate Change Advisory Council, *Environmental Protection Agency, Dublin*

Senior Postdoctoral Research Associatein Climate Change and the Carbon Cycle & Executive Officer at the Global Carbon Project, International Project Office, 2013-2016, *Tyndall Centre for Climate Change Research, University of East Anglia, Norwich, UK*

GEOTRACES Research Fellow, 2012-2013, Postdoctoral Research Associate in Marine Isotope Geochemistry, 2009-2011, *School of Earth and Environmental Science, University of Manchester, Manchester, UK*

Doctoral Researcher, 2008, British Antarctic Survey, Cambridge, UK

# Career Break & Freelance Writer

Writer, 2019-2022, *Briançon, France*

**Policy Advisory** (voluntary), 2020, Protect Our Winters UK

# Selected Publications

Daly HE & **Moriarty R** Methane, fairness and the potential consequences of ambiguity in definitions of net zero. *In preparation for Environmental Research Letters*

**Moriarty R**, O’Mahony T, Stefaniec A, et al. 2023 Ireland’s Climate Change Assessment. Volume 4: the benefits of realising transition and transformation. *In press*

Ciais P, …, **Moriarty R** et al. 2019 Five decades of northern land carbon uptake revealed by inter hemisphere CO2 gradient. *Nature* 568 221-225 doi:[10.1038/s41586-019-1078-6](https://www.nature.com/articles/s41586-019-1078-6)

Loose B, Jenkins WJ, **Moriarty R**, …, et al. 2016 Estimating the recharge properties of the deep ocean using noble gasses and helium isotopes. *Journal of Geophysical Research: Oceans* 121 5959-5979 doi:[10.1002/2016JC011809](https://agupubs.onlinelibrary.wiley.com/doi/10.1002/2016JC011809)

Le Quéré C, Buitenhuis ET, **Moriarty R** et al. 2016 Role of zooplankton dynamics for Southern Ocean biomass and global biogeochemical cycles. *Biogeosciences* 13 4111–4133 doi:[10.5194/bg-13-4111-2016](https://bg.copernicus.org/articles/13/4111/2016/bg-13-4111-2016.pdf)

Le Quéré C, **Moriarty R** et al. 2015 Global carbon budget 2014. *Earth System Science Data* 7 47-85 doi:[10.5194/essd-7-47-2015](https://essd.copernicus.org/articles/7/47/2015/)

Le Quéré C, …, **Moriarty R** et al. 2014 Global carbon budget 2013. *Earth System Science Data* 6 235-263 doi:[10.5194/essd-6-235-2014](https://essd.copernicus.org/articles/6/235/2014/)

**Moriarty R**, Buitenhuis ET, Le Quéré C & Gosselin M-P. 2013. Distribution of known macrozooplankton abundance and biomass in the global ocean. *Earth System Science Data* 5 241-257 doi:[10.5194/essd-5-241-2013](https://essd.copernicus.org/articles/5/241/2013/)

**Moriarty R** & O’Brien, TD. 2013 Distribution of mesozooplankton biomass in the global ocean. *Earth System Science Data* 5 45-55 doi:[10.5194/essd-5-45-2013](https://essd.copernicus.org/articles/5/45/2013/)

Buitenhuis ET, Vogt V, **Moriarty R** et al. 2013 MAREDAT: Towards a World Ocean Atlas of MARine Ecosystem DATa. *Earth System Science Data* 5 227-239 doi:[10.5194/essd-5-227-2013](https://essd.copernicus.org/articles/5/227/2013/essd-5-227-2013-relations.html)

*Full publications may be found as part of supplementary material*

# Research Grants

UK GEOTRACES: Tracers of Source, 2012-2013, Natural and Environmental Research Council, Program Grant €260,000

Improve 3He & noble gas sample handling on mass spectrometer MAP-215/50, 2012, Dean of Science Equipment Grant €14,000

MAREDAT: Towards a World Ocean Atlas of MARine Ecosystem DATa, 2008, Natural and Environmental Research Council, PhD Student Grant €7,000

# Awards

Publishing Fund, School of Environmental Sciences, 2008, University of East Anglia, €1,300

Marie Skłodowska-Curie FAASIS PhD Fellowship, 2005-2008, €96,000

# Analytical Skills

R, Matlab and Excel for statistical analysis and data synthesis.

Unix/Linus, Vi, FORTRAN, ferret and netCDF for the running the ocean and land components of Earth System Models associated outputs and datasets.

# Teaching Experience

**Informal teaching**, 2016-2019, Climate Change Advisory Council (CCAC) & Environmental Protection Agency

* One-to-one and group training related to climate, greenhouse gas emissions, policy and communicating with policy makers and the public with a view to building scientific and communications capacity within the CCAC secretariat and EPA.

**Lecture** (inhouse), 2018, *Office of Environmental Evidence Away Day*, Environmental Protection Agency, Ireland -- ‘Water Quality Through the Climate Lens’

**Guest lecture**, 2017, *International Greenhouse Gas Summer School*, National Oceanographic Centre Southampton, UK -- ‘The Importance of Greenhouse Gas Science in Current and Emerging Climate Change policy’

**Guest seminar** (recurrent), 2014-2015, *Climate Change: Science and Policy* undergraduate module University of East Anglia (UEA), Norwich UK -- ‘Understanding and interrogating the Global Carbon Budget through the Global Carbon Atlas’

**Guest lecture**, 2015, *Carbon Connections 2015 Geography Teacher Conference*, London, UK -- ‘The Carbon Budget: Ocean Carbon Sink’

**Guest lecture**, 2014, *UEA’s Carbon Crew*, University of East Anglia, Norwich, UK -- ‘Global Carbon Budget 2013’

**Guest lecture**, 2013, *UEA’s Café Conversations*, University of East Anglia, Norwich, UK --‘Understanding Climate Change’

**Guest lecture**, 2013, 'Youth Space' Nowy Zielony Swiat (New Green World), Warsaw, Poland --‘Climate Negotiations - The Changing Face of Territorial Emissions’

**Guest lecture**, 2013, *UK Polar Network Software and Polar Research Workshop*, Scott Polar Institute, Cambridge, UK -- ‘Data sharing and Management for Early Career Scientists’

# Mentoring Experience

Mentoring doctorate and early career researchers in the Energy Policy and Modelling Group at the Environmental Research Institute.

Supervision of second level students on work placement and third level degree and masters students that interned at the Environmental Protection Agency and the Secretariat to the Climate Change Advisory Council. The interns proceeded to secure permanent position in public and private sectors including for example the Central Statistics Office and Ernest & Young

Informal supervision and mentoring of four doctoral students, including one with English as a second language, between 2009 and 2014, all of whom have remained in academia.

# Virtual Learning

Zoom, Teams and Blackboard Collaborate for developing and deliver online lecture and seminar material and the integration of interactive platforms into virtual and in person teaching.

# Laboratory and Field Work Experience

Extensive experience in ocean carbon modelling including including 1) development, editing, compiling and running code 2) parameterising, optimising and validating models and 3) experimental design and scenario development, and the synthesis and analysis the model output from land carbon models.

Developed and operated a tritium degassing system and improved the existing sample handling system in the MAP-215/50 mass spectrometer in the Isotope Geochemistry laboratory.

Participated in four major ocean research expeditions to the south Atlantic and Southern Ocean between December 2008 and January 2012, as part of my research for ANDREX and UKGEOTRACES projects.

Preparation and logistics for ocean-based fieldwork including the collection and preservation of water samples for tritium, 3He and noble gas analysis (and a variety of other water samples for partner institutes including CFCs, SF6, 14C, δ15N, δ30Si among others).

Collection, identification and analysis of benthic infaunal samples as part of my undergraduate dissertation, and later as an intern with Aquafact International and Frugo Survey Limited undertaking Environmental Impact Assessments

# Selected Contributions

Expert reviewer, 2018-present, on behalf of the Department of Environment, Climate and Communications, for United Nations Framework Convention on Climate Change for greenhouse gas inventories and emissions projections in Biennial Reports and National Communications submitted by Parties to the Convention

Invited reviewer, 2014, IPCC Fifth Assessment Report Synthesis Report Climate Change 2014, Topic 4: Adaptation and Mitigation Measures

Member of the Expert Board of the Environmental Society's Environmental Affairs (student) Journal at University College Cork with a climate change and environmental sciences portfolio

*More contributions can be found as part of supplementary material*

# Professional Memberships

Women in Technology and Science Ireland

Marie Skłodowska-Curie Ireland Chapter