Anna Katavouta

Ocean Modelling Scientist

National Oceanography Centre
Liverpool, UK
✉ *annkat@noc.ac.uk*
https://orcid.org/0000-0002-1587-4996

Research Expertise

I am an early career scientist currently conducting research on the role of shelf processes on the dynamics of tropical regions and the control of climate response by ocean physics and biogeochemistry. My research interests and experience lie in combining numerical models, observations and theory to understand ocean processes and their role within the Earth system on different spatial scales, regional to global, and time scales, days to millennia. I have expertise on ocean dynamics, the ocean carbon cycle, the interaction between the ocean and other Earth system components (e.g., the atmosphere and sea ice), numerical modelling, downscaling methods, statistical analysis of large observational data sets and data assimilation.

Education

2010-2016 **PhD** in Oceanography, Dalhousie University, Halifax, Canada.
Thesis: *Non-linear coupling of scales of ocean variability and implications for downscaling*.

2008-2010 **MSc** in Earth and Atmospheric Sciences, University of Alberta, Edmonton, Canada.
Thesis: *Sea Ice Data Assimilation for the Canadian East Coast*.

2003-2008 **Ptychio (Bachelor)** in Physics, University of Patras, Patras, Greece.
Thesis: *Simulating and forecasting erythemal radiation time series using artificial neural networks*.

Professional Experience

Aug. 2019 -present **Ocean Modelling Scientist**
National Oceanography Centre, Liverpool, UK

Sept. 2016 - present **Post-doctoral Research Associate**
Department of Earth, Ocean and Ecological Sciences, University of Liverpool, UK

Teaching and Mentoring Experience

2017-present Contribution to the **mentoring** of PhD student Katherine Turner, University of Liverpool.

Nov. 2017, 2018 **Computer-lab assistance**, University of Liverpool.
Module: Key Skills for Environmental Data Analysis, for the second-year students in the School of Environmental Sciences.
Assistance in matlab training sessions.

October 2017 **Guest Lecturer**, Liverpool John Moores University.
Module: Earth Systems, for the first-year students in the Geography Programme.
90-minute lecture on *Seawater Properties and Ocean Circulation*.

Jan 2017 **Guest Lecturer**, University of Liverpool.
Module: Global Carbon Cycle, for the third-year students in the Ocean Science Programme.
Two 45-minute lectures linked with a practical on *Modelling the Carbon Cycle*.

Publications

13. Williams, R.G., **A. Katavouta** and V. Roussenov (2020). Anthropogenic heat and carbon storage in climate model projections: regional similarities and differences due to added and redistributed tracer. *Journal of Climate*, submitted.

12. Williams, R.G., C. Paulo and **A. Katavouta** (2020). Controls of the Transient Climate Response to Emissions: effects of physical feedbacks, heat uptake, saturation of radiative forcing and carbon cycling. *Environmental Research Letters*, in press - available online: https://doi.org/10.1088/1748-9326/ab97c9

11. Arora, V.K., **A. Katavouta**, R.G. Williams, C.D. Jones, V. Brovkin, P. Friedlingstein, J. Schwinger, L. Bopp, O. Boucher, P. Cadule, M.A. Chamberlain, J.R. Christian, C. Delire, R.A. Fisher, T. Hajima, T. Ilyina, E. Joetzjer, M. Kawamiya, C. Koven, J. Krasting, R.M. Law, D.M. Lawrence, A. Lenton, K. Lindsay, J. Pongratz, T. Raddatz, R. Séférian, K. Tachiiri, J.F. Tjiputra, J. A. Wiltshire, T. Wu, T. Ziehn (2019). Carbon-concentration and carbon-climate feedbacks in CMIP6 models, and their comparison to CMIP5 models. *Biogeosciences*, 17, 4173–4222. https://doi.org/10.5194/bg-17-4173-2020

10. Williams, R.G., **A. Katavouta** and P. Goodwin (2019). Carbon-Cycle Feedbacks Operating in the Climate System. *Current Climate Change Reports*, 5, 282-295, https://doi.org/10.1007/s40641-019-00144-9

9. **Katavouta, A.**, R.G. Williams and P. Goodwin (2019). The effect of ocean ventilation on the Transient Climate Response to Emissions. *Journal of Climate*, 32, 5085-5105, https://doi.org/10.1029/2019GL082887

8. Goodwin, P., R.G. Williams, V. Roussenov and **A. Katavouta** (2019). Climate sensitivity from both physical and carbon cycle feedbacks. *Geophysical Research Letters*, 46, 7554-7564, 10.1029/2019GL082887

7. **Katavouta A.**, R. G., Williams, P. Goodwin and V.M. Roussenov (2018). Reconciling Atmospheric and Oceanic Views of the Transient Climate Response to Emissions. *Geophysical Research Letters*, 45, https://doi.org/10.1029/2018GL077849

6. Goodwin P., **A. Katavouta**, V. M. Roussenov, G. L. Foster, E. J. Rohling and R. G. Williams (2018). Pathways to 1.5C and 2C warming based on observational and geological constraints. *Nature Geoscience*, 11, 102-107, https://doi.org/10.1038/s41561-017-0054-8

5. Chegini F., Y. Lu, **A. Katavouta** and H. Ritchie (2018). Coastal upwelling off Southwest Nova Scotia simulated with a high-resolution baroclinic ocean model. *Journal of Geophysical Research*, 123, 2318-2331, https://doi.org/10.1002/2017JC013431

4. **Katavouta, A.** and K. R. Thompson (2016). Downscaling ocean conditions with application to the Gulf of Maine, Scotian Shelf and adjacent deep ocean. *Ocean Modelling*, 104, 54-72, https://doi.org/10.1016/j.ocemod.2016.05.007

3. **Katavouta, A.**, K. R. Thompson, Y. Lu and J. W. Loder (2016). Interaction Between the Tidal and Seasonal Variability of the Gulf of Maine and Scotian Shelf Region. *Journal of Physical Oceanography*, 46(11), 3279-3298, https://doi.org/10.1175/JPO-D-15-0091.1

2. **Katavouta, A.**, and P. G. Myers (2014). Sea-ice concentration multivariate assimilation for the Canadian east coast in a coupled sea ice-ocean model. *Atmosphere-Ocean*, 52, 418-433, https://doi.org/10.1080/07055900.2014.954096

1. **Katavouta, A.**, and K. R. Thompson (2013). Downscaling Ocean Conditions: Experiments with a quasi-geostrophic model. *Ocean Modelling*, 72, 231-241, https://doi.org/10.1016/j.ocemod.2013.10.001

Conference Presentations

May 2020 **European Geosciences Union General Assembly 2020: Sharing Geoscience Online**
Carbon-concentration and carbon-climate feedbacks in CMIP6 models, and their comparison to CMIP5 models

Febr, 2020 **Ocean Sciences meeting 2020**, San Diego, USA.
Effect of tides on the circulation and hydrography in the Indonesian Seas: Comparison of a model with and without tidal forcing.

April 2019 **European Geosciences Union General Assembly 2019**, Vienna, Austria.
Timescales of the ocean thermal and carbon response to carbon forcing .
The role of ocean physics in controlling the climate response and carbon cycle feedback to carbon emissions.

Sept. 2018 **Challenger Society Conference 2018**, Newcastle, UK.
The role of ocean in climate change: ocean carbon cycle feedbacks.
Ocean Modelling Special Interest Group meeting: Timescales for the ocean heat and carbon uptakes.

Febr, 2018 **Ocean Sciences meeting 2018**, Portland, USA.
Dependence of surface warming due to carbon emissions on ocean ventilation: experiments using idealised ocean models.

Sept. 2017 **Challenger Ocean Modelling Special Interest Group meeting 2017**, Met Office, Exeter, UK.
The ocean ventilation control of the transient climate response to carbon emissions: experiments using idealised models.

April 2017 **European Geosciences Union General Assembly 2017**, Vienna, Austria.
Downscaling ocean conditions with application to the Gulf of Maine, Scotian Shelf and adjacent deep ocean.
Mechanistic controls of surface warming by ocean heat and carbon uptake: Experiments using idealised ocean models with and without overturning.
Interaction between the tidal and seasonal variability of the Gulf of Maine and Scotian Shelf region.

June 2014 **48th Canadian Meteorological and Oceanographic Society Congress**, Rimouski, Canada.
Downscaling Ocean Conditions on the Scotian Shelf.

May 2014 **European Geosciences Union General Assembly 2014**, Vienna, Austria.
Downscaling Ocean Conditions: Initial results using a Quasigeostrophic and a Realistic Ocean Model.

June 2013 **2013 Ocean Tracking Network Canada Symposium**, Halifax, Canada.
Downscaling Ocean Conditions.

June 2012 **46th Annual Canadian Meteorological and Oceanographic Society Congress**, Montreal, Canada.
Downscaling ocean conditions: initial tests of a new method using a quasi-geostrophic ocean model.

June 2012 **2012 Ocean Tracking Network Canada Symposium**, Halifax, Canada.
Downscaling ocean conditions: initial tests of a new method using a quasi-geostrophic ocean model.

June 2011 **2011 Ocean Tracking Network Canada Symposium**, Halifax, Canada.
Assimilation of Sea Level Observations into a Quasi-Geostrophic Model using Multivariate Ensemble Optimal Interpolation (EnOI).

June 2010 **44th Annual Canadian Meteorological and Oceanographic Society Congress**, Ottawa, Canada.
Sea Ice Data Assimilation for the Canadian East Coast.

Invited Seminars

Jan. 2019 The role of ocean in a changing climate: a carbon cycle feedback framework.
Max Planck Institute for Meteorology, Hamburg, Germany.

August 2018 Ocean ventilation control of the surface warming dependence on carbon emissions: Experiments using idealised ocean models,
University of Bern, Bern, Switzerland.

Nov. 2015 Non-Linear Coupling of Scales of Ocean Variability and Implications for Downscaling.
Dalhousie University, Halifax, Canada.

Summer Schools

August 2018 Awarded a place in the Oeschger Centre for Climate Change Research (OCCR) 17th Swiss Summer School "Earth system variability through time". Participation in this summer school is highly competitive and is limited to a maximum of 70 young researchers from all fields of climate research.

Awards and Bursaries

June 2012 Canadian Meteorological and Oceanographic Society (CMOS) Student Travel Bursary for the 46th CMOS Congress.

2010-2011 Kathy Ellis Memorial Book Prize.
Presented annually to the graduate student who achieves the highest average in the Oceanography core courses at Dalhousie University.

June 2010 Canadian Meteorological and Oceanographic society (CMOS) Student Travel Bursary for the 44th CMOS Congress.

June 2010 J. Gordin Kaplan Graduate Student Award
Awarded to full-time doctoral and master's students in support of approved travel expenses related to research.

Jan. 2010 Dr. Roy Dean Hibbs Memorial Graduate Scholarship
Awarded on the basis of strong academic performance with an emphasis on research accomplishments at the University of Alberta.

Sea Experience

May 2010 Participation in the 2010 ocean research mission of CCGS Hudson (Laurentian Fan - Orphan Basin - Orphan Knoll)

Computer Skills

Unix, Linux, Fortran, C+, Matlab, R, Python, Java, Latex

Languages

Greek (native), English (fluent), and French (basic)