Dr Anna Katavouta – C.V.
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Research Statement

I am an early career scientist interested in understanding the role of fundamental processes, such as ocean circulation and carbonate chemistry, on the climate response to carbon emissions, as well as using this understanding to assess emerging trends in ocean conditions in terms of regional-scale variability and extremes. My research approach combines numerical models (idealised and realistic), observations and theory to address the changing ocean and its role within the Earth system.

Work Experience

08/2019 - present	**Ocean Modelling Scientist**, National Oceanography Centre, Liverpool, UK. *Investigating the climate-change impacts in the Indonesian seas, and the effect of shelf sea processes on the Indonesian Throughflow.*
05/2020 - present	**Secondment** (part-time, 50%) at the University of Liverpool, UK. *Investigating ocean carbon and air-sea/cloud feedbacks operating in the climate system.*
09/2016 - 08/2019	**Postdoctoral Research Associate in Ocean Sciences**, Department of Earth, Ocean and Ecological Sciences, University of Liverpool, UK. *Investigating the role of the ocean on the climate response to emissions.*

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** (specialised in Oceanography), University of Alberta, Edmonton, Canada. Thesis: "*Sea-ice data assimilation for the Canadian East Coast*".
2003 - 2008	**Ptychio (BSc Hons) in Physics**, University of Patras, Patras, Greece. Thesis: "*Simulating and forecasting erythemal radiation time series using Artificial Neural Networks*".

Teaching and Mentoring Experience

2017 – present	**Mentoring** and contributing to the supervision of PhD student Katherine Turner, University of Liverpool.
Nov. 2017 & 2018	**Computer-lab support**, University of Liverpool. Module: Key Skills for Environmental Data Analysis, for the second-year students in the School of Environmental Sciences.
October 2017	**Guest Lecturer**, Liverpool John Moores University. Module: Earth Systems, for the first-year students in the Geography Programme. 90-min 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-minutes lectures linked with a practical on "*Modelling the Carbon Cycle*".

Journal Reviewer: *Biogeosciences*, *Climate Dynamics*, *Geophysical Research Letters*, *Journal of Climate*, *JGR-Oceans*, *Journal of Physical Oceanography*, and *Nature Communications*.

Funding and Bursaries

05/2020 - 04/2023 **NERC standard grant**: *Asymmetries in ocean heat and carbon uptake, and effects on marine hazards*, NE/T007788/1. Named Researcher Co-I.

June 2012 Student **Travel Award** from the Canadian Meteorological and Oceanographic Society (CMOS) to attend the 46th CMOS Congress in Montreal, Canada.

June 2010 Student **Travel Award** from the Canadian Meteorological and Oceanographic Society (CMOS) to attend the 44th CMOS Congress in Ottawa, Canada.

Awards

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 **J. Gordin Kaplan Graduate Student Award**. Awarded to doctoral and master's students in support of approved travel expenses related to research.

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

Selected and most recent Conference Presentations

- **Ocean Sciences meeting 2022** (upcoming), Hawaii, USA: "*Ocean carbon cycle feedbacks in CMIP6: contributions from different basins and role of the Atlantic Overturning Circulation*".
- **European Geosciences Union General Assembly 2020**, online: "*Carbon-concentration and carbon-climate feedbacks in CMIP6 models, and their comparison to CMIP5 models*".
- **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*".
- **European Geosciences Union General Assembly 2019**, Vienna, Austria: **1**. "*The role of ocean physics in controlling the climate response and carbon cycle feedback to carbon emissions*" & **2**. "*Timescales of the ocean thermal and carbon response to carbon forcing*".
- **Ocean Sciences meeting 2018,** Portland, USA: "*Dependence of surface warming due to carbon emissions on ocean ventilation: Experiments using idealised ocean models*".
- **European Geosciences Union General Assembly 2017**, Vienna, Austria: **1**. "*Downscaling ocean conditions with application to the Gulf of Maine & Scotian Shelf*", **2**. "*Mechanistic controls of surface warming by ocean heat and carbon uptake, Experiments using idealised models*" & **3**. "*Interaction between the tidal and seasonal variability of the Gulf of Maine & Scotian Shelf*".

Selected Invited Visits and Talks

- **Jan 2019, Max Planck Institute of Meteorology**, Hamburg, Germany: "*The role of ocean in a changing climate: a carbon cycle feedback framework*". Invited by Dr Tatiana Ilyina (co-leader of the WCRP Grand Challenge on Carbon Feedbacks in the Climate System).
- **August 2018, University of Bern, Bern Switzerland**: "*Ocean ventilation control of the surface warming dependence on carbon emissions*". Invited by Prof Thomas Frölicher (lead author of the IPCC Special Report on the Oceans and Cryosphere).

Summer Schools

August 2018 Awarded a place in the **17th Oeschger Centre for Climate Change Research (OCCR) 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.

Publications

14. **Katavouta A.** & R.G. Williams (2021). Ocean carbon cycle feedbacks in CMIP6 models: contributions from different basins, *Biogeosciences*, 18, 3189–3218, https://doi.org/10.5194/bg-18-3189-2021.

13. Williams R.G., **A. Katavouta** & V. Roussenov (2021). Regional Asymmetries in Ocean Heat and Carbon Storage due to Dynamic Redistribution in Climate Model Projections, *Journal of Climate*, 34(10), 3907-3925, https://doi.org/10.1175/JCLI-D-20-0519.1.

12. Williams R.G., P. Ceppi & **A. Katavouta** (2020). Controls of the Transient Climate Response to Emissions by physical feedbacks, heat uptake and carbon cycling, *Environmental Research Letters*, 15 0940c1, 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, et al., (2020). 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** & 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 & P. Goodwin (2019). The effect of ocean ventilation on the Transient Climate Response to Emissions, *Journal of Climate*, 32, 5085-5105. https://doi.org/10.1175/JCLI-D-18-0829.1.

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

7. **Katavouta A.**, R.G. Williams, P. Goodwin & V.M. Roussenov (2018). Reconciling Atmospheric and Oceanic Views of the Transient Climate Response to Emissions, *Geophysical Research Letters*, 45. 6205-6214. https://doi.org/10.1029/2018GL077849.

6. Goodwin P., **A. Katavouta**, V.M. Roussenov, G.L. Foster, E.J. Rohling & R.G. Williams (2018). Pathways to 1.5^{o}C and 2^{o}C 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** & 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.** & 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 & 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. Theme 1. **Message**: A seasonal current pattern in the Gulf of Maine is identified, for the first time, in model outputs and High Frequency radar observations, and explained in terms of the interaction between the barotropic tide and the seasonal variability in stratification.

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