

Nicola MAHER, PHD

NATIONALITY: Australian
CURRENT LOCATION: Hamburg, Germany
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Curriculum vitae

Work Experience and Education

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| <i>Current</i> | Freelance Researcher, at MAX-PLANCK INSTITUTE FOR METEOROLOGY, Hamburg |
| <i>Jan. 2020</i> | Germany <i>Topic: Climate Variability and Change</i> <i>Mentor: Jochem Marotzke</i> |
| <i>Dec. 2019</i> | Postdoctoral Researcher, at MAX-PLANCK INSTITUTE FOR METEOROLOGY, Hamburg |
| <i>Feb. 2019</i> | Germany <i>Topic: Climate Variability and Change</i> <i>Mentor: Jochem Marotzke</i> |
| <i>Jan. 2019</i> | Alexander von Humboldt Postdoctoral Fellow, at MAX-PLANCK INSTITUTE FOR METEOROLOGY, Hamburg |
| <i>Feb. 2017</i> | Germany <i>Topic: Climate Variability and Change</i> <i>Mentor: Jochem Marotzke</i> |
| <i>November. 2016</i> <i>October. 2016</i> | 6 weeks as a Research officer at UNIVERSITY OF NEW SOUTH WALES, Sydney Australia <i>To write: Role of Pacific trade winds in driving ocean temperature during the recent slowdown and projections under a wind trend reversal</i> <i>Supervisors: Matthew England and Alex Sen Gupta</i> |
| <i>Sep. 2016</i> <i>April. 2012</i> | PhD Student at UNIVERSITY OF NEW SOUTH WALES, Sydney Australia <i>Title: Natural drivers of Interannual to Decadal Variations in Surface Climate</i> <i>Supervisors: Matthew England and Alex Sen Gupta</i> I received two A grades from my thesis. This is the top grade for an Australian PhD. |
| <i>Jan. 2011</i> <i>Jan. 2012</i> | Graduate Researcher at GEOSCIENCE AUSTRALIA, Canberra Australia <i>Topics: Ocean Acidification in the Antarctic, Tropical Cyclone Modelling and Tsunami Modelling in association with the Indonesian Government</i> |
| <i>November. 2010</i> <i>Feb. 2010</i> | Honours Candidate at AUSTRALIAN NATIONAL UNIVERSITY, Canberra Australia <i>Title: A laboratory investigation into the effects of westerly wind stress and buoyancy forcing on the Antarctic Circumpolar Current</i> <i>Supervisors: Andy Hogg and Ross Griffiths</i> Note: an Australian Honours is similar to a Masters; I achieved a first class graded honours with a dissertation graded at 93% |
| <i>November. 2009</i> <i>Feb. 2007</i> | Bachelor of Global and Ocean Sciences (Honours) at AUSTRALIAN NATIONAL UNIVERSITY, Canberra Australia <i>High Distinction Average, with a semester spent studying Abroad at UNIVERSITY OF EAST ANGLIA, Norwich, United Kingdom</i> |

Teaching Experience

- 2015 | Field Trip Demonstrator for MSCI2001 Introductory Marine Science, at UNIVERSITY OF NEW SOUTH WALES, Sydney
Australia
- 2015 | Exam Marking for MSCI3001 - Physical Oceanography, at UNIVERSITY OF NEW SOUTH WALES, Sydney
Australia
- 2012 | Teaching Assistant for Course MSCI3001 - Physical Oceanography, at UNIVERSITY OF NEW SOUTH WALES, Sydney
Australia
- 2010 | Laboratory Demonstrator for Chemistry 1, at UNIVERSITY OF CANBERRA, Canberra
Australia

Scholarships and Awards

- 2019 | Max Planck Institute Bonus
Given for an exceptional contribution to the Max Planck Institute for Meteorology
- 2018 | Selected for the Sign Up Program
Competitive program for career-building for female postdocs at Max Planck Institutes
- 2018 | Uwe Radok Award
For the best PhD thesis awarded in 2016 in Australia in the fields of meteorology, oceanography, glaciology or climatology.
- 2015 | Outstanding Young Scientist Award
Presentation at International Workshop on Modeling the Ocean.
- 2014 | 2014 Geophysical Research Letters Editor highlight and EOS Research Spotlight
For the paper: Drivers of decadal hiatus periods in the 20th and 21st centuries
- 2012 | Laureate Fellowship Scholarship
Awarded to a student, undertaking a PhD in Climate Change Research at the Climate Change Research Centre at the University of New South Wales.
- 2010 | A. H. Hales Scholarship
Awarded to a student undertaking honours in Earth and Marine Sciences at the Australian National University.
- 2010 | ANU Summer Scholarship
Australian National University, awarded to undertake research for summer 2010, in Earth and Marine Science.

Successful Grants

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| 2020 | CIRES Visiting Postdoctoral Fellowship <i>Awarded to undertake a two year postdoctoral position at the University of Colorado, Boulder. I wrote the project proposal.</i> |
| 2016 | Humboldt Postdoctoral Fellowship <i>Awarded to undertake a two year postdoctoral position at the Max Plank Institute for Meteorology. I wrote the project proposal.</i> |
| 2016 | AXA Postdoctoral Fellowship <i>This award was offered, however was not accepted as I accepted the Humboldt Fellowship. Here I wrote the project proposal.</i> |
| 2016 | WCRP funding for Early Career Scientists <i>Awarded to Early Career Scientists to attend the CLIVAR Early Career Scientists Symposium and Open Science Conference, Qingdao 2016</i> |
| 2012-16 | ARC Centre of Excellence for Climate System Science, travel funding <i>4 successful applications adding to a total of \$7500 AUD in funding.</i> |
| 2015 | Postgraduate Research Support Scheme <i>\$2875 AUD to attend a International Conference during my PhD.</i> |

Refereed Publications

Submitted

Ward, B., F.S.R., and **Maher, N.** The sensitivity of the ENSO to volcanic aerosol spatial distribution in the MPI large ensemble. *Submitted to Earth System Dynamics.*

Suarez-Gutierrez, L., **Maher, N.**, and Milinski, S. Exploiting large ensembles for a better yet simpler climate model evaluation. *In revision for Science Advances*

Maher, N., Power, S. and Marotzke J. Robust assessment of model agreement in projections of temperature, precipitation and their variability. *In revision for Nature Communications*

Published

Milinski, S., **Maher, N.**, and Olonscheck, D. How large does a large ensemble need to be? *Accepted in Earth System Dynamics*

Fiedler, S., Crueger, T., D'Agostino, R., Peters, P., Becker, T., Leutwyler, D., Paccini, L., Burdanowitz, J., Buehler, S.A., Cortes, A.U., Dauhut, T., Dommenget, D., Fraedrich, K., Jungandreas, L., **Maher, N.**, Naumann, A.K., Rugenstein, M., Sakradzija, M., Schmidt, H., Sielmann, F., Stephan, C., Timm-

reck, C., Zhu, X. and Stevens, B. (2020). Simulated Tropical Precipitation Assessed Across Three Major Phases of the Coupled Model Intercomparison Project (CMIP). *Monthly Weather Review*, 148 (9): 36533680 <https://doi.org/10.1175/MWR-D-19-0404.1>

Lehner, F., Deser, C., **Maher, N.**, Marotzke, J., Fischer, E., Brunner, L., Knutti, R., and Hawkins, E. (2020). Partitioning climate projection uncertainty with multiple Large Ensembles and CMIP5/6 *Earth System Dynamics* <https://doi.org/10.5194/esd-2019-93>

Maher, N., Lehner, F and Marotzke J. (2020) Quantifying the role of internal variability in the climate we will observe in the coming decades. *Environmental Research Letters* <https://doi.org/10.1088/1748-9326/ab7d02>

Perry, S.J., McGregor, S., Sen Gupta, A., England, E. and **Maher, N.** (2020). Projected late 21st Century changes to the regional impacts of the El Niño-Southern Oscillation. *Climate Dynamics*. <https://doi.org/10.1007/s00382-019-05006-6>

Maher, N., Milinski, S., Suarez-Gutierrez, L., Botzet, M. Dobrynin, M., Kornblueh, L., Kröger, J., Takano, Y., Ghosh, R., Hedemann, C., Li, C., Li, H., Manzini, E., Notz, D., Putrasahan, D., Boysen, L., Claussen, M., Ilyina, T., Olonscheck, D., Raddatz, T., Stevens, B. and Marotzke, J. (2019). The Max Planck Institute Grand Ensemble - Enabling the Exploration of Climate System Variability. *Journal of Advances in Modeling Earth Systems*. <https://doi.org/10.1029/2019MS001639>

Maher, N., Matei, D., Milinski, S., and Marotzke, J. (2018). ENSO change in climate projections: Forced response or internal variability? *Geophysical Research Letters*, 45. <https://doi.org/10.1029/2018GL079764>

Maher, N. England, M. H., Sen Gupta, A. and Spence, P. (2018), Role of Pacific trade winds in driving ocean temperature during the recent slowdown and projections under a wind trend reversal, *Climate Dynamics* <https://doi.org/10.1007/s00382-017-3923-3>

Donat M. G., Lowry, A. L., Alexander, L. V., OGorman, P. A. and **Maher, N.** (2016), More extreme rain in the driest and wettest regions of the globe. *Nature Climate Change*, doi:10.1038/nclimate2941

Maher W., **Maher, N.**, Taylor, A., Krikowa, F., and Mikac, K. M. (2016). The use of the marine gastropod, *Cellana tramoserica* as a biomonitor of metal contamination in near shore environments, *Environmental Monitoring and Assessment*, doi: 10.1007/s10661-016-5380-6

Maher, N., McGregor, S., England, M. H., and Sen Gupta, A. (2015), Effects of volcanism on tropical variability, *Geophysical Research Letters*, 42 ,60246033

Meehl, G. A., Teng, H., **Maher, N.** and England, M. H. (2015), Effects of Mt Pinatubo eruption on decadal climate prediction skill, *Geophysical Research*

Letters, 42, 10,84010,846, doi:10.1002/ 2015GL066608.

England, M. H., Kajtar, J. N., **Maher ,N.** (2015), Robust warming projections despite the recent hiatus, *Nature Climate Change*, 5, 394-396

Griffin, J., Latief, H., Kongko, W., Harig, S., Horspool, N., Hanung, R., Rojalli, A., **Maher, N.**, Fuchs, A., Hossen, J., Upi, S., Dewanto, S. E., Rakowsky, N. and Cummins, P. (2015), *Frontiers in Earth Science*, 3, 32

Maher, N., Sen Gupta, A., and England, M. E. (2014), Drivers of decadal hiatus periods in the 20th and 21st centuries, *Geophysical Research Letters*, 41, 59785986

Griffiths, R.W, **Maher, N** and Hughes, G.O. (2011) ,Ocean stratification under oscillatory surface buoyancy forcing, *Journal of Marine Research*, 69, 523-543

Book Chapters

McGregor, S., Khodri, M., **Maher, N.**, Ohba, M., Pausata, F. and Stevenson, S. (2020) The effect of strong volcanic eruptions on ENSO. McPhaden, M.J., Santoso, S. and Cai, W. (Eds.) El Niño Southern Oscillation in a Changing Climate *American Geophysical Union*.

Other Publications

Suarez-Gutierrez, L, **Maher, N**, and Milinski, S. (2020). Evaluating the internal variability and forced response in Large Ensembles. *US CLIVAR Variations*, 18, 2.

Maher, N. Natural drivers of interannual to decadal variations in surface climate (2018). Bulletin of the Australian Meteorological and Oceanographic Society, 31(2), 9-12

Invited Presentations

- 2019 | LMU Munich Seminar
The Max Planck Grand Ensemble: utilizing the power of a single model large ensemble
- 2019 | APS Focus Invited Presentation
ENSO Change in Climate Projections: Forced Response or Internal Variability?
- 2018 | AGU Invited Presentation
ENSO Change in Climate Projections: Forced Response or Internal Variability?
- 2018 | AGU Invited Presentation
Do we project a frequency change of robustly classified El Niño types?
- 2018 | FB1 Seminar GEOMAR Kiel
ENSO change in climate projections: forced response or internal variability?
- 2018 | Keynote seminar at the Australian Meteorological and Oceanographic Society Conference
Natural drivers of interannual to decadal variations in surface climate
- 2017 | KAUST Invited Seminar for Earth Science and Engineering Graduate Students
Hiatus periods: past, present and future
- 2017 | KAUST Seminar to Atmospheric and Climate Modelling Research Group
Does ENSO change under external forcing? The influence of volcanic eruptions, greenhouse gas emissions and internal variability.
- 2015 | European Geosciences Union, Vienna
Hiatuses in global warming: the role of volcanic eruptions and Pacific decadal variability
- 2015 | Greenhouse Conference, Hobart
Effects of volcanism on tropical modes of variability

Conference Presentations and Posters

Conference presentations (**12**) *Taiwan Meeting, Max-Planck Institute for Meteorology Hamburg 2018, European Geosciences Union, Vienna 2018, Australian Meteorologic and Oceanographic Society Conference, Sydney 2018, 4th International Conference on Earth System Modelling, Hamburg 2017, CLIVAR-ICTP Workshop on Decadal Variability and Predictability 2015, International Workshop on Modelling the Ocean, Canberra 2015, American Meteorological Society 2015, Ocean Sciences, Hawaii 2014, Australian Meteorological and Oceanographic Society Conference, Hobart Australia 2014, Australian Meteorological and Oceanographic Society Conference, Melbourne Australia 2013 and 12th ACCESS Model Evaluation Workshop - Opportunities for Collaboration, Melbourne*

Australia.

Presented Seminars (11) *IPSL Paris, 2019, Australian National University GFD Laboratory 2018, Climate Change Research Centre University of New South Wales 2018, ETH Institute for Atmospheric and Climate Science 2017, Canberra University Ecochem Laboratory 2015, Australian National University, GFD Laboratory 2015, Lawrence Livermore National Laboratories 2015, Max-Planck Institute for Meteorology Hamburg 2015, Met Office 2015, University of Exeter 2015 and GFDL seminar 2015.*

Poster presentations (11) *The SMILE Workshop 2019, US-Clivar Large Ensemble Workshop Boulder 2019, 2 at European Geosciences Union 2019, American Geosciences Union 2018, ENSO Under a Change Climate, Ecuador 2018, 2 at European Geosciences Union, Vienna 2017, CLIVAR Open Science Conference Qingdao China 2016, European Geosciences Union, Vienna 2015 and WGOMD/SOP Workshop on Sea Level Rise, Ocean/Ice Shelf Interaction and Ice Sheets, Hobart Australia 2013.*

Professional Workshops

- 2019 | Max Planck Institute Leadership Competence for Scientists
- 2019 | Supervising PhD students
- 2018 | Workshop on Unconscious biases
- 2018 | Max Planck Institute Effective Proposal Writing
- 2018 | Sign Up Career-building for female postdocs at Max Planck Institutes
- 2018 | Advanced Scientific Writing run by Prof. Dr. Jochem Marotzke and Dallas Murphy
- 2013 | Scientific writing workshop by Dr Peter Rothlisberg from CSIRO Marine and Atmospheric Research, and co-facilitated by ARCCSS researchers

Other professional activities

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| <i>Current</i> | Lead Editor for the special issue: <i>Large Ensemble Climate Model Simulations: Exploring Natural Variability, Change Signals and Impacts in Earth System Dynamics</i> |
| <i>Current</i> | Reviewer for: <i>IPCC AR6 report, Nature Geosciences, Nature Climate Change, Geophysical Research Letters, Journal of Climate, Climate Dynamics, Proceedings of the National Academy of Sciences, International Journal of Climatology, Nature Geoscience</i> |
| <i>Current</i> | Member of the team that manages the Max Planck Institute for Meteorology twitter account |
| <i>Current</i> | Manager of the Max Planck Institute Grand Ensemble Project |
| <i>2019</i> | Co-organiser of a breakout group on Machine Learning at the Max Planck Institute for Meteorology 2019 retreat |
| <i>2019</i> | Co-organiser of The SMILE Workshop: Understanding natural climate variability, anthropogenic climate change, and their impacts from local to global scales - Targeted Experiments with initial-condition Large Ensembles |
| <i>2019</i> | Lead session Chair at European Geophysical Union Conference: Session AS4.35/CL3.08/HS4.1.4 Large Ensemble Climate Model Simulations: Exploring Natural Variability, Change Signals and Impacts |
| <i>2018</i> | Co-organised two workshops on the Max Planck Institute Grand Ensemble |
| <i>2017</i> | Co-organised Humboldt Climate Protection Fellows workshop at the Max Planck Institute for Meteorology |
| <i>2013-16</i> | Member of the team that managed the Climate Change Research Centre Facebook page |
| <i>2014-15</i> | Co-organiser of the Australian Meteorological and Oceanographic Society Postgraduate Symposium, UNSW, Sydney |
| <i>2014-15</i> | Member of the Australian Meteorological and Oceanographic Society Postgraduate Symposium New South Wales Committee |

Skills

Computer languages Able to use the following languages - Matlab, Python, CDO, NCO

Proficient in using Unix, Git, currently learning Ferret, NCL and able to run climate and ocean models including the MOM5 ocean model

Data sets I have skills working with large quantities of data and large datasets

and I have worked extensively with netcdf file structures. I have worked with the CMIP5 archive, considering multiple variables and multiple models. I have also looked at 3D ocean output from the MOM5 ocean model and the CESM climate model.

Laboratory skills I completed my honours in a fluid dynamics laboratory, using a rotating tank experiment. I also worked in an Ecochemistry laboratory during my undergraduate degree and have skills working with chemical reagents and undertaking chemical analyses.

Field work I was selected as a student assistant to assist in a hydrographic survey on the Australian research vessel, the Southern Surveyor in 2013. I acquired ocean-observing skills, learnt to program floats and run a CTD profiler. For my undergraduate job I was employed to go into the field and collect gastropod samples from the intertidal rocky shore zones.