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MICHELLE TIGCHELAAR

Curriculum Vitae

EDUCATION

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| PhD, Oceanography
<i>University of Hawaii at Mānoa, USA</i> | 2015 |
| MSc, Meteorology, Physical Oceanography & Climate
<i>Utrecht University, the Netherlands</i> | 2010 |
| BSc, Physics & Earth Sciences
<i>University College Utrecht, the Netherlands</i> | 2008 |

RESEARCH EXPERIENCE

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| Research Scientist | 2021–present |
| Early Career Fellow
<i>Stanford University, Center for Ocean Solutions</i>
Coordinating ‘Blue Food Assessment’ which engages academic, NGO, and policy partners to put aquatic foods on global sustainable food agenda, and leading two cross-disciplinary research projects on food system climate risk. | 2019–2021 |
| Research Associate
<i>University of Washington, Dep. of Atmospheric Sciences</i>
Quantified climate change vulnerability of crop yields, pests, and agricultural workers through innovative analysis of climate and food data in interdisciplinary teams. | 2016–2019 |
| Research Assistant
<i>University of Hawaii at Mānoa, Dep. of Oceanography</i>
Developed and ran simulations with a suit of climate and ice sheet models to analyze drivers of long-term variability in tropical hydroclimate, Antarctic ice volume, and sea level. | 2010–2015 |
| Visiting Scholar
<i>University of Tokyo, AORI</i>
Analyzed climate model output of long-term Antarctic climate change and modeled ice-ocean processes. | 2013–2014 |

PUBLICATIONS

4 in progress; 12 peer-reviewed; 6 non-reviewed. List attached.

PRESENTATIONS

7 invited; 14 conferences & seminars. List attached.

HONORS & AWARDS

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| UW College of the Environment Travel & Meeting Award | 2018 |
| UW OPA Postdoc Travel Award | 2018 |
| Nominee, UW Postdoc Mentoring Award | 2018 |
| J. Watumull Scholarship for Outstanding Scholastic Achievement | 2014 |
| UCSB Dean’s Honor | 2007 |

**TEACHING &
SCIENCE
COMMUNICATION**

Co-Developer <i>Climate Conversations</i> Software and database development for a web-app that aims to spark non-scientific, non-political dialogue about climate change http://climateconversations.org/	2017–2019
Training Development & Speaker <i>King County Labor Council Climate Change Speaker's Bureau</i> Developed and delivered worker-to-worker presentations on climate change impacts and labor in Washington State.	2016–2019
Science Communication Fellow <i>Pacific Science Center, Seattle</i> Developed hands-on activities to engage visitors at Meet-a-Scientist and other museum events.	2016–2018
Co-Educator <i>Environmental Science & Technology Practicum</i> Curriculum development, teaching, and mentoring for high school students interested in environmental science.	2017–2018
Subject Matter Expert <i>Resilience Dialogues</i> Worked with the community of Whitefish, MT to identify and frame ways to think about and address climate resilience, preparedness and adaptation.	2017
Speaker & Workshop Development <i>Climate Science Teacher Institute</i> Lectures and hands-on activities on climate change impacts for Marshallese high school teachers.	2015
Teaching Assistant <i>University of Hawaii at Mānoa</i> Global Environmental Change	2013
<i>University of Hawaii at Mānoa</i> Science of the Sea	2012
<i>Utrecht University</i> Geophysical Fluid Dynamics	2009
Media Coverage The Huffington Post, The Guardian, CBS News, The Atlantic, Carbon Brief, The Counter, Public Radio International, The Weather Channel & others.	

**LEADERSHIP &
ACTIVITIES**

UW Postdocs United <i>Organizer & Bargaining Committee Member</i> Coordinated diverse team of postdoc leaders to make science more inclusive through collective bargaining – community engagement, meeting facilitation, working condition analysis, contract proposal development, media spokesperson.	2016–2019
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UH Mānoa Graduate Student Organization

2014–2015

President

Represented and built community among 5,000 graduate students – directing of board, budget management, meeting facilitation, engagement with administration, lobbying with state legislature, media spokesperson, event planning, grant review.

Evaluation Manager

2009–2010

Institute for Marine and Atmospheric Research Utrecht

Conducted course evaluations and compiled teacher feedback.

Workshop & Symposia Planning

- Ocean Visions Summit session “Healthy Oceans & Healthy People” – *Scripps Institution of Oceanography 2021*
- Planetary Health Alliance panel “Food Connects Land and Sea: Integrating Oceans into the Future of Food” *Stanford University – 2019*
- Physical Oceanography Graduate Student Symposium *University of Hawaii at Mānoa – 2013, 2014, 2015*
- Workshop “Using Paleo-Climate Model/Data Comparisons to Constrain Future Projections” *Honolulu, HI – 2012*
- Symposium “European Energy Policy in the Face of Climate Change” *Utrecht, the Netherlands – 2009*

Relevant Coursework

- Certificate in Critical Consciousness & Anti-Oppressive Praxis
- AMS Summer Policy Colloquium
- Potsdam Summer School on Dealing with Climate Change Impacts
- Bergen Summer Research School on Climate Governance
- INTIMATE Summer School on Climate Transitions
- NIOZ Marine Master Course
- Utrecht Summer School in Physics of the Climate System

SKILLS

Computer

Data analysis and visualization (python, R, Matlab, NCL, Fortran, Linux, Ferret, NCO/CDO); Climate and ice sheet modeling

Languages

Dutch (native), English (fluent), French (beginner/intermediate), German (beginner/intermediate), Japanese (beginner)

MICHELLE TIGCHELAAR

Publications

IN PROGRESS

Tigchelaar, M., Selig, E., Sarhadi, A., Allison, E., Fanzo, J., Mehrabi, Z., Naylor, R., Thilsted, S. *Towards nutrition-sensitive climate adaptation pathways.*

Crona, B., Naylor, R.L., Koehn, J.Z., Jonell, M., Short, R.E., **Tigchelaar, M.**, Leape, J.P., Selig, E.R., DeClerck, F., Troell, M., Gephart, J.A., Allison, E.H., Bush, S.R., Fanzo, J., Golden, C.D., Little, D.C., Kishore, A., Thilsted, S.H., Hicks, C.C., Phillips, M., Cao, L., Wabnitz, C.C.C., Halpern, B.S., Sumaila, U.R., Cheung, W.W.L., Gelcich, S., Micheli, F., Daw, T., Wassénus, E. *Blue food policy objectives for nations and regions: an analysis of opportunities and trade-offs.*

Cao, L., Halpern, B.S., Troell, M., Short, R.E., Blasco, G., Zeng, C., Naylor, R.L., Micheli, F., DeClerck, F., Sumaila, U.R., Cheung, W.W.L., Gephart, J.A., **Tigchelaar, M.**, Selig, E.R., Gelcich, S., Cottrell, R., Liu, Y., Liu, S., Kaul, J.I., Godo-Solo, D., Payne, H.J. *Vulnerability of aquatic food to human-induced environmental change.*

Parsons, L.A., Shindell, D., **Tigchelaar, M.**, Zhang, Y., Spector, J.T. (in review) *Increased labor losses and decreased adaptation potential in a warmer world.* Nature Communications.

PEER-REVIEWED

Tigchelaar, M., Cheung, W.W.L., Mohammed, E.Y., Phillips, M., Payne, H.J., Selig, E.R., Wabnitz, C.C.C., Oyinlola, M.A., Frölicher, T.L., Gephart, J.A., Golden, C.D., Allison, E.H., Bennett, A., Cao, L., Fanzo, J., Halpern, B.S., Lam, V.W.Y., Micheli, F., Naylor, R.L., Sumaila, U.R., Tagliabue, A., Troell, M. (in press) *Compound climate risks threaten aquatic food benefits.* Nature Food.

Short, R.E., Gelcich, S., Little, D.C., Micheli, F., Allison, E.H., Basurto, X., Belton, B., Brugere, C., Bush, S.R., Cao, L., Crona, B.I., Cohen, P.J., Defeo, O., Edwards, P., Ferguson, C.E., Franz, N., Golden, C.D., Halpern, B.S., Hazen, L., Hicks, C., Derek, J., Alexander M., K., Mangubhai, S., Naylor, R.L., Reantaso, M., Sumaila, U.R., Thilsted, S.H., **Tigchelaar, M.**, Wabnitz, C.C.C., Zhang, W. (in press) *Harnessing the diversity of small-scale actors is key to the future of aquatic food systems.* Nature Food.

Naylor, R.L., Kishore, A., Sumaila, U.R., Issifu, I., Hunter, B.P., Belton, B., Bush, S.R., Cao, L., Gelcich, S., Gephart, J.A., Golden, C.D., Jonell, M., Koehn, J.Z., Little, D.C., Thilsted, S.H., **Tigchelaar, M.**, Crona, B. (in press) *Blue food demand across geographic and temporal scales.* Nature Communications.

Tigchelaar, M., Battisti, D. S., Spector, J.S (2020) *Work adaptations insufficient to address growing heat risk for U.S. agricultural workers.* Environmental Research Letters, DOI 10.1088/1748-9326/ab86f4.

Tigchelaar, M., Timmermann, A., Friedrich, T., Heinemann, M., & Pollard, D. (2019) *Nonlinear response of the Antarctic Ice Sheet to late Quaternary sea level and climate forcing.* The Cryosphere 13: 2615–2631, DOI 10.5194/tc-13-2615-2019.

Deutsch, C. A., Tewksbury, J. J., **Tigchelaar, M.**, Battisti, D. S., Merrill, S., Huey, R. B., Naylor, R. L. (2018) *Increase in crop losses to insect pests in a warming climate.* Science, 361(6405), 916-919. DOI: 10.1126/science.aat3466.

Stuecker, M. F., **Tigchelaar, M.**, Kantar, M. B. (2018) *Climate variability impacts on rice production in the Philippines*. PLoS ONE, 13(8): e0201426.

Tigchelaar, M., Battisti, D. S., Naylor, R. L., Ray, D. K. (2018) *Future warming increases global maize yield variability with implications for food security*. Proceedings of the National Academies of Sciences. DOI: 10.1073/pnas.1718031115.

Tigchelaar, M., Timmermann, A., Pollard, D., Friedrich, T., and Heinemann, M. (2018) *Local insolation changes enhance Antarctic interglacials: Insights from an 800,000-year ice sheet simulation with transient climate forcing*. Earth and Planetary Science Letters, 459, 69-78.

Friedrich, T., Timmermann, A., **Tigchelaar, M.**, Timm, O. E., and Ganopolski, A. (2016) *Nonlinear paleo climate sensitivity and its implications for future Greenhouse Warming*. Science Advances. DOI: 10.1126/sciadv.1501923.

Tigchelaar, M., Timmermann, A. (2015) *Mechanisms rectifying the annual mean response of tropical Atlantic rainfall to precessional forcing*. Climate Dynamics. DOI: 10.1007/s00382-015-2835-3.

Tigchelaar, M., von der Heydt, A. S., and Dijkstra, H. A. (2011) *A new mechanism for the two-step $\delta^{18}O$ signal at the Eocene-Oligocene boundary*. Climate of the Past, 7, 235-247.

NOT REVIEWED

Leape, J.P., Micheli, F., **Tigchelaar, M.**, Allison, E.H., Basurto, X., Bennett, A., Bush, S.R., Cao, L., Crona, B., DeClerck, F., Fanzo, J., Gelcich, S., Gephart, J.A., Golden, C.D., Hicks, C.C., Kishore, A., Koehn, J.Z., Little, D.C., Naylor, R.L., Selig, E.R., Short, R.E., Sumaila, U.R., Thilsted, S.H., Troell, M., Wabnitz, C.C.C. (2021) *The vital roles of blue foods in the global food system*. Policy brief to the UNFSS Scientific Group. <https://dx.doi.org/10.48565/scfss2021-bg71>.

Tigchelaar, M. (2020) *Satellites for supply-side water balancing*. Nature Food, 1: 104, DOI 10.1038/s43016-020-0036-7.

Tigchelaar, M. (2018, Jun. 11) *Climate change could heighten risk of global food production 'shocks'* [Guest article]. Carbon Brief. <https://www.carbonbrief.org/guest-post-climate-change-could-heighten-risk-global-food-production-shocks>

Tigchelaar, M. and Goldman, J. (2017, Aug. 24) *Becoming a Scientist 4.0* [Blog post]. Program on Climate Change. <https://pcc.uw.edu/blog/2017/08/24/becoming-a-scientist-4-0/>

Tigchelaar, M. (2015) *Nonlinear rectification of Quaternary climate drivers at high and low latitudes*. [Dissertation].

Tigchelaar, M. (2015, Aug. 24) *Climate science for Marshallese high school teachers* [Blog post]. Real Science at SOEST! <https://earthscigradblog.wordpress.com/2015/08/24/climate-science-for-marshallese-high-school-teachers/>

MICHELLE TIGCHELAAR

Presentations

INVITED

Tigchelaar, M. (University of Hawai'i Oceanography Seminar, 2021) Compound climate risk threatens aquatic food system benefits.

Tigchelaar, M. (Washington State University Seminar, 2021) Compound climate risk threatens aquatic food contributions to sustainable development.

Tigchelaar, M. (Rosenberg Institute Seminar Series, 2019) Putting aquatic foods at the center of a healthy and sustainable future of food.

Tigchelaar, M. (PCC Summer Institute, 2019) Beyond staples: Considering climate change impacts across food system components.

Tigchelaar, M. (Hopkins Marine Station Seminar, 2019) Climate change impacts on land-sea linkages in the global food system.

Tigchelaar, M. (UTIG Seminar, 2017) What drives Antarctic ice sheet evolution? Insights from an 800,000-year ice sheet simulation with transient climate forcing.

Tigchelaar, M. (IMAU Seminar, 2016) Precessional and CO₂ forcing of Antarctic ice sheet variability over eight glacial cycles.

CONFERENCES & SEMINARS

Tigchelaar, M., Battisti, D., Spector, J. (AGU Fall Meeting, 2019) Growing heat risk for U.S. agricultural workers only mitigated by strong adaptive measures.

Tigchelaar, M., Battisti, D. (AGU Fall Meeting, 2018) Heat exposure of U.S. agricultural workers in a warming climate.

Tigchelaar, M., Lin, M., Proistosescu, C., Xu, L. (AGU Fall Meeting, 2018) Harassment prevention and redress through academic union contracts.

Twedt, J., White, R., **Tigchelaar, M., Doroschak, K., Buchanan, R.** (AGU Fall Meeting, 2017) Talking about climate: a simple tool for everyday climate conversations.

Tigchelaar, M., Battisti, D., Naylor, R., Ray, D. (AGU Fall Meeting, 2017) Future Warming Increases Global Maize Yield Variability with Implications for Food Markets.

Tigchelaar, M. (IBS Conference on Climate Change and Human Migration, 2017) Climate change impacts on yield volatility and global food markets.

Tigchelaar, M., Twedt, J., Buchanan, R., Doroschak, K., Lundquist, D., White, R. (Northwest Climate Conference, 2017) Let's talk about climate change: an app to spark meaningful conversation.

Tigchelaar, M., Timmermann, A., Pollard, D., Friedrich, T., Heinemann, M. (IMAU, Utrecht University, 2016) Precessional and CO₂ forcing of Antarctic ice sheet variability over eight glacial cycles.

Tigchelaar, M., Timmermann, A., Pollard, D., Friedrich, T., Heinemann, M. (AGU Fall Meeting, 2015) Climatic drivers of past Antarctic ice sheet evolution add nonlinearly.

Tigchelaar, M., Timmermann, A., Pollard, D., Friedrich, T., and Heinemann, M. (INQUA, 2015) Modeling the evolution of the Antarctic ice sheet through the last eight glacial cycles.

Tigchelaar, M., Timmermann, A., Pollard, D., Friedrich, T., and Heinemann, M. (Graduate Climate Conference, 2014) What drives the long-term evolution of the Antarctic ice sheet?

Tigchelaar, M., Timmermann, A., Pollard, D., Heinemann, M., and Abe-Ouchi, A. (AORI Paleoclimate Symposium, 2014) Modeling the long-term evolution of the Antarctic ice sheet.

Tigchelaar, M., Timmermann, A. (AGU Fall Meeting, 2012) Understanding precessional variations in tropical precipitation.

Tigchelaar, M., Timmermann, A. (PMIP Workshop, 2012) Precessional cycles in tropical precipitation.