# Elke Zeller

*Curriculum Vitae*

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## Education

2019 – 2025 **Pusan National University, South Korea**,
*Climate System*, Doctor of Philosophy.
Thesis: A Global Environmental Perspective on on the Early Hominin Ecological Niche | Advisor: Axel Timmermann

2012 – 2013 **University of Hawai'i at Mānoa, United States**,
*Financial Engineering*, Master of Science.

2008 – 2012 **Hogeschool van Arnhem en Nijmegen, The Netherlands**,
*Chemistry*, Bachelor of Applied Science.

## Research and Experience

Oct 2024 – Ongoing **Postdoctoral Scholar**, Department of Geosciences | University of Arizona.
- Researching vegetation-climate interactions with the use of climate models.

Sep 2019 – Feb 2025 **PhD Student**, IBS Center for Climate Physics.
- Demonstrated hominins' preference for diverse environments on a global scale by merging archaeological data with a 3 million-year paleo-climate/vegetation model. See "Human adaptation to diverse biomes over the past 3 million years", Science, 2023.

Sep 2022 **Summer school**, Advanced Climate Dynamics Courses | University of Bergen.
- Acquired in-depth knowledge of various aspects of the global water cycle, including atmospheric moisture transport, extreme weather events, soil moisture, and ice-ocean interactions, through participation in a comprehensive summer school program.
- Collaborated with fellow participants to identify and explore tractable research questions related to the global water cycle, demonstrating the ability to work effectively in interdisciplinary teams and contribute to group-level research efforts.

Feb 2017 – Aug 2019 **Database Administrator**, IBS Center for Climate Physics.
- Built and managed the center's climate data server and website.
- Fulfilled data requests from outside researchers that were too large to handle with the climate data server.

Oct 2013 – Nov 2016 **Risk Analyst**, First Hawaiian Bank.
- Automated and optimized risk reporting for executive management.
- Developed various risk assessment methods used for FDIC and internal reporting.
- Implemented a suite of econometric and risk models to asses possible risk scenarios.

Jan 2012 – Jul 2012 **Student Intern R&D**, Teijin Aramid.
- Analyzed Twaron fibers to determine the effects of moisture interaction.
- Studied regressions and correlations using Excel, VBA, and SPSS.

Aug 2011 – Dec 2011 **Student Intern (analytical chemistry)**, Water Resources Research Center.
- Studied the chemical breakdown of pollutants from TNT and RDX in soil.
- Performed data analysis using Excel and statistics software.

## Teaching

Spring 2026 **Co-teacher**, *ENVS 270: Critical Zone Science*, This co-teaching experience is part of my CIRTL Teaching program at the University of Arizona..

## Publications

2025 **A new late Neanderthal from Crimea reveals long-distance connections across Eurasia**, *AEmily M Pigott, Konstantina Cheshmedzhieva, Elke Zeller, Laura G van der Sluis, Manasij Pal Chowdhury, Maddalena Gianni, Emese Végh, Thorsten Uthmeier, Victor Chabai, Marylène Patou-Mathis, Petra G Šimková, Jana N Voglmayr, Gerhard W Weber, Ron Pinhasi, Axel Timmermann, Martin Kuhlwilm, Katerina Douka, Thomas Higham*, Proceedings of the National Academy of Sciences 122.45 (2025): e2518974122., DOI: 10.1073/pnas.2518974122.

**EutherianCoP. An integrated biotic and climate database for conservation paleobiology based on eutherian mammals**, *Alessandro Mondanaro, Giorgia Girardi, Silvia Castiglione, Axel Timmermann, Elke Zeller, Thushara Venugopal, Carmela Serio, Marina Melchionna, Antonella Esposito, Mirko Di Febbraro, Pasquale Raia*, Scientific Data 12 (1), 6., DOI: 10.1038/s41597-024-04181-4.

2024 **The evolving 3-dimensional landscape of human adaptation**, *Elke Zeller, Axel Timmermann*, Science Advances, 10 (41), eadq3613, DOI: 10.1126/sciadv.adq3613.

**Past climate change effects on human evolution**, *Axel Timmermann, Pasquale Raia, Alessandro Mondanaro, Christoph P. E. Zollikofer, Marcia Ponce De León, Elke Zeller, Kyung-Sook Yun*, Nature Reviews Earth & Environment, 5 (10), 701-716, DOI: 10.1038/s43017-024-00584-4.

2023 **Climate shifts orchestrated hominin interbreeding events across Eurasia**, *Jiaoyang Ruan, Axel Timmermann, Pasquale Raia, Kyung-Sook Yun, Elke Zeller, Alessandro Mondanaro, Mirko Di Febbraro, Danielle Lemmon, Silvia Castiglione, Marina Melchionna*, Science 381 (6658), 699-704, DOI: 10.1126/science.add445.

**Human adaptation to diverse biomes over the past 3 million years**, *Elke Zeller, Axel Timmermann, Kyung-Sook Yun, Pasquale Raia, Karl Stein, Jiaoyang Ruan*, Science 360 (6645), 604-608, DOI: 10.1126/science.abq1288.

**Self-supervised learning for climate downscaling**, *Karandeep Singh, Chaeyoon Jeong, Sungwon Park, Arjun N Babur, Elke Zeller, Meeyoung Cha*, 2023 IEEE International Conference on Big Data and Smart Computing, 13-17.

**Neural Classification of Terrestrial Biomes**, *Vyacheslav Shen, Dong-Kyum Kim, Elke Zeller, Meeyoung Cha*, 2023 IEEE International Conference on Big Data and Smart Computing, 163-166.

2022 **Downscaling Earth System Models with Deep Learning**, *Sungwon Park, Karandeep Singh, Arjun Nellikkattil, Elke Zeller, Tung Duong Mai, Meeyoung Cha*, Proceedings of the 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, 3733-3742.

**Climate effects on archaic human habitats and species successions**, *Axel Timmermann, Kyung-Sook Yun, Pasquale Raia, Jiaoyang Ruan, Alessandro Mondanaro, Elke Zeller, Christoph Zollikofer, Marcia Ponce de León, Danielle Lemmon, Matteo Willeit, Andrey Ganopolski*, Nature 604 (7906), 495-501, DOI: 10.1038/s41586-022-04600-9.

2021 **Tropical Indo-Pacific SST influences on vegetation variability in eastern Africa**, *In-Won Kim, Malte F Stuecker, Axel Timmermann, Elke Zeller, Jong-Seong Kug, So-Won Park, Jin-Soo Kim*, Scientific Reports 11 (1), 10462, DOI: 10.1038/s41598-021-89824-x.

2018 **El Niño–southern oscillation complexity**, *Axel Timmermann, Soon-Il An, Jong-Seong Kug, Fei-Fei Jin, Wenju Cai, Antonietta Capotondi, ..., Elke Zeller, Xuebin Zhang*, Nature 559 (7715), 535, DOI: 10.1038/s41586-018-0252-6.