

# GREGOR MATHES

Gregor Mathes is a PostDoc at the University of Zurich. His research interests include conservation palaeontology, analytical macroecology, and data science. He applies novel statistical tools to the fossil record to gain insights about Earth's history. Using this information about the past, he focuses on the conservation of recent biodiversity under current climate change. A big ambition in Gregor Mathes work is the use and creation of free and open software.



View this CV online with links [here](#)

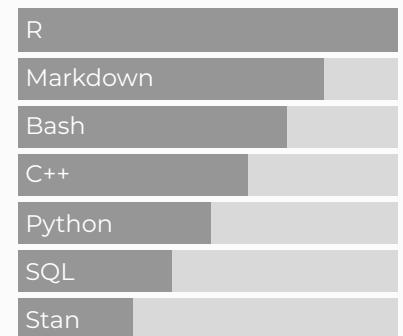
## EDUCATION

2023   2022	<b>PostDoc</b> University of Zurich	Zurich
	<ul style="list-style-type: none"><li>PostDoc position on shark extinction risk together with Catalina Pimiento</li><li>Additionally contributing to research projects of other team members</li><li>Uni-Website<sup>1</sup></li></ul>	
2022   2019	<b>PhD. Candidate, Analytical Palaeobiology</b> University of Bayreuth	Bayreuth
	<ul style="list-style-type: none"><li>Dissertation: The role of climate legacies in shaping extinction risk throughout Earth's history</li><li>Additionally contributing to various research projects of other team member covering sports ecology, macroecology, and geology. Providing help for programming, statistics, and data visualisation</li><li>Uni-Website<sup>2</sup></li></ul>	
2019   2018	<b>M.Sc., Analytical Palaeobiology and Earth System Research lab</b> Friedrich-Alexander University Erlangen-Nuremberg	Erlangen
	<ul style="list-style-type: none"><li>Thesis: The effect of palaeoclimate interactions on the extinction risk of organism</li><li>Focus on statistics, programming, and academic skills</li><li>Uni-Website<sup>3</sup></li></ul>	
2018   2013	<b>B.Sc., Geoscience</b> Friedrich-Alexander University Erlangen-Nuremberg	Erlangen
	<ul style="list-style-type: none"><li>Thesis: Diagenesis of Halimeda</li><li>Focus on palaeobiology, applied sedimentology, and geochemistry/ petrology</li></ul>	

## CONTACT

- [gregor.mathes@uni-bayreuth.de](mailto:gregor.mathes@uni-bayreuth.de)
- [Twitter](#)
- [Github](#)
- [My Website](#)
- [Linkedin](#)

## LANGUAGE SKILLS



2013  
|  
2005

**Abitur**

Hans-Sachs Gymnasium Nuremberg

📍 Nuremberg

- Thesis: Die Alpen - Paradebeispiel plattentektonischer Prozesse
- Focus on German, Mathematics, English, History, and Physics

## PUBLICATIONS

- 2022 • **Five million years of high atmospheric CO<sub>2</sub> in the aftermath of the Permian-Triassic mass extinction**  
Geology  
• Michael Joachimski, Johann Müller, Daoliang Chu, Timothy Gallagher, Vladimir Silantiev, Fedor Mouraviev, Yadong Sung, **Gregor H. Mathes**, J. Tong  
• Read the paper here<sup>4</sup>
- 2022 • **Benthic foraminifera as bioindicators for assessing reef condition in Kāne'ohe Bay, O'ahu, Hawai'i**  
Pacific Conservation Biology  
• **Gregor H. Mathes**, Manuel J. Steinbauer, Laura Cotton  
• Read the paper here<sup>5</sup>
- 2021 • **Extinction risk controlled by interaction of long-term and short-term climate change**  
Nature Ecology and Evolution  
• **Gregor H. Mathes**, Jeroen van Dijk, Wolfgang Kiessling, Manuel J. Steinbauer  
• Read the paper here<sup>6</sup>
- 2021 • **Outdoor cycling activity affected by COVID-19 related epidemic-control decisions**  
Plos one  
• Anne-Maria Schweizer, Anna Leiderer, Veronika Mitterwallner, Anna Walentowitz, **Gregor H. Mathes**, Manuel J. Steinbauer  
• Read the paper here<sup>7</sup>
- 2021 • **Deep-time climate legacies affect origination rates of marine genera**  
PNAS  
• **Gregor H. Mathes**, Wolfgang Kiessling, Manuel J. Steinbauer  
• Read the paper here<sup>8</sup>



## SOFTWARE DEVELOPMENT

- 2020 • **CPNR**  
Conservation Paleobiology Symposium  
• R package to access CPN tutorials via R  
• website<sup>9</sup>
- A big ambition in my work is the use and creation of free and open software.

- 2020
- **fotofallen - TensorFlow Model**  
Bayerische Landesanstalt für Wald und Forstwirtschaft  Freising
    - Convolutional Neural Network for image classification of camera trap images

## SELECTED POSTERS AND TALKS

- 2022
- **Range shifts of planktonic foraminifera assemblages in response to climate change over the past 700,000 years**  
GSA Annual Meeting
    - Denver, USA
    - DOI<sup>10</sup>
  - **Climate legacies and interactions accelerate turnover in terrestrial plant assemblages over the past 21,000 years**  
GSA Annual Meeting
    - Denver, USA
    - DOI<sup>11</sup>
- 2021
- **Deep-time climate legacies affect origination rates of marine genera**  
Crossing the Palaeontological – Ecological Gap
    - Online conference
    - HTML slides<sup>12</sup>
  - **Cascading palaeoclimate interactions affect origination rate of marine genera**  
International Meeting of Early-stage Researchers in Palaeontology
    - Online conference
    - HTML slides<sup>13</sup>
- 2020
- **Marine origination rates linked to interactions of past temperature trends with short-term climate change**  
Palaeontological Association Annual Meeting
    - Online conference
    - HTML version of the poster<sup>14</sup>
  - **Extinction risk controlled by climate interactions**  
BayCEER Workshop 2020
    - Online conference

2020	<b>Biodiversity turnover controlled by interaction of long-term and short-term climate change</b> YOMOS 2020 · Online conference
2020	<b>Extinction risk controlled by interaction of long-term and short-term climate change</b> Conservation Paleobiology Symposium  University of Bologna · A talk on the first project in my PhD schedule
2019	<b>A novel approach to define evolutionary units in Phanerozoic reefs</b> Macroecology 2019  University of Würzburg · A talk about a project from my master program
2018	<b>Anthropogenic impacts on benthic foraminiferal assemblages, Oahu, Hawaii</b> Forams 2018  University of Edinburgh · A poster presentation at my first academic conference.



## INDUSTRY EXPERIENCE

Current   2019	<b>Lecturer</b> Hanns-Seidel Stiftung  Kloster Banz · Lecturer for one week workshops covering topics such as mass extinctions or climate change
2019   2018	<b>Data Warehouse Solution</b> Friedrich-Alexander University Erlangen-Nuremberg  Erlangen · Created a data base for the thin section collection of the Faculty Palaeobiology · Data base environment based on WissKI

I am a member of the Conservation Paleobiology Network and currently chair of the training series sub-committee. I am a private lecturer at the Hanns-Seidel-Stiftung e.V. providing talks and classes on climate change and Earths system.



## TEACHING EXPERIENCE

Current  
|  
2020

### Lecturer

Friedrich-Alexander University Erlangen-Nuremberg

📍 Erlangen

- Served as TA for foraminifera lecture in the microfossils course 2020 of the master program "Analytical Palaeobiology"

2022

### Lecturer

University of Bayreuth

📍 Bayreuth

- Served as TA for analytical palaeobiology, providing both lectures and practice courses for graduate students from various departments in Bayreuth

2021

### Lecturer

University of Bayreuth

📍 Bayreuth

- Served as TA for analytical palaeobiology, providing both lectures and practice courses for graduate students from various departments in Bayreuth

2019

### Lecturer

Friedrich-Alexander University Erlangen-Nuremberg

📍 Erlangen

- Served as TA for foraminifera lecture in the microfossils course 2019 of the master program "Analytical Palaeobiology"

2019  
|  
2017

### Lecturer

Friedrich-Alexander University Erlangen-Nuremberg

📍 Erlangen

- Invited talks on carbonate microfacies during the internationally renowned Flügel-Course<sup>75</sup>
- Focus on foraminifera and thin sections



## SELECTED AWARDS AND HONORS

2023

### Dissertation – Summa cum laude

University of Bayreuth

📍 Bayreuth

- Dissertation with highest honours
- News-article<sup>76</sup>

2022

### Cited in the IPCC's sixth assessment report

Intergovernmental Panel on Climate Change

- Citation for our paper on complex cascading effects in the climate system <sup>77</sup>) in chapter 1 of the Working Group 2 SPM

2020	<b>Best Talk Award – Third Prize</b> Bayreuther Zentrum für Ökologie und Umweltforschung (BayCEER)  Bayreuth
	• Young researcher award. Presentation title: Extinction risk controlled by climate interactions
2020	<b>Best student talk</b> Conservation Paleobiology Symposium  Bologna
	• Presentation title: Extinction risk controlled by interaction of long-term and short-term climate change
2019	<b>Master thesis with distinction</b> Friedrich-Alexander University Erlangen-Nuremberg  Erlangen
	• Awarded for master theses with an overall grade below 1.2
2019	<b>Invited talk on carbonate microfacies</b> Friedrich-Alexander University Erlangen-Nuremberg  Erlangen
	• Invited talk at the international course on carbonate microfacies about foraminifera and their applications
2018	<b>Winner of the 1st FAU International Science Slam</b> Friedrich-Alexander University Erlangen-Nuremberg  Erlangen
	• The Faculty of Sciences hosted FAU's first International Science Slam. Presentation title: Warning: the following presentation may contain foraminifera



## SCIENCE OUTREACH

Current   2016	<b>Geologic field trips</b> Franconian Switzerland  Nuremberg
	• Organiser of educational and interdisciplinary excursions for school classes.
Current   2017	<b>Public talks</b> Various • Various talks about climate change given at schools and colleges
2020	<b>Online lectures</b> The Halifax Academy  West Yorkshire
	• Various online talks for school classes about the sixth mass extinction

Trying to make my research accessible and public, I am engaging in various open science efforts. Please feel free to contact me if you want me to come to your school, company, or conference.

2019	<b>Lange Nacht der Wissenschaften</b> Friedrich-Alexander University Erlangen-Nuremberg <ul style="list-style-type: none"> <li>• Organiser of a big science outreach event at the Geoscience faculty</li> <li>• Lange Nacht der Wissenschaften<sup>18</sup></li> </ul>	📍 Erlangen
2019   2018	<b>Erlanger Markttage</b> Friedrich-Alexander University Erlangen-Nuremberg <ul style="list-style-type: none"> <li>• Co-Organiser of a science outreach event in Erlangen</li> <li>• Markttage des Wissens<sup>19</sup></li> </ul>	📍 Erlangen
2019	<b>Kinderuniversität</b> Friedrich-Alexander University Erlangen-Nuremberg <ul style="list-style-type: none"> <li>• Co-Organiser of a science outreach event for children in Nuremberg</li> <li>• Kinderuni Nürnberg<sup>20</sup></li> </ul>	📍 Nuremberg

## ↗ ATTENDED WORKSHOPS

2019	<b>UFZ-Winterschool: Ecologic modelling</b> Helmholtz Zentrum <ul style="list-style-type: none"> <li>• A two week in presence coding school on ecological models with C++</li> </ul>	📍 Leipzig
2019	<b>RangeShiftR workshop</b> Humboldt University <ul style="list-style-type: none"> <li>• A four day in presence coding school on the R package RangeShiftR</li> </ul>	📍 Berlin
2018	<b>International Course on Organofacies Analysis</b> Friedrich-Alexander University Erlangen-Nuremberg <ul style="list-style-type: none"> <li>• A five day in presence workshop on organofacies analysis using microscopy techniques.</li> </ul>	📍 Erlangen

## 🔗 LINKS

- 1: <https://www.pim.uzh.ch/apps/cms/pageframes/staff.php?show=1266>
- 2: <https://www.spowi5.uni-bayreuth.de/de/team/Mathes/index.php>
- 3: <https://www.gzn.nat.fau.de/palaeontologie/team/assoziierte-wissenschaftler/gregor-mathes/>

- 4: <https://pubs.geoscienceworld.org/gsa/geology/article/50/6/650/612995>
- 5: <https://www.publish.csiro.au/PC/PC21027>
- 6: <https://rdcu.be/cdMkz>
- 7: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0249268>
- 8: <https://www.pnas.org/content/118/36/e2105769118>
- 9: <https://lschi94.github.io/cpn/>
- 10: [10.1130/abs/2022AM-377456](https://doi.org/10.1130/abs/2022AM-377456)
- 11: [10.1130/abs/2022AM-377457](https://doi.org/10.1130/abs/2022AM-377457)
- 12: [https://gregor-mathes.netlify.app/slides/cpeg/2021\\_09\\_08\\_cpeg#1](https://gregor-mathes.netlify.app/slides/cpeg/2021_09_08_cpeg#1)
- 13: [https://gregor-mathes.netlify.app/slides/2021\\_05\\_20\\_imerp](https://gregor-mathes.netlify.app/slides/2021_05_20_imerp)
- 14: <http://htmlpreview.github.io/?https://github.com/lschi94/palass-poster/blob/main/poster-mathes.html>
- 15: <https://www.gzn.nat.fau.eu/palaeontology/outreach/flugel-course/>
- 16: <https://www.spowi5.uni-bayreuth.de/de/news/2023/Rigorosum-Gregor-Mathes/index.html>
- 17: [Mathes et al. 2021](<https://doi.org/10.1038/s41559-020-01377-w>)
- 18: <https://www.nacht-der-wissenschaften.de/>
- 19: <https://www.275.fau.de/2018/06/09/markttage-des-wissens-mai-und-juni-2018/>
- 20: [https://www.nuernberg.de/internet/kuf\\_kultur/kinderuni.html](https://www.nuernberg.de/internet/kuf_kultur/kinderuni.html)