

# GREGOR MATHES

Gregor Mathes is a PhD student and analytical palaeontologist at the University of Bayreuth and Friedrich-Alexander University Erlangen-Nuremberg. 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

Current  
|  
2019

### PhD. Candidate, Analytical Palaeobiology

University of Bayreuth

 Bayreuth

- Working on climate-biodiversity interactions using mixed effect regression models and machine learning algorithms
- Additionally contributing to various research projects of other team member covering sports ecology, macroecology, and geology. Providing help for programming, statistics, and data visualisation
- Uni-Website<sup>7</sup>

2019  
|  
2018

### M.Sc., Analytical Palaeobiology and Earth System Research lab

Friedrich-Alexander University Erlangen-Nuremberg

 Erlangen

- Thesis: The effect of palaeoclimate interactions on the extinction risk of organism
- Focus on statistics, programming, and academic skills
- Uni-Website<sup>2</sup>

2018  
|  
2013

### B.Sc., Geoscience

Friedrich-Alexander University Erlangen-Nuremberg

 Erlangen

- Thesis: Diagenesis of Halimeda
- Focus on palaeobiology, applied sedimentology, and geochemistry/ petrology

2013  
|  
2005

### Abitur

Hans-Sachs Gymnasium Nuremberg

 Nuremberg

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

## CONTACT

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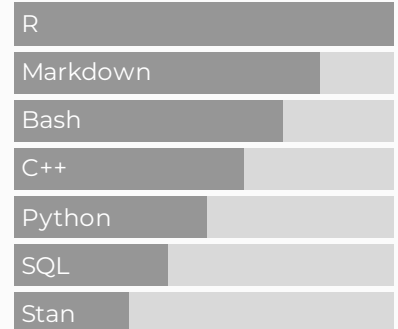
 [Twitter](#)

 [Github](#)

 [My Website](#)

 [LinkedIn](#)

## LANGUAGE SKILLS



*Last updated on 2022-04-27.*



## 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  
• In press
- 2022 • **Benthic foraminifera as bioindicators for assessing reef condition in Kāneʻohe Bay, Oʻahu, Hawaiʻi**  
Pacific Conservation Biology  
• **Gregor H. Mathes**, Manuel J. Steinbauer, Laura Cotton  
• Accepted for publication
- 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>3</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>4</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>5</sup>](#)



## SOFTWARE DEVELOPMENT

- 2020 • **CPNR**  
Conservation Paleobiology Symposium  
• R package to access CPN tutorials via R  
• [website<sup>6</sup>](#)

A big ambition in my work is the use and creation of free and open software.

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



## SELECTED POSTERS AND TALKS

- 2021 ● **Deep-time climate legacies affect origination rates of marine genera**  
Crossing the Palaeontological – Ecological Gap
- Online conference
  - HTML slides<sup>7</sup>
- 2021 ● **Cascading palaeoclimate interactions affect origination rate of marine genera**  
International Meeting of Early-stage Researchers in Palaeontology
- Online conference
  - HTML slides<sup>8</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>9</sup>
- 2020 ● **Extinction risk controlled by climate interactions**  
BayCEER Workshop 2020
- Online conference
- 2020 ● **Biodiversity turnover controlled by interaction of long-term and short-term climate change**  
YOMOS 2020
- Online conference
- 2020 ● **Extinction risk controlled by interaction of long-term and short-term climate change** 📍 University of Bologna  
Conservation Paleobiology Symposium
- A talk on the first project in my PhD schedule
- 2019 ● **A novel approach to define evolutionary units in Phanerozoic reefs** 📍 University of Würzburg  
Macroecology 2019
- A talk about a project from my master program

2018

● **Anthropogenic impacts on benthic foraminiferal assemblages, Oahu, Hawaii**

Forams 2018

📍 University of Edinburgh

- A poster presentation at my first academic conference.



## INDUSTRY EXPERIENCE

Current  
|  
2019

● **Lecturer**

Hanns-Seidel Stiftung

📍 Kloster Banz

- Lecturer for one week workshops covering topics such as mass extinctions or climate change

2019  
|  
2018

● **Data Warehouse Solution**

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 Earth's 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"

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>10</sup>
- Focus on foraminifera and thin sections



## SELECTED AWARDS AND HONORS

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>11)</sup> in chapter 1 of the Working Group 2 SPM

2020

### Best Talk Award – Third Prize

Bayreuther Zentrum für Ökologie und Umweltforschung (BayCEER)

📍 Bayreuth

- Young researcher award. Presentation title: Extinction risk controlled by climate interactions

2020

### Best student talk

Conservation Paleobiology Symposium

📍 Bologna

- Presentation title: Extinction risk controlled by interaction of long-term and short-term climate change

2019

### Master thesis with distinction

Friedrich-Alexander University Erlangen-Nuremberg

📍 Erlangen

- Awarded for master theses with an overall grade below 1.2

2019

### Invited talk on carbonate microfacies

Friedrich-Alexander University Erlangen-Nuremberg

📍 Erlangen

- Invited talk at the international course on carbonate microfacies about foraminifera and their applications

2018

### Winner of the 1st FAU International Science Slam

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  
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2016

### Geologic field trips

Franconian Switzerland

📍 Nuremberg

- Organiser of educational and interdisciplinary excursions for school classes.

Current  
|  
2017

### Public talks

Various

- Various talks about climate change given at schools and colleges

2020

### Online lectures

The Halifax Academy

📍 West Yorkshire

- Various online talks for school classes about the sixth mass extinction

2019

### Lange Nacht der Wissenschaften

Friedrich-Alexander University Erlangen-Nuremberg

📍 Erlangen

- Organiser of a big science outreach event at the Geoscience faculty
- Lange Nacht der Wissenschaften<sup>12</sup>

2019  
|  
2018

### Erlanger Markttage

Friedrich-Alexander University Erlangen-Nuremberg

📍 Erlangen

- Co-Organiser of a science outreach event in Erlangen
- Markttage des Wissens<sup>13</sup>

2019

### Kinderuniversität

Friedrich-Alexander University Erlangen-Nuremberg

📍 Nuremberg

- Co-Organiser of a science outreach event for children in Nuremberg
- Kinderuni Nürnberg<sup>14</sup>

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.



## ATTENDED WORKSHOPS

2019

### UFZ-Winterschool: Ecologic modelling

Helmholtz Zentrum

📍 Leipzig

- A two week in presence coding school on ecological models with C++

2019

### RangeShiftR workshop

Humboldt University

📍 Berlin

- A four day in presence coding school on the R package RangeShiftR

2018

## International Course on Organofacies Analysis

Friedrich-Alexander University Erlangen-Nuremberg

📍 Erlangen

- A five day in presence workshop on organofacies analysis using microscopy techniques.

## LINKS

- 1: <https://www.spowi5.uni-bayreuth.de/de/team/Mathes/index.php>
- 2: <https://www.gzn.nat.fau.de/palaeontologie/team/assoziierte-wissenschaftler/gregor-mathes/>
- 3: <https://rdcu.be/cdMkz>
- 4: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0249268>
- 5: <https://www.pnas.org/content/118/36/e2105769118>
- 6: <https://ischi94.github.io/cpnr/>
- 7: [https://gregor-mathes.netlify.app/slides/cpeg/2021\\_09\\_08\\_cpeg#1](https://gregor-mathes.netlify.app/slides/cpeg/2021_09_08_cpeg#1)
- 8: [https://gregor-mathes.netlify.app/slides/2021\\_05\\_20\\_imerp](https://gregor-mathes.netlify.app/slides/2021_05_20_imerp)
- 9: <http://htmlpreview.github.io/?https://github.com/Ischi94/palass-poster/blob/main/poster-mathes.html>
- 10: <https://www.gzn.nat.fau.eu/palaeontology/outreach/flugel-course/>
- 11: [Mathes et al. 2021](<https://doi.org/10.1038/s41559-020-01377-w>)
- 12: <https://www.nacht-der-wissenschaften.de/>
- 13: <https://www.275.fau.de/2018/06/09/markttage-des-wissens-mai-und-juni-2018/>
- 14: [https://www.nuernberg.de/internet/kuf\\_kultur/kinderuni.html](https://www.nuernberg.de/internet/kuf_kultur/kinderuni.html)