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 Earths 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.

🎓 EDUCATION

2023 | 2022
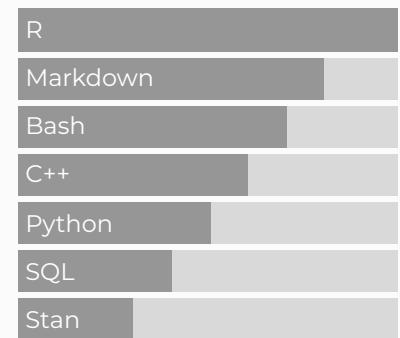
PostDoc
University of Zurich

📍 Zurich

- PostDoc position on shark extinction risk together with Catalina Pimiento
- Additionally contributing to research projects of other team members

2022 | 2019

PhD. Candidate, Analytical Palaeobiology
University of Bayreuth

📍 Bayreuth

- Dissertation: The role of climate legacies in shaping extinction risk throughout Earth's history
- Additionally contributing to various research projects of other team member covering sports ecology, macroecology, and geology. Providing help for programming, statistics, and data visualisation

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

2018 | 2013

B.Sc., Geoscience
Friedrich-Alexander University Erlangen-Nuremberg

📍 Erlangen

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

CONTACT

✉️
gregor.mathes@pim.uzh.ch
🐦 Twitter
 Github
🔗 My Website
in Linkedin

LANGUAGE SKILLS

R

Markdown

Bash

C++

Python

SQL

Stan

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_2 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[1]

2022 — **Benthic foraminifera as bioindicators for assessing reef condition in Kāneʻohe Bay, Oʻahu, Hawaiʻi**

Pacifc Conservation Biology

· Gregor H. Mathes, Manuel J. Steinbauer, Laura Cotton

· Read the paper here[2]

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[3]

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[4]

2021 — **Deep-time climate legacies affect origination rates of marine genera**

PNAS

· Gregor H. Mathes, Wolfgang Kiessling, Manuel J. Steinbauer

· Read the paper here[5]

SOFTWARE DEVELOPMENT

2020 — **CPNR**

Conservation Paleobiology Symposium

· R package to access CPN tutorials via R

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

2024 ● **Climate legacies in macroevolutionary dynamics**

EGU24

· Vienna
· DOI[6]

2023 ● **N/A**

21st Swiss Geoscience Meeting

· Mendrisio

2023 ● **The role of climate legacies in shaping**

14th BayCEER Workshop ◆ BayCeer

· Bayreuth

2023 ● **extinction risk throughout**

Ecography ◆ University of Bayreuth

· Bayreuth

2023 ● **Earth's history**

Ecography ◆ University of Bayreuth

· Bayreuth

2022 ● **Range shifts of planktonic foraminifera assemblages in response to climate change over the past 700,000 years**

GSA Annual Meeting

· Denver, USA
· DOI[7]

2022 ● **Climate legacies and interactions accelerate turnover in terrestrial plant assemblages over the past 21,000 years**

GSA Annual Meeting

· Denver, USA
· DOI[8]

2021   Deep-time climate legacies affect origination rates of marine genera

Crossing the Palaeontological – Ecological Gap

· Online conference
· HTML slides[9]

2021   Cascading palaeoclimate interactions affect origination rate of marine genera

International Meeting of Early-stage Researchers in Palaeontology

· Online conference
· HTML slides[10]

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[11]

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

Conservation Paleobiology Symposium   📍 University of Bologna

· A talk on the first project in my PhD schedule

2019   A novel approach to define evolutionary units in Phanerozoic reefs

Macroecology 2019   📍 University of Würzburg

· 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

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-

2022
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2019

Lecturer
Hanns-Seidel Stiftung

📍 Kloster Banz

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

2019
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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

🖥 TEACHING EXPERIENCE

Current
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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"

2024
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2023

Lecturer
University of Zurich

📍 Zurich

· Served as TA for various courses and exercises on Paleontolog and Marine Megafauna

2023
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2023

Workshop leader
Macroecology

📍 Bayreuth

· Led a workshop on Paleontology for macroecologist at the Ecography conference

2022
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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
|
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 | 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[12]
· Focus on foraminifera and thin sections

★ SELECTED AWARDS AND HONORS

2023

Early career research award

Bayreuther Zentrum für Ökologie und Umweltforschung (BayCEER)
⚲ Bayreuth

· For outstanding achievements during the dissertation

2023

Palaeo-Price

Commision of the Swiss Journal of Palaeontology ⚲ Mendrisio

· Awarded for excellent contributions to the field of Palaeontology

2023

Nominated for the "Bayrische Kulturpreis" by the faculty for Geosciensces

University of Bayreuth ⚲ Bayreuth

· Awarded as best Dissertation of the Faculty 2023

2023

Dissertation – Summa cum laude

University of Bayreuth ⚲ Bayreuth

· Dissertation with highest honours

2022 | 2021

Certification for teaching in higher education of the Bavarian universities

ProfiLehre Plus ⚲ Bayreuth

· Formal proof of teaching competencies and didactic and pedagogical
  qualifications in numerous application contexts, as certified by Bavarian
  universities based on international standards

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 [13]) 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 | 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

2022 | 2019 Lange Nacht der Wissenschaften

Friedrich-Alexander University Erlangen-Nuremberg

📍 Erlangen

· Organiser of a big science outreach event at the Geoscience faculty

Trying to make my reseach accessible and public, I am engaging in various open science efforts.

2020 ● **Online lectures**
The Halifax Academy   📍 West Yorkshire

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

2019
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2018 ● **Erlanger Markttage**
Friedrich-Alexander University Erlangen-Nuremberg   📍 Erlangen

· Co-Organiser of a science outreach event in Erlangen

2019 ● **Kinderuniversität**
Friedrich-Alexander University Erlangen-Nuremberg   📍 Nuremberg

· Co-Organiser of a science outreach event for children in Nuremberg

📈 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://pubs.geoscienceworld.org/gsa/geology/article/50/6/650/612995
2: https://www.publish.csiro.au/PC/PC21027
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://doi.org/10.5194/egusphere-egu24-19127
7: 10.1130/abs/2022AM-377456

8: 10.1130/abs/2022AM-377457

9: https://gregor-mathes.netlify.app/slides/cpeg/2021_09_08_cpeg#1

10: https://gregor-mathes.netlify.app/slides/2021_05_20_imerp

11: http://htmlpreview.github.io/?https://github.com/lschi94/palass-poster/blob/main/poster-mathes.html

12: https://www.gzn.nat.fau.eu/palaeontology/outreach/flugel-course/

13: [Mathes et al. 2021](https://doi.org/10.1038/s41559-020-01377-w