Kilian Eichenseer

Curriculum Vitae

Date and place of birth: 21/06/1993, Regensburg, Germany

University address: Department of Earth Sciences, Durham University, South Road, DH1 3LE, Durham, United Kingdom

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Education and career

Postdoctoral researcher, Durham University, UK (January 2022 –). Developing a Bayesian age model to correlate and date stratigraphic sections from the Cambrian.

Postdoctoral researcher, Friedrich-Alexander University Erlangen-Nürnberg (FAU), Germany, (July – December 2021). Researching the role of temporal, spatial and taxonomic scales in palaeontology.

PhD Earth Sciences, University of Plymouth, UK (January 2017 – July 2021)

Environmental and ecological drivers of the Phanerozoic evolution of skeletal composition in marine invertebrates. Funded by the School of Geography, Earth and Environmental Sciences, supervised by Dr Uwe Balthasar (University of Plymouth), Prof Wolfgang Kießling (FAU) and Dr Christopher Smart (University of Plymouth).

MSc Palaeobiology and Sedimentology, FAU, Germany (October 2014 – November 2016)

Selection of modules: Microfacies analysis and diagenesis of carbonate rocks, Geochemical Proxies in Palaeoenvironmental Analysis, Programming and statistics in Palaeobiology, Analytical Palaeobiology, Oceanography

Master thesis titled *Taphonomical and Ecological Controls on the Pleistocene Rise of Acropora.* Overall grade: 1.4 (1 = best, 5 = worst)

BSc Geosciences, FAU, Germany (October 2011 – July 2015)

Bachelor thesis on the consequences of taphonomic alteration on quaternary, tropical coral communities: *Taphonomische Beeinträchtigung quartärer, tropischer Korallenfaunen (Sulawesi, Indonesien).* Overall grade: 1.7 (1 = best, 5 = worst)

Peer-reviewed publications

Jones, L.A. & Eichenseer, K. (2022). Uneven spatial sampling distorts reconstructions of Phanerozoic seawater temperature. *Geology* 50 (2), 238-242.

Balthasar, U., Kershaw, S., Da Silva, A.-C., Seuss, B., Cusack, M., Eichenseer, K., Chung, P. (2021). Palaeozoic stromatoporoids and chaetetids analysed using electron backscatter diffraction (EBSD); implications for original mineralogy and microstructure. *Facies* 67:1-18.

Eichenseer, K., Balthasar, U., Smart, C. W., Stander, J., Haaga, K. A. & Kiessling, W. (2019). Jurassic shift from abiotic to biotic control on marine ecological success. *Nature Geoscience*, *12*(8), 638-642.

Kemp, D. B., Eichenseer, K. & Kiessling, W. Maximum rates of climate change are systematically underestimated in the geological record. (2015). *Nature communications* 6, 8890.

In review:

Jones, L.A., Gearty, W., Allen, B., Eichenseer, K., Dean, C., Galván, S., Kouvari, M., Godoy, P., Nicholl, C., Buffan, L., Dillon, E., Flannery Sutherland, J. & Chiarenza, A. palaeoverse: a community-driven R package to support palaeobiological analysis. In review in *Methods in Ecology and Evolution*.

Software

Jones, L.A., Gearty, W., Allen, B., Eichenseer, K., Dean, C., Galván, S., Kouvari, M., Godoy, P., Nicholl, C., Buffan, L., Dillon, E., Flannery Sutherland, J. & Chiarenza, A. (2022). palaeoverse: a community-driven R package to support palaeobiological analysis. R package version 1.0.0.

Conference contributions (selected)

Eichenseer, K., Sinnesael, M., Smith, M.R. & Millard, A.R. (2022). Increasing temporal resolution with Bayesian chemostratigraphy. *6th International Palaeontological Congress* in Khon Kaen, Thailand.

Eichenseer, K. & Jones, L.A. (2022). Improving palaeoclimatic reconstructions with ecological data: How hot was the early Eocene? *6th International Palaeontological Congress*.

Eichenseer, K. (2021). The Pleistocene rise of staghorn corals. **Invited speaker** at the *Early Career Researcher Symposium of the International Fossil Coral and Reef Society*.

Eichenseer, K., Balthasar, U., Smart, C., Stander, Haaga, K. A., J. & Kiessling, K. (2019). Aragonite calcite sea effects on calcifying organisms and reefs. *Annual Meeting of the Palaeontological Association* in Valencia, Spain.

Eichenseer, K., Balthasar, U., Smart, C. W., Stander, J., Haaga, K. A., Kiessling, W. Jurassic decline in abiotic controls on marine ecological success (2019). *90th annual meeting of the Paläontologische Gesellschaft* in Munich, Germany. **Young Scientist Award for the best talk (2nd place).**

Fellowships, scholarships, awards and grants (ca. £267,000)

Research fellowship of €217,400 from the Deutsche Forschungsgemeinschaft (2021)

Scholarship of €15,000 from the Emerging Talent Initiative, Friedrich-Alexander Universität Erlangen-Nürnberg (2021)

Young Scientist Award (€300) at *90th annual meeting of the Paläontologische Gesellschaft*, Munich, Germany (2019)

IPC5 travel grant of £300 from PALASS for *the 5th International Palaeontological Congress* in Paris, France (2018)

ProgPal Travel grant of £100 for the *Progressive Palaeontology conference* in Manchester, UK (2018)

Travel reimbursement of £320 from PALASS for their session at the *EGU conference* in Vienna, Austria (2018)

Roland Schlich travel support grant of €425 towards the *EGU conference* in Vienna, Austria (2018)

Award for the best presentation in the category "lightening talks" at the *Progressive Palaeontology conference* in Leicester, UK (2017)

PhD scholarship (£65,000) from the School of Geography, Earth and Environmental Sciences, University of Plymouth, UK (2017)

PROMOS scholarship of €1,000 from the Deutsche Akademischer Austauschdienst (DAAD) for a five-weeks field course in the Bahamas (2015)

Science communication

Quantamagazine (2019): How Jurassic Plankton Stole Control of the Ocean's Chemistry

University of Plymouth research communication (2019): Evolution of life in the ocean changed 170 million years ago

Science Slam: Tempolimit für den Klimawandel, Nürnberg (2016)

Science Slam - Klima Special: Tempolimit für den Klimawandel, Erlangen (2015)

Peer-review experience

Nature Communications

Earth and Planetary Science Letters

Field work experience:

Quantitative survey and sampling of Pleistocene and recent reef ecosystems on San Salvador island, The Bahamas (2015) and on Sulawesi, Indonesia (2014)

Professional development

Workshop (3 days) on machine learning approaches automated geologic correlation at the University of Bremen (2022)

Summer school (2 weeks) on temperature-related stressors in mass extinctions at the FAU in Erlangen, Germany (2016)

Workshop (2 weeks) on Conservation Paleobiology and Historical Ecology at the University of Vienna, Austria (2016)

International course on carbonate microfacies (1 week) at the FAU in Erlangen, Germany (2016)

Field course (5 weeks) on taphonomic and ecological processes in tropical environments on San Salvador Island, Bahamas (2015)

Teaching experience

Teaching assistant for undergraduate practicals at Durham University (2022, Palaeobiology) and at the University of Plymouth (2017 – 2020, Palaeontology, Stratigraphy, Earth History)

Teaching assistant at undergraduate field trips at the University of Plymouth (coral reefs and tectonics of the Devonian in Devon, UK, 2017 – 2020)

Skills

R programming. Proficiency in the programming language R for data analysis and visualisation. Experience with creating and publishing R packages.

Statistical analysis. Proficiency in hypothesis testing, time series and spatial analysis, linear models, hierarchical models, and non-parametric techniques (Splines, GAM).

Machine learning. Extensive experience in designing and implementing Bayesian models, using JAGS or Stan, or directly programming Markov chain Monte Carlo simulations in R. Blog posts on Bayesian modelling: https://keichenseer.netlify.app/

Software. Markdown, Latex, Microsoft Office, Adobe Photoshop & Illustrator, ImageJ (image processing), Shotcut (video editing), blogdown (creating websites using R)

Laboratory experiments. Experience in planning, executing and analysing chemical laboratory experiments.

Languages. English (full proficiency), German (native), French (advanced), Portuguese (beginners)