Erik **Kusch**

Biostatistician · Data Scientist · Macroecologist

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Research Profile

I am a biostatistican and data scientist specialised in streamlining work-flows as well as integrating and analysing heterogeneous data products. I use and develop quantitative tools to study the impacts of climate change and investigate the resilience of system at macro-scales to understand trajectories through time and space. My current work includes software development for climate data retrieval and aggregation as well as inference, analysis, and simulation of ecological networks.

Education

PhD in Biology; Specialisation on Ecoinformatics, Data Analysis and Biodiversity   *01/2020 - 04/2023*

Aarhus University (AU) & Oxford University (OX)

Dissertation: A Macroecological Perspective to Ecological Networks - Exploring the Impacts of Climate-Driven Biodiversity Change & Contrasting and Benchmarking Network Inference Approaches

M.Sc. in Biology; Specialisation on Biodiversity, Ecology and Evolution   *08/2017 - 08/2019*

University of Bergen (UiB) & Nansen Environmental and Remote Sensing Center (Nansen)

Thesis: Inferring Vegetation Memory From Remote Sensing Data And Identifying Causal Links To Plant Function

B.Sc. in Biology   *10/2013 - 07/2017*

Technical University Dresden (TUD) & University of Bergen (UiB)

Thesis: Remote Sensing And Predicting Shifts In Biome Distribution And Resilience Using NDVI Data

Specialised Training

Invasive Species Monitoring with Remote Sensing

NASA's Applied Remote Sensing Training (ARSET)   *11/08/2024 - 28/08/2024*

Open, Reproducible, and Transparent Science in Ecology   *Finse, Norway*

University of Bergen   *14/11/2022 - 18/11/2022*

7th Edition Species Distribution Modelling Course   *Évora, Portugal*

University of Évora, Science Retreats   *26/04/2021 - 02/05/2021*

An Introduction to Bayesian Statistics   *Glasgow, Scotland*

University of Glasgow   *06/04/2021 - 16/04/2021*

Hierarchical Modelling of Species Communities with the R-package Hmsc   *Helsinki, Finland*

University of Helsinki   *02/11/2020 - 06/11/2020*

Modelling Challenges for Mountain Ecosystems   *Hamburg, Germany*

University of Hamburg   *23/02/2020 - 28/02/2020*

Experience

Advisor   *Oslo, Norway*

CICERO Center for International Climate Research   *09/2024 - PRESENT*

Senior Engineer / Research Infrastructure Manager   *Oslo, Norway*

Natural History Museum, University of Oslo   *03/2023 - 12/2024*

Visiting Researcher   *Onna, Japan*

Okinawa Institute for Science and Technology   *02/2024 - 12/2024*

Research Fellow   *Bergen, Norway*

Ecological and Environmental Change Research Group, University of Bergen   *09/2019 - 12/2019*

National Park Ranger & Environmental Education Guide   *Saxony, Germany*

National Park Saxon-Bohemian Swiss   *04/2016 - 06/2016*

Research and Teaching Assistant

Behavioural Ecology Research Group, University of Leipzig   *08/2017 - 08/2019; 03/2017 - 04/2017*

Primate Research Centre, University of Kyoto   *07/2018*

German Centre for Marine Biodiversity Research, Senckenberg Group   *05/2017 - 07/2017*

Teaching & Supervision Activity

NFDI4Biodiversity & iDiv Seasonal School on Data Management in Biodiversity and Environmental Science   🌐 *Course Material*
Author & Lecturer

Bayesian Networks Study Group   🌐 *Personal Course Web Page*
Author & Lecturer

AU Bayes Study Group   🌐 *Personal Course Web Page*
Author & Lecturer

Excursions into Biostatistics   🌐 *Course Web Page*
Author & Lecturer

An Introduction to Biostatistics Using R   🌐 *Course Web Page*
Author & Lecturer

Biological Research in Theory and Praxis (BFTP)   🌐 *Course Web Page*
Author   *Aarhus University*

Teaching Assistant   *Aarhus University*
Applied Statistics   *22/03/2021 - 14/05/2021*
Statistical and Geospatial Modelling   *03/09/2020 - 18/12/2020*
Geospatial Information Systems   *27/10/2020 - 18/12/2020*

Instructor & Advisor
Ecoinformatics & Biodiversity Masters Seminars (EBMS), Aarhus University   *03/02/2021 - 05/05/2021*
Centre of Excellence in Biodiversity Education (BioCeed), University Of Bergen   *08/2017 - 07/2018*

Honours & Grants & Awards

Scholarships & Grants

10/2020 **Scholarship for Academically Excellent Students**, Frands Christian Frantsen's Scholarship   *Aarhus, Denmark*
03/2019 **Funding for Particularly Talented Students**, Lina Asbjørnsens Stipendiefond   *Bergen, Norway*
02/2019 **Fast-Track-Initiative Funding**, FTI, Bjerknessenteret   *Bergen, Norway*
03/2018 **Project Grant**, L. Meltzers Høyskolefond   *Bergen, Norway*
2018/19 **Scholarship**, German Academic Scholarship Foundation (Studienstiftung des deutschen Volkes)   *Bonn, Germany*

Awards

10/2019 **Best Poster: Student and Early Career Researcher**, International Society for Ecological Modelling   *Salzburg, Austria*
10/2019 **Modeller's Choice Poster Award**, International Society for Ecological Modelling   *Salzburg, Austria*

Extracurricular Activity

Group Leader
Coders & Biostatisticians of NHM, University of Oslo   *08/2023 - 12/2024*
Natural History Museum Computational Biology Help-desk, University of Oslo   *08/2023 - 12/2024*

Naturviterne Union Representative
University of Oslo Natural History Museum   *07/2023 - 12/2023*

Group Member
STADIS – STAbility and DIScontinuity Group, University of Oslo   *08/2023 - PRESENT*
Statistics Journal Club, University of Glasgow   *03/2021 - 03/2023*
Spatial Shared-Interest Group, University of Glasgow   *03/2021 - 03/2023*
Bayes Study Group, University of Bergen   *09/2018 - 12/2019*

Leader & Dungeon Master
CICERO Dungeons & Dragons Group   *12/2023 - PRESENT*
University of Oslo Natural History Museum Dungeons & Dragons Group   *05/2023 - 12/2024*
Aarhus University Section for Ecoinformatics Dungeons & Dragons Group   *03/2022 - 01/2023*

Writing

Naturally formed canopy gaps increase tree species diversity in the tropical Moist Afromontane Forest of Gerba Dima, southwest Ethiopia

Bedilu Tafesse, **Erik Kusch**, Tamrat Bekele, Sebesbe Demissew, Bikila Warkineh, Desalegn Chala

Forest Ecology and Management - *2024*

A Yarnball of Frayed Strings - Communication, Impact & Cohesion of European Biodiversity Research Infrastructures

Erik Kusch, Allan T. Souza, Yi-Ming Gan, Carrie Andrew

Preprint - *2024*

TwinEco: A Unified Framework for Dynamic Data-Driven Digital Twins in Ecology

Taimur Khan, Koen de Koning, Dag Endresen, Desalegn Chala, **Erik Kusch**

Preprint - *2024*

Prototype biodiversity digital twin: crop wild relatives genetic resources for food security

Desalegn Chala, **Erik Kusch**, Claus Weiland, Carrie Andrew, Jonas Grieb, Tuomas Rossi, Tomas Martinovic, Dag Endresen

Research Ideas and Outcomes - *2024*

Plant trait and vegetation data along a 1314 m elevation gradient with fire history in Puna grasslands, Perú

Aud Halbritter, Vigdis Vandvik, Sehoya Cotner, [...], **Erik Kusch**, [...], Brian Enquist

Nature Scientific Data - *2024*

A Novel Simulation Framework for Validation of Ecological Network Inference

Erik Kusch*, Anna C. Vinton* (* ... joint first-authorship)

Preprint - *2023*

Ecological Network Resilience & Extinction Proxies - Updating Projections of Ecological Networks

Erik Kusch, Alejandro Ordonez

Preprint - *2023*

Ecological Network Inference is not Consistent Across Scales or Approaches

Erik Kusch, Malyon Bimler, James A. Lutz, Alejandro Ordonez

Preprint - *2023*

NetworkExtinction - R Package to Simulate Extinction Propagation & Rewiring Potential in Ecological Networks

M.Isidora Ávila-Thieme*, **Erik Kusch***, Derek Corcoran*, ..., Navarrete, Pablo A. Marquet (* ... joint first-authorship)

Methods in Ecology and Evolution - *2023*

MOSAIC: A Unified Trait Database to Complement Structured Population Models

Connor Bernard, Gabriel Silva Santos, [...], **Erik Kusch**, [...], Roberto Salguero-Gómez

Nature Scientific Data - *2023*

A novel trophic cascade between cougars and feral donkeys shapes desert wetlands

Erick Lundgren, Daniel Ramp, Owen Middleton, Eamonn Wooster, **Erik Kusch**, [...], Arian Wallach

Journal of Animal Ecology - *2022*

Vegetation memory effects and their association with vegetation resilience in global drylands

Erik Kusch, Richard Davy, Alistair Seddon

Journal of Ecology - *2022*

KrigR - A Tool for Downloading and Statistically Downscaling Climate Reanalysis Data

Erik Kusch, Richard Davy

Environmental Research Letters - *2022*

Reconciling high resolution climate datasets using KrigR

Richard Davy, **Erik Kusch**

Environmental Research Letters - *2021*