

Erik Kusch

SENIOR ENGINEER · BIostatistician · MACROecologist

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Research Profile

I am a macroecologist and data scientist specialised in streamlining work-flows as well as integrating and analysing big data. I use and develop quantitative tools to study ecosystem resilience and landscape-scale biodiversity to understand ecosystems trajectories through time and space. My current work includes coordination efforts of European biodiversity data research infrastructures, 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 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

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

Senior Engineer / Research Infrastructure Manager

Oslo Norway

NATURAL HISTORY MUSEUM, UNIVERSITY OF OSLO

03/2023 - PRESENT

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

Student Assistant

BOTANICAL INSTITUTE, TECHNICAL UNIVERSITY DRESDEN (TUD)

05/2016 - 08/2016; 02/2015 - 08/2015

ZOOLOGICAL COLLECTION, TECHNICAL UNIVERSITY DRESDEN (TUD)

04/2016 - 05/2016; 11/2013 - 08/2015

Teaching & Supervision Activity

Bayesian Networks Study Group

AUTHOR & LECTURER

 [Personal Course Web Page](#)

AU Bayes Study Group

AUTHOR & LECTURER

 [Personal Course Web Page](#)

Excursions into Biostatistics

AUTHOR & LECTURER

 [Course Web Page](#)

An Introduction to Biostatistics Using R

AUTHOR & LECTURER

 [Course Web Page](#)

Biological Research in Theory and Praxis (BFTP)

AUTHOR

 [Course Web Page](#)

Teaching Assistant

APPLIED STATISTICS

[Aarhus University](#)

STATISTICAL AND GEOSPATIAL MODELLING

22/03/2021 - 14/05/2021

GEOSPATIAL INFORMATION SYSTEMS

03/09/2020 - 18/12/2020

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

Writing

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

ERIK 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

Talks & Workshops

Integrating Ecological Networks in Macroecological Research AUTHOR & SPEAKER, STADIS TANGLED BANK-SEMINARS	Oslo, Norway 17/08/2023
Accessing and Referencing GBIF Data for Research AUTHOR & SPEAKER, LIVING NORWAY COLLOQUIUM 2023	Trondheim, Norway 24/05/2023
State-of-the-Art Climate Data for Macroecologists with the KrigR Pipeline AUTHOR & SPEAKER, 5TH CONFERENCE OF NORDIC SOCIETY OIKOS 2022 AUTHOR & SPEAKER, BIOCHANGE METHODS WORKSHOPS	Aarhus, Denmark 07/07/2022 12/11/2020
Ecological Network Inference - Pipedream or Pipeline INVITED SPEAKER, SALGO TEAM, UNIVERSITY OF OXFORD	Oxford, England 22/05/2022
KrigR - Climate Data For Your Spatial Study SPEAKER, AK KLIMA INTERIMSTREFFEN 2021 SPEAKER, INTERNATIONAL STATISTICAL ECOLOGY CONFERENCE 2020 INVITED SPEAKER, SALGO TEAM, UNIVERSITY OF OXFORD	25/03/2021 25/06/2020 18/06/2020
Identifying Ecological-Memory Patterns in Drylands using Remote Sensing INVITED SPEAKER, ECOSYSTEM RESEARCH GROUP, UNIVERSITY OF OXFORD SPEAKER, INTERNATIONAL SOCIETY FOR ECOLOGICAL MODELLING CONFERENCE 2019 INVITED SPEAKER, ECOINFORMATICS AND BIODIVERSITY RESEARCH GROUP, UNIVERSITY OF AARHUS	15/10/2019 04/10/2019 06/09/2019
Spatial Patterns of Plant Performance INVITED SPEAKER, BIO DAY, UNIVERSITY OF BERGEN	Bergen, Norway 15/03/2019
Inferring Vegetation Memory from Remote Sensing Data INVITED SPEAKER, SPATIAL ECOLOGY GROUP, UNIVERSITY OF GLASGOW	Glasgow, Scotland 09/01/2019

Extracurricular Activity

Group Leader CODERS & BIOSTATISTICIANS OF NHM, UNIVERSITY OF OSLO NATURAL HISTORY MUSEUM COMPUTATIONAL BIOLOGY HELP-DESK, UNIVERSITY OF OSLO	08/2023 - PRESENT 08/2023 - PRESENT
Group Member STATISTICS JOURNAL CLUB, UNIVERSITY OF GLASGOW SPATIAL SHARED-INTEREST GROUP, UNIVERSITY OF GLASGOW BAYES STUDY GROUP, UNIVERSITY OF BERGEN EECRG READING GROUP, UNIVERSITY OF BERGEN	03/2021 - 03/2023 03/2021 - 03/2023 09/2018 - 12/2019 10/2017 - 12/2019
Leader & Dungeon Master UNIVERSITY OF OSLO NATURAL HISTORY MUSEUM DUNGEONS & DRAGONS GROUP AARHUS UNIVERSITY SECTION FOR ECOINFORMATICS DUNGEONS & DRAGONS GROUP	05/2023 - PRESENT 03/2022 - 01/2023
Elected Member: Students Council of Biology Studies at the TUD TECHNICAL UNIVERSITY OF DRESDEN	Dresden, Germany 10/2013 - 10/2015

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