

Erik Kusch

BIostatistician · Data Scientist · Macroecologist

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Research Profile

I am a biostatistician 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

UNIVERSITY OF BERGEN

Finse, Norway

14/11/2022 - 18/11/2022

7th Edition Species Distribution Modelling Course

UNIVERSITY OF ÉVORA, SCIENCE RETREATS

Évora, Portugal

26/04/2021 - 02/05/2021

An Introduction to Bayesian Statistics

UNIVERSITY OF GLASGOW

Glasgow, Scotland

06/04/2021 - 16/04/2021

Hierarchical Modelling of Species Communities with the R-package Hmsc

UNIVERSITY OF HELSINKI

Helsinki, Finland

02/11/2020 - 06/11/2020

Modelling Challenges for Mountain Ecosystems

UNIVERSITY OF HAMBURG

Hamburg, Germany

23/02/2020 - 28/02/2020

Experience

Advisor

CICERO CENTER FOR INTERNATIONAL CLIMATE RESEARCH

Oslo, Norway

09/2024 - PRESENT

Senior Engineer / Research Infrastructure Manager

NATURAL HISTORY MUSEUM, UNIVERSITY OF OSLO

Oslo, Norway

03/2023 - 12/2024

Visiting Researcher

OKINAWA INSTITUTE FOR SCIENCE AND TECHNOLOGY

Onna, Japan

02/2024 - 12/2024

Research Fellow

ECOLOGICAL AND ENVIRONMENTAL CHANGE RESEARCH GROUP, UNIVERSITY OF BERGEN

Bergen, Norway

09/2019 - 12/2019

National Park Ranger & Environmental Education Guide

NATIONAL PARK SAXON-BOHEMIAN SWISS

Saxony, Germany

04/2016 - 06/2016

Research and Teaching Assistant

BEHAVIOURAL ECOLOGY RESEARCH GROUP, UNIVERSITY OF LEIPZIG

PRIMATE RESEARCH CENTRE, UNIVERSITY OF KYOTO

GERMAN CENTRE FOR MARINE BIODIVERSITY RESEARCH, SENCKENBERG GROUP

08/2017 - 08/2019; 03/2017 - 04/2017

07/2018

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

Talks & Workshops

Integrating Ecological Networks in Macroecological Research

Oslo, Norway

AUTHOR & SPEAKER, STADIS TANGLED BANK-SEMINARS

17/08/2023

Accessing and Referencing GBIF Data for Research

Trondheim, Norway

AUTHOR & SPEAKER, LIVING NORWAY COLLOQUIUM 2023

24/05/2023

State-of-the-Art Climate Data for Macroecologists with the KrigR Pipeline

Aarhus, Denmark

AUTHOR & SPEAKER, 5TH CONFERENCE OF NORDIC SOCIETY OIKOS 2022

07/07/2022

AUTHOR & SPEAKER, BIOCHANGE METHODS WORKSHOPS

12/11/2020

Ecological Network Inference - Pipedream or Pipeline

Oxford, England

INVITED SPEAKER, SALGO TEAM, UNIVERSITY OF OXFORD

22/05/2022

KrigR - Climate Data For Your Spatial Study

SPEAKER, INTERNATIONAL STATISTICAL ECOLOGY CONFERENCE 2020

25/06/2020

Identifying Ecological-Memory Patterns in Drylands using Remote Sensing

SPEAKER, INTERNATIONAL SOCIETY FOR ECOLOGICAL MODELLING CONFERENCE 2019

04/10/2019

Spatial Patterns of Plant Performance

Bergen, Norway

INVITED SPEAKER, BIO DAY, UNIVERSITY OF BERGEN

15/03/2019

Inferring Vegetation Memory from Remote Sensing Data

Glasgow, Scotland

INVITED SPEAKER, SPATIAL ECOLOGY GROUP, UNIVERSITY OF GLASGOW

09/01/2019

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

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

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

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

UNIVERSITY OF OSLO NATURAL HISTORY MUSEUM DUNGEONS & DRAGONS GROUP AARHUS UNIVERSITY SECTION	05/2023 - PRESENT
FOR ECOINFORMATICS DUNGEONS & DRAGONS GROUP	03/2022 - 01/2023