

Kate Saunders

POSTDOCTORAL RESEARCHER

Delft Institute of Applied Mathematics, TU Delft

☎ +31 6 3374 7624 | ✉ K.R.Saunders@tudelft.nl | 📷 katerobsau | 🐦 katerobsau

About me

- Current research is in statistical post-processing
- Core focus is on improving probabilistic forecasts of extreme weather events
- PhD research was in extreme value theory
- Core PhD focus was on modelling rainfall extremes in continuous space with dependence
- Applications considered in the thesis helped to improve our understanding of rainfall extremes in Australia
- Passionate about R programming and data visualisation

Employment

Posdoctoral Researcher

Delft, Netherlands

DELFT UNIVERSITY OF TECHNOLOGY

Oct. 2018 - Present

- Collaborating on a joint project with Koninklijk Nederlands Meteorologisch Instituut (KNMI)
- Research Interests: Post-processing for extreme events, compound events, modelling extremal dependence using covariates

Graduate Researcher

Melbourne, Australia

COMMONWEALTH SCIENTIFIC INSTITUTE OF TECHNOLOGY (CSIRO)

Feb. 2012 - Feb. 2014

- Research Interests: natural disaster modelling, floods, tsunamis, sea level rise, computational fluid dynamics

Education

Doctor of Philosophy

Melbourne, Australia

THE UNIVERSITY OF MELBOURNE

Mar. 2014 - Oct. 2018

- Thesis Advisors: Prof. Peter Taylor, Prof. David Karoly and Dr. Alec Stephenson
- Thesis Title: An Investigation of Australian Rainfall using Extreme Value Theory
- Research Interests: Extreme Value Theory, Statistics, Max-stable Processes, Rainfall Extremes, Extremal Dependence, Quality Control

Bachelor of Science (Honours I in Mathematics)

Brisbane, Australia

THE UNIVERSITY OF QUEENSLAND

Jul. 2010 - Jun. 2011

- Thesis advisors: Prof. Tony Roberts
- Thesis title: Mean first passage time for discrete periodic networks

Bachelor of Science

Brisbane, Australia

THE UNIVERSITY OF QUEENSLAND

Feb. 2007 - Jun. 2010

- Major in mathematics

Publications

A Regionalisation Approach for Rainfall based on Extremal Dependence

Extremes (in submission)

K.R. SAUNDERS, A.G. STEPHENSON, AG AND D.J. KAROLY

2019

- Preprint: <https://arxiv.org/abs/1907.05750>

An Investigation of Australian Rainfall Using Extreme Value Theory

PhD Thesis

K.R. SAUNDERS

2018

- Identifier: <http://hdl.handle.net/11343/220318>

The Winning Entry for the EVA2017 Competition for Spatiotemporal Prediction of Extreme Rainfall using Generalized Extreme Value Quantiles

Extremes

A.G. STEPHENSON, K. SAUNDERS AND L. TAFAKORI

2018

- DOI: 10.1007/s10687-018-0321-0

The Spatial Distribution of Rainfall Extremes and the Influence of El Niño Southern Oscillation

Weather and Climate Extremes

K. SAUNDERS, A.G. STEPHENSON, P.G. TAYLOR, AND D. KAROLY

2017

- DOI: 10.1016/j.wace.2017.10.001

Assessing Sea Level Rise Risks to Coastal Floodplains in the Kakadu Region, Northern Australia, using a tidally-driven hydrodynamic model

Marine and Freshwater Research

P. BAYLISS, K. SAUNDERS, L. DUTRA, L. MELO, J. HILTON, M. PRAKASH, F. WOOLARD

2016

- DOI: 10.1071/MF16049

Teaching Experience

Teaching Assistant

The University of Melbourne

SCHOOL OF MATHEMATICS AND STATISTICS

2014 – 2015

- MAST20005 Statistics, MAST20004 Probability for statistics, MAST10006 Calculus 2

College Tutor

The University of Melbourne

NEWMAN COLLEGE

2015

- Probability and Statistics tutor for undergraduate students

Teaching Assistant and Peer Assisted Study Leader

The University of Queensland

SCHOOL OF MATHEMATICS AND PHYSICS

2007 – 2011

- MATH1061 Discrete Mathematics, MATH1051 Calculus and Linear Algebra, MATH1050 Mathematical Foundations, MATH1040 Basic Mathematics

Supervision Experience

Vacation Student (8 week project)

The University of Melbourne

PROJECT TOPIC: IDENTIFYING SPURIOUS INHOMOGENEITIES IN DAILY RAINFALL OBSERVATIONS

2016

Vacation Student (4 week project)

CSIRO

PROJECT TOPIC: A SENSITIVITY ANALYSIS OF TSUNAMI INUNDATION USING A SHALLOW WATER SOLVER

2012

Invited talks

Community Contributions

WORKSHOP ORGANISATION

WOMEN IN STEM

Invited Talk: R Ladies Rotterdam

AN INTRODUCTION TO WEB SCRAPING USING RVEST

2019

- R-Ladies' is a diversity initiative, whose aim is to help empower underrepresented minorities within the R community.

Women in mathematics panel discussion on affirmative action

EVENT ORGANISER AND PANEL CHAIR

2016

- Internation Womens' Day Event #BeBoldForChange

A celebration of Dr. Alison Harcourt (Order of Australia)

EVENT JOINT ORGANISER

2015

- Internation Womens' Day Event #MakeItHappen

JOURNAL REFEREEING

Spatial Statistics, Stochastic Networks, Extremes, Environmetrics

COMMITTEE POSITIONS

MENTORING

Grabbing your Audience's Attention: Advice on Giving Talks

ACEMS SEMINAR SERIES

2019

- Mentoring talk shared live across ACEMS university nodes

ACEMS Mentoring Program

MENTOR

2019

- Paired with an early stage PhD Student in Statistics at Monash University

Outreach & Science Communication

CLIMART

Package details

POPULAR SCIENCE ARTICLES

Is Usain Bolt the greatest athlete of all time? That's not what the numbers say

K. SAUNDERS AND A.G. STEPHENSON

- Article statistics: 20,609 Readers, 275 Shares

Explainer: was the Sydney storm 'once-in-a-century'?

K. SAUNDERS, D. KAROLY AND P.G. TAYLOR

- Article statistics: 8591 Readers, 80 Shares

The Conversation

2017

The Conversation

2015

SCHOOLS

Scholarships and Awards

Laureate Fellowship: Postgraduate Researcher Award

\$30,000 AUD PER ANNUM (€18,800 TAX FREE)

- Awarded in lieu of the Australian Postgraduate Award (\$25,000 AUD per annum)

Postgraduate Top Up Scholarship

\$10,000 PER ANNUM (€6,265 TAX FREE)

- Awarded to outstanding graduates to undertake postgraduate research

Science Abroad Travelling Scholarship

\$1,500 AUD IN TOTAL (€940 TAX FREE)

- Awarded to outstanding graduates to undertake research abroad

The University of Melbourne

2014 – 2018

CSIRO

2015 – 2018

The University of Melbourne

2016

Prizes

Winner of the Young Statisticians Video Competition

STATISTICS SOCIETY OF AUSTRALIA

2017

Winning Team of the Data Challenge: Prediction of Extremal Precipitation

EXTREME VALUE ANALYSIS CONFERENCE, DELFT, 2017

2017

Affiliations

- Academic Collaborator with Koninklijk Nederlands Meteorologisch Instituut (KNMI)
- Associate Investigator with Australian Centre of Excellence in Mathematical and Statistical Frontiers (ACEMS)
- Women in Mathematics Special Interest Group (WIMSIG)
- Statistical Society of Australia: SSA (Past Member)
- Australian Mathematical Society (Past Member)
- German Climate and Energy College (Alumni)

Referees

Available upon request