

# Raphaël Huser

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Statistics program, Computer, Electrical and Mathematical Sciences and Engineering (CEMSE) Division  
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## EDUCATION

Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, 2009–2013  
PhD in Statistics (2014 EPFL Doctorate Award),  
*Dissertation Title*: Statistical Modeling and Inference for Spatio-Temporal Extremes  
Advisor: Prof. Anthony C. Davison

Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, 2007–2009  
MSc in Applied Mathematics,  
*Dissertation Title*: On Kriging of Extreme Precipitation Return Levels and Tapering  
Co-Advisors: Prof. Anthony C. Davison and Prof. Douglas Nychka

Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, 2004–2007  
BSc in Mathematics

## PROFESSIONAL EXPERIENCE

2022-present Associate Professor, Statistics Program (Primary affiliation) and Applied Mathematics and Computational Science Program (Secondary affiliation), CEMSE Division, KAUST  
PI of Extreme Statistics ([extSTAT](#)) Research Group  
2015–2022 Assistant Professor, Statistics Program, CEMSE Division, KAUST  
2014–2015 Post-Doctoral Research Fellow, Statistics Program, CEMSE Division, KAUST

## EDITORIAL EXPERIENCE

### **Current**

2022–present Associate Editor for the journal *Statistics and Computing*  
2022–present Associate Editor for the *Journal of the Royal Statistical Society: Series C*  
2020–present Associate Editor for the journal *Environmetrics*  
2019–present Associate Editor for the *Journal of Agricultural, Biological and Environmental Statistics*  
2017–present Associate Editor for the journal *Extremes*

### **Past**

2020–2021 Associate Editor for the *Journal of the Korean Statistical Society*  
2020 Guest Editor for the *Extremes* Special Issue on the “EVA 2019 Data Competition on Spatio-Temporal Prediction of Red Sea Surface Temperature Extremes”  
2019–2021 Associate Editor for the journal *Econometrics and Statistics*

**Reviewer experience indicated in the relevant section below (at the end of this document).**

## RESEARCHER ID NUMBER

ORCID: 0000-0002-1228-2071  
Google Scholar: [link](#)  
Web of Science Researcher ID: I-7165-2019  
SCOPUS: 55743671800

## HONORS AND SCHOLARLY AWARDS

- 2022: 7. Abdel El-Shaarawi Early Investigator (AEEI) Award, The International Environmetrics Society (TIES), Association of the International Statistical Institute (ISI)  
⇒ *Invited to give a keynote presentation at the Virtual TIES workshop 2022*
- 2019: 6. ENVR Early Investigator Award, Section on Statistics and the Environment (ENVR) of the American Statistical Association (ASA)
- 2018: 5. Award for Best 2016 Paper (Journal paper [J9] below with **Huser, R.**, and Genton, M. G.) published in the Journal of Agricultural, Biological and Environmental Statistics (JABES)  
⇒ *Work presented in a Special Invited Session at the 2018 International Biometric Conference*
- 2016: 4. Elected Member of the International Statistical Institute (ISI)
- 2015: 3. Lambert Award, Swiss Statistical Society (SSS)  
⇒ *Prize to recognize the work of young statisticians up to age 35*  
⇒ *Work presented in a plenary talk at the 2015 Swiss Statistics Meeting*
- 2014: 2. EPFL Doctorate Award, EPFL, Lausanne, CH  
⇒ *2 laureates for 405 PhD theses defended university-wide*
- 2010: 1. Co-winner of PhD poster competition at the Workshop on Environmetrics, NCAR

***Plenary and special invited conference talks indicated in the “Conference Presentations” section below.***

## STUDENT AND POST-DOC AWARDS

**(student, post-doc or intern advisees at the time of main work are underlined)**

- 2023 6. Ya Halla Team (Postdoc Richards, J., and PhD students Alotaibi, N., Cisneros, D., Gong, Y., Guerrero, M., Shao, X.) Winner (1<sup>st</sup> place) of the Data Competition organized for the 2023 Extreme-Value Analysis conference (EVA 2023), Milan, IT
5. Best Poster Presentation Award for the Journal paper [R13] below with Redondo, P. V., **Huser, R.**, and Ombao, H., from the 2023 Extreme-Value Analysis conference (EVA 2023), Milan, IT
4. Runner-up for Best Student Paper Award for the Journal paper [R13] below with Redondo, P. V., **Huser, R.**, and Ombao, H., from the American Statistical Association (ASA) Section on Statistics in Imaging (SI)
- 2019 3. Journal paper [J18] below with Lombardo, L., Opitz, T., and **Huser, R.**, published in the journal Stochastic Environmental Research and Risk Assessment (SERRA) in 2018, was highlighted among the top 10 most downloaded 2018 papers in Springer’s Environmental Sciences Journals
- 2017: 2. Recipient of ENAR Distinguished Student Paper Award for the Journal paper [J24] below with Vettori, S., **Huser, R.**, and Genton, M. G., from the International Biometric Society Eastern North American Region (ENAR).  
⇒ *Work presented in an Invited Talk at the 2018 ENAR Conference, Atlanta*
1. Recipient of Best Student Paper Award for the Journal paper [J26] below with Vettori, S., **Huser, R.**, Segers, J., and Genton, M. G., from the American Statistical Association (ASA) Section on Statistics and the Environment (ENVR).

## PROFESSIONAL AFFILIATIONS

7. International Statistical Institute (ISI), **Elected Member**
6. Bernoulli Society (BS), Regular Member
5. The International Environmetrics Society (TIES), Regular Member
4. American Statistical Association (ASA), Regular Member
3. Royal Statistical Society (RSS), Regular Member
2. European Geoscience Union (EGU), Regular Member
1. Swiss Statistical Society (SSS), Regular Member

## PUBLICATIONS

### Peer-Reviewed Journal Articles

(\*corresponding author; student, post-doc or intern advisees at the time of main work are underlined)

### Publications at KAUST

- [J56] Richards\*, J., **Huser, R.**, Bevacqua, E., and Zscheischler, J. (2023+), *Insights into the drivers and spatio-temporal trends of extreme Mediterranean wildfires with statistical deep-learning*, Artificial Intelligence for the Earth Systems, to appear
- [J55] Yadav, R., **Huser\***, R., Opitz, T., and Lombardo, L. (2023+), *Joint modeling of landslide counts and sizes using spatial marked point processes with sub-asymptotic mark distributions*, Journal of the Royal Statistical Society: Series C, to appear
- [J54] Sainsbury-Dale\*, M., Zammit-Mangion, A., and **Huser, R.** (2023+), *Likelihood-free parameter estimation with neural Bayes estimators*, The American Statistician, to appear
- [J53] Zhong, P., **Huser\***, R., and Opitz, T. (2022+), *Exact simulation of max-infinitely divisible processes*, Econometrics and Statistics, to appear
- [J52] Dahal\*, A., Castro Cruz, D. A., Tanyas, H., Fadel, I., Mai, P. M., van der Meijde, M., van Westen, C., **Huser, R.**, and Lombardo, L. (2023), *From ground motion simulations to landslide occurrence prediction*, Geomorphology 441, 108898
- [J51] Zhang, Z., Arellano-Valle, R. B., Genton, M. G., and **Huser\***, R. (2023), *Tractable Bayes of skew-elliptical link models for correlated binary data*, Biometrics 79, 1788-1800
- [J50] Zhang\*, Z., Krainski, E., Zhong, Z., Rue, H., and **Huser, R.** (2023), *Joint modeling and prediction of massive spatio-temporal wildfire count and burnt area data with the INLA-SPDE approach*, Extremes 26, 339-351
- [J49] Cisneros, D., Gong, Y., Yadav, R., Hazra\*, A., and **Huser, R.** (2023), *A combined statistical and machine learning approach for spatial prediction of extreme wildfire frequencies and sizes*, Extremes 26, 301-330
- [J48] de Carvalho\*, M., **Huser, R.**, and Rubio, R. (2023), *Similarity-based clustering for patterns of extreme values*, Stat 12, e560
- [J47] Guerrero, M. B., **Huser\***, R., and Ombao, H. (2023), *Conex-Connect: Learning patterns in extremal brain connectivity from multi-channel EEG data*, Annals of Applied Statistics 17, 178-198
- [J46] Gong, Y., and **Huser\***, R. (2022), *Flexible modeling of multivariate spatial extremes*, Spatial Statistics 52, 100713
- [J45] Krupskii, P., and **Huser\***, R. (2022), *Modeling spatial tail dependence with Cauchy convolution processes*, Electronic Journal of Statistics 16, 6135-6174
- [J44] Castro-Camilo\*, D., **Huser, R.**, and Rue, H. (2022), *Practical strategies for generalized extreme value-based regression models for extremes*, Environmetrics 33, e2742
- [J43] Zhang, Z., **Huser\***, R., Opitz, T., and Wadsworth, J. (2022), *Modeling spatial extremes using normal mean-variance mixtures*, Extremes 25, 175-197
- [J42] Gong, Y., and **Huser\***, R. (2022), *Asymmetric tail dependence modelling, with application to cryptocurrency market data*, Annals of Applied Statistics 16, 1822-1847
- [J41] Opitz\*, T., Bakka, H., **Huser, R.**, and Lombardo\*, Luigi (2022), *High-resolution mapping of landslide hazard with unobserved trigger event*, Annals of Applied Statistics 16, 1653-1675
- [J40] Jóhannesson, Á. V., Siegert, S., **Huser\***, R., Bakka, H., and Hrafnkelsson, B. (2022), *Approximate Bayesian inference for analysis of spatio-temporal flood frequency data*, Annals of Applied Statistics 16, 905-935
- [J39] Yadav, R., **Huser\***, R., and Opitz, T. (2022), *A flexible Bayesian hierarchical modeling framework for spatially dependent peaks-over-threshold data*, Spatial Statistics 51, 100672

- [J38] Zhong, P., **Huser\*, R.**, and Opitz, T. (2022), *Modeling nonstationary temperature maxima based on extremal dependence changing with event magnitude*, *Annals of Applied Statistics* 16, 272-299
- [J37] **Huser\*, R.**, and Wadsworth, J. (2022), *Advances in statistical modeling of spatial extremes*, *Wiley Interdisciplinary Reviews (WIREs): Computational Statistics* 14, e1537
- [J36] Lombardo\*, L., Tanyas, H., **Huser, R.**, Guzzetti, F., and Castro-Camilo, D. (2021), *Landslide size matters: a new data-driven, spatial prototype*, *Engineering Geology* 293, 106288
- [J35] Hazra, A., and **Huser\*, R.** (2021), *Estimating high-resolution Red Sea surface temperature hotspots, using a low-rank semiparametric spatial model*, *Annals of Applied Statistics* 15, 572-596
- [J34] Hrafnkelsson\*, B., Siegert, S., **Huser, R.**, Bakka, H., and Jóhannesson, Á. V. (2021), *Max-and-Smooth: a two-step approach for approximate Bayesian inference in latent Gaussian models*, *Bayesian Analysis* 16, 611-638
- [J33] Yadav, R., **Huser\*, R.**, and Opitz, T. (2021), *Spatial hierarchical modeling of threshold exceedances using rate mixtures*, *Environmetrics* 32, e2662
- [J32] Bopp\*, G., Shaby, B., and **Huser, R.** (2021), *A hierarchical max-infinitely divisible spatial model for extreme precipitation*, *Journal of the American Statistical Association (Applications and Case Studies)* 116, 93-106
- [J31] **Huser\*, R.** (2021), *Editorial: EVA 2019 data competition on spatio-temporal prediction of Red Sea surface temperature extremes*, *Extremes* 24, 91-104
- [J30] **Huser, R.**, Opitz\*, T., and Thibaud, E. (2021), *Max-infinitely divisible models and inference for spatial extremes*, *Scandinavian Journal of Statistics* 48, 321-348
- [J29] Khandavilli\*, M., Yalamanchi, K. K., **Huser, R.**, and Sarathy\*, M. (2020), *Effects of fuel composition variability on high temperature combustion properties: A statistical analysis*, *Applications in Energy and Combustion Science* 1-4, 100012
- [J28] Lombardo\*, L., Opitz, T., Ardizzone, F., Guzzetti, F., and **Huser, R.** (2020), *Space-time landslide predictive modelling*, *Earth-Science Reviews* 209, 103318
- [J27] Castro Camilo\*, D., and **Huser, R.** (2020), *Local likelihood estimation of complex tail dependence structures, applied to U.S. precipitation extremes*, *Journal of the American Statistical Association (Applications and Case Studies)* 115, 1037-1054
- [J26] Vettori, S., **Huser\*, R.**, Segers, J., and Genton, M. G. (2020), *Bayesian model averaging over tree-based dependence structures for multivariate extremes*, *Journal of Computational and Graphical Statistics* 19, 174-190  
 ⇨ *ENVR Student Paper Award 2017, Section on Statistics and the Environment (ENVR), ASA*
- [J25] Alam, T., Alazmi, M., Naser, R., Huser, F., Momin, A. A., Astro, V., Hong S., Walkiewicz, K. W., Canlas, C. G., **Huser, R.**, Ali, A. J., Merzaban, J., Adamo, A., Jaremko, M., Jeremko, Ł, Bajic\*, V. B., Gao\*, X., and Arold\*, S. T. (2020), *Proteome-level assessment of origin, prevalence and function of Leucine-Aspartic Acid (LD) motifs*, *Bioinformatics* 36, 1121-1128
- [J24] Vettori, S., **Huser\*, R.**, and Genton, M. G. (2019), *Bayesian modeling of air pollution extremes using nested multivariate max-stable processes*, *Biometrics* 75, 831-841  
 ⇨ *Distinguished Student Paper Award 2018, Eastern North American Region (ENAR) of the International Biometric Society*
- [J23] Castro Camilo\*, D., **Huser, R.**, and Rue, H. (2019), *A spliced Gamma-generalized Pareto model for short-term extreme wind speed probabilistic forecasting*, *Journal of Agricultural, Biological and Environmental Statistics* 24, 517-534
- [J22] Lombardo\*, L., Bakka, H., Tanyas, H., van Westen, C., Mai, P. M., and **Huser, R.** (2019), *Geostatistical modeling to capture seismic-shaking patterns from earthquake-induced landslides*, *Journal of Geophysical Research: Earth Surface* 124, 1958-1980
- [J21] **Huser, R.** and Wadsworth\*, J. (2019), *Modeling spatial processes with unknown extremal dependence class*, *Journal of the American Statistical Association (Theory and Methods)* 114, 434-444
- [J20] **Huser\*, R.**, Dombry, C., Ribatet, M., and Genton, M. G. (2019), *Full likelihood inference for max-stable data*, *Stat* 8, e218

- [J19] Opitz, T., **Huser\***, R., Bakka, H., and Rue, H. (2018), *INLA goes extreme: Bayesian tail regression for the estimation of high spatio-temporal quantiles*, *Extremes* 21, 441-462
- [J18] Lombardo\*, L., Opitz, T., and **Huser, R.** (2018), *Point process-based modeling of multiple debris flow landslides using INLA: an application to the 2009 Messina disaster*, *Stochastic Environmental Research and Risk Assessment* 32, 2179-2198  
 ⇒ *Highlighted among the top 10 most downloaded 2018 papers in Springer's Environmental Sciences Journals*
- [J17] Hofert\*, M., **Huser, R.**, and Prasad, A. (2018), *Hierarchical archimax copulas*, *Journal of Multivariate Analysis* 167, 195-211
- [J16] Krupskii\*, P., **Huser, R.**, and Genton, M. G. (2018), *Factor copula models for replicated spatial data*, *Journal of the American Statistical Association (Theory and Methods)* 113, 467-479
- [J15] Vettori\*, S., **Huser, R.**, and Genton, M. G. (2018), *A comparison of dependence function estimators in multivariate extremes*, *Statistics and Computing* 28, 525-538
- [J14] Lombardo\*, L., Saia, S., Schillaci, C., Mai, P. M., and **Huser, R.** (2018), *Modeling soil organic carbon with Quantile Regression: Dissecting predictors' effects on carbon stocks*, *Geoderma* 318, 148-159
- [J13] **Huser\***, R., Opitz, T., and Thibaud, E. (2017), *Bridging asymptotic independence and dependence in spatial extremes using Gaussian scale mixtures*, *Spatial Statistics* 21, 166-186
- [J12] Castro Camilo, D., Lombardo\*, L., Mai, P. M., Dou, J., and **Huser, R.** (2017), *Handling high predictor dimensionality in slope-unit-based landslide susceptibility models through LASSO-penalized Generalized Linear Model*, *Environmental Modelling and Software* 97, 145-156
- [J11] Castruccio\*, S., **Huser, R.**, and Genton, M. G. (2016), *High-order composite likelihood inference for max-stable distributions and processes*, *Journal of Computational and Graphical Statistics* 25, 1212-1229
- [J10] Naveau\*, P., **Huser, R.**, Ribereau, P., and Hannart, A. (2016), *Modeling jointly low, moderate and heavy rainfall intensities without a threshold selection*, *Water Resources Research* 52, 2753-2769
- [J9] **Huser\***, R., and Genton, M. G. (2016), *Non-stationary dependence structures for spatial extremes*, *Journal of Agricultural, Biological and Environmental Statistics* 21, 470-491  
 ⇒ *Award for Best 2016 Paper published in JABES*
- [J8] **Huser\***, R., Davison, A. C., and Genton, M. G. (2016), *Likelihood estimators for multivariate extremes*, *Extremes* 19, 79-103
- [J7] Ben Taieb\*, S., **Huser, R.**, Hyndman, R. J., and Genton, M. G. (2016), *Forecasting uncertainty in electricity smart meter data by boosting additive quantile regression*, *IEEE Transactions on Smart Grid* 7, 2448-2455
- [J6] Davison\*, A. C., and **Huser, R.** (2015), *Statistics of Extremes*, *Annual Review of Statistics and its Application* 2, 203-235
- [J5] Genton\*, M. G., Castruccio, S., Crippa, P., Dutta, S., **Huser, R.**, Sun, Y., and Vettori, S. (2015), *Visuanimation in statistics*, *Stat* 4, 81-96

#### Publications before joining KAUST

- [J4] **Huser, R.**, and Davison\*, A. C. (2014), *Space-time modeling of extreme events*, *Journal of the Royal Statistical Society: Series B* 76, 439-461
- [J3] Davison\*, A. C., **Huser, R.**, and Thibaud, E. (2013), *Geostatistics of dependent and asymptotically independent extremes*, *Mathematical Geosciences* 45, 511-529
- [J2] **Huser, R.**, and Davison\*, A. C. (2013), *Composite likelihood estimation for the Brown-Resnick process*, *Biometrika* 100, 511-518
- [J1] Anderes\*, E., **Huser, R.**, Nychka, D., and Coram, M. (2013) *Nonstationary positive definite tapering on the plane*, *Journal of Computational and Graphical Statistics* 22, 848-865

## Contributions to papers with discussion

(\*corresponding author; student, post-doc or intern advisees at the time of main work are underlined)

- [D4] Hazra\*, A., and Huser, R. (2021), *Discussion of “Multilevel linear models, Gibbs samplers and multigrid decompositions” by Giacomo Zanella and Gareth Roberts*, Bayesian Analysis 16,1309-1391
- [D3] Huser\*, R., and Cisernos, D. (2020), *Discussion of “Graphical models for extremes” by Sebastian Engelke and Adrien S. Hitz*, Journal of the Royal Statistical Society: Series B 82, 871-932
- [D2] Huser\*, R., de Carvalho, M., and Lombardo, L. (2019) *Discussion of “Visualizing spatiotemporal models with virtual reality: from fully immersive environments to applications in stereoscopic view” by Castruccio et. al*, Journal of the Royal Statistical Society: Series A 182, 419-441
- [D1] Bakka, H., Castro Camilo, D., Franco-Villoria, M., Freni-Sterrantino, A., Huser, R., Opitz, T., and Rue\*, H. (2018) *Discussion of “Using stacking to average Bayesian predictive distributions” by Yao et. al*, Bayesian Analysis 13, 917-1003

## Book chapters

(\*corresponding author; student, post-doc or intern advisees at the time of main work are underlined)

- [B3] Hazra, A., Huser\*, R., and Jóhannesson, Á. V. (2021+), *Bayesian latent Gaussian models for high-dimensional spatial extremes*, Book chapter, In *Statistical Modeling Using Bayesian Latent Gaussian Models – With Applications in Geophysics and Environmental Sciences*, editor B. Hrafnkelsson, Springer, to appear
- [B2] Lombardo\*, L., Opitz, T., and Huser, R. (2019), *Numerical recipes for landslide spatial prediction by using R-INLA: A step-by-step tutorial*, In *Spatial Modeling in GIS and R for Earth and Environmental Sciences*, editors H. R. Pourghasemi and C. Gokceoglu, Elsevier, 55-83
- [B1] Davison\*, A. C., Huser, R., and Thibaud, E. (2019), *Spatial extremes*, In *Handbook of Environmental and Ecological Statistics*, editors A. E. Gelfand, M. Fuentes, J. A. Hoeting and R. L. Smith. CRC Press, 711-744

## Theses

- [T2] Huser, R. (2013), *Statistical Modeling and Inference for Spatio-Temporal Extremes*, PhD thesis, École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland. Supervised by Prof. Anthony C. Davison  
⇒ EPFL Doctorate Award 2014, EPFL, Lausanne, CH
- [T1] Huser, R. (2009), *On Kriging of Extreme Precipitation Return Levels and Tapering*, M.Sc. thesis, École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland. Performed while visiting the National Center for Atmospheric Research (NCAR), CO, US, and co-supervised by Prof. Anthony C. Davison (EPFL) and Prof. Douglas Nychka (NCAR).

## Journal Articles Under Review

(\*corresponding author; student, post-doc or intern advisees at the time of main work are underlined)

- [R21] Sainsbury-Dale\*, M., Richards, J., Zammit-Mangion, A., and Huser, R. (2023+), *Neural Bayes estimators for irregular spatial data using graph neural networks*, [arXiv preprint 2310.02600](https://arxiv.org/abs/2310.02600), Submitted to the Journal of Graphical and Computational Statistics
- [R20] Cisneros, D., Richards\*, J., and Huser, R. (2023+), *Deep graphical regression models for jointly moderate and extreme Australian wildfires*, [arXiv preprint 2308.14547](https://arxiv.org/abs/2308.14547), Submitted to Spatial Statistics
- [R19] Cisneros, D., Hazra, A., and Huser\*, R. (2023+), *Spatial wildfire risk modeling using mixtures of tree-based multivariate Pareto distributions*, [arXiv preprint 2308.03870](https://arxiv.org/abs/2308.03870), Submitted to the Journal of Agricultural, Biological and Environmental Statistics
- [R18] Zhang, Z., Bolin, D., Engelke, S., and Huser\*, R. (2023+), *Extremal dependence of moving average processes driven by exponential-tailed Lévy noise*, [arXiv preprint 2307.15796](https://arxiv.org/abs/2307.15796), Submitted to Bernoulli

- [R17] [Ahmed\\*](#), M., Tanyas, H., **Huser, R.**, Dahal, A., Titti, G., Borgatti, L., Francioni, M., and Lombardo, L. (2023+), *Dynamic rainfall-induced landslide susceptibility: a step towards a unified forecasting system*, [EarthArXiv preprint 5755](#), Submitted to the International Journal of Applied Earth Observation and Geoinformation
- [R16] Vandeskog\*, S. M., Martino, S., and **Huser, R.** (2023+), *Fast spatial simulation of extreme high-resolution radar precipitation data using INLA*, [arXiv preprint 2307.11390](#), Submitted to the Annals of Applied Statistics
- [R15] Zhang\*, L., Ma, X., Wikle, C. K., and **Huser, R.** (2023+), *Flexible and efficient spatial extremes emulation via variational autoencoders*, [arXiv preprint 2307.08079](#), Submitted to the Journal of the American Statistical Association (Theory and Methods)
- [R14] [Richards\\*](#), J., [Sainsbury-Dale, M.](#), Zammit-Mangion, A., and **Huser, R.** (2023+), *Likelihood-free neural Bayes estimators for censored peaks-over-threshold models*, [arXiv preprint 2306.15642](#), Submitted to the Journal of Machine Learning Research
- [R13] [Redondo\\*](#), P. V., **Huser, R.**, and Ombao, H. (2023+), *Measuring information transfer between nodes in a brain network through spectral transfer entropy*, [arXiv preprint 2303.06384](#), Submitted to the Annals of Applied Statistics  
 ⇒ *Runner-up of Best Student Paper Award 2023, Section on Statistics in Imaging (SI), ASA*  
 ⇒ *Best Poster Presentation Award, 2023 Extreme-Value Analysis conference (EVA 2023), Milan*
- [R12] [Oesting\\*](#), M., and **Huser, R.** (2022+), *Patterns in spatio-temporal extremes*, [arXiv preprint 2212.11001](#), In revision for the Journal of the American Statistical Association (Theory and Methods) (major revision in 1<sup>st</sup> round)
- [R11] [Guerrero, M. B.](#), Ombao, H., and **Huser\*, R.** (2022+), *Club Exco: clustering brain extreme communities from multi-channel EEG data*, [arXiv preprint 2212.04338](#), In revision for the Annals of Applied Statistics (rejected with resubmission in 1<sup>st</sup> round)
- [R10] [Zhong, P.](#), Brunner, M., Opitz, T., and **Huser\*, R.** (2022+), *Spatial modeling and future projection of extreme precipitation extents*, [arXiv preprint 2212.03028](#), In revision for the Journal of the American Statistical Association (Applications and Case Studies) (major revision in 1<sup>st</sup> round)
- [R9] [Gong, Y.](#), [Zhong, P.](#), Opitz, T., and **Huser\*, R.** (2022+), *Partial tail-correlation coefficient applied to extremal-network learning*, [arXiv preprint 2210.07351](#), In revision for Technometrics (major revision in 1<sup>st</sup> round)
- [R8] [Shao, X.](#), [Hazra, A.](#), [Richards, J.](#), and **Huser\*, R.** (2022+), *Flexible modeling of non-stationary extremal dependence using spatially-fused LASSO and Ridge penalties*, [arXiv preprint 2210.05792](#), In revision for Technometrics (major revision in 1<sup>st</sup> round)
- [R7] [Vandeskog\\*, S. M.](#), Martino, S., and **Huser, R.** (2022+), *An efficient workflow for modelling high-dimensional spatial extremes*, [arXiv preprint 2210.00760](#), To be submitted to Statistics and Computing
- [R6] [Redondo\\*, P. V.](#), **Huser, R.**, and Ombao, H. (2022+), *Functional-coefficient models for multivariate time series in designed experiments: With applications to brain signals*, [arXiv preprint 2208.00292](#), In revision for the Annals of Applied Statistics (rejected with resubmission in 1<sup>st</sup> round)
- [R5] Dahal, A., Tanyas, H., van Westen, C., van der Meije, M., Mai, P. M., **Huser, R.**, and Lombardo\*, L. (2022+), *Space-time landslide hazard modeling via ensemble neural networks*, [EarthArXiv preprint 3382](#), Submitted to Natural Hazards and Earth System Sciences
- [R4] [Richards\\*, J.](#), and **Huser, R.** (2022+), *Regression modelling of spatiotemporal extreme U.S. wildfires via partially-interpretable neural networks*, [arXiv preprint 2208.07581](#), In revision for the Annals of Applied Statistics (rejected with resubmission in 1<sup>st</sup> round)
- [R3] **Huser\*, R.**, Stein, M. L., and [Zhong, P.](#) (2022+), *Vecchia likelihood approximation for accurate and fast inference in intractable spatial extremes models*, [arXiv preprint 2203.05626](#), Resubmitted to the Journal of Computational and Graphical Statistics (after major revision in 1<sup>st</sup> round)

- [R2] Hazra, A., Huser\*, R., and Bolin, D. (2023+), *Efficient modeling of spatial extremes over large geographical domains*, [arXiv preprint 2112.10248](#), Submitted to the Journal of Computational and Graphical Statistics
- [R1] Hazra, A., Alahmadi, E., and Huser\*, R. (2021+), *Extreme-value analysis: a brief summary*

### Journal Articles in Preparation, with expected submission by March 2024

(\*expected corresp. author; student, post-doc or intern advisees at the time of main work underlined)

- [P14] Alotaibi, N., Sainsbury-Dale, M., Naveau, P., Gaetan, C., and Huser\*, R. (2023+), *Modeling multivariate low and large precipitation without threshold selections*
- [P13] Quan\*, V., Shao, X., Zammit-Mangion, A., and Huser, R. (2023+), *Nonstationary spatial modeling using the deepspat R package*
- [P12] Dahal\*, A., Huser, R., and Lombardo, L. (2023+), *At the junction between deep learning and extreme-value theory: a new solution to landslide hazard assessment*
- [P11] Guerrero\*, M., Ombao, H., and Huser, R. (2023+), *Statistics of extremes for neuroscience*, book chapter in the Handbook of Statistics of Extremes
- [P10] Lombardo\*, L., and Huser, R. (2023+), *Statistics of extremes for natural hazards: landslides and earthquakes*, book chapter in the Handbook of Statistics of Extremes
- [P9] Huser\*, R., and Richards, J. (2023+), *Extreme quantile regression with deep learning*, book chapter in the Handbook of Statistics of Extremes
- [P8] Braunsteins\*, P., Bolin, D., Engelke, S., and Huser, R. (2023+), *The SPDE approach to spatial extremes*
- [P7] Fischer\*, E., Bador, M., Coumou, D., Huser, R., Kendon, E., Robinson, A., and Sippel, S. (2023+), *Record-breaking extremes in a warming climate*
- [P6] Kim, M., Genton, M. G., Huser, R., and Castruccio\*, S. (2023+), *A neural network-based approach to normality testing for dependent data*
- [P5] Sainsbury-Dale\*, M., Zammit-Mangion, A., Huser, R., and Cressie, N. (2023+), *Optimal neural inference with missing data*
- [P4] Krupskii\*, P., and Huser, R. (2023+), *Max-convolution processes with random shape indicator kernels*
- [P3] Huser\*, R., Opitz, T., and Wadsworth, J. (2023+), *Environmental extreme data science: recommendations moving forward*
- [P2] Zhang, Z., Huser\*, R., Opitz, T., and Wadsworth, J. (2023+), *Extremal kriging based on a spatio-temporal mean-variance mixture model*
- [P1] de Carvalho\*, M., Rubio, R., Leonelli, M., and Huser, R. (2023+), *Diagonal distributions*

### CONFERENCE PRESENTATIONS

#### Invited Talks (Including Plenary/Keynote Talks) at International Conferences/Workshops

##### After joining KAUST

- 2023, RSS, Aberdeen, UK (*Invited Session*)  
 JSM, Toronto, CA (*Invited Session*)  
 EVA, Bocconi University, Milan, IT (*Invited Session*)  
 BIRS-IMAG Workshop on Modern Statistical and Machine Learning Approaches for High-Dimensional Compound Spatial Extremes, Granada, ES
- 2022, Virtual TIES Meeting (*Plenary Keynote Talk for Abdel El-Shaarawi Early Investigator Award 2022*)  
 Climate and Weather Extremes workshop, Institute for Mathematical and Statistical Innovation (IMSI), University of Chicago, Chicago IL, US (*Virtual Talk*)  
 JSM, Washington DC, US (*Topic Contributed Session*)

- 24<sup>th</sup> National Symposium on Probability and Statistics (SINAPE), Gramado, BR (**Plenary Talk + Invited Short Course on Spatial Extremes**)
- Workshop on Combining Causal Inference and Extreme Value Theory in the Study of Climate Extremes and their Causes, BIRS, Kelowna, CA (*Virtual Invited Talk*)
- 5<sup>th</sup> Conference of the ISNPS, Pathos, CY
- EcoSta, Ryukoku University, Kyoto, JP
- EGU General Assembly (*Solicited Talk*)
- 2021, CMStatistics (ERCIM), King's College London, London, UK
- Spatial Data Science Conference (Virtual)
- [ICSA Symposium (*cancelled*)]
- EcoSta (Virtual), Hong Kong University of Science and Technology, HK
- 2020, Virtual TIES Meeting
- [TIES, Imperial College, London, UK (*cancelled due to COVID-19 pandemic*)]
- JSM, Philadelphia PA, US (*Invited Session*)
- [EcoSta, University of Yonsei, Seoul, SK (*postponed to 2021 due to COVID-19 pandemic*)]
- [Workshop on Functional Data over Multidimensional domains, EPFL, Lausanne, CH (*cancelled due to COVID-19 pandemic*)]
- 2019, CMStatistics (ERCIM), University of London, London, UK
- ISI World Statistics Congress, Kuala Lumpur, MY (*Special Topic Session*)
- JSM, Denver CO, US (*Invited Session*)
- Workshop on Risk Analysis for Extremes in the Earth System, Lawrence Berkeley National Lab, Berkeley CA, US (*2 Invited talks: 3h short course on Spatial Extremes & Research talk*)
- EVA, University of Zagreb, Zagreb, Croatia (*2 Invited Talks: Invited Session & Introduction to EVA Competition*)
- 2018, JSM, Vancouver, CA (*Topic Contributed Session*)
- TIES, CIMAT, Guanajuato, MX
- International Biometric Conference, Barcelona, ES (**JABES Showcase Session, Invited Talk for JABES Best 2016 Paper Award [J9]**)
- IMS Asia Pacific Rim Meeting Conference, Singapore, SG
- 4<sup>th</sup> Conference of the ISNPS, Salerno, IT
- Transition Workshop on Mathematical and Statistical Methods for Climate and the Earth System (CLIM), SAMSI, Raleigh NC, US (**Special Plenary Lecture**)
- Conference on Computational and Stat. Interface to Big Data, KAUST, Thuwal, SA (**Plenary Talk**)
- 2017, CMStatistics (ERCIM), University of London, London, UK
- EMS, University of Helsinki, Helsinki, FI
- ISI World Statistics Congress, Marrakech, MA (*Discussant and Invited Session Organizer*)
- EVA, University of Technology, Delft, NL (*2 Invited talks: Invited Session & EVA Competition*)
- EcoSta, Hong Kong University of Science and Technology, Hong Kong, CN
- Workshop on Risk Quantification and Extreme Values in Applications, EPFL, Lausanne, CH
- 2016, CMStatistics (ERCIM), University of Seville, Seville, ES
- STATMOS Workshop, Pennsylvania State University, State College PA, US
- IMS Asia Pacific Rim Meeting Conference, The Chinese University of Hong Kong, CN
- Workshop on Uncertainty Modeling in the Analysis of Weather, Climate and Hydrological Extremes, BIRS, Banff, CA
- Workshop on Uncertainty and Causality Assessment in Modeling Extreme and Rare Events, NCAR, Boulder CO, US
- Workshop on Computational Challenges of Multivariate Extremes with Applications in the Environment and Geosciences, Edinburgh, UK
- 2015, TIES, UAE University, Al Ain, UAE
- Swiss Statistics Meeting, Berne, CH (**Plenary Talk for Lambert Award 2015**)

EVA, University of Michigan, Ann Arbor MI, US  
Workshop on New Developments in Econometrics and Time Series, RUB, Bochum, DE

### ***Before joining KAUST***

- 2014, CFE (ERCIM), University of Pisa, Pisa, IT  
COMPSTAT, Geneva, CH
- 2013, PEPER workshop, Aussois, FR
- 2012, Zürich Extremes Meeting, Zurich, CH  
Workshop on Composite Likelihood Methods, BIRS, Banff, CA  
CLAPEM, Viña del Mar, CL
- 2011, EVA, Lyon, FR (*Invited talk shared with Prof. Anthony C. Davison*)
- 2010, Transition Workshop on Space-Time Analysis for Environmental Mapping, Epidemiology and Climate Change, SAMSI, Raleigh NC, US

### **Invited Seminars/Webinars**

#### ***After joining KAUST***

- 2023, National Center for Atmospheric Research (NCAR), Boulder CO, US  
EPFL, Lausanne, CH
- 2021, University of New South Wales, Sydney, AU  
Clemson University, Clemson SC, US  
EPFL, Lausanne, CH  
CMU/STAMPS Webinar, CMU, Pittsburgh, US
- 2020, Chalmers University, Gothenburg, SE  
University of Melbourne, Melbourne, AU
- 2018, North Carolina State University, Raleigh NC, US
- 2016, University of Chicago, Chicago IL, US (*2 Talks*)  
Purdue University, West Lafayette IN, US  
University of Michigan, Ann Arbor MI, US  
Ohio State University, Columbus OH, US  
Colorado School of Mines, Golden CO, US  
Newcastle University, Newcastle, UK  
Lancaster University, Lancaster, UK
- 2015, Pontificia Universidad Católica de Chile, Santiago, CL

#### ***Before joining KAUST***

- 2015, Bristol University, Bristol, UK
- 2014, KAUST, Thuwal, SA  
Laboratoire de Statistique Théorique et Appliquée (LSTA), St-Quentin-en-Yvelines, FR  
Laboratoire des Sciences du Climat et de l'Environnement (LSCE), Paris, FR  
EPFL, Lausanne, CH  
EPFL (course for PhD students in statistics), Lausanne, CH
- 2013, KAUST, Thuwal, SA

### **Contributed Talks**

#### ***After joining KAUST***

- 2023, Spatial Statistics Conference, University of Colorado, Boulder CO, US  
CRG Workshop, KAUST, Thuwal, SA
- 2022, CRG Workshop, Fafleralp, CH
- 2021, JSM (Virtual) (*Contributed Speed Talk*)

EVA (Virtual), University of Edinburgh, UK  
 Spatial Data Science conference (Virtual), UNIL, Lausanne, CH  
 EGU General Assembly (Virtual) (*vPICO Talk*)  
 Virtual CRG Workshop  
 2020, [CRG Workshop, Lancaster University, Lancaster, UK (*cancelled due to COVID-19 pandemic*)]  
 2019, Spatial Statistics Conference, Sitges, ES  
 CRG Workshop, KAUST, Thuwal, SA  
 2018, XIV EBEB – Brazilian Meeting on Bayesian Statistics, Rio de Janeiro, BR  
 2016, Workshop on Statistics for High-Dimensional and Complex Data, KAUST, Thuwal, SA  
 2015, Workshop on Computational Space-Time Statistics, KAUST, Thuwal, SA  
 JSM, Seattle WA, US

### ***Before joining KAUST***

2014, Workshop on Statistics of Extremes, KAUST, Thuwal, SA  
 JSM, Boston MA, US  
 Workshop on High-Dimensional and Multivariate Extremes, Bristol, UK  
 2013, 10<sup>th</sup> Graduate Colloquium in Mathematics, University of Berne, Berne, CH  
 2011, Annual Meeting of the EXTREMES Group, Davos, CH  
 2010, Annual Meeting of the EXTREMES Group, Davos, CH

### **Poster Presentations**

#### ***After joining KAUST***

2018, Workshop in honor of Anthony C. Davison's 60<sup>th</sup> birthday, EPFL, Lausanne, CH  
 2017, Workshop on Modern Statistics and Complex Data Structures, KAUST, Thuwal, SA  
 2016, Workshop on Uncertainty Modeling in the Analysis of Weather, Climate and Hydrological  
 Extremes, BIRS, Banff, CA (*Invited Poster*)

#### ***Before joining KAUST***

2014, KAUST Industry Collaboration Program (KICP) Research Symposium, KAUST, Thuwal, SA  
 Workshop on Spatial Statistics for Environmental and Energy Challenges, KAUST, Thuwal, SA  
 2013, CRAG-IRGC Symposium on Uncertainty: From Insight to Action, EPFL, Lausanne, CH  
 2010, Workshop on Environmetrics, NCAR, Boulder CO, US (*1<sup>st</sup> prize for best poster*)  
 IMSC, Edinburgh, UK  
 2009, EVA, Fort Collins CO, US

### **RESEARCH FUNDS**

**(Total: approx. USD \$3.7 M; My portion: approx. USD \$1.6 M; excluding baseline/start-up/computing)**

Lead Principal Investigator: Title: *Neural Estimators for Fast Optimal Inference with Intractable  
 Statistical Models in Complex Settings*  
 KAUST Opportunity Fund Program (OFP)  
 Total value: US \$199,830 (My portion: 60%) Jan 2024–Jun 2025

Lead Principal Investigator: Title: *Investigating the impacts of climate change on compound extreme  
 wildfires and PM<sub>2.5</sub> concentrations via statistical deep-learning*  
 KAUST Climate and Livability Initiative (CLI)  
 Total value: US \$100,000 (My portion: 100%) Jan–Dec 2023

Lead Principal Investigator: Title: *Feasibility Study to Perform Pipeline Corrosion Data Analysis with  
 Scarcity of Verification Information*

- Saudi Aramco  
Total value: US \$20,133 (My portion: 100%) Oct 23–Dec 22, 2022
- Collaborator: Title: *New Methods for Modelling Real-World Extremes*  
PI: Prof. S. Sisson, University of New South Wales, Australia  
Australian Research Council  
Total value: US \$398,575 (My portion: 0%) Jan 2022–Dec 2025
- Collaborator: Title: *21st Century Projections of Sub-Daily Extreme  
Precipitation by Spatio-Temporal Recalibration*  
PI: Prof. B. Hrafnkelsson, University of Iceland, Iceland  
University of Iceland Research Fund  
Total value: US \$122,700 (My portion: 0%) Jan 2022–Dec 2025
- Lead Principal Investigator: Title: *Sparse Models for Spatio-Temporal Extremes*  
KAUST Competitive Research Grant, CRG 2020  
Total value: US \$1,050,000 (My portion: 63%) Apr 2021–Mar 2024
- Co-Principal Investigator: Title: *Natural Hazard Chain (NaHaC): from Earthquake  
Shaking to Landslide Disasters*  
Lead PI: Prof. P. Martin Mai, KAUST, Saudi Arabia  
KAUST Competitive Research Grant, CRG 2020  
Total value: US \$1,050,000 (My portion: 26%) Apr 2021–Mar 2024
- Lead Principal Investigator: Title: *Statistical Estimation and Detection of Extreme Hot  
Spots, with Environmental and Ecological Applications*  
KAUST Competitive Research Grant, CRG 2017  
Total value: US \$771,674 (My portion: 58%) Apr 2018–Mar 2021
- Lead Principal Investigator: Computing resources on KAUST’s supercomputer, Shaheen II:  
Project k1359, 80M core hours (equiv. to US \$1.04M grant) 2019–2023  
Project k1342, 2M core hours (equiv. to US \$26K grant) 2018–2019  
Project k1241, 2M core hours (equiv. to US \$26K grant) 2017–2018  
Project k1209, 2M core hours (equiv. to US \$26K grant) 2017–2018  
Project k1201, 10.05M core hours (equiv. to US \$130K grant) 2017–2019
- Lead Principal Investigator: KAUST’s generous sustained funding (Baseline + Start-up) 2015–2027

## RESEARCH SUPERVISED

\*The list of KAUST Post-Doctoral Researchers and graduate (MS and/or PhD) students that I have supervised so far is summarized in the following table.

Supervision at KAUST (of KAUST students and Post-Doctoral Researchers)					
Post-Doc Supervision		Primary Supervision – PhD		Primary Supervision – Masters	
Completed: 4	In Progress: 1	Completed: 7	In Progress: 3	Completed: 7	In Progress: 1

## Post-Doctoral Researchers Supervised

### **Completed**

1. Peter Braunsteins; June 2022–August 2022 (remotely)  
PhD in Mathematics and Statistics, 2018, University of Melbourne, AU  
*Position after Post-Doc:* Lecturer (i.e., equiv. to Assistant Professor) at the University of New South Wales, Sydney, Australia  
*Papers under my supervision (see details above):* [P8]
2. Arnab Hazra; March 2018–December 2021  
PhD in Statistics, 2017, North Carolina State University, US  
*Position after Post-Doc:* Assistant Professor at IIT Kanpur, India  
*Papers under my supervision (see details above):* [J35, B3, D4, R1, R2, J49, R8]
3. Luigi Lombardo; in co-supervision with Prof. P. Martin Mai (PSE, KAUST); April 2016–December 2018  
PhD in Geology, 2015, University of Tuebingen, Germany, and University of Palermo, Italy  
*Position after Post-Doc:* Assistant Professor at the University of Twente, Netherlands  
*Papers under my supervision (see details above):* [J12, J14, J18, J22, J28, J41, B2, D2]
4. Daniela Castro-Camilo; November 2015–June 2019  
PhD in Statistics, 2015, Pontifical Catholic University of Chile (PUC), Chile  
*Position after Post-Doc:* Lecturer (i.e., equiv. to Assistant Professor) at the University of Glasgow, UK  
*Papers under my supervision (see details above):* [J12, J23, J27, J44, D1]

### **In Progress**

5. Jordan Richards; November 2021–present  
PhD in Statistics, 2021, Lancaster University, UK  
*Position after Post-Doc:* Lecturer (i.e., equiv. to Assistant Professor) at the University of Edinburgh, UK  
(expected to start on February 1<sup>st</sup>, 2024)  
*Papers under my supervision (see details above):* [J56, R4, R8, R14, R20, R21, P9]

## PhD: Advisor or co-Advisor (Primary)

### **Completed**

1. Daniela Cisneros Arce, Statistics; Start date: Fall 2017; Graduated: Fall 2023  
*Next position:* TBD  
*Papers under my supervision (see details above):* [D3, J49, R19, R20]
2. Matheus B. Guerrero, Statistics; Start date: Fall 2018; Graduated: Spring 2023; co-supervision with Prof. Hernando Ombao (STAT Program, CEMSE Division, KAUST). I had the role of a *Primary Advisor*.  
*Next position:* Assistant Professor at California State University, Fullerton, US (starting in August 2023)  
*Papers under my supervision (see details above):* [J47, R11, P11]
3. Yan Gong, Statistics; Start date: Spring 2018; Graduated: Spring 2023  
*Next position:* Postdoc at Imperial College, London, UK (May to September, 2023), followed by Postdoc at Harvard School of Public Health, US (October 2023 onwards)  
*Papers under my supervision (see details above):* [J42, J46, J49, R9]
4. Zhongwei Zhang, Statistics; Start date: Fall 2018; Graduated: Fall 2022  
*Papers under my supervision (see details above):* [J43, J50, J51, R18, P2]  
*Next position:* Post-Doctoral researcher at the University of Geneva, Switzerland
5. Rishikesh Yadav, Statistics; Start date: Fall 2017; Graduated: Spring 2022  
*Next position:* Post-Doctoral researcher at HEC Montréal, Canada  
*Papers under my supervision (see details above):* [J33, J39, J49, J55]
6. Peng Zhong, Statistics; Start date: Spring 2019; Graduated: Spring 2022  
*Next position:* Post-Doctoral Fellow position at the University of New South Wales, Sydney, Australia

*Papers under my supervision (see details above): [J38, J50, J53, R3, R9, R10]*

7. Sabrina Vettori, Statistics; Start date: Fall 2014; Graduated: Fall 2017; co-supervision with Prof. Marc Genton (STAT Program, CEMSE Division, KAUST). I had the role of a *Primary Advisor*.  
*Next position:* Declined a very competitive [Eberly Postdoctoral Research Fellowship](#) at Pennsylvania State University, to work as CEO of [Edama Organic Solutions](#) (successful KAUST start-up)  
*Papers under my supervision (see details above): [J15, J24, J26]*

### ***In Progress***

8. Noura Alotaibi, Statistics; Start date: Fall 2020; Expected Graduation: Summer 2025  
*Papers under my supervision (see details above): [P14]*
9. Paolo Redondo, Statistics; Start date: Spring 2021; Expected Graduation: Fall 2024; co-supervision with Prof. Hernando Ombao (STAT Program, CEMSE Division, KAUST). I have the role of a *Primary Advisor*.  
*Papers under my supervision (see details above): [R6, R13]*
10. Xuanjie Shao, Statistics; Start date: Spring 2022; Expected Graduation: Spring 2025  
*Papers under my supervision (see details above): [R8, P13]*

### ***PhD: Advisor or co-Advisor (Secondary)***

#### ***Completed***

11. Rodrigo Rubio, Statistics, Pontifical Catholic University of Chile (PUC); Start date: Fall 2014; Graduated: Spring 2020; joint supervision with Prof. Miguel de Carvalho (PUC, Chile) as primary supervisor;  
*Next position:* Senior Data Analyst at Banco Bci, Santiago, Chile.  
*Papers under my supervision (see details above): [J48, P1]*

### ***PhD: Dissertation Committee Member***

#### ***At KAUST***

1. Sagnik Mondal; Statistics; November 2023 (*upcoming*)  
PhD Advisor: Prof. Marc G. Genton  
*Thesis title:* Models and Inference for Non-Gaussian Random Vectors and Fields
2. Daniela Cisneros Arce; Statistics; September 2023  
PhD Advisor: Prof. Raphaël Huser  
*Thesis title:* Extreme-Value Models and Graphical Methods for Spatial Wildfire Risk Assessment
3. Esmail Fattah; Statistics; June 2023  
PhD Advisor: Prof. Haavard Rue  
*Thesis title:* Approximate Bayesian Inference Based on Dense Matrices and New Features Using INLA
4. Zhedong Liu; Statistics; May 2023  
PhD Advisor: Prof. Haavard Rue  
*Thesis title:* Leave-group-out Cross-validation for Latent Gaussian Models
5. Rafael Cabral; Statistics; May 2023  
PhD Advisor: Prof. Haavard Rue  
*Thesis title:* Criticism and Robustification of Latent Gaussian Models
6. Matheus B. Guerrero; Statistics; April 2023  
PhD Advisor: Prof. Raphaël Huser  
*Thesis title:* Modeling and Inference for Multivariate Time Series, with Applications to Integer-Valued Processes and Nonstationary Extreme Data
7. Yan Gong; Statistics; March 2023  
PhD Advisor: Prof. Raphaël Huser  
*Thesis title:* Flexible Multivariate, Spatial, and Causal Models for Extremes
8. Zhongwei Zhang; Statistics; October 2022

- PhD Advisor: Prof. Raphaël Huser  
*Thesis title:* Flexible Extremal Dependence Models for Multivariate and Spatial Extremes
9. Rishikesh Yadav; Statistics; April 2022  
 PhD Advisor: Prof. Raphaël Huser  
*Thesis title:* Bayesian Modeling of Sub-Asymptotic Spatial Extremes
  10. Peng Zhong; Statistics; Graduated: April 2022  
 PhD Advisor: Prof. Raphaël Huser  
*Thesis title:* Modeling and Simulation of Spatial Extremes based on Max-Infinitely Divisible and Related Processes
  11. Wardana Saputra; Ali I. Al-Naimi Petroleum Engineering Research Center; Graduated: November 2021  
 PhD Advisor: Prof. Tadeusz W. Patzek  
*Thesis title:* Physics-Guided Data-Driven Production Forecasting in Shales
  12. Wanfang Chen; Statistics; Graduated: October 2020.  
 PhD Advisor: Prof. Marc Genton  
*Thesis title:* Spatio-Temporal Statistical Modeling with Application to Wind Energy Assessment in Saudi Arabia
  13. Nadhir Ben Rached; Applied Mathematics and Computational Science; Graduated: October 2018.  
 PhD Advisor: Prof. Mohammed-Slim Alouini  
*Thesis title:* Rare Events Simulations with Applications to the Performance Evaluation of Wireless Communication Systems
  14. Sabrina Vettori; Statistics; Graduated: December 2017.  
 PhD co-Advisors: Prof. Raphaël Huser and Prof. Marc Genton  
*Thesis title:* Models and Inference for Multivariate Spatial Extremes

***Outside KAUST***

15. Alina Kumukova; University of Edinburgh, UK; Expected graduation: September 2023  
 PhD Advisor: Prof. Miguel de Carvalho  
*Thesis title:* Regression Analysis for Extreme Value Responses and Covariates
16. Junho Lee; University of Edinburgh, UK; Graduated: January 2022.  
 PhD Advisor: Prof. Miguel de Carvalho  
*Thesis title:* Bayesian Analysis of Nonstationary Extremes
17. Rodrigo Rubio; Pontifical Catholic University of Chile (PUC); Graduated: January 2020.  
 PhD co-Advisors: Prof. Miguel de Carvalho (PUC) and Raphaël Huser (KAUST)  
*Thesis title:* Interfaces Between Statistical Learning and Risk Management
18. Daniela A. Castro-Camilo; Pontifical Catholic University of Chile (PUC); Graduated: August 2015.  
 PhD Advisor: Prof. Miguel de Carvalho  
*Thesis title:* Bivariate Extremes: Modeling, Smoothing, and Regression

*PhD: Proposal Committee Member*

***At KAUST***

1. Kesen Wang; November 2023 (*upcoming*)  
 PhD Advisor: Prof. Marc G. Genton  
*Thesis title:* Neural Networks for Gaussian and Non-Gaussian Random Vectors and Fields
2. Noura Alotaibi; August 2023  
 PhD Advisor: Prof. Raphaël Huser  
*Thesis title:* Modeling Multivariate Low and Large Extremes Without Threshold Selections
3. Paolo Redondo; November 2022  
 PhD co-Advisors: Prof. Raphaël Huser and Prof. Hernando Ombao

- Thesis title:* Modelling Complex Dependence in Multivariate Time Series
4. Theodoros Aspiotis; October 2022  
PhD Advisor: Prof. P. Martin Mai  
*Thesis title:* Novel Approaches of Multi-Cycle Earthquake Simulations. Applications in the Wider Area of the Gulf of Aqaba
  5. Tariq Anwar Aquib; October 2022  
PhD Advisor: Prof. P. Martin Mai  
*Thesis title:* New Approaches to High Frequency Modelling in Kinematic Ground Motion Simulations
  6. Shourya Dutta; August 2022  
PhD Advisor: Prof. Haavard Rue  
*Thesis title:* Correcting the Laplace Method with Variational Bayes: Marginal Variance
  7. Sagnik Mondal; June 2022  
PhD Advisor: Prof. Marc Genton  
*Thesis title:* Models and Inference for Non-Gaussian Random Vectors and Fields
  8. Daniela Cisneros Arce; May 2022  
PhD Advisor: Prof. Raphaël Huser  
*Thesis title:* Spatial Models and Extreme-Value Methods for Wildfire Risk Assessment
  9. Daniela Arias Ortiz; April 2022  
PhD Advisor: Prof. Tadeusz W. Patzek  
*Thesis title:* Forecasts and Uncertainty Quantification of Oil and Gas Production from Shales
  10. Zhongwei Zhang; January 2022  
PhD Advisor: Prof. Raphaël Huser  
*Thesis title:* Subasymptotic Modeling of Spatial-Temporal Extremes
  11. Zhedong Liu; November 2021  
PhD co-Advisor: Prof. Haavard Rue  
*Thesis title:* Leave-Group-Out Cross-Validation in INLA
  12. Matheus B. Guerrero; September 2021  
PhD co-Advisors: Prof. Raphaël Huser and Prof. Hernando Ombao  
*Thesis title:* Modeling and Inference for Multivariate Time Series, with Applications to Integer-Valued Processes and Nonstationary Extremes Data
  13. Peng Zhong; Statistics; July 2021  
PhD Advisor: Prof. Raphaël Huser  
*Thesis title:* Modeling and Simulation of Spatial Extremes based on Max-Infinitely Divisible Processes
  14. Wardana Saputra; Ali I. Al-Naimi Petroleum Engineering Research Center; November 2020  
PhD Advisor: Prof. Tadeusz W. Patzek  
*Thesis title:* Generalized Extreme Value Statistics, Physical Scaling, and Data-Driven Forecasts of Oil and Gas Production in Shales
  15. Yan Gong; Statistics; May 2020  
PhD Advisor: Prof. Raphaël Huser  
*Thesis title:* Models for Multivariate and Spatial Extremes with Flexible Tail Dependence Structures
  16. Rishikesh Yadav; Statistics; April 2020  
PhD Advisor: Prof. Raphaël Huser  
*Thesis title:* Bayesian Modeling of Spatial and Spatio-Temporal Extremes
  17. Wanfang Chen; Statistics; December 2018  
PhD Advisor: Prof. Marc Genton  
*Thesis title:* Spatio-Temporal Statistical Models for Wind Energy Assessment in Saudi Arabia
  18. Sabrina Vettori; Statistics; November 2015  
PhD co-Advisors: Prof. Raphaël Huser and Prof. Marc Genton

- Thesis title:* Models and Inference for High-Dimensional Multivariate and Spatial Extremes
19. Nadhir Ben Rached; Applied Mathematics and Computational Science; Graduated: June 2015.  
PhD Advisor: Prof. Slim Alouini  
*Thesis title:* Fast Simulation Methods of Rare Events with Application to the Performance Evaluation of Wireless Communication Systems

MS: Advisor

**Completed**

1. Xuanjie Shao; Statistics; Start date: Fall 2020; Graduated: Spring 2022  
*Next position:* PhD student in statistics at KAUST with Prof. Raphaël Huser
2. Abdulaziz Almutlaq; Statistics; Start date: Fall 2020; Graduated: Fall 2021  
*Next position:* Management consultancy at Strategic Gears, Riyadh, KSA  
*Now:* Lecturer in the Mathematics Department at King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, SA
3. Enas Alahmadi; Statistics; Start date: Fall 2018; Graduated: Spring 2020;  
*Next position:* Assistant Market Analyst at the Saudi Industrial Development Fund (SIDF), Riyadh, KSA  
*Papers under my supervision (see details above):* [R1]
4. Rustam Bekishev; Statistics; Start date: Fall 2017; Graduated: Fall 2018;  
*Next position:* Senior Business Analyst at the Applied Economics Research Center, Astana, Kazakhstan
5. Peng Zhong; Statistics; Start date: Fall 2017; Graduated: Fall 2018;  
*Next position:* PhD student in statistics at KAUST with Prof. Raphaël Huser
6. Zhuldyzay Baki; Statistics; Start date: Fall 2016; Graduated: Spring 2018;  
*Next position:* Risk Assurance Associate at PwC, Astana, Kazakhstan  
*Now:* PhD student in Statistics at the University of Twente, Netherlands, with Prof. Marie van Lieshout
7. Yan Gong; Statistics; Start date: Fall 2016; Graduated: Fall 2017;  
*Next position:* PhD student in statistics at KAUST with Prof. Raphaël Huser

**In Progress**

8. Mohammad Alhyari, Statistics; Start date: Fall 2023; Expected Graduation: Fall 2024

MS: Thesis Committee

**At KAUST**

1. Haibo Wu; Statistics; Spring 2023  
MS Advisor: Prof. Hernando Ombao  
*Thesis title:* Multi-Scale Wavelet Coherence with its Applications
2. Miguel A. A. Ballesteros; Applied Mathematics and Computational Science; Spring 2022  
MS Advisor: Prof. Ajay Jasra  
*Thesis title:* Unbiased Estimators Applied to the Ensemble Kalman-Bucy Filter
3. Xuanjie Shao; Statistics; Spring 2022  
MS Advisor: Prof. Raphaël Huser  
*Thesis title:* Flexible Modeling of Nonstationary Extremal Dependence Using Spatially Fused Lasso and Ridge Penalties
4. Xi Peng; Computer Science; Spring 2022  
MS Advisor: Prof. Robert Hoehndorf  
*Thesis title:* Description Logic EL++ Embeddings with Intersectional Closure
5. Amine Bejaoui; Statistics; Spring 2020  
MS Advisor: Prof. Mohammed-Slim Alouini  
*Thesis title:* Improved Quadratic Discriminant Analysis in Unbalanced Settings

6. Zhuldyzay Baki; Statistics; Spring 2018  
MS Thesis Advisor: Prof. Raphaël Huser  
*Thesis title:* Local Likelihood Approach for High-Dimensional Peaks-Over-Threshold Inference
7. Soumaya Elkantassi; Applied Mathematics and Computational Science; Spring 2017  
MS Thesis Advisor: Prof. Raul Tempone  
*Thesis title:* Probabilistic Forecast of Wind Power Generation by Stochastic Differential Equation Models
8. Rui Meng; Applied Mathematics and Computational Science; Spring 2016  
MS Thesis Advisor: Prof. Ying Sun  
*Thesis title:* Growth Curve Analysis and Change-points Detection in Extremes

### **Outside KAUST**

9. Mahnoor Ahmed; Faculty of Geo-Inform. Science and Earth Observation, University of Twente; Fall 2022  
MS Thesis Advisors: Prof. Luigi Lombardo and Prof. Hakan Tanyas  
*Thesis title:* Towards Near Real-Time Forecasting of Rainfall-Induced Landslides

### Interns and consultants: Research Supervised

#### **At KAUST**

1. Matthew Sainsbury-Dale; PhD Student of Andrew Zammit-Mangion and Noel Cressie at the University of Wollongong, AU; Sep-Dec, 2022 (as visiting student intern; VS program) and Apr-Aug, 2023 (as remote consultant working full-time for KAUST)  
*Papers under my co-supervision (see details above):* [J54, R14, R21, P5]
2. Ashok Dahal; PhD Student of Luigi Lombardo at the University of Twente, NL; Jan-Jun, 2022; VS program; co-supervision with Prof. P. Martin Mai (official host)  
*Papers under my co-supervision (see details above):* [J52, R5, P12]
3. Silius M. Vandeskog; PhD Student of Sara Martino at NTNU, NO; Jan-Mar, 2022; VS program  
*Papers under my co-supervision (see details above):* [R7, R16]
4. Mahnoor Ahmed; MS Student of Luigi Lombardo at the Univ of Twente, NL; Jan-Apr, 2022; VS program  
*Papers under my supervision (see details above):* [R17]
5. Arnab Hazra; Remote research consultant; Sep, 2018-Mar, 2019 (before joining as a postdoc)  
*Papers under my supervision (see details above):* [J35, B3, D4, R1, R2, J49, R8]
6. Enas Alahmadi; BS Student; Jun-Jul, 2018; KGSP program  
*Papers under my supervision (see details above):* [R1]

## **TEACHING EXPERIENCE**

### **Instructor at KAUST**

Dependence Modeling with Copulas (STAT 390/394); Spring 2020, 2022 [[Syllabus](#)]  
 Statistics of Extremes (STAT 380); Spring 2016, 2017, 2018, 2019, 2021, 2023 [[Syllabus](#)]  
 Linear Models (STAT 230); Fall 2015, 2016, 2017, 2018 [[Syllabus](#)]  
 Probability and Statistics (STAT 220); Fall 2019, 2020, 2021, 2022, 2023 [[Syllabus](#)]  
 Graduate Seminar series (AMCS/STAT 298/398); Fall 2017, Spring 2018

### **Teaching Assistant at EPFL**

Monte Carlo Inference; Fall 2010, 2012  
 Mathematics projects; Spring 2012  
 Statistics of Extremes; Fall 2009, 2011  
 Calculus; Fall 2011  
 Time Series; Spring 2010, 2011

Probability and Statistics; Spring 2011  
Statistics; Spring 2010

### **Short Courses and Special Lectures**

Recent Advances in Statistical Modeling of Spatial Extremes; Invited Short Course, SINAPE Conference, Gramado, BR, Summer 2022  
Are heatwaves getting more intense, wider or both? A statistical perspective; AMCS-STAT Winter School, KAUST; February 2021  
Statistical Analysis of Extreme Events; AMCS-STAT Winter School, KAUST; February 2021  
Statistical Analysis of Extreme Events; AMCS Summer School, KAUST; September 2019  
Contemporary Advances in Statistical Analysis of Extreme Events; 3h Invited Lecture at the Workshop on Risk Analysis for Extremes in the Earth System, Lawrence Berkeley National Lab, Berkeley CA, US, Summer 2019  
Climate Extremes and Max-Stable Processes; 1.5h Invited Lecture at the Transition Workshop on Mathematical and Statistical Methods for Climate and the Earth System (CLIM), SAMSI, Raleigh NC, US  
Statistics of Extremes, 3-day short course for statisticians at KAUST, Fall 2014  
Space-Time Modeling of Extreme Events, 2h Invited lecture at EPFL, Switzerland, Fall 2014

## **UNIVERSITY SERVICE AND OUTREACH**

### **University Committees**

*Chair*, Organizing Committee for the Al-Kindi Distinguished Statistics Lectures, KAUST: 2021  
*Member*, Nomination Committee for the Al-Kindi Distinguished Statistics Lectures, KAUST: 2015–present  
*Chair*, Statistics Program Liaison for the joint AMCS-STAT Winter School, KAUST: 2022–present  
*Member*, Statistics Program Student Admission Committee, KAUST: 2022–present  
*Faculty Advisor*, Statistics Program, KAUST ASA Student Chapter, KAUST: 2022–present  
*Member*, Statistics Program Qualifying Exam Committee, KAUST: 2015–present  
*Member*, Statistics Program Student Recruitment Committee, KAUST: 2020–2022  
*Member*, Statistics Program Curriculum Committee, KAUST: 2020–2022

### **Outreach**

Speaker at the AMCS-STAT Winter School for Saudi students, February 2020–2021  
Speaker at the AMCS Summer School, September 2019  
Co-Organizer of the Annual Statistics and Data Science Workshops, October/November 2015–2019  
Presentation of Statistics Program to KGSP students, February 2019  
Participation in SciCafe on “Power of Statistics: Extreme or Environmentally Friendly”, April 2017  
Research presentation for Saudi General Authority of Statistics, April 2017  
Research presentation for KAUST Big Data Day, December 2016

## **PROFESSIONAL SERVICE**

### **Conference and workshop organization**

*Co-organizer*: 2023 BIRS-IMAG Workshop on “Modern Statistical and Machine Learning Approaches for High-Dimensional Compound Spatial Extremes”, Granada, ES  
*Co-organizer*: 2022 Workshop on Statistics, KAUST  
[*Scientific Committee Member*: TIES 2020 Conference, Imperial College, London, UK (*postponed to 2021 due to COVID-19 pandemic*)]  
[*Scientific Committee Member*: 2020 Spatial Data Science Workshop, UNIL, Lausanne, CH (*postponed to 2021 due to COVID-19 pandemic*)]  
[*Scientific Program Committee Member*: EcoSta 2020 conference, Seoul, SK (*postponed to 2021 due to COVID-19 pandemic*)]

*Member, Scientific Program Committee:* CFE-CMStatistics 2019 conference, London, UK  
*Co-organizer:* 2019 Workshop on Statistics and Data Science, KAUST  
*Co-organizer:* 2018 Workshop on Statistics and Data Science, KAUST  
*Co-organizer:* 2017 Workshop on Modern Statistics and Complex Data Structures, KAUST  
*Chair:* 2016 Workshop on Statistics for High-Dimensional and Complex Data, KAUST  
*Co-organizer:* 2015 Workshop on Computational Space-Time Statistics, KAUST  
*Co-organizer:* 2014 Workshop on Statistics of Extremes, KAUST

***Organization of invited sessions at international conferences***

JSM 2023, Toronto, US  
EVA 2023, Milan, IT  
EGU 2023, Vienna, AU, co-convener of session on “Spatial extremes in the hydro- and atmosphere: understanding and modelling”  
CMStatistics 2021, King’s College London, London, UK  
CMStatistics 2020, King’s College London, London, UK  
[TIES 2020, Imperial College, London, UK (*postponed to 2021 due to COVID-19 pandemic*)]  
[EcoSta 2020, Yonsei University, Seoul, SK (*postponed to 2021 due to COVID-19 pandemic*)]  
CMStatistics 2019, University of London, London, UK  
CMStatistics 2018, University of Pisa, Pisa, Italy  
4<sup>th</sup> conference of the International Society for Non-Parametric Statistics (ISNPS) 2018, Salerno, Italy  
CMStatistics 2017, University of London, London, UK  
ISI World Statistics Congress 2017, Marrakech, Morocco

***Other***

*Member:* ISI Nominations Committee (TIES representative), 2021–present  
*Co-organizer:* One World Extremes Seminar (online seminars on EVT), 2020–2023  
*Member:* ISI Publications Committee (TIES representative), 2020–present  
*Co-chair:* team “Statistics of Extremes and Appl.” of the CMStatistics network, 2020–present  
*Organizer:* EVA 2019 Data Competition on Spatio-Temporal Prediction of Red Sea Surface Temperature Extremes (led to a Special Invited Session at EVA 2019, and a Special Issue in the journal *Extremes*)

**REVIEWER EXPERIENCE**

***Journals***

Annals of Applied Statistics;  
Annals of Statistics;  
Biometrika;  
Canadian Journal of Statistics;  
Computational Statistics and Data Analysis;  
Earth System Dynamics;  
Econometrics and Statistics;  
Electronic Journal of Statistics;  
Environmetrics;  
Extremes;  
Hydrology and Earth System Sciences;  
IEEE Transactions on Signal Processing;  
IEEE Transactions on Smart Grid;  
Journal of Agricultural, Biological, and Environmental Statistics;  
Journal of the American Statistical Association: Applications and Case Studies;  
Journal of the American Statistical Association: Theory and Methods;  
Journal of Computational and Graphical Statistics;

Journal of Hydrology;  
Journal of Mountain Science;  
Journal of Multivariate Analysis;  
Journal of the Royal Statistical Society: Series B  
Journal of the Royal Statistical Society: Series C  
Machine Learning;  
Mathematical Geosciences;  
Metron;  
Natural Hazards;  
Nature Climate Change;  
REVSTAT;  
Sankhya;  
Scandinavian Journal of Statistics;  
Scientific Reports;  
Spatial Statistics;  
Stat;  
Statistical Science;  
Statistics and Computing;  
Stochastic Environmental Research and Risk Assessment;  
TEST;  
Water Resources Research

***Funding agencies***

Army Research Office (ARO), US  
Natural Sciences and Engineering Research Council of Canada (NSERC), Canada

***Other***

KAUST Research Computing Allocation Committee (RCAC), Saudi Arabia