Reinhard Furrer

Place of origin Eisten, VS, Switzerland; born on 04. 10. 1972
Married, three children, born 2006, 2007 and 2010.

@ReinhardFurrer

Department of Mathematical Modeling and Machine Learning
University of Zurich
Winterthurerstrasse 190
8057 Zurich

+41-44-63-55843
mailto:reinhard.furrer@uzh.ch
http://www.math.uzh.ch/furrer
http://www.math.uzh.ch/as

Research Interests

Spatial statistics, spatio-temporal statistics, non stationary spatial processes, large datasets, statistical computing, statistical software, scale-space decomposition, fusing multiscale biodiversity data, additive Bayesian networks, statistical evaluation of climate and weather model output, small sample statistics for animal experiments.

Professional Experience

2024–	Full professor at the Department of Mathematical Modeling and Machine Learning, University of Zurich (UZH), Switzerland.
2022–2023	Full professor at the Department of Mathematics, UZH.
2014–2023	Affiliate faculty member Institute of Computational Science, UZH.
2016–2022	Associate professor at the Department of Mathematics, UZH.
2009–2016	Assistant professor (tenure track) at the Department of Mathematics, UZH.
2005–2009	Assistant professor at the Department of Mathematical and Computer Sciences, Colorado School of Mines (CSM), Golden, CO, USA.
2002–2005	Postdoctoral fellow at the Geophysical Statistics Project, National Center for Atmospheric Research (NCAR), Boulder, CO, USA.
1998–2002	Research assistant at EPFL, Switzerland.

Education

May 2017	Certificate of Advanced Studies (CAS) "Leadership und Governance an Hochschulen" at UZH.
May 2002	Doctoral thesis at the Swiss Federal Institute of Technology in Lausanne (EPFL): *Aspects of Modern Geostatistics: Nonstationarity, Covariance Estimation and State-Space Decompositions.* Advisor Prof. Stephan Morgenthaler.
March 1998	Diploma in Mathematics at EPFL. Undergraduate thesis: *Spatial statistics: Point processes and multivariate measures.*
July 1997	Certificate of Applied Mathematics Teaching (CESMA), EPFL.
1993–1998	Undergraduate studies at EPFL.
July 1993	Scientific baccalaureate type C, College Spiritus Sanctus, Brig, Switzerland.
June 1991	Graduation, North Kossuth High School, Iowa, USA.

Grants

Jan. 2023	Co-PI: Stroke DynamiX: Graphical and Causal Networks for Personalized Stroke Management, Innovationsprogramm DIZH (/2023–/2025), PI: Sven Hirsch, ZHAW.
July 2022	PI: Entwicklung des Softwareumgebung Stats4All, ULF-Focus Innovation UZH (09/2022–09/2023, CHF78k).
July 2022	PI: Entwicklung des Minorprogramms Angewandte Wahrscheinlichkeit und Statistik, ULF-Program Innovation UZH (09/2022–09/2023, CHF24k).
Mai 2022	PI: How Small Is Big Enough? Tackling Challenges in Fusing Big Numbers of Small Data Sets, Emeritus Stiftung (06/2022–12/2023, CHF58k).
Jan. 2021	Co-PI: Airborne Research Platform for the Earth System (ARES), SNSF Roadmap RI 2019. 20RMP1_180450. PI: M. Schapman.
July 2020	PI: Gapfilling for ensemble postprocessing for high-impact events, Meteoschweiz (10/2020–12/2022, CHF230k).
March 2020	Co-PI: TTF Statistics (joint with D. Van de Ville, EPFL) within the NCCR Evolving Language (6/2020–, CHF225k). PIs: B. Bickel (UZH), A.-L. Giraud (UniGE), K. Zuberbühler (UniNE).
Dec. 2018	PI: Lernumgebung für den Statistik Unterricht (LESU), Lehrkredit UZH (01/2019–06/2020, CHF40k).
Oct. 2017	PI: Disentangling evidence from huge multivariate space-time data from the earth sciences, SNSF 175529 (02/2018–, CHF487k).
Jan. 2013	Co-PI: Assessing uncertainty in global change–biodiversity research using multi-scale Bayesian modelling, and, Detection and space-time modeling of biome transition zones Subproject within the URPP 'Global Change and Biodiversity' (1/2013–12/2016, CHF303k of CHF4'749k, and 1/2017–12/2020 CHF260k of CHF4'220k and 1/2021–12/2024 CHF60k). PIs: M. Schaepman (RSL, UZH), O. Petchey (IEU, UZH), B. Schmid (IEU, UZH).
Nov. 2012	Co-PI: R'Equip: Computing equipment, SNSF 144973 (05/2013–04/2014, CHF120k) + UZH matching. PI: J. Rosenthal (UZH).
Oct. 2012	PI: Multivariate Modeling of Large Non-stationary Spatial and Spatio-temporal Climate Fields, SNSF 143282 (1/2013–12/2015, CHF212k).
Jan. 2012	PI: Developing Bayesian Networks as a tool for Zoonotic Systems Epidemiology, SNSF 138562 (1/2012–7/2015, CHF194k).
Oct. 2010	Co-PI: Development of Transmission Models for an Emergent Parasitic Zoonosis, SNSF 132482 (1/2011–6/2015, CHF360k). PI: P. Torgerson (Vetsuisse, UZH).
March 2010	PI: Multivariate Non-stationary Spatial Mixed-effects Models for Intelligent, Continuous Compaction Control, SNSF 129782 (4/2010–3/2013, CHF155k).
July 2009	Co-PI: Extraction of Layer Properties from Intelligent Compaction Data, NCHRP-145 (6/2009-12/2011, $140k). PI: M. Mooney (CSM).
Sept. 2006	PI: Non-stationary Spherical Processes to Synthesize Multimodel Climate Change Simulations, NSF-CMG DMS-0621118 (09/2006–09/2010, $260k).

Sept. 2003	Collaborator: Development of Spatio-Temporal and Multi-Resolution Methods for Detecting the Impact of Volcanic and Solar Forcings in Climate, NSF-CMG ATM-0327936 (09/2003–09/2006, $300k). PI: P. Naveau (CU Boulder).

Awards

June 2020	Nomination *Teacher of the Hour*, Center for University Teaching and Learning, UZH.
Oct. 2007	*Nobel Peace Price* as a contributing author to Chapter 10 (*Global Climate Projections*) of the Working Group I contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report: *Climate Change 2007: The Physical Science Basis* (among more than 800 contributing and 450 lead authors).
April 1998	*Prix Jean Landry* to reward a scientific work with original research within all EPFL diploma theses.
July 1997	*Prix de la Société vaudoise des ingénieurs et architectes* to reward the student with the best grade in the third year at EPFL.
Sept. 1992	First Prize at European Community Contest For Young Scientists for the project *Graphtal Plants and Varieties of Trees*.
April 1992	First Prize at *Schweizer Jugend forscht* for the project *Graphtale Pflanzen und Häufigkeit von Bäumen*.

Professional Memberships

Member of the American Statistical Association, the Institute of Mathematical Statistics, the International Environmetrics Society, the International Association of Mathematical Geology, the Swiss Statistical Society and the TeX Users Group.

Publications

Refereed Journal Publications

†: joint first authorship; $^|$: equal contribution; ‡: joint last authorship.

1 Furrer, R. and Hediger, M. (2023). Asymptotic analysis of ML-covariance parameter estimators based on covariance approximations. *Electronic Journal of Statistics*, 17(2), 3050–31021.

2 Bodenhausen, N., Hess, J., Valzano, A., Deslandes-Hérold, G., Waelchli, J., Furrer, R., van der Heijden, M. G. A. and Schlaeppi, K. (2023). Predicting soil fungal communities from chemical and physical properties. *Journal of Sustainable Agriculture and Environment*, 2(3), 225–237.

3 Rocchini, D., Nowosad, J., D'Introno, R., Chieffallo, L., Bacaro, G., Gatti, R. C. Foody, G. M. Furrer, R., Gábor, L., Malavasi, M., Marcantonio, M., Marchetto, E., Moudrý, V., Ricotta, C., *v*Símová, P., Torresani, M. and Thouverai, E. (2023). Scientific maps should reach everyone: The cblindplot R package to let colour blind people visualise spatial patterns. *Ecological Informatics*, 76, 102045.

4 Thouverai, E., Marcantonio M., Lenoir, J., Mariasole Galfré, M., Marchetto, E., et al. (2023). Integrals of life: tracking ecosystem spatial heterogeneity from space through the area under the curve of the parametric Rao's Q index. *Ecological Complexity*, 52, 101029.

5 Kratzer, G., Lewis, F., Comin, A., Pittavino, M. and Furrer, R. (2023). Additive Bayesian Network Modelling with the R Package abn. *Journal of Statistical Software*, 105(1), 1–41.

6 Schuh, L. A., Santos, M. J., Schaepman, M. E. and Furrer, R. (2023). An Empirical Bayesian Approach to Quantify Multi-Scale Spatial Structural Diversity in Remote Sensing Data. *Remote Sensing*, 15(1), 14.

7 Flury, R. and Furrer, R. (2022). Pipeline to Identify Dominant Features in Spatial Data. *Journal of Computational Mathematics and Data Science*, 5, 100063.

8 Dambon J. A., Sigrist, F. and Furrer, R. (2022). Joint variable selection of both fixed and random effects for Gaussian process-based spatially varying coefficient models. *International Journal of Geographical Information Science*, 36(12), 2525–2548.

9 Bachoc, F., Porcu, E., Bevilacqua, M., Furrer, R. and Faouzi, T. (2022). Asymptotically equivalent prediction in multivariate geostatistics, *Bernoulli*, 28(4), 2518–2545.

10 Delucchi, M., Spinner, G. R., Scutari, M., Bijlenga, P., Morel, S., Friedrich, C. M., Furrer, R. and Hirsch, S. Bayesian network analysis reveals the interplay of intracranial aneurysm rupture risk factors. *Computers in Biology and Medicine*, 147, 105740.

11 Blasi, F., Caamaño-Carrillo, C., Bevilacqua, M. and Furrer, R. (2022). A selective view of climatological data and likelihood estimation. *Spatial Statistics*, 50, 100596.

12 Ingelfinger, F., Gerdes, L. A., Kavaka, V. et al. (2022). Twin study reveals non-heritable immune perturbations in multiple sclerosis. *Nature*, 603, 152–158.

13 Gupta, A., Furrer, R. and Petchey, O. (2022). Simultaneously estimating food web connectance and structure with uncertainty. Ecology and Evolution, 12, e8643.

14 Guillén Escribà, C., Schneider, F., Schmid, B., Tedder, A. Schaepman, M. E., Niklaus, P., Morsdorf, F., Furrer, R., Hueni, A. (2021). Remotely sensed between-individual functional trait variation in a temperate forest. *Ecology and Evolution*, 11(16), 310834–10867.

15 Paternoster, G., Boo, G.$^|$, Flury, R.$^|$, Raimkulov, K. M., Minbaeva, G., Usubalieva, J., Bondarenko, M., Müllhaupt, B., Deplazes, P., Furrer, R.‡ and Torgerson, P. R.‡ (2021). Association between environmental and climatic risk factors and the spatial distribution of cystic and alveolar echinococcosis in Kyrgyzstan. PLOS Neglected Tropical Diseases, 15(6), e0009498.

16 Rocchini, D., Thouverai, E, Marcantonio, M, et al. (2021). rasterdiv - An Information Theory tailored R package for measuring ecosystem heterogeneity from space: To the origin and back. Methods in Ecology and Evolution, 12(6), 1093–1102.

17 Wang, C. and Furrer, R. (2021). Combining heterogeneous spatial datasets with process-based spatial fusion models: A unifying framework. *Computational Statistics & Data Analysis*, 161, 107240.

18 Flury, R., Gerber, F., Schmid, B. and Furrer, R. (2021). Identification of Dominant Features in Spa tial Data. *Spatial Statistics*, 41, 100483.

19 Dambon, J. A., Sigrist, F., and Furrer, R. (2021). Maximum likelihood estimation of spatially varying coefficient models for large data with an application to real estate price prediction. *Spatial Statistics*, 41, Available online, 10 Nov. 2020.

20 Rocchini, D. et al. (2021). From zero to infinity: Minimum to maximum diversity of the planet by spatio-parametric Rao's quadratic entropy. Global Ecology and Biogeography, 30(5), 1153–1162.

21 Folly, C. L., Konstatinoudis, G., Mazzei-Abba, A., Kreis, C., Bucher, B., Furrer, R. and Spycher, B. D. (2021). Bayesian spatial modelling of terrestrial radiation in Switzerland. *Journal of Environmental Radioactivity*, 233, 106571.

22 Porcu, E., Furrer, R., and Nychka, D. (2020). 30 Years of Space-time covariance functions. *Wiley interdisciplinary reviews. Computational statistics*, 13:e1512, 1–24.

23 Carraro, L, Bertuzzo, E., Fronhofer, E. A., Furrer, R., Gounand, I., Rinaldo, A., and Altermatt, F. (2020). Generation and application of river network analogues for use in ecology and evolution. *Ecology and Evolution*, 10(14), 7537–7550.

24 Bachoc, F., Bétancourt, J., Furrer, R., Klein, T. (2020). Asymptotic properties of the maximum likelihood and cross validation estimators for transformed Gaussian processes. *Electronic Journal of Statistics*, 14(1), 1962–2008.

25 Paternoster, G., Boo, G., Wang, C., Minbaeva, G., Usubalieva, J., Raimkulov, K. M., Zhoroev, A., Abdykerimov, K. K., Kronenberg, P. A., Müllhaupt, B., Furrer, R., Deplazes, P., and Torgerson, P. R. (2020). Epidemic cystic and alveolar echinococcosis in Kyrgyzstan: an analysis of national surveillance data. *The Lancet Global Health*, 8(4), e603–e611.

26 Kratzer, G., Lewis, F. I., Willi, B., Meli, M. L., Boretti, F. S., Hofmann-Lehmann, R., Torgerson, P., Furrer, R. and Hartnack, S. (2020). Bayesian Networks modeling applied to

Feline Calicivirus infection among cats in Switzerland. *Frontiers in Veterinary Science*, 7, 73.

27 Noll, S., Furrer, R., Reiser, B., and Nakas C. T. (2019). Inference in ROC surface analysis via a trinormal model-based testing approach. *Stat*, 8(1), e249.

28 Gerber, F. and Furrer, R. (2019). optimParallel: An R Package Providing a Parallel Version of the L-BFGS-B Optimization Method. *The R Journal*, 11(1), 352–358.

29 Alegría, A., Porcu, E., Furrer, R. and Mateu, J. (2019). Covariance functions for multivariate Gaussian fields evolving temporally over planet earth. Journal, 33(8–9), 1593–1608.

30 Brunner, M. I., Bárdossy, A., and Furrer, R. (2019). Technical note: Stochastic simulation of streamflow time series using phase randomization. Hydrology and Earth Systems Science, 23, 3175–3187.

31 Hartnack, S., Odoch, T., Kratzer, G., Furrer, R., Wasteson, Y., L'Abée-Lund, T. M., and Skjerve, E. (2019). Additive Bayesian networks for antimicrobial resistance and potential risk factors in non-typhoidal Salmonella isolates from layer hens in Uganda. *BMC Veterinary Research*, 15:212, 1–9.

32 Braun, D., de Jong, R., Schaepman, M. E., Furrer, R., Hein, L., Kienast, F., and Damm, A. (2019). Ecosystem service change caused by climatological and non-climatological drivers: A Swiss case study. *Ecological Applications*, 29(4), e01901.

33 Ruchti, S., Kratzer, G., Furrer, R., Hartnack, S., Würbel, H. and Gebhardt-Henrich, S. G. (2019). Progression and risk factors of pododermatitis in part-time group housed rabbit does in Switzerland. *Preventive Veterinary Medicine*, 166, 56–64.

34 Heaton, M. J., Datta, A., Finley, A. O., Furrer, R., Guiness, J., Guhaniyogi, R., Gerber, F., Gramacy, R. B., Hammerling, D., Katzfuss, M., Lindgren, F., Nychka, D. W., Sun, F., and Zammit-Mangion A. (2019). A Case Study Competition Among Methods for Analyzing Large Spatial Data. *Journal of Agricultural, Biological, and Environmental Statistics*, 24(3), 398–425.

35 Wang, C. and Furrer, R. (2019). Efficient inference of generalized spatial fusion models with flexible specification. *Stat*, 8(1), e216.

36 Brunner, M. I., Furrer, R., and Favre, A.-C. (2019). Modeling the spatial dependence of floods using the Fisher copula. *Hydrology and Earth System Sciences*, 23(1), 107–124.

37 Bevilacqua, M., Faouzi, T., Furrer, R., Porcu, E. (2019). Estimation and prediction using generalized Wendland covariance functions under fixed domain asymptotics. *Annals of Statistics*, 47(2), 828–856.

38 Brunner, M., Sikorska, A. E., Furrer, R. and Favre, A.-C. (2018). Uncertainty assessment of synthetic design hydrographs for gauged and ungauged catchments. *Water Resources Research*, 54(3), 1493–1512.

39 Wang, C., Torgerson, P. R., Kaplan, R. M., George, M. M. and Furrer, R. (2018). Modelling anthelmintic resistance by extending eggCounts package to allow individual efficacy. International Journal for Parasitology: Drugs and Drug Resistance, 8(3), 386–393.

40 Porcu, E., Alegría, A. and Furrer, R. (2018). Modeling Temporally Evolving and Spatially Globally Dependent Data. *International Statistical Review*, 86, 344–377.

41 Gerber, F., Mösinger, K., and Furrer, R. (2018). dotCall64: An R package providing an efficient interface to compiled C, C++, and Fortran code supporting long vectors. *SoftwareX*, 7, 217–221.

42 Brunner, M., Furrer, R., Sikorska, A. E., Viviroli, D., Seibert, J. and Favre Pugin, A.-C. (2018). Synthetic design hydrographs for ungauged catchments. A comparison of regionalization methods. *Stochastic Environmental Research and Risk Assessment*, 32(7), 1993–2023.

43 Brunner, M. I., Sikorska, A. E., Furrer, R. and Favre, A.-C. (2017). Uncertainty assessment of synthetic design hydrographs for gauged and ungauged catchments. *Water Resources Research*, 54(3), 1852–1867.

44 Gerber, F., de Jong, R., Schaepman, M. E., Schaepman-Strub, G. and Furrer, R. (2018). Predicting Missing Values in Spatio-Temporal Remote Sensing Data. *IEEE Transactions on Geoscience and Remote Sensing*, 56(5), 2841–2853.

45 Alegría, A., Porcu, E. and Furrer, R. (2018). Asymmetric matrix-valued covariances for multivariate random fields on spheres. *Journal of Statistical Computation and Simulation*, 88(10), 1850–1862.

46 Wang, C., Puhan, M. A., Furrer, R., for the SNC group (2018). Generalized Spatial Fusion Model Framework for Joint Analysis of Point and Areal Data. *Spatial Statistics*, 23, 72–90.

47 Abiven, S., Altermatt, F., Backhaus, N., Deplazes-Zemp, A., Furrer, R., Korf, B., Niklaus, P. A., Schaepman-Strub, G., Shimizu, K. K., Zuppinger-Dingley, D., Petchey, O. L. and Schaepman, M. E. (2017). Integrative research efforts at the boundary of biodiversity and global change research. *Current Opinion in Environmental Sustainability*, 29, 215–222.

48 Farnham, A., Furrer, R., Blanke, U., Stone, E., Hatz, C. and Puhan, M. A. (2017). The quantified self during travel: mapping health in a prospective cohort of travellers. *Journal of Travel Medicine*, 24(5), tax050.

49 Güsewell, S., Furrer, R., Gehrig, R., and Pietragalla, B. (2017). Changes in temperature sensitivity of spring phenology with recent climate warming in Switzerland are related to shifts of the preseason. *Global Change Biology*, 23(12), 5189–5202.

50 Pittavino, M.[†], Dreyfus, A.[†], Heuer, C., Benschop, J., Wilson, P., Collins-Emerson, J., Torgerson, P. R. and Furrer, R. (2017). Comparison between Generalized Linear Modelling and Additive Bayesian Network; Identification of Factors associated with the Incidence of Antibodies against *Leptospira interrogans* sv *Pomona* in Meat Workers in New Zealand. *Acta Tropica*, 173, 191–199.

51 Pittavino, M., Dreyfus, A., Heuer, C., Benschop, J., Wilson, P., Collins-Emerson, J., Torgerson, P. R. and Furrer, R. (2017). Data on *Leptospira interrogans* sv *Pomona* infection in Meat Workers in New Zealand. *Data in Brief*, 13, 587–596.

52 Gerber, F., Mösinger, K., and Furrer, R. (2017). Extending R Packages to Support 64-bit Compiled Code: An Illustration with spam64 and GIMMS NDVI$_{3g}$ Data. *Computers & Geosciences*, 104, 109–119.

53 Wang, C., Torgerson P. R., Höglund, J., and Furrer, R. (2017). Zero-inflated hierarchical models for faecal egg counts to assess anthelmintic effcacy. *Veterinary Parasitology*, 235, 20–28.

54 van der Lely, S., Stefanovic, M., Schmidhalter, M. R., Pittavino, M., Furrer, R., Liechti, M. D. Schubert, M., Kessler, T. M., and Mehnert, U. (2016). Protocol for a prospective, randomized study on neurophysiological assessment of lower urinary tract function in a healthy cohort. *BMC Urology*, 16:69.

55 Furrer, R., Bachoc, F., and Du, J. (2016). Asymptotic properties of multivariate tapering for estimation and prediction. *Journal of Multivariate Analysis*, 149, 177–191.

56 Addor, N, Rohrer, M., Furrer, R., and Seibert, J. (2016) Propagation of biases in climate models from the synoptic to the regional scale: Implications for bias-adjustment. *Journal of Geophysical Research - Atmospheres*, 121(5), 2075–2089.

57 Hombach, M., Ochoa, C., Maurer, F., Pfiffner, T., Bottger, E., and Furrer, R. (2016). Relative contribution of biological variation and technical variables to zone diameter variations of disk diffusion susceptibility testing. *Journal of Antimicrobial Chemotherapy*, 71(1), 141–151.

58 Bachoc, F., and Furrer, R. (2016). On the smallest eigenvalues of covariance matrices of multivariate spatial processes. *STAT*, 5(1), 102–107.

59 Leiterer, R., Torabzadeh, H., Furrer, R., Schaepman, M. E., and Morsdorf, F. (2015). Towards automated characterization of canopy layering in mixed temperate forests using airborne laser scanning. *Forests*, 6(11), 4146–4167.

60 Hombach, C., Maurer, F., Pfiffner, T., Bottger, E., and Furrer, R. (2015). Standardization of operator-dependent variables affecting precision and accuracy of the disk diffusion method for antibiotic susceptibility testing. *Journal of Clinical Microbiology*, 53(6), 1812–1822.

61 Leiterer, R., Furrer, R., Schaepman, M. E., and Morsdorf, F. (2015). Forest canopy-structure characterization: A data-driven approach. *Forest Ecology and Management*, 358, 48–61.

62 Baggiolini, A., Varum, S., Mateos J. M., Bettosini, D., John, N., Bonalli, M., Ziegler, U., Dimou, L., Clevers, H., Furrer, R., and Sommer, L. (2015). Premigratory and Migratory Neural Crest Cells Are Multipotent In Vivo. *Cell Stem Cell*, 16(3), 314–322.

63 Gerber, F., and Furrer, R. (2015). Pitfalls in the Implementation of Bayesian Hierarchical Modeling of Areal Count Data. An Illustration Using BYM and Leroux Models. *Journal of Statistical Software, Code Snippets*, 63(1), 1–32.

64 Geinitz, S., Furrer, R., and Sain, S. R. (2015). Bayesian Multilevel Analysis of Variance for Relative Comparison Across Sources of Global Climate Model Variability, *International Journal of Climatology*, 35(3), 433–443

65 Torgerson, P. R., Paul, M., and Furrer, R. (2014). Evaluating Faecal Egg Count Reduction Using a Specifically Designed Package "eggCounts" in R and a User Friendly Web Interface, *International Journal for Parasitology*, 44(5), 299–303.

66 Wuest, S., Richard, S., Walther, I., Furrer, R., Anderegg, R., Sekler, J., and Egli, M. (2014). A Novel Microgravity Simulator Applicable for Three-Dimensional Cell Culturing, *Microgravity Science and Technology*, 26(2), 77–88.

67 Gerber, F.[†], Marty, F.[†], Eijkel, G. B.[†], Basler, K., Brunner, E., Furrer, R.[‡] and Heeren, R. M. A.[‡] (2014). Multiorder Correction Algorithms to Remove Image Distortions from Mass Spectrometry Imaging Data Sets, *Analytical Chemistry*, 85(21), 10249–10254.

68 Heersink, D. K. and Furrer, R. (2013). Sequential Spatial Analysis of Large Datasets with Applications to Modern Earthwork Compaction Roller Measurement Values, *Spatial Statistics*, 6, 41–56.

69 Kirchner, N.[†], Furrer, R.[†], Jakobsson, M., Zwally, H. J. and Robbins J. W. (2013). Statistical modeling of a former Arctic Ocean ice shelf complex using Antarctic analogies. *Journal of Geophysical Research: Earth Surface*, 118, 10.1002/jgrf.20077.

70 de Jong, R., Schaepman, M. E., Furrer, R. de Bruin, S. and Verburg, P. H. (2013). Spatial Relationship Between Climatologies and Changes in Global Vegetation Activity, *Global Change Biology*, 19(6), 1953–1964.

71 Benigni, M. and Furrer, R. (2012). Spatio-Temporal Improvised Explosive Device Monitoring: Improving Detection to Minimise Attacks, *Journal of Applied Statistics*, 39(11) 2493–2508.

72 Furrer, R., Genton, M. G. and Nychka, D. (2012). Errata and addendum to: "Covariance Tapering for Interpolation of Large Spatial Datasets" published in the *Journal of Computational and Graphical Statistics*, 15, 502-523, *Journal of Computational and Graphical Statistics*, 21(3), 823–824.

73 Furrer, R, Geinitz, S. and Sain, S. R. (2012). Assessing Variance Components of General Circulation Model Output Fields, *Environmetrics*, 23(5), 440–450.

74 Heersink, D. K. and Furrer, R. (2012). On Moore–Penrose Inverses of Quasi-Kronecker Structured Matrices, *Linear Algebra and its Applications*, 436(3), 561–570.

75 Furrer, R. and Genton, M. G. (2011). Aggregation-cokriging for Highly-Multivariate Spatial Data. *Biometrika*, 98(3), 615–631.

76 Holmström, L., Pasanen, L., Furrer, R. and Sain, S. R. (2011). Scale Space Multiresolution Analysis of Random Signals *Computational Statistics and Data Analysis*, 55, 2840–2855.

77 Sain, S. R., Furrer, R. and Cressie, N. (2011). A Spatial Analysis of Multivariate Output from Regional Climate Models. *Annals of Applied Statistics*, 5(1), 150–175.

78 Furrer, E. M., Katz, R. W., Walter, M. D. and Furrer, R. (2010). Statistical Modeling of Hot Spells and Heat Waves. *Climate Research*, 43(3), 191–205.

79 Krembs, F. J., Siegrist, R. L., Crimi, M. L., Furrer, R. and Petri, B. G. (2010). ISCO for Groundwater Remediation: Analysis of Field Applications and Performance. *Ground Water Monitoring & Remediation*, 30(4), 42–53.

80 Furrer, R. and Sain, S. R. (2010). spam: A Sparse Matrix R Package with Emphasis on MCMC Methods for Gaussian Markov Random Fields. *Journal of Statistical Software*, 36(10), 1–25.

81 Facas, N., Furrer, R. and Mooney, M. A. (2010). Anisotropy in the Spatial Distribution of Roller-Measured Soil Stiffness. *International Journal of Geomechanics*, 10(4), 129–135.

82 Sain, S. R. and Furrer, R. (2010). Combining Climate Model Output via Model Correlations, *Stochastic Environmental Research and Risk Assessment*, 24(6), 821–829.

83 Knutti, R., Furrer, R., Tebaldi, C., Cermak, J. and Meehl, G. A. (2010). Challenges in Combining Projections from Multiple Climate Models, *Journal of Climate*, 23(10), 2739-2758.

84 Furrer, R. and Sain, S. R. (2009). Spatial Model Fitting for Large Datasets with Applications to Climate and Microarray Problems. *Statistics and Computing*, 19(2), 113–128.

85 Kupper, T., de Alencastro, L. F., Gatsigazi, R., Furrer, R., Grandjean D. and Tarradellas J. (2008). Concentrations and Specific Loads of Brominated Flame Retardants in Sewage Sludge. *Chemosphere*, 71(6), 1173–1180.

86 Mendez, P. F., Furrer, R., Ford, R. and Ordóñez F. (2008). Scaling Laws as a Tool of Materials Informatics. *JOM*, 60(03), 60–66.

87 Furrer, R., Sain, S. R., Nychka, D. and Meehl, G. A. (2007). Multivariate Bayesian Analysis of Atmosphere-Ocean General Circulation Models. *Environmental and Ecological Statistics*, 14(3), 249–266.

88 Furrer, R. and Bengtsson, T. (2007). Estimation of High-dimensional Prior and Posterior Covariance Matrices in Kalman Filter Variants. *Journal of Multivariate Analysis*, 98(2), 227–255.

89 Brändli, R. C., Bucheli, T. D., Kupper, T., Furrer, R., Stahel, W. A., Stadelmann, F. X. and Tarradellas, J. (2007). Organic Pollutants in Compost and Digestate. Part 1. Polychlorinated Biphenyls, Polycyclic Aromatic Hydrocarbons and Markers. *Journal of Environmental Monitoring*, 9, 456–464.

90 Furrer, R., Knutti, R., Sain, S. R., Nychka, D. W. and Meehl, G. A. (2007). Spatial Patterns of Probabilistic Temperature Change Projections from a Multivariate Bayesian Analysis. *Geophysical Research Letters*, 34, L06711.

91 Furrer, R. and Naveau, P. (2007). Probability Weighted Moments Properties for Small Samples. *Statistics and Probability Letters*, 77(2), 190–195.

92 Furrer, R., Genton, M. G. and Nychka, D. (2006). Covariance Tapering for Interpolation of Large Spatial Datasets. *Journal of Computational and Graphical Statistics*, 15(3), 502–523.

93 Plagellat, C., Kupper, T., Furrer, R., de Alencastroa, L. F., Grandjean, D. and Tarradellas, J. (2006). Concentrations and Specific Loads of UV Filters in Sewage Sludge Originating from a Monitoring Network in Switzerland. *Chemosphere*, 62, 915-925.

94 Feingold, G., Furrer, R., Pilewskie, P., Remer L. A., Min, Q. and Jonsson H. (2006). Aerosol Indirect Effect Studies at Southern Great Plains during the May 2003 Intensive Operation Period. *Journal of Geophysical Research*, 111, D05S14.

95 Fournier, B. and Furrer, R. (2005). Automatic Mapping in the Presence of Substitutive Errors: A Robust Kriging Approach. Extended Abstract in *Automatic mapping algorithms for routine and emergency monitoring data. Report on the Spatial Interpolation Comparison (SIC2004) exercise*, Dubois, G. ed. Office for Official Publications of the European Communities, Luxembourg, EUR 21595 EN, ISBN: 92-894-9400-X.

96   Fournier, B. and Furrer, R. (2005). Automatic Mapping in the Presence of Substitutive Errors: A Robust Kriging Approach. *Applied GIS*, 1(2).

97   Brändli, R., Kupper, T., Bucheli, T. D., Furrer, R., Stadelmann, F. X. and Tarradellas, J. (2005). Persistent Organic Pollutants in Compost and its Input Materials – A Review of Field Studies. *Journal of Environmental Quality*, 34(3), 735–760.

98   Furrer, R. (2005). Covariance Estimation under Spatial Dependence. *Journal of Multivariate Analysis*, 94(2), 366–381.

99   Kupper, T., Berset, J.D., Etter-Holzer, R., Furrer, R. and Tarradellas, J. (2004). Concentrations and Specific Loads of Polycyclic Musks in Sewage Sludge Originating from a Monitoring Network in Switzerland. *Chemosphere*, 54(8), 1111–1120.

100   Genton, M. G. and Furrer, R. (2003). Analysis of Rainfall Data by Simple Good Sense: is Spatial Statistics Worth the Trouble?, in *Mapping radioactivity in the environment - Spatial Interpolation Comparison 97*, Dubois, G., Malczewski, J. and De Cort M. (eds), 45–50.

101   Genton, M. G. and Furrer, R. (2003). Analysis of Rainfall Data by Robust Spatial Statistics using S+SpatialStats, in *Mapping radioactivity in the environment - Spatial Interpolation Comparison 97*, G. Dubois, J. Malczewski, M. De Cort (eds), 118–129.

102   Furrer, R. (2002). *M*-Estimation for Dependent Random Variables. *Statistics and Probability Letters*, 57(4), 337–341.

103   Furrer, R. and Genton, M. G. (1999). Robust Spatial Data Analysis of Lake Geneva Sediments with S+SpatialStats. *Systems Research and Information Science. Special Issue on Spatial Data: Neural Nets/Statistics*, 8(4), 257–272.

104   Genton, M. G. and Furrer, R. (1998). Analysis of Rainfall Data by Robust Spatial Statistics using S+Spatial Stats. *Journal of Geographic Information and Decision Analysis*, 2(2), 126–136.

105   Genton, M. G. and Furrer, R. (1998). Analysis of Rainfall Data by Simple Good Sense: is Spatial Statistics Worth the Trouble? *Journal of Geographic Information and Decision Analysis*, 2(2), 11–17.

Other Peer Refereed Publications

106   Delucchi, M., Spinner, G. R., Bijlenga, P., Morel, S., Hostettler, I., Werring, D., Wostrack, M., Meyer, B., Bourcier, R., Lindgren, A., Bakker, M. K., Ruigrok, Y. M., Furrer, R., and Hirsch, S. (2023). An explainable multicentric analysis for understanding the aetiology of intracranial aneurysm disease [Conference poster]. *Clinical and Translational Neuroscience*, 7(4), 46–47.

107   Kalischek, N., Daudt, R. C., Peters, T., Furrer, R., Jan D. Wegner, J. D. and Schindler, K. (2023). BiasBed - Rigorous Texture Bias Evaluation. *2023 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 22221–22230.

108   Feurstein, L., Furrer, R., Stoll, S. (2023). Turn-Taking Predicts Vocabulary Acquisition at 18 Months: A Study of Daylong Recordings. In: 47th annual Boston University Conference on Language Development, Sommerville, MA, 2 November 2022 - 5 November 2022. Cascadilla Press, 255–267.

109 Schuh, L., Furrer, F., Schaepman, M., Santos, M. J. and de Jong, R. (2020). Advancing Texture Metrics to Model Landscape Heterogeneity. In: IGARSS 2020 - 2020 IEEE International Geoscience and Remote Sensing Symposium, Waikoloa, HI, USA, pages 2735–2738.

110 Wang, C. and Furrer, R. (2020). Monte Carlo Permutation Tests for Assessing Spatial Dependence at Different Scales. In: La Rocca, M., Liseo, B., Salmaso, L. (eds) *Nonparametric Statistics. ISNPS 2018.* Springer Proceedings in Mathematics & Statistics, vol 339. Springer, pages 503–511.

111 Flury, R. and Furrer, R. (2019). Multiresolution Decomposition of Areal Count Data. In: Cameletti, M., Ippoliti, L., and Pollice, A. (eds.) *Proceedings of the GRASPA 2019 Conference, Pescara, 15–16 July 2019*, pages 86–89.

112 Kratzer, G., Furrer, R., Pittavino, M. (2019). Comparison Between Suitable Priors for Additive Bayesian Networks. In: Argiento, R., Durante, D., Wade, S. (eds) *Bayesian Statistics and New Generations. BAYSM 2018.* Springer Proceedings in Mathematics & Statistics, vol 296. Springer, pages 95–104.

113 Pittavino, M. and Furrer, R. (2018). Additive Bayesian networks for an epidemiological analysis of swine diseases. In: Abbruzzo, A., Brentari, E., Chiodi, M., Piacentino, D. (eds) *Book of Short Papers SIS 2018*, Proceedings of the 49th Meeting of the Italian Statistical Society, ISBN-978 889 191 0233, Pearson, pages 1160–1165.

114 Emery, X., Furrer, R. and Porcu, E. (2018). A Turning Bands Method for Simulating Isotropic Gaussian Random Fields on the Sphere. *Statistics and Probability Letters*, 144, 9–15.

115 Leiterer, R., Furrer, R., Schaepman, M. E. and Morsdorf, F. (2015). Retrieval of canopy structure types for forest characterization using multi-temporal airborne laser scanning. Proceedings IGRASS, Milan, Italy.

116 Furrer, R., Kirchner, N. and Jakobsson, M. (2014). A Cross-polar Modeling Approach to Hindcast Paleo-Arctic Mega Icebergs: a Storyboard. In: Pardo-Igúzquiza, E., et al. (Eds.) *Mathematics of Planet Earth*, Springer, 41-44.

117 Facas, N., Mooney, M. A. and Furrer, R. (2009). Geostatistical Analysis of Roller-Integrated Continuous Compaction Control Data. *Bearing Capacity of Roads, Railways and Airfields*, Tutumluer and Al-Qadi (eds.), Taylor and Francis Group, London, 1, 755–762.

118 Contributing author to Chapter 10 (*Global Climate Projections*) of the Working Group I contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report: *Climate Change 2007: The Physical Science Basis*, (2007), Cambridge University Press.

Under Revision/Submitted for Publication (selected)

119 Schuh, L., Santos, M. J., de Jong, R., Schaepman, M. E., and Furrer, R. (2021). Structural diversity entropy: a unified diversity measure to detect latent landscape features, submitted.

120 Daugaard, U., Reinhard Furrer, R. and Owen L. Petchey, O. L. (2021). Prey speed up, predators slow down: non-consumptive effects on movement behavior of a ciliate predator-prey pair, submitted.

Software (selected)

121   `spam`: an R package, implementing a collection of functions based in R/Fortran for sparse matrix algebra, tailored for MCMC calculations within GMRF or GRF with compactly supported covariance functions. Emphasis is given on a comprehensive, simple, tutorial structure of the code. Creator and maintainer. Available from CRAN, http://CRAN.R-project.org/package=spam or gitlab http://git.math.uzh.ch/reinhard.furrer/spam.

122   `spam64`: this package together with the R package 'spam' enables the sparse matrix class "spam" to handle huge sparse matrices with more than $2^{31} - 1$ non-zero elements. Creator and maintainer. Available from CRAN, http://CRAN.R-project.org/package=spam or gitlab http://git.math.uzh.ch/reinhard.furrer/spam.

123   `pfuef`: a PDFLATEX stylefile to create presentations which does not require any post processing and which handles different types of backgrounds but produces easily different types of printable versions. Creator and maintainer. Available at http://www.math.uzh.ch/furrer/research/software.shtml.

124   `abn`: an R package to providing routines to help determine optimal Bayesian network models for a given data set, where these models are used to identify statistical dependencies in messy, complex data. Contributor and maintainer. Available from CRAN, http://CRAN.R-project.org/package=abn or gitlab http://git.math.uzh.ch/reinhard.furrer/abn. See also http://www.r-bayesian-networks.org.

125   `dotCall64`: an R package, enhancing the functionality of .C() and .Fortran() from the foreign function interface to support long vectors and 64-bit integer type arguments. The package provides a mechanism to avoid unnecessary copies of read-only and write-only arguments. Contributor and maintainer. Available from CRAN, http://CRAN.R-project.org/package=dotCall64 or gitlab http://git.math.uzh.ch/reinhard.furrer/dotCall64.

126   `PRSim`: this package provides a framework to simulate streamflow time series with similar main characteristics as observed data. The approach is based on the randomization of the phases of the Fourier transform. Author. Available from CRAN, http://CRAN.R-project.org/package=PRSim or gitlab http://git.math.uzh.ch/reinhard.furrer/PRSim.

127   `trinROC`: an R package, providing several statistical test functions as well as a function for exploratory data analysis to investigate classifiers allocating individuals to one of three disjoint and ordered classes. Author and maintainer. Available from CRAN, http://CRAN.R-project.org/package=trinROC or gitlab http://git.math.uzh.ch/reinhard.furrer/trinROC.

128   `varrank`: an R package, providing a computational toolbox of heuristics approaches for performing variable ranking and feature selection based on mutual information well adapted for multivariate system epidemiology datasets. Contributor. Available from CRAN, http://CRAN.R-project.org/package=varrank.

Further contributions to R packages `OCNet`, `RandomFieldsUtils`, `mcmcabn`, `variosig`, `spatialfusion`, `mrbsizeR`, `eggCounts`.

Contributions and/or initiations of the following ShinyApps: sample size calculation tailored to scientists in pre-clinical research `SampleSizeR`; web tool to assess anthelmintic efficacy for faecal egg count data `shiny-eggCounts`; 'More Facts, Less Fiction' (for Scientifica 2019) `scientifica2019`; 'Datenlabor' (for Scientifica 2017) `shiny-scientifica`; 'Statistik App' illustrating simple statistical elements `shiny-lwb`.

129 Flury, R. and Furrer, R. (2021). Discussion on Competition for Spatial Statistics for Large Datasets *Journal of Agricultural, Biological and Environmental Statistics* 26, 599–603.

130 Staudinger, M., Furrer, R. and Viviroli, D. (2021). Hochwasserereignisse aus kontinuierlicher Langzeitsimulation zur Überprüfung der Sicherheit der Stauanlagen. Schlussbericht für Bundesamt für Energie BFE, Aufsicht Talsperren, 58 pp.

131 Sain, S. R. and Furrer, R. (2018). Comments on: Some recent work on multivariate Gaussian Markov random fields. *TEST*, 27(3), 545–548.

132 Güsewell, S., Pietragalla, B., Gehrig, R., and Furrer, R. (2018). Representativeness of stations and reliability of data in the Swiss Phenology Network. Technical Report MeteoSwiss, 267, 100 pp.

133 Schaepman-Strub, G., Iturrate, M. and Furrer, R. (2013). Towards Assessing Biodiversity Feedbacks to Climate in the Arctic – Future Application of the AVA. Arctic Vegetation Archive (AVA) Workshop, CAFF Proceeding Series Report Nr. 10., 101-102.

134 Furrer, R., Furrer, E. M. and Nychka, D. (2011). Comments on "An explicit link between Gaussian fields and Gaussian Markov random fields: The stochastic partial differential equation approach". *Journal of the Royal Statistical Society, Series B.* 73(4), 464.

135 Heersink, D. K. and Furrer, R. (2011). Spatial analysis of modern soil compaction roller measurement values. *Procedia Environmental Sciences*, 7, 8–13.

136 Furrer, R. and Genton, M. G. (2008). Aggregation-cokriging for Large Multivariate Spatial Datasets. *IAMCS-2008-014*. Texas A&M University.

137 Sain, S. R., Furrer, R. and Cressie, N. (2008). Combining Ensembles of Regional Climate Model Output via a Multivariate Markov Random Field Model. *Department of Statistics Technical Report No. 815.* The Ohio State University.

138 Furrer, R. and Sain, S. R. (2008). spam: A Sparse Matrix R Package with Emphasis on MCMC Methods for Gaussian Markov Random Fields. *Technical Report MCS-05-08.* CSM.

139 Benigni, M. and Furrer, R. (2008). Periodic Spatio-Temporal Improvised Explosive Device Attack Pattern Analysis. *Technical Report MCS-04-08.* CSM.

140 Furrer, R. (2006). KriSp: An R Package for Covariance Tapered Kriging of Large Datasets Using Sparse Matrix Techniques. *Technical Report MCS-06-06.* CSM.

141 Brändli, R. C. *et. al.* (2006). Organic Pollutants in Source-Separated Compost. Short paper for *DIOXIN 2006*, Oslo, Norway.

142 Feingold, G., Furrer, R., Pilewskie, P., Remer L. A., Min, Q. and Jonsson H. (2005). Determining the Best-Estimate of Cloud Drop Size From a Variety of Remote Sensing Instruments. *Eos Trans. AGU*, 86(52), Fall Meet. Suppl., Abstract A22B-08.

143 Feingold, G., Furrer, R., Pilewskie, P., Remer L. A., Min, Q. and Jonsson H. (2005). A Weighted, Least-squares Approach to Determining the Best-estimate of Cloud Drop Size from a Variety of Remote Sensing Instruments. *Abstracts of the 24th Annual AAAR Conference, October 17-21*, Austin, Texas.

144 Tebaldi, C., Nychka, D., Mearns, L. O. and Furrer R. (2005). Inferring Climate from Climate Models. *55th Session of the International Statistical Institute*, Sydney, Australia.

145 Sain, S. R. and Furrer, R. (2004). Fitting Large-Scale Spatial Models with Applications to Microarray Data Analysis, *Computing Science and Statistics*, 36, 869–883.

146 Fournier, B., Furrer, R., Gsponer, T. and Restle, E.-M. (2003), Editors. Proceedings of the 13th European Young Statisticians Meeting, September 21-26, Ovronnaz, Switzerland, Stämpfli AG, ISBN 3-908152-17-8.

147 Naveau, P., Furrer, R. and Keckhut, P. (2003). The Spatio-temporal Influence of the Vortex on Artic Total Column Ozone Variability, in *The ISI International Conference on Environmental Statistics and Health*, Mateu, J., Holland, D. González-Manteiga, W. (eds), 131–140.

148 Fournier, B., Furrer, R., Gsponer, T. and Restle, E. (2001). Probabilités et statistique, collection des exercices. *Polycopié*, EPFL.

149 Furrer, R. (2001). Observation-State Representation of Non Stationary Spatial Processes. *Proceedings of the 12th European Young Statisticians Meeting*, Jánska Dolina, Slovakia, 15.

150 Furrer, R. (2001). Non Parametric Estimation within Decomposed Spatial Processes. *Proceedings of the International Conference of the Royal Statistical Society (RSS2001)*, University of Glasgow, Scotland, 51.

151 Kuonen, D. and Furrer, R. (2001). Data mining avec R dans un monde libre. *Flash Informatique Spécial Été*, EPFL, 45–50.

152 Furrer, R. and Kuonen, D. (2001). GRASS GIS et R : main dans la main dans un monde libre. *Flash Informatique Spécial Été*, EPFL, 51–56.

153 Furrer, R. (2000). On the Implementation of the Decomposition of Spatial Processes in MATLAB. *Computing Science and Statistics*, 32, 64–77.

154 Furrer, R. (1999). Covariance Estimation under Spatial Dependence. *Proceedings in Spatial Temporal Modelling and its Applications*. Edited by Mardia, K. V., Aykroyd, R. G. and Dryden, I. L. Leeds University Press, Leeds, 137–140.

155 Furrer, R. Kuonen, D. and Picasso, M. (1999). La rédaction de documents scientifiques avec LaTeX. *Flash Informatique 2/99*, EPFL, 16–17.

156 Furrer, R. (1998). Principal Component Analysis of Lake Geneva Sediments. *Proceedings of the Fourth Annual Conference of the International Association for Mathematical Geology*. Edited by Buccianti, A., Nardi, G. and Potenza, R., De Frede Editore, Napoly, 421–426.

arXiv Preprints

The following list contains arXiv preprints without a direct link to a journal publication.

157 Flury, R., Aakala, T., Ruha, L., Kuuluvainen, T., and Furrer, R. (2022). Dominant-feature identification in data from Gaussian processes applied to Finnish forest inventory records. arXiv:2203.03322 [stat.ME].

158 Hediger, M. and Furrer, R. (2021). Consistency and asymptotic normality of covariance parameter estimators based on covariance approximations. arXiv:2112.12317 [math.ST].

159 Dambon, J. A., Sigrist, F. and Furrer, R. (2021). varycoef: An R Package for Gaussian Process-based Spatially Varying Coefficient Models. arXiv:2106.02364 [stat.CO].

160 Kratzer, G. and Furrer, R. (2018). Information-Theoretic Scoring Rules to Learn Additive Bayesian Network Applied to Epidemiology. arXiv:1808.01126 [stat.ML].

161 Wang, C. and Furrer, R. (2018). eggCounts: a Bayesian hierarchical toolkit to model faecal egg count reductions. arXiv:1804.11224 [stat.CO].

162 Kratzer, G. and Furrer, F. (2018). varrank: an R package for variable ranking based on mutual information with applications to observed systemic datasets arXiv:1804.07134 [stat.ML].

163 Molinaro, M. and Furrer, R. (2016). Valid parameter space of a bivariate Gaussian Markov random field with a generalized block-Toeplitz precision matrix. arXiv:1604.05478 [stat.CO].

164 Heersink, D. K., Furrer, R. and Mooney, M. A. (2012). Spatial Backfitting of Roller Measurement Values from a Florida Test Bed. arXiv:1302.4659 [stat.AP].

165 Heersink, D. K., Furrer, R. and Mooney, M. A. (2012). Intelligent Compaction and Quality Assurance of Roller Measurement Values utilizing Backfitting and Multiresolution Scale Space Analysis. arXiv:1302.4631 [stat.AP].

166 Geinitz, S., Furrer, R. and Sain, S. R. (2012). MMANOVA: A general multilevel framework for multivariate analysis of variance. arXiv:1207.2338 [stat.ME].

Teaching Scripts

167 "Introduction to Statistics", roughly 192 pages, used in STA120 (since 2017), available at: http://user.math.uzh.ch/furrer/download/sta120/script_sta120.pdf.

168 "Einführung in die Statistik", 164 pages, used in STA120 (since 2013–2016), available at: http://user.math.uzh.ch/furrer/download/sta120/oldGermanVersion/script_sta120_older_version_DE.pdf.

169 "Stochastic Modeling", roughly 128 pages, used in STA111/MAT919 in 2018, available at: http://user.math.uzh.ch/furrer/download/sta111/script_sta111.pdf.

170 "Statistical Modeling", roughly 264 pages, used in STA121 (since 2013), available at: http://user.math.uzh.ch/furrer/download/sta121/script_sta121.pdf.

171 "Modeling Dependent Data", roughly 120 pages, used in STA330 (2015–2017), available at: http://user.math.uzh.ch/furrer/download/sta330/script_sta330.pdf.

172 "Spatial Statistics", 97p., used in MAT912 (2009), STA430 (2011) and STA429 (2012).

Teaching

Teaching at UZH

Spring 2024, 2023	Instructor for *Analysis für Chemie*, MAT184.
Fall 2023, 2022, 2021, 2019–2016, 2014–2012	Instructor for *Likelihood Inference*, STA402 (2014, 2016–2020 cross-listed as *Applied Mathematical Statistics*, MAT924).
Fall 2023, 2022, 2021	Instructor for *Good Statistical Practice*, STA472, (joint with E. Furrer).
Spring 2023, 2021, 2019, 2016, 2015	Instructor for *Modeling Dependent Data*, STA330.
Spring 2022, 2020, 2019	Instructor for *Analysis für Physik II*, MAT132.
Spring 2022, 2021	Instructor for *Design of Experiments*, BME321, (joint with others).
Fall 2019, 2018, 2017	Instructor for *Good Statistical Practice: Computational Skills*, STA470.
Spring 2018	Instructor for *Stochastic Simulation*, MAT919. (cross-listed as STA111 *Stochastic Modelierung*
Spring 2018, 2017	Instructor for *Introduction to Statistics*, STA120.
Fall 2017	Instructor for *Statistical Modeling*, STA121.
Spring 2017	Instructor for *Analysis of Longitudinal and Spatial Data* (joint with L. Held), STA330.
Spring 2016, 2015, 2014, 2013	Instructor for *Einführung in die Statistik*, STA120.
Spring 2017, 2016, 2015, 2014, 2013	Instructor for *Practical Bioinformatics* (joint with others), BIO334.
Fall 2015, 2014, 2013	Instructor for *Statistische Modelierung*, STA121.
Fall 2016, 2015	Instructor for *Stochastic Modeling* STA111.
Spring 2013	Instructor for *Applied Statistical Modeling*, STA220.
Spring 2012, 2011	Instructor for *Spatial Epidemiology*, STA429, STA430.
Fall 2011, 2010	Instructor for *Generalized Regression*, STA406, STA957.
Spring 2010	Instructor for *Applied Mathematical Statistics*, STA950.
Fall 2009	Instructor for *Spatial Statistics*, MAT912.

The lecture *Good Statistical Practice: Computational Skills* is a flipped classroom lecture with videos hosted on the MNF internal edX instance: openedx.mnf.uzh.ch/courses/course-v1:UZH+ STA470+HS2018/about and videos placed on tube.switch.ch/channels/5a20f23d. Its successor *Good Statistical Practice* now 4 ECTS, combines the communication and computational aspects and covers from ethics to containerization. Different Open edX instances have been used,

e.g., legacy.swissmooc.ch/courses/course-v1:uzh+STA472+HS21/course/ and videos placed on tube.switch.ch/channels/5b128TkBin.

In 2014 Torsten Hothorn, Owen Petchey, Jan Seibert and myself have created the first online course in R, hosted on the MNF internal edX instance: openedx.mnf.uzh.ch/courses/course-v1:UZH+multi_module+multi_date/about. The content is structured in blocks, allowing to efficiently "build" further courses from the material (as has been done for STA260, BIO377, ECO332 and several more).

Additionally, I organize on a regular basis research seminars: *Research Seminar on Statistics ETH/UZH* STA670, *Kolloquium über anwendungsorientierte Statistik* STA671, *Research Seminar in Applied Statistics* STA672; student seminars: *Epidemiology and Biostatistics Methods Seminar* STA880DP, *Biostatistics Journal Club* STA480, *Selected Topics in Statistics*, STA380, and reading classes *Statistics and Probability* STA291.

Moreover, I am 'Modulverantwortlicher' for *Einführung in die Wahrscheinlichkeit* STA110, *Research Practical in Biostatistics* STA491, *Statistical Consulting* STA490, *Analysis für die Naturwissenschaften* MAT182 and *Stochastik für die Naturwissenschaften* MAT183.

Modules STA4xy are within the Master Program in Biostatistics. The modules are open to students in mathematics as well.

Modules STA1xy are within the minor subject Applied Probability and Statistics.

Modules STA3xy are within the master and minor program (incl. mathematics). Modules STAxyzDP are exclusively for PhD students. Several STA4xy modules have a STA4xyDP counterpart as well.

Modules STA2xy can be seen as service modules.

With group members we have completely redesigned the module 'LTK Module 13E Basics Statistics for Animal Experimentation', which is offered by us on a regular basis. Group members regularly contribute to other LTK modules.

Teaching at CSM

Fall 2005, 2006, 2007, 2008	Instructor for *Introduction to Probability*, MACS434 and MATH334.
Spring 2008, 2009	Instructor for *Advanced Statistical Modelling*, MATH436/598.
Spring 2006, 2007, 2008, 2009	Instructor for *Introduction to Mathematical Statistics*, MACS435 and MATH335.
Summer 2008	Instructor for independent study *Statistical Methods for Environmental Epidemiology*, MATH599A.
Spring 2008	Instructor for independent study *Improvised Explosive Device Modeling with Inhomogeneous Spatio-Temporal Point Processes*, MATH599A.

Summer, Fall 2007	Instructor for independent studies *Introduction to Spatial Point Processes I/II*, MACS599A and MATH599A.
Spring 2007	Instructor for *Introduction to Applied Statistics*, MACS424/598.
Spring 2007	Instructor for *Senior Seminar II*, MACS462B.
Fall 2006	Instructor for independent study *R Programming Language*, MACS599B.

Teaching at University of Colorado, Boulder

Spring 2003	Instructor for *Statistical Methods*, APPM4570/5570.
Fall 2002	Teaching assistant *Differential Equations and Linear Algebra*, APPM2360.

Teaching at EPFL and College Spiritus Sanctus

March 2001	Instructor (joint with S. Morgenthaler and D. Kuonen) for *Probability and Statistics* given within the Postgraduate Cycle in Biomedical Engineering, LGM, EPFL.
June 2000, April 2001	Instructor (joint with S. Morgenthaler) for *Probability and Statistics* given within the Postgraduate Cycle in Risk and Security in Technical Systems, LMAF-DGM, EPFL.
March 2000, Nov. 2001	Instructor for *Probability and Statistics* given within the Postgraduate Cycle in Expertises of Real Estate, IREC-DA, EPFL.
June, Dec. 1999, April 2000	Instructor for two-day courses *Introduction to LaTeX*, Postformation, SIC, EPFL.
April, Oct. 1999, Feb., Oct. 2001	Instructor (joint with D. Kuonen) for two-day courses *Introduction to* S-Plus, Postformation, DMA, EPFL.
1996–2002	Teaching assistant for undergraduate courses *Nonparametric and Robust Statistics*, *Nonlinear and generalized linear Models*, *Probability and Statistics I & II*, and *Calculus III*, DMA, EPFL.
1993–1995	Substitute for lectures in mathematics and physics, College Spiritus Sanctus, Brig, Switzerland.

Mentoring

Postdocs and Scientific Collaborators

Marc Lischka	UZH, Juli 2021 –
Bernadetta Tarigan	UZH, Oct. 2019 –
Zofia Baranczuk	UZH, March 2017 –
Stephan Hemri	UZH, Oct. 2020 – Nov. 2022.
Dorothea Hug Peter	UZH, Mai 2018 – December 2019.
Florian Gerber	UZH, Oct. 2017 – Mai 2018.
Gian Marco Palamara	UZH, Mai 2016 – December 2016.
Clément Chevalier	UZH, October 2014 – January 2016.
David Masson	UZH, Mai 2014 – January 2016.
Julia Braun	UZH, July 2013 – December 2014.
Michaela Paul	UZH, January 2011 – January 2013.

Ph.D. Students

Tim Gyger	2022– joint with Fabio Sigrist, HSLU (externally funded).
Matteo Delucci	2022– joint with Sven Hirsch, ZHAW (externally funded).
Servan Grüninger	2020–.
Michael Hediger	2020–.
Federico Blasi	2019– (ESKAS scolar).
Leila Schuh	Ph.D., UZH, 2023.
Roman Flury	Ph.D., UZH, 2022.
Jakob Dambon	Ph.D., UZH, 2021, joint with Fabio Sigrist, HSLU (externally funded).
Gilles Kratzer	Ph.D., UZH, 2020.
Craig Wang	Ph.D., UZH, 2019.
Florian Gerber	Ph.D., UZH, 2017.
Marta Pittavino	Ph.D., UZH, 2016.
Steve Geinitz	Ph.D., UZH, 2013.
Daniel Heersink	Ph.D., UZH, 2013.

Master Students

Zhixuan Li (Lilly)	Master student in biostatistics, 2023–
Delia Schüpbach	Master student in mathematics, 2023–
Jonas Füglisthaler	Master student in biostatistics, graduated in fall 2023.
Isidro Gonzalez	Master student in mathematics, graduated in fall 2023.
Lukas Nägeli	Master student in biostatistics, graduated in spring 2023.
Anouk Petitpierre	Master student in biostatistics, graduated in spring 2023.
Céline Hofmann	Master student in mathematics, graduated in spring 2023
Chiara Aruanno	Master student in mathematics, graduated in fall 2022.

Ruben Scherrer	Master student in mathematics, graduated in spring 2022.
Annina Cincera	Master student in mathematics, graduated in spring 2022.
Thomas Fisher	Master student in biostatistics, graduated in spring 2022.
Tengyingzi Ma	Master student in mathematics, graduated in spring 2022.
Nicolas Huber	Master student in mathematics, graduated in fall 2021.
Stefan Willi	Master student in mathematics, graduated in spring 2021.
Oliver John	Master student in biostatistics, graduated in spring 2021
David Markwalder	Master student in mathematics, graduated in spring 2020.
Audrey Yeo	Master student in biostatistics, graduated in spring 2020.
Uriah Daugaard	Master student in biostatistics, graduated in spring 2020.
Sandar Lim	Master student in biostatistics, graduated in fall 2019.
Josef Stocker	Master student in mathematics, graduated in fall 2019.
Jonas Fürstenberger	Master student in mathematics, graduated in spring 2019.
Natacha Bodenhausen	Master student in biostatistics, graduated in fall 2019.
Tea Isler	Master student in biostatistics, graduated in spring 2018.
Cyntia Dukic	Master student in mathematics, graduated in spring 2018.
Roman Fluri	Master student in biostatistics, graduated in fall 2017.
Pierre Häberli	Master student in mathematics, graduated in fall 2017.
Samuel Noll	Master student in mathematics, graduated in fall 2017.
Marco Schleiniger	Master student in biostatistics, graduated in fall 2017.
Christos Polysopoulos	Master student in biostatistics, graduated in fall 2017.
Servan Grüninger	Master student in biostatistics, Co-advising with Marcel Salathé, EPFL, graduated in fall 2017
Anja Fallegger	Master student in mathematics, graduated in spring 2017
Thimo Schuster	Master student in biostatistics, graduated in spring 2017.
Andrea Meier	Master student in biostatistics, graduated in spring 2017.
Ursina Brunnhofer	Master student in mathematics, graduated in spring 2017.
Craig Wang	Master student in statistics ETHZ, graduated in spring 2016.
Fabienne Herzog	Master student in mathematics, graduated in spring 2016.
Carina Schneider	Master student in mathematics, graduated in spring 2016.
Sereina Graber	Master student in biostatistics, Co-advising with Karin Isler, AIM, UZH, graduated in fall 2015.
Linna Du	Master student in mathematics, UZH, graduated in fall 2015.
Carlos Ochoa	Master student in biostatistics, Co-advising with Rita Ghosh, WSL, ETH, graduated in fall 2015.
Kaspar Mösinger	MSc UZH in Mathematics, graduated in spring 2015.
Markus Hirschbühl	MSc UZH in Mathematics, graduated in spring 2015.
Gabrielle Moser	MSc UZH in Biostatistics, Co-advising with Rita Ghosh, WSL, ETH, graduated in fall 2014.
Sabine Güsewell	MSc UZH in Biostatistics, Co-advising with Barbara Pietragalla, MeteoSwiss, graduated in spring 2015.
Florian Gerber	MSc UZH in Biostatistics, graduated in spring 2013.
Stefan Purtschert	MSc UZH in Statistics, graduated in fall 2012.

Rebekka Schibli | MSc UZH in Statistics, Co-advising with M. Liniger, MeteoSwiss, graduated in fall 2011.

Internships and Supported Projects

Various longer and shorter internships have been granted, notably, Rathes Sriram (02/23–, part time), Jerome Sepin (02/23–10/2023, part time), Severina Haas (09/2022–08/2023, part time), Georgy Astakov (05/2022–06/2023, different projects, part time), Maurice Veitl (10/2022–06/2023, part time) Roman Stadler (10/2022–06/2023, part time) Leila Schuh (10/2022–06/2023, part time) Servan Grüninger (10/2019–09/2020), Abigail Sutton (08/2018–12/2018 part time), Jonas Fürstenberger (08/2018–09/2018 part time), Samuel Noll (11/2017–02/2018 full time), Kelly Reeve (03/2017–12/2017, part time), Mattia Mollinaro (1/2012–12/2016, full time), Craig Wang (10/2015–02/2016), Roman Flury (10/2015–02/2016), Severin Mösinger (12/2014–1/2015), Markus Hirschbühl (10/2014), Andrés Boldori (4/2010–12/2012, full time).

Graduate Students at CSM

The positions refer to their first job after graduation.

Ryan A. Ford | M.S., MACS, CSM, graduated in summer 2009. Software Engineer with Lockheed Martin, Denver, CO, USA.

Norman Facas | M.S., Engineering, CSM, Co-advising with M. Mooney, graduated in spring 2009. Senior Software Development Engineer with the MITRE Corporation in Colorado Springs, CO, USA.

Matthew Benigni | M.S., MACS, CSM, graduated in spring 2008. Major/Assistant Professor at the United States Military Academy, Department of Mathematics, West Point, NY, USA.

Talks and Short Courses

Invited Talks

Sept. 2021	*Computational Reproduciblilty.* DACH Epidemiologietagung, 1.–3. September 2021, Bern.
Dec. 2019	*Interpolation for huge spatial datasets: theory, implementations and ideas.* Geneva School of Economics and Management, University of Geneva.
June 2019	*Modeling and prediction of extreme events over networks.* Presentation for Workshop on "Causality and Extremes", EPFL.
Jan. 2019	*Interpolation for huge spatial datasets: theory, implementations and ideas.* Department of Statistics, University of Uppsala, Sweden.
Nov. 2018	*Imputing missing values in satellite data: From parametric to non-parametric approaches.* Institute for Geoinformatics, University of Münster, Germany.
Sept. 2018	*Imputing missing values in satellite data: From parametric to non-parametric approaches.* Public University of Navarre, Pamplona, Spain.
July 2017	*Brute Force or Hand-waiving: Spatial Interpolation Approaches At Your Service.* 27th Annual Conference of The International Environmetrics Society joint with Biennial GRASPA Conference, Bergamo, Italy.
July 2016	*Gapfillers for remotely sensed NDVI data.* 26th Annual Conference of The International Environmetrics Society, Heriot-Watt University, Riccarton, Edinburgh, UK.
March 2015	*Multivariate spatial modeling for large datasets: backfitting, tapering and spam.* Department of Statistics and Operations Research, University of Vienna, Austria.
Jan. 2015	*Multivariate spatial modeling for large datasets: backfitting, tapering and spam.* The First International Congress on Seismomatics, Valparaiso, Chile.
Dec. 2014	*Solving computational problems in spatial statistics.* Institute of Computational Science, UZH.
Nov. 2014	*Quick and dirty: how to (not so quickly) simulate G(M)RF with spam.* GRF-Sim workshop: Simulation of Gaussian and related Random Fields, University of Bern, Switzerland.
Sept. 2014	*Spatial Models for Global Change and Biodiversity Research.* Keynote at Österreichische Statistiktage 2014, Innsbruck, Austria.
Aug. 2014	*Tapering for Prediction of Multivariate Spatial Processes.* Invited presentation at the JSM 2014, Boston, USA.
April 2014	*An asymptotic framework for multivariate tapering.* Department of Statistics, Kansas State University, USA.
March 2014	*Extending tapering to multivariate spatial processes: concepts and illustrations.* Spatial Statistics for Environmental and Energy Challenges, KAUST, Saudi Arabia.

Nov. 2013	*Using R to statistically solve an engineering problem.* Lunchveranstaltungen HS13, Informatikdienste UZH, Switzerland.
Sept. 2013	*Statistical modeling of a former Arctic Ocean ice shelf complex using Antarctic analogies.* IAMG 2013, Madrid, Spain.
May 2012	*Hierarchical framework for multivariate multi-model climate projections.* Climate and Environmental Physics, University of Bern, Switzerland.
Oct. 2011	*Multivariate spatial modeling for large datasets.* Fall meeting 2011 of the Swiss Mathematical Society, ETHZ, Switzerland.
Oct. 2011	*A spatial analysis of multivariate output from regional climate models.* Econometrics Department, University of Geneva, Switzerland.
Oct. 2011	*A spatial analysis of multivariate output from regional climate models.* Colloquium in honor of H. R. Künsch on the occasion of his 60th birthday, ETHZ, Switzerland.
Aug. 2011	*Exploring and Visualizing Uncertainty in Multidimensional Spatial Random Fields.* Invited presentation at the JSM 2011, Miami Beach, USA.
June 2011	*A Spatial Analysis of Multivariate Output from Regional Climate Models.* Journée Environnement et Exploration Numérique, AgroParisTech, Paris, France.
Jan. 2011	*Hierarchical Framework for Multi-model Climate Projections.* Atelier Méthodes statistiques en météorologie et en changement climatique. CRM, Université de Montréal, Canada.
Jan. 2010	*Bayesian Hierarchical Models for Climate Model Data.* Université Paris-Sud 11, France.
Dec. 2009	*Spatial Model Fitting for Large Datasets with Illustrations in Climate and Microarray Problems.* Institute of Environmental Sciences, UZH, Switzerland.
Nov. 2009	*Hierarchical Framework for Multi-model Climate Projections*, ZüKoSt: Seminar on Applied Statistics, Switzerland.
Oct. 2009	*Climate Change: the Uncertainty of Certainty.* Swiss Statistics Meeting, Geneva, Switzerland.
Oct. 2009	*Bayesian Hierarchical Models for Climate Model Data*, Second Trondheim Symposium in Statistics, Norway.
Aug. 2009	*Combining Ensembles of Regional Climate Model Output.* Invited presentation at the JSM 2009, Washington DC, USA.
Feb. 2009	*Aggregation-Cokriging: Prediction for Large Multivariate Spatial Datasets.* IAMCS-KAUST, Texas A&M, USA.
Nov. 2008	*The Golden Guide to Spatial Prediction.* Mathematical and Computer Sciences Departmental Colloquia, CSM, Golden, USA.
Oct. 2008	*Prediction for large multivariate spatial datasets.* Invited presentation at the Workshop on Environmetrics, 2008, Boulder, USA.
Aug. 2008	*Estimation of High-dimensional Prior and Posterior Covariance Matrices in Kalman Filter Variants.* Invited presentation at the JSM 2008, Denver, USA.

July 2008	*A Bayesian View of Climate Change: Assessing Uncertainties of General Circulation Model Projections.* Invited presentation at the WCPS 2008, Singapore.
Feb. 2008	*Spatial Patterns of Probabilistic Temperature Change Projections from a Multivariate Bayesian Analysis.* 2nd Workshop on Climate Risk Assessment, JAMSTEC/FRCGC, Yokohama, Japan.
Oct. 2007	*Spatial Model Fitting for Large Datasets with Illustrations in Climate and Microarray Problems.* Department of Statistics, University of Wyoming, Laramie, USA.
July 2007	*Experiments on the Earth: Smoothing and spatial statistics for geophysical applications using fields.* Invited poster presentation joint with S. R. Sain and D. Nychka for JSM, 2007, Salt Lake City, USA.
May 2007	*Spatial Patterns of Probabilistic Temperature Change Projections.* Workshop on the Application of Random Matrices Theory and Methods, SAMSI/IMAGe, NCAR, Boulder, USA.
Feb. 2006	*Sparse Matrix Techniques for Interpolation of Large Environmental and Biological Datasets.* Department of Preventive Medicine and Biometrics, University of Colorado at Denver, USA.
Sept. 2005	*A Small Statistical Contribution Towards a Global Picture.* Mathematical and Computer Sciences Departmental Colloquia, CSM, Golden, USA.
June 2005	*Correlated Errors in Geophysical Applications.* Workshop on Computational and Mathematical Geoscience, CSM, Golden, USA.
Oct. 2004	*Covariance Tapering for Interpolation of Large Spatial Datasets.* Department of Statistics, The Ohio State University, Columbus, USA.
June 2004	*Ensembles in Numerical Weather Prediction and the Ensemble Kalman Filter.* INRS, Québec, Canada.
April 2004	*Covariance Tapering for Interpolation of Large Spatial Datasets.* Department of Econometrics, University of Geneva, Geneva, Switzerland.
April 2004	*The Kalman Filter and its Application in Numerical Weather Prediction.* Institute of Geography, University of Bern, Bern, Switzerland.
July 2003	*Data Assimilation and the Ensemble Kalman Filter.* Chairs of Statistics, Institute of Mathematics, EPFL, Lausanne, Switzerland.
Jan. 2003	*State-Space Decomposition of Geostatistical Processes.* Department of Applied Mathematics, University of Colorado, Boulder, USA.
Nov. 2002	*State-Space Decomposition of Geostatistical Processes.* Department of Statistics, Colorado State University, Fort Collins, USA.
Oct. 2002	*Covariance Functions and Nonstationary Processes.* Department of Applied Mathematics, University of Colorado, Boulder, USA.
Feb. 2002	*Covariance Estimation of Geostatistical Data*, NCAR, Boulder, USA.
Feb. 2002	*Nonstationarity in Geostatistical Modeling*, NCAR, Boulder, USA.
Oct. 2001	*Représentation espace-état des processus spatiaux non stationnaires*, INRA, Avignon, France.

Instructor of Short Courses

2021	*Spatial Statistics for huge datasets and best practices*, useR2021 Tutorial, online.
2021	*Additive Bayesian Networks Modeling* (Joint with G. Kratzer), useR2021 Tutorial, online.
2019–	Several instances of one day short course *Basics Statistics for Animal Experimentation* (joint with S. Grüninger und B. Tarigan), LTK Module 13E, UZH.
Nov. 2019	*Basic Statistics Done Right*, workshop contribution to a three day MD PhD Retreat, Kandersteg.
Oct. 2015 Jan. 2016	*Statistik leicht gemacht* HS15.24 and HS15.24_2 two one-day events (Leiter Weiterbildung für Lehrpersonen an Maturitätsschulen).
2013–2015	Several instances of two to four day short courses of *Introduction to R*, I-Math, UZH.
Mai 2012	*Introduction to R* two day graduate/postgraduate short course at the Department of Physical Geography and Quaternary Geology, June 28–29, Stockholm University, Sweden.
July 2009	*Summer School on Spatial Statistics* (joint with S. Bannerjee, D. Nychka and S. Sain). Sponsored by SAMSI, July 28–Aug. 1, Research Triangle Park, NC, USA.
March 2009	*Estimating Curves and Surfaces from Environmental Data* (joint with D. Nychka and S. Sain). Sponsored by ENAR, March 15, San Antonio, USA.
Oct. 2008	*Analysis of Spatially Correlated Environmental Data* (joint with D. Nychka and S. Sain). Sponsored by ENVR, Oct. 22, Boulder, USA.
Aug. 2008	*The International Graduate Summer School on Statistics and Climate Modeling* (joint with D. Nychka, S. Sain and C. Tebaldi). Sponsored by PIMS/NCAR, Aug. 9–13, Boulder, USA.

Conference Presentations

Aug. 2022	*Asymptotic properties of truncated-ML estimators based on covariance approximations.* Presentation at Compstat 2022, Bologna, Italy.
July 2019	*Scalable gapfilling in spatio- temporal remote sensing data.* Presentation at the JSM Denver, USA.
June 2018	*Predicting missing values in spatio-temporal satellite data*, Presentation at IS-NPS2018, Salerno, Italy.
March 2016	*Bayesian models for uncertainty quantification of Antarctic ice shelves*, Presentation at SIAM UQ16, April 5–8 2016, Lausanne.
Oct. 2015	*Spatial relationship(s) between climatologies and changes in global vegetation activity*, International Workshop on Spatial Scaling of Earth's Biodiversity, October, 15–17 2015, UZH/Bouldern, CH.
Dec. 2014	*An asymptotic framework for multivariate tapering*, Presentation at ERCIM 2014, December 6–8 2014, Pisa, Italy.

June 2014   *Multivariate modelling and efficient estimation of Gaussian random fields with application to roller data.* Presentation and additional contributions at Pan-American Advanced Study Institute on Spatio-Temporal Statistics, 16–26 June 2014, Búzios, RJ, Brazil.

June 2013   *Multivariate modelling and efficient estimation of Gaussian random fields with application to roller data.* Presentation at Spatial Statistics 2013, June 4–7, Ohio, USA.

Mai 2012   *Dimension reduction for multivariate lattice data.* Presentation at The Second Workshop on Bayesian Inference for Latent Gaussian Models with Applications, May 30–June 1, 2012, Trondheim, Norway.

Oct. 2006   *An Efficient Cokriging Approach Based on Canonical Correlation Analysis and Tapering* and *Estimation of High-dimensional Prior and Posterior Covariance Matrices in Kalman Filter Variants.* Poster presentations joint with M. G. Genton and T. Bengtsson at the conference *Multivariate Methods in Environmetrics*, Chicago, USA.

Aug. 2006   *Spatial Patterns of Global Climate Change Fields.* Presentation at the JSM 2006, Seattle, USA.

March 2006   *Covariance tapering for Interpolation of Large Spatial Datasets.* Presentation in the contributed session 'Advances in Spatial and Temporal Modeling'. 2006 ENAR Spring Meeting, Tampa, USA.

Oct. 2005   *Optimal Estimation of Cloud Drop Effective Radius.* Presentation at the Special Symposium 'Combining Multiple Data Sources and Models to Create an Accurate, Global Scale Aerosol Picture' at the 24th Annual AAAR Conference, Austin, USA.

July, Aug. 2004   *Spatial Hierarchical Bayes Model for AOGCM Climate Projections.* Presentation at the Graybill Conference, Fort Collins, USA and at the JSM 2004, Toronto, Canada.

Sept. 2001   *Observation-State Representation of Non Stationary Spatial Processes.* Presentation at the 12th EYSM, Jánska Dolina, Slovakia.

July 2001   *Non Parametric Estimation within Decomposed Spatial Processes.* Presentation at the RSS, Glasgow, Scotland.

April 2000   *On the Decomposition of Spatial Processes.* Presentation at the Interface 2000, New Orleans, USA.

July 1999   *Covariance Estimation under Spatial Dependence.* Poster presentation at the 18th LASR Workshop, Leeds, England.

Oct. 1998   *Principal Component Analysis of Lake Geneva Sediments.* Poster presentation a the Forth Annual Conference of the IAMG, Ischia, Italy.

Contributions to Conference Presentations

Selection of relevant contributions presented by coauthors. A full list is available here.

May 2022	*Postprocessing of gridded precipitation forecasts using conditional generative adversarial networks and quantile regression*, Presented by S. Hemri joint with Bhend, J., Spirig, C., Nerini, D., Moret, L., Furrer, R., and Liniger, M. A. EGU General Assembly 2022, Vienna, Austria, 23-27 May 2022, EGU22-5609.
April 2021	*Functional data clustering as a powerful tool to group streamflow regimes and flood hydrographs*, Presented by M. I. Brunner joint with Furrer, R., and Gilleland, E. EGU General Assembly 2021, online, 19–30 Apr 2021, EGU21-375.
April 2020	*A framework to characterize flood events of defined return period ranges using functional boxplots*, Presented by M. Staudinger, joint with Furrer, R. and Viviroli, D. EGU General Assembly 2021, online, 19–30 Apr 2021, EGU2020-9950.
July 2017	*A Characterization of the Valid Parameter Space of Large Multivariate GMRFs.* Invited. Presented by M. Molinaro joint with M. R. Furrer) 27th Annual Conference of The International Environmetrics Society joint with Biennial GRASPA Conference, Bergamo, Italy.
Dec 2016	*GC43B-1154: Linking Arctic plant biodiversity measurements with landscape heterogeneity*, Poster presentation, joint with F. Gerber, G. Schaepman-Strub and R. Furrer, 2016 Fall Meeting, AGU, San Francisco, USA.
Dec 2015	*Linking Remotely Sensed Functional Diversity of Structural Traits to the Radiative Regime of a Temperate Mixed Forest.* Invited. Presented by F. D. Schneider, joint with F. D. Schneider, F. Morsdorf, R. Furrer, P. Moorcroft, B. Schmid, M. E. Schaepman in Session 8166, 2015 Fall Meeting, AGU, San Francisco, USA.
July 2015	*Retrieval of canopy structure types for forest characterization using multi-temporal airborne laser scanning.* Presented by R. Leiterer joint with R. Leiterer, R. Furrer, M. E. Schaepman, F. Morsdorf at IGARSS 2015, Milan, Italy.
Oct. 2014	*Towards uncertainty quantification in descriptions of ice shelves as key components of the global cryosphere.* Poster presentation joint with D. Masson, N. Kirchner, Reklim 2014, Berlin, Germany.
May 2012	*Statistical modeling of a former Arctic Ocean ice shelf complex using Antarctic analogies.* Poster presentation joint with N. Kirchner, M. Jakobsson, H. J. Zwally and J. W. Robbins at APEX VI International Conference and Workshop, Oulu University at Oulanka Research Station, Finland.
Sept. 2012	*Toward robust bias correction of regional precipitation simulations for hydrological modeling.* Poster presentation joint with N. Addor and J. Seibert, 11th International NCCR Climate Summer School 9–14 September 2012, Centro Stefano Franscini, Monte Verità, Ticino, Switzerland.
Nov. 2010	*Can Statistics Explain Arctic Paleoglacial Extremes? A cross-polar ice shelf modeling approach.* Poster presentation joint with N. Kirchner, M. Jakobsson and H. J. Zwally at Bolin Centre for Climate Research Annual International Conference, Stockholm, Nov 2010
Dec. 2010	*Ice Shelf Modeling: A Cross-Polar Bayesian Statistical Approach.* Poster presentation joint with N. Kirchner, M. Jakobsson and H. J. Zwally at 2010 Fall Meeting, AGU, San Francisco, USA.

Oct. 2008	*Bayesian Multiscale Analysis of Images and Random Fields.* Poster presentation joint with L. Pasanen, L. Holmstrom and S. R. Sain at the Workshop on Environmetrics, 2008, Boulder, USA.
April 2006	*Probabilistic Projections of Climate Change Fields from a Multivariate Bayesian Analysis of Climate Model Data.* Poster presentation joint with R. Knutti at the EGU General Assembly 2006, Vienna, Austria.

Further Output

Further output, including by members of my research group, is available at `www.math.uzh.ch/as/index.php?id=368`.

Professional Service

Editorial Activities

Section Editor, *Journal of Statistical Software*, since fall 2023.

Editorial Board Member, *Spatial Statistics*, since 2015.

Associate Editor, *STAT*, 2012–2023.

Associate Editor, *Journal of Agricultural, Biological, and Environmental Statistics*, 2014–2015.

Associate Editor, *Journal of Multivariate Analysis*, 2011–2015.

Manuscript Reviews

Journal Articles: Annals of Applied Statistics, Annals of the Institute of Statistical Mathematics, Automation in Construction, Bayesian Analysis, Biometrical Journal, Climate Dynamics, Climate of the Past, Communications in Statistics - Theory and Methods, Computational Geosciences, Computational Statistics and Data Analysis, Environmental and Ecological Statistics, Environmetrics, International Journal of Applied Earth Observation and Geoinformation, Journal of Agricultural, Biological, and Environmental Statistics, Journal of Computational and Graphical Statistics, Journal of Climate, Journal of Multivariate Statistics, Journal of Statistical Software, Journal of the Royal Statistical Society Series B, Journal of the Royal Statistical Society Series C, Journal of the American Statistical Association, Journal X, Meteorologische Zeitschrift, Nature, Nonlinear Processes in Geophysics, Technometrics, Scandinavian Journal of Statistics, SIAM Journal on Matrix Analysis and Applications, Spatial Statistics, Statistica Sinica, Statistics and Computing, Transactions on Modeling and Computer Simulation, and Water Resources Research.

Book Proposals: Springer, New York.

Various *Conference Proceedings* manuscripts.

Grant Proposal Reviews

United States National Science Foundation, National Sciences and Engineering Research Council of Canada, STARS Grants (University of Padova, Italy), Swiss National Science Foundation.

Organization or committees of Conferences, Workshops and Sessions at large Conferences

Committee: The 6th Swiss Conference on Data Science, June 14, 2019, Bern.

Committee: Spatial Statistics 2019: "Towards Spatial Data Science" July 10–13, 2019, Sitges, Spain.

Committee: Spatial Statistics 2017: "One World: One Health" July 4–7, 2017, Lancaster, UK.

Organization: International workshop "Scaling and estimation of Earth's diversity" October 15–18, 2015, Zurich, Switzerland (joint with G. Schaepman-Strub and M. Schaepman).

Organization: International workshop "Bayesian Inference for Latent Gaussian Models with Applications, February 2–5, 2011, at the University of Zurich, Switzerland (joint with L. Held).

Topic-contributed session "Modern Nonparametric Statistics in Climate Science" for the Conference on Nonparametric Statistics and Statistical Learning, May 19–22, 2010, at the The Ohio

State University, Columbus, USA.

Topic-contributed session "New Research in Spatial and Environmental Statistics" at the Joint Statistical Meetings, August 2–6, 2009, in Washington DC, USA.

Topic-contributed session "Climate, Weather, and Spatial-temporal Models" at the Joint Statistical Meetings, August 6–10, 2006, in Seattle, USA (joint with S. Sain).

Organization: 13th European Young Statistician Meeting, September 21–26, 2003, in Ovronnaz, Switzerland (joint with T. Gsponer, B. Fournier and E.-M. Restle).

University Service

Director of Division of Mathematics, since fall 2023.

Co-Director of Department of Mathematics, fall 2021–fall 2023.

Director of Studies ('Studiendelegierter') Department of Mathematics, fall 2017–fall 2021.

Member of the Studienkommission, fall 2017–fall 2022.

Member of the MNF Awards Commission (formerly Evaluation Committee for Distinctions and Awards), since 2018.

Managing Director, Master in Biostatistics, UZH, since 2011.

Member of steering committee, University Research Priority Programme (URPP) on Global Change and Biodiversity (GCB), since 2013.

Member Steuerungsausschusses "P-8: Digital Skills for You", UZH, since 2020.

'Fachexperte' evaluation of 'Elitestudiengang #278' Bayern.

Joint with Leo Held, responsible faculty member for the creation of the Master program in Biostatistics.

Responsible faculty member for the creation and coordination of the minor in Applied Probability and Statistics.

Member of structured PhD programs 'Epidemiology and Biostatistics', and 'Ecology' (Life Sciences Graduate School Zurich), of 'Zurich Graduate School in Mathematics', and of 'Computational Science Zurich Graduate School'.

Member of search committees of the following openings at the Institute of Mathematics, UZH: APNT in Quantitative Network Science (2019) lead; Professorships in applied mathematics (2012); APNT in mathematics (2012); Professorship in Probability (2010); lectureship in applied mathematics (2009). At the Institute of Plant Biology, UZH: APNT Evolution in Action (2015). At the Department of Geography, UZH: Professorship in Remote Sensing (2022); APTT Earch System Science (2016); APNT in Spatial Genomics (2018). At the Institute of Computational Science, UZH: Professorship in Computational Science (2018).

Several promotion and habilitation committees MNF, UZH.

Member of the MNF Committee on Sustainability (2015–); of the MNF MOOC Committee (2014–2022) of the Study Commission (2017–2022).

Regular, active participation on information events for external and internal participants ('Science Info Days', 'Minor Days', 'Master Info Event' etc.).

External examiner for 'Lehrdiplom für Maturitätsschulen', Institut für Gymnasial- und Berufspädagogik, since 2010, several candidates.

Member of the MNF Bachelor/Master Working Group, 2013–2016.

Member of admission committee, ZGSM, 2020–2022.

Member of admission committee, Master in Statistics, ETHZ, 2010–2017.

Public Service

Member of 'Schulkommission, Kantonsschule Wiedikon Zürich (KWI)' (2012–2022).

'Findungskommissionen' Kantonsschule Wiedikon Zürich (KWI): Chemie fall 2017, Mathematik spring 2018, Biologie fall 2019, Physik spring 2021.

External examiner for 'Maturitätsprüfungen', (KWI, regularly since 2013). External examiner for 'Mündliche Maturitätsarbeiten', (KWI, June 2013).

RPK Katholische Kirchgemeinde Illnau-Effretikon (since Mai 2019)

Mandate for 'Weiterentwicklung des Biorisiko-Katasters', Amt für Abfall, Wasser, Energie und Luft, Kanton Zürich (2012).

Contribution to 'Junior Euler Society' U18, theme 'Statistik' (2012).

Mandate for 'Organische Schadstoffe für Kompost und Gärgut in der Schweiz', Schweizerische Hochschule für Landwirtschaft, Zollikofen (2007).

Ph.D. Thesis Committees

Member of current Ph.D. thesis committees at UZH of the following students: Samuel Gunz, Institute of Molecular Life Sciences, (2023–); Johannes Dollinger, Institute for Computational Science, (2023–) Peiying Cai, Institute of Molecular Life Sciences, (2023–); Martin Emons, Institute of Molecular Life Sciences, (2023–); Chuhe Lin, Department of Mathematics, (2023–); Samuel Koovely, Department of Mathematics, (2022–); Aman Gupta, Department of Geography, (2022–); Reto Gerber, Institute of Molecular Life Sciences, (2022–); Simon Landauer, Department of Evolutionary Biology and Environmental Studies, (2021–); Carmen Meiller, Department of Geography, (2021–); Duriya Charypkhan, Section of Epidemiology, VetSuisse, (2021–); Pooya Razzaghi, Neuroscience Center Zurich, (2021–); Mirjam Scheller, Department of Geography, (2021–); Adrian Meyer, Department of Geography, (2021–); Violeta Muñoz, Section of Epidemiology, VetSuisse, (2021–); Maria Dunbar, Department of Biostatistics, (2020–); Heng, Zhang, Department of Evolutionary Biology and Environmental Studies, (2020–); Liudmyla Feurstein, Psycholinguistics Laboratory, (2020–);

Member of Ph.D. thesis committees of the following students (year of degree in parenthesis): Francesco Florian, Department of Mathematics, (2023); Sandra Siegfried, Department of Biostatistics, (2023); Samuel Pawel, Department of Biostatistics, (2023); Helena Crowell, Institute of Molecular Life Sciences, (2023); Kyriakos Schwarz, Department of Quantitative Biomedicine, (2023); Luisa Barbanti, Department of Biostatistics, (2022); Sona Hunanyan, Department of Biostatistics, (2022); Giulia Paternoster, Section of Epidemiology, VetSuisse, (2021), head of committee; Alexandra Strassmann, Department of Epidemiology (2021); Johannes Bracher, Department of Biostatistics, (2020); Frank Techel, Department of Geography and SLF, (2020); Kirsti Hakala, Hydrology and Climate, (2020); Janko Tackmann, Institute of Molecular Life Sciences, (2019); Manuela Ott, Department of Biostatistics, (2018); Mariamawit Ashenafi,

Institute of Plant Biology; Fabian Daniel Schneider, Remote Sensing Laboratories, (2018); Belen Otero, Section of Epidemiology, VetSuisse, (2018); Manuela Brunner, Hydrology and Climate, (2018); Carla Escriba, Remote Sensing Laboratories; Andrea Farnham, Epidemiology, Biostatistics and Prevention Institute, (2017); Sereina Graber, Anthropological Institute & Museum, (2017); Ni Ai, Institute of Molecular Life Sciences; Xiaobei Zhou, Institute of Molecular Life Sciences, (2016); Fabien Mavrot, Section of Epidemiology, VetSuisse, (2016); Sebastian Meyer, Department of Biostatistics, (2016); Reik Leiterer, Remote Sensing Laboratories, (2016); Rafael Sauter, Department of Biostatistics, (2015); Wei Wei, Department of Biostatistics, (2015); Nans Addor, Hydrology and Climate, (2015); Nicolas Blöchliger, Institute of Biochemistry, (2015); David Fischer, Functional Genomics Center Zürich/Institute of Molecular Cancer Research, (2014); Daniel Sabanés Bové, Division of Biostatistics, (2014); Florian Marty, Institute of Molecular Cancer Research, (2013); Julia Braun, Division of Biostatistics, (2013).

Co-referee for Ph.D. project of Christophe Folly, Graduate School for Health Sciences, University of Bern, (2018–).

Co-referee for Ph.D. thesis 'Facilitating Statistical Analysis of Large-Scale Satellite-Based Earth Observation Data' of Marius Appel, Institute of Geoinformatics, University of Münster, Germany (2020).

Co-referee for Ph.D. thesis 'Ensemble Kalman Filtering and Generalizations' of Marco L. F. Frei, Department of Mathematics, ETHZ, (2013).

First opponent for Ph.D. thesis defense 'Multivariate Gaussian Random Fields: The Stochastic Partial Differential Equation Approach' of Xiangping Hu, Department of Mathematical Sciences, Norwegian University of Science and Technology, Norway (Aug. 2013).

External member for Ph.D. viva 'Characterising and modelling time-varying rainfall extremes and climatic drivers' of Mari Jones, School of Civil Engineering and Geoscience, Newcastle University, UK (June 2012).

First opponent for Ph.D. thesis defense 'Assessment of the Ensemble Kalman Filter Sampling Error' of Andrey Kovalenko, Department of Mathematics, University of Bergen, Norway (Jan. 2012).

Departmental and University Service at CSM

Member of thesis committees at CSM of the following students: Kristofer Davis, Ph.D., Geophysics, 2008; Fritz Krembs, M.S., Environmental Engineering, 2008; Ashlyn I. Hutchinson, Ph.D., Mathematical and Computer Sciences, 2009; Kari Macklin, M.S., Mathematical and Computer Sciences, 2010.

Member of search committees, Mathematical and Computer Sciences Department, CSM: Mathematical/Computer Science Education (2007, search #07-081040, chair Barb Moskal); Statistics (2008, search #08-081090 chair William Navidi).

Member of the graduate committee, Mathematical and Computer Sciences Department, CSM (fall 2007–spring 2009).

Colloquium chair at the Mathematical and Computer Sciences Department, CSM (fall 2006–spring 2009).