# Marc Kjerland, PhD

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*(pronounced "chair"land)*

## Skills

- Machine learning & deep learning
- Numerical & statistical modeling
- High-performance computing
- Nonlinear dynamics and chaos
- Algorithm development
- Data insights

## Experience

**2019 – Present** — **Bank of America**, *Senior Data Scientist*, Global Markets Ops.

- Building reinforcement learning model for market risk application using custom Keras neural network and compute layers
- Developed interpretable multi-label classifier for regulatory compliance, complementing internal expert model
- Lead R&D support for stochastic risk models using dimension reduction and non-linear transformationsfor signal extraction
- Hired as contractor; converted to permanent employee after 8 months

**2018 – 2019** — **Verisk Analytics**, *Data Scientist*, Insurance Analytics.

- Headed a personal lines modeling project with six data scientists, from data processing to model iteration to detailed documentation
- Built countrywide and state-specific models with data-driven recommendations for product owners
- Delivered rigorous technical presentations to stakeholders with model improvement of 40–80%

**2017, 2014–2015** — **University of Illinois at Chicago**, *Postdoctoral Fellow*, Institute for Environmental Science and Policy.

- Developed novel non-parametric performance metrics for urban sustainability
- Published results and methodology using linear optimization and time series analysis

**2015 – 2017** — **Kyoto University**, *Postdoctoral Researcher*, Disaster Prevention Research Inst.

- Developed open-source module for large multiscale storm surge simulations using complex meteorological data
- Quantified hazard impacts of changing typhoon distributions in Pacific Ocean using Monte Carlo simulation

## Education

**2015** — **PhD, Applied Mathematics**, *University of Illinois at Chicago.*
Thesis: Linear response closure approximations for multiscale systems

**2005** — **B.S., Mathematics**, *University of Minnesota, Twin Cities.*

## Technical skills

Computing languages: Python, SAS, C/C++, Fortran, Matlab/Octave, SQL

Python packages: pandas, numpy, scipy, scikit-learn (sklearn), matplotlib, seaborn, keras, tensorflow, h2o, jupyter, etc

Natural languages: English, French, German, Japanese

Other: Excel, LaTeX, Bash, GitHub, QGIS, JSON, web scraping

## Research Papers

2019 **Journal of Cleaner Production**, *Sustainability Assessment of Universities as Small-Scale Urban Systems: A Comparative Analysis Using Fisher Information and Data Envelopment Analysis. Vol 212.*

2017 **Proceedings of Coastal Dynamics 2017**, *Estimating climate change impacts on storm surge using adaptive mesh refinement.*

2016 **Hydrological Research Letters**, *Impact assessment of climate change on coastal hazards in Japan. Vol 10.*

2016 **Communications in Mathematical Sciences**, *The response of reduced models of multiscale dynamics to small external perturbations. Vol 14, No 3.*