Marc Kjerland, PhD

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Computational scientist with experience modeling real-world high-dimensional systems, applying novel quantitative techniques to multiscale problems, and collaborating in international settings

Skills

- Nonlinear and multiscale systems
- Algorithm development
- High-performance computing
- Complex data and abstraction
- Scientific visualization
- Geophysical modeling
- Machine learning
- GIS and geospatial analysis
- Applied linear algebra
- Peer-reviewed publication

Research Experience

Institute for Environmental Science and Policy — **Chicago, IL**
University of Illinois at Chicago — *2017*

- Evaluate institutional performance in data-driven urban metabolism framework
- Develop new applications and methodologies and write technical reports

Disaster Prevention Research Institute — **Kyoto, Japan**
Kyoto University — *2015 – 2017*

- Developed coastal flooding simulations using meteorological and topographical data
- Quantified hazard impacts of changing typhoon distributions in northwest Pacific
- Implemented novel methods in high-performance computing for multiscale applications

Institute for Environmental Science and Policy — **Chicago, IL**
University of Illinois at Chicago — *2014 – 2015*

- Evaluated institutional performance in data-driven urban metabolism framework
- Implemented regression models, optimized comparison indices, and trend analysis

Department of Mathematics — **Chicago, IL**
University of Illinois at Chicago — *2010 – 2014*

- Examined dynamics of multiscale systems in chaotic and periodic regimes
- Generated ensemble solutions to analyze statistical response of reduced-dimension systems

Education

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

B.S., Mathematics — **University of Minnesota, Twin Cities**
Emphasis on computer science and numerical anaylsis — *2005*

Technical skills

Programming languages: Python, C/C++, Fortran, Matlab/Octave
Natural languages: English, French, German, Japanese
Python packages: numpy, pandas, scipy, scikit-learn (sklearn), matplotlib, jupyter, gdal
Other: LaTeX, Bash scripting, OpenMP, GitHub, QGIS, Excel, Photoshop