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
- Complex data and abstraction
- GIS and geospatial analysis
- Scientific visualization
- Geophysical modeling
- Linear algebra
- Time series and regression analysis
- High-performance computing
- Peer-reviewed publication

Research Experience

Institute for Environmental Science and Policy   **Chicago, IL**
University of Illinois at Chicago   *August 2017 – present*

- 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   *July 2015 – July 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**
                    2005

Technical skills

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