

# Weiming Hu

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## Education

- 2016 - present Ph.D. in Geography with Minor in Computer Science, The Pennsylvania State University  
Advisor: Dr. Guido Cervone
- 2016 - 2018 M.S. in Geography, The Pennsylvania State University
- 2012 - 2016 B.E. in Remote Sensing and Information Engineering, Wuhan University

## Research Interests

Computational Algorithm; High-Performance Computing; GIScience; Spatial Statistics; Artificial Intelligence; Numerical Weather Prediction.

## Publications

### PUBLISHED

- 2017 Balasubramanian, Vivek, Matteo Turilli, **Weiming Hu**, Matthieu Lefebvre, Wenjie Lei, Guido Cervone, Jeroen Tromp, and Shantenu Jha. "Harnessing the Power of Many: Extensible Toolkit for Scalable Ensemble Applications." arXiv preprint arXiv:1710.08491. [link](#).
- 2015 Li, Haoang, **Weiming Hu**, Jian Yao, and Wenqiao Zhang. "Anti-Excessive Filtering Model Based on Sliding Window." In International Conference, vol. 786. [link](#).

### UNDER REVIEW

- 2018 **Weiming Hu**, Guido Cervone. "Dynamically Optimized Unstructured Grid (DOUG) for Analog Ensemble of Numerical Weather Predictions Using Evolutionary Algorithms". Computers and Geosciences. Elsevier.
- 2018 Martina Calovi, Guido Cervone, Luca Delle Monache, **Weiming Hu**. "GFS Downscaling Using Personal Weather Stations for Heat Wave Vulnerability". Natural Hazards. Springer.

## IN PROGRESS

- 2018 **Weiming Hu**, Guido Cervone. "A Bias Correction Method for the Analog Ensemble Technique Using Neural Networks". Monthly Weather Review. American Meteorological Society.
- 2018 Laura Clemente-Harding, Guido Cervone, **Weiming Hu**. "A Search Space Extension for the Analog Ensemble Technique". Atmospheric Environment. Elsevier.

## Research Product

### [An Integrated Package for Parallel Ensemble Forecasts in C++ and R](#)

I have been actively developing and maintaining the package implementing an ensemble forecast method, the Analog Ensemble, to foster various research projects. The package contains is written in C++, and provides R APIs and several utilities to facilitate data management and computation processes, including file I/O, forecast computation, visualization, and analysis. The package has also been used on Supercomputers, like XSEDE Wrangler and NCAR Cheyenne to solve problems at scale. Currently, the package has about 5 users. [Link](#).

## Academic Presentations

- 2018 Martina Calovi, Guido Cervone, Luca Delle Monache, **Weiming Hu**. "GFS Downscaling Using Personal Weather Stations for Heat Wave Vulnerability". Talk. Penn State GIS Day. University Park, PA. [Link](#).
- 2018 **Weiming Hu**, Guido Cervone. "A High Resolution Photovoltaic Energy Production Simulator With A Probabilistic Approach". Poster. Graduate Climate Conference. Pack Forest, WA. [Link](#).
- 2018 Laura Clemente-Harding, Luca Delle Monache, Guido Cervone, Martina Calovi, **Weiming Hu**, Mehdi Shahriari. "The Analog Ensemble Technique for Probabilistic Forecasts". Talk. Software Engineering Assembly (SEA) 2018 Conference and Tutorials. Boulder, CO. [Link](#).
- 2018 **Weiming Hu**, Guido Cervone, Shantenu Jha, Vivek Balasubramanian, Matteo Turilli. "Automatic Unstructured Grid Refinement Using Machine Learning for the Analog Ensemble of Numeric Weather Prediction". Poster. EarthCube Projects All Hands Meeting. Washington, DC. [Link](#).
- 2018 **Weiming Hu**, Guido Cervone, Shantenu Jha, Vivek Balasubramanian, Matteo Turilli. "Automatic Unstructured Grid Refinement Using Machine Learning for the Analog Ensemble of Numeric Weather Prediction". Poster. ICS Symposium 2018: Harnessing the Power of Data. University Park, PA. [Link](#).
- 2017 **Weiming Hu**, Guido Cervone, Shantenu Jha, Vivek Balasubramanian, Matteo Turilli. "Short-Term Temperature Predictions Using Adaptive Computing on Dynamic Scales". Poster. American Geophysical Union 2017 Fall Meeting. Now Orleans, LA. [Link](#).
- 2017 **Weiming Hu**, Guido Cervone. "Short-Term Probabilistic Photovoltaic Power Prediction

- 2017 Using Analog Ensemble". Poster. Energy Days. University Park, PA. [Link](#).  
**Weiming Hu.** "Local Humidity Prediction Using an Analog Ensemble". Talk. Association of American Geographers Annual Meeting. Boston, MA. [Link](#).

## Awards and Honors

- 2018 Sustainable Energy Fund for the 2018 EnergyPath conference (Full cover). [Link](#).  
 2018 Travel grant for the 12th Annual Graduate Climate Conference (\$325). [Link](#).  
 2018 First place (out of 46) in 2018 Institute of CyberScience Symposium Student Poster Competition (\$750).  
 2018, 2017 Research covered by Penn State News. [Link1](#), [Link2](#).  
 2017 Ronald F. Albert Award in Geography Academic Enrichment at Penn State University. (\$350). [Link](#).  
 2015 "Jiwei Era" Top 10 (out of 200) New Remote Sensing Star Award Nomination at Wuhan University.  
 2015, 2013 First-class (1 out of 40) scholarship in Geoinformatics at Wuhan University (\$150, \$150).

## Public Outreach and Services

- 2018 - present Mentor of a Geography Ph.D. student and a Meteorology undergraduate student.  
 2018 - 2019 Chair of GEOLab prospective graduate student selection committee.  
 2017 - 2018 Representative of Geography Graduate Student Community, Penn State University.  
 2018.6 Visit to International Research Institute of Disaster Science, Tohoku Univeristy, Japan.  
 Host: Prof. Shunichi Koshimura  
 2017.6 - 2017.7 Visit to Foothills Laboratory, National Center of Atmospheric Research, Boulder, CO.  
 Host: Prof. Guido Cervone

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