

## Ziwan Deng

### Climate Change Scientist

Laboratory of Mathematical Parallel Systems (LAMPS)

Department of Mathematics & Statistics

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## Expertise

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- **Climate Change (15+):**
  - Climate Change modeling
    - Global Climate Modeling (GCM) and Regional Climate Modeling(RCM)
    - Spatial and temporal analysis of climate change
    - Climate extreme analysis: indicators, trend, impacts
  - Climate Change risk analysis
    - Climate Change Scenario Analysis
    - Agriculture, Public health and Infrastructure
  - Climate Change data portal development
    - Create and disseminate high resolution climate change data
    - Ensemble Kalman Filter Optimal Interpolation (EnOI)
    - Bias-correction spatial disaggregation (BCSD)
    - AI-based downscaling model (SR)
- **Geographic Information Systems and Database (15+)**
- **Web Application development (10+)**
- **Big data technology (5+)**
- **Machine Learning (ML) and AI (5+)**
- **Programming Languages:**
  - Python(5+), R(5+), Matlab(15+) and Fortran (15+)

## Work Experiences

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- **Climate Change Researcher, Associate Director of LAMPS (March 2013 to Present)**  
*Department of Mathematics and Statistics, York University, Toronto, ON, Canada*
  - Advise public and government sectors on climate change in Ontario
  - Apply for funding for climate change and risk research
  - Design, develop and maintain the Ontario Climate Data Portal ([yorku.ca/ocdp](http://yorku.ca/ocdp)) for the Ministry of the Environment, Conservation and Parks (MECP)
  - Present research findings to policy makers and commissioners seeking expert opinion
  - Act as technical leader providing professional guidance to colleagues and subordinate
  - Carried out six climate change and impacts projects funded by MECP
  - Taught several mathematics courses
- **Postdoctoral, Research Scientist (2005-2012)**  
*Laboratory of High Performance Computing (HPC)*  
*University of Northern British Columbia, Prince George, BC, Canada*
  - Developed coupled atmosphere-ocean models to improve ENSO prediction
  - Assimilated data and enhance quality of initial conditions for ENSO prediction
  - Provided technical support and professional guidance to PhD/Master students

- **Assistant, Associate Professor, Director and Vice Dean of A Department (2002-2005)**  
*Nanjing University of Information Science and Technology, Nanjing, China*
  - Secured funding for regional climate change research
  - Taught Climatology, Statistics, Probability, GIS and Web technology
  - Managed the Department of GIS and supervised graduate students

## **Education**

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- **PhD in Climate Change (1999-2002)**  
*Nanjing University of Information Science and Technology, Nanjing, China*
- **Ms. in Climate Change (1993-1996)**  
*Nanjing University, Nanjing, China*

## **Recent Major Projects**

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- Update, maintain and promote the Ontario Climate Change Data Portal ([yorku.ca/ocdp](http://yorku.ca/ocdp)) and Advise the public on climate change in Ontario (2021-2024, MECP)
- Impacts of climate change on abundance and spatial distribution of mosquito-borne disease in Ontario, (2018-, NSERC Grant)
- Developing A Common Set of High-Resolution (10km x 10km) Probabilistic Regional Climate Projections Over Ontario Using A Large Ensemble of GCMs and RCMs Results (MECP, 2016-2018)
- Developing Extreme Climate Indices for Building Code Calculation for Ontario from IPCC AR5 multi-model Ensemble (MECP, 2015-2016)
- Updating the High-Resolution (45km x 45km) Probabilistic Climate projections over Ontario via Statistical Downscaling using the New IPCC AR5 Data (MECP, 2014-2015)
- Identification and Validation of Extreme Weather Indicators for Agricultural Production and Rural Resilience in Ontario (Agriculture and Agri-Food Canada, 2014-2015)
- Developing high-resolution (45km x 45 km) probabilistic climate projections of extreme events over Ontario from multiple global and regional climate models (MECP, 2013-2014)

## **Selected Recent Publications**

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- Deng Ziwang, et al. "Climate trends in the Great Lakes region and surrounding area over the past 40 years", submitted to *Theoretical & Applied Climatology*, 2022
- Zhu, Huaiping, et al. "The Ontario Climate Data Portal, a user-friendly portal of Ontario-specific climate projections." *Scientific Data* 7.1 (2020): 1-10.
- Deng, Ziwang, et al. "Downscaling RCP8.5 daily temperatures and precipitation in Ontario using localized ensemble optimal interpolation (EnOI) and bias correction." *Climate dynamics* (2018): 1-21.
- Deng, Ziwang, et al. "Projection of Temperature and Precipitation Related Climatic Design Data Using CMIP5 Multi-Model Ensemble: A case study for Ontario, Canada under RCP 6.0." *Journal of Buildings and Sustainability* 1.1 (2018).
- Deng, Ziwang, et al. "Trend in frequency of extreme precipitation events over Ontario from ensembles of multiple GCMs." *Climate dynamics* 46.9-10 (2016): 2909-2921.