

# Bing He

Geological Oceanography | Deep Learning | Numerical Simulation | Seafloor Geodesy | Data Science & Analytics  
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## EDUCATION

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### Graduate School of Oceanography, University of Rhode Island, Narragansett, RI

#### Ph.D. Candidate in Marine Geology and Geophysics

Expected August 2022

- **Honors:** 2 GSO Alumni Awards, McMaster Award
- **Dissertation:** Detecting slow slip events using machine learning method from the seafloor pressure data

### The Chinese University of Hong Kong, Hong Kong, China

#### Master's Degree in Earth and Atmospheric Science

June 2017

- **Honors:** Best Teaching Assistant Award, Outreach Award
- **Dissertation:** Deriving rupture scenarios from the inter-seismic locking distribution in Nicoya Peninsula, Costa Rica

### Jilin University, Jilin, China

#### Bachelor's Degree of Engineering in Applied Geophysics

June 2015

- **Honors:** 2<sup>nd</sup> Class Scholarship, Excellent Student Award

## PROFESSIONAL EXPERIENCE

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- **Designed a machine learning algorithm to automatically detect special tectonic events.**
  - Designed event detector incorporating convolutional and recurrent neural networks using Keras and TensorFlow.
  - Algorithm lowers the costs to detect such events compared to the conventional method.
  - Published first author paper in *Geophysical Research Letter* and preparing second paper for *Science Advance*.
- **Developed a machine learning based model to automatically separate earthquake and ambient noise signals cooperating with seismologists at Harvard University (Dr. Jiuxun Yin & Prof. Marine Denolle).**
  - Separated two complex signals using Encoder-Decoder network and regression method in PyTorch.
  - The developed method can be used in real-time earthquake data analysis. A co-authored paper is in preparation.
- **Processed and analyzed immense seafloor pressure and deep currents data using principal components analysis method cooperating with physical oceanographers.**
  - Removed tides and instrumental drift from the interpolated pressure data and investigated the relationship between seafloor pressure and deep currents data. Co-authored paper in *Journal of Geophysical Research*.
- **Designed a workflow to detect tremors from 2 terabits ocean bottom seismic data using cross-correlation method.**
- **Built a 3D subduction zone model using CUBIT, simulated earthquake process using PYLITH and investigated the relation between the potential earthquake size and nucleation area.**
  - Reproduced the 2012 Nicoya earthquake process using numerical simulation method, simulated the ground motion from different nucleation sources, and analyzed the potential seismic hazards in Costa Rica coastal region.
  - Published 2 co-authored papers in *Journal of Geophysical Research* and *Earth and Planetary Science Letters*.

## RELEVANT EXPERIENCE

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- **Grant Writing:** Drafted two successful NSF proposals assisting principal investigators – funding awarded.
- **Communications:** Gave 10+ oral and poster presentations in global Geoscience conferences, including *American Geophysical Union*, *Ocean Science*, *2<sup>nd</sup> Machine Learning in Solid Earth Geoscience*, *Community Seafloor Geodesy*.
- **Training:** Served as mentor for first-year Ph.D. students and taught them basic programming skills.
- Served as a curator assistant in Rock & Core Lab for two years and conducted several tours for kids and adults.
- **Computer & Technology:**
  - Visualize and analyze complex data using Python, MATLAB, GMT, and Google Earth.
  - Use High-Performance Computers for computing machine learning models and numerical simulations.

## COMPUTER SKILLS

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Python (Pandas, Scikit-learn, Keras, TensorFlow, PyTorch), MATLAB, R, Shell, C++, GMT, CUBIT, PYLITH, ParaView, Adobe Illustrator, Photoshop, LaTeX, Microsoft Office, Linux, Windows.