

Curriculum Vitae

Zexuan Xu

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General Information

Current address: 1 Cyclotron Road, MS 84-0122
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Education

05/2016 **Ph.D** in Geology, Dept. of Earth, Ocean and Atmosphere Sciences (EOAS)
Florida State University (FSU), Tallahassee, FL
Major in hydrology and numerical modeling
*Dissertation: Data analysis and numerical modeling of seawater intrusion
through conduit network in a coastal karst aquifer*
Supervisor and Committee Chair: Dr. Bill X. Hu
06/2012 **B.Sc** in Geology, Zhejiang University (ZJU), Hangzhou, Zhejiang, China

Short-term Education

05/2013 - 07/2013 Visiting Student, China University of Geoscience (Beijing), Beijing, China
08/2010 - 09/2010 Exchange Student, University of California, Los Angeles, CA

Research Experience

06/2016 - present Postdoctoral Fellow, Climate & Ecosystem Science Division (CESD)
Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA
*LDRD Project: Modeling the Earth's hydrologic cycle from watershed to global
scales*
08/2012 - 05/2016 Graduate Research Assistant, Dept. of EOAS, FSU, Tallahassee, FL
*Project: Numerical modeling of seawater intrusion in a coastal aquifer with
well-developed conduits*
06/2015 - 08/2015 Intern, Florida Geological Survey (FGS), Tallahassee, FL
*Project: Data analysis of seawater intrusion through subsurface conduit net-
works in a coastal karst aquifer at the Woodville Karst Plain*
05/2014 - 08/2014 Intern, Idaho National Laboratory (INL), Idaho Falls, ID
*Project: Phase-field modeling of solute precipitation/dissolution using
MOOSE: a finite element method*

Teaching Experience

08/2012 - 05/2016 Teaching Assistant, Dept. of EOAS, FSU
GLY1000 Dynamic Earth / GLY1000L Dynamic Earth Laboratory
GLY4751/5757 Introduction to Remote Sensing and GIS

Research Interests

- Atmosphere - Land surface -Hydrological integration modeling
- Surface water and groundwater interaction coupled model development
- Numerical simulation of flow and solute transport in porous and fracture media
- Numerical modeling of variable-density flow and salinity transport problems
- Uncertainty quantification and sensitivity analysis

Academic Skills

Programming

Fortran, C/C++, Python, R, SQL, Unix shell script, NCAR Command Language (NCL)
OpenMP, MPI

Numerical Models

Atmosphere/Climate: CESM(CAM, CLM, etc), WRF
Hydrology: ParFlow, PAWS, WRF-Hydro, GSFLOW, MODFLOW, MT3DMS, SEAWAT, MODFLOW-
CFP, MODFLOW-SWI, UMT3D, Groundwater Vistas
Uncertainty analysis: PEST, UCODE

Software

MATLAB, Mathematica, ArcGIS, QGIS, CorelDraw, L^AT_EX

Peer-reviewed Publications

- Xu, Z.** and Hu, B.X., 2016, Development of a discrete-continuum VDFST-CFP numerical model for simulating seawater intrusion to a coastal karst aquifer with conduit network, submitted to Water Resource Research.
- Xu, Z.**, Hu, B.X. and Ye, M., 2016, Numerical modeling and sensitivity analysis of seawater intrusion in a dual-permeability coastal karst aquifer with conduits, submitted to Journal of Hydrology.
- Xu, Z.**, Bassett, S., Hu, B.X. and Dyer, S., 2016, Long distance seawater intrusion through a karst conduit network in the Woodville Karst Plain, Florida, Scientific Reports, in press.
- Xu, Z.**, Hu, B.X., Davis, H. and Kish, S., 2015, Numerical study of a groundwater flow cycling controlled by seawater intrusion within karst conduit networks using MODFLOW-CFP, submitted to Journal of Contaminant Hydrology, 182, 131-145..
- Xu, Z.**, Hu, B.X., Davis, H. and Cao, J., 2015, Using CFP numerical solute transport method to simulate nitrate-N contamination in Woodville Karst Plain, Journal of Hydrology, 52(4), 72 - 88.

Book Chapter

Hu, B.X. and **Xu, Z.**, 2016, Numerical Simulation of Groundwater Flow and Solute Transport in a Karst Aquifer with Conduits, *Groundwater - Contaminant and Resource Management*, edited by Dr. Muhammad Salik Javaid (Ed.), InTech, ISBN 978-953-51-2466-5.

Conferences Proceedings

- Xu, Z.**, Bassett, S., Hu, B.X. and Dyer, S., Field observations of extended seawater intrusion through subsurface karst conduit networks at Wakulla Spring in the Woodville Karst Plain, Florida, American Geophysical Union (AGU) 2016 Fall Meeting, San Francisco, California, December 2016.
- Xu, Z.** and Hu, B.X., Numerical simulation of freshwater/seawater interaction in a dual-permeability karst system with conduits: the development of a discrete-continuum VDFST-CFP model, European Geosciences Union (EGU) General Assembly 2016, Vienna, Austria, April 2016 (oral).
- Xu, Z.** and Hu, B.X., Variable density numerical modeling of seawater intrusion in coastal aquifer with well-developed conduits, American Geophysical Union (AGU) 2015 Fall Meeting, San Francisco, California, December 2015 (poster).
- Xu, Z.** and Hu, B.X., Simulating seawater intrusion using numerical variable-density SEAWAT model in coastal karst aquifer with well-developed conduits, Geological Society of America (GSA) Annual Meeting, Baltimore, Maryland, November 2015 (oral).
- Hu, B.X. and **Xu, Z.** (presenter), Numerical study on groundwater flow cycling in the Woodville Karst Plain controlled by seawater intrusion to a karst aquifer through conduit network using CFPv2, OMICS International Conference on Geology, Orlando, Florida, June 2015 (oral).
- Xu, Z.**, Hu, B.X., Davis, H. and Kish, S., Numerical study of a groundwater flow cycling controlled by seawater intrusion within karst conduit networks using MODFLOW-CFP, American Geophysics Union (AGU) 2014 Fall Meeting, San Francisco, California, December 2014 (poster).
- Xu, Z.**, Hu, B.X. and Davis, H., Using CFP numerical solute transport method to simulate nitrate-N and chloride contamination in Woodville Karst Plain, Geological Society of America (GSA) 125th Annual Meeting, Denver, Colorado, October 2013 (oral).

Colloquium Presentations

- Xu, Z.** and Hu, B.X., Numerical modeling of seawater intrusion in a heterogeneous coastal karst aquifer with conduits. 5th UF Water Institute Symposium, University of Florida, Gainesville, Florida, February 2016.
- Xu, Z.** and Hu, B.X., Numerical modeling of groundwater and seawater intrusion in the Woodville Karst Plain. Regional open workshop: Study on groundwater and surface water in the Woodville Karst Plain, GFDI, FSU, Tallahassee, Florida, September 2015 (workshop organizer as well).
- Xu, Z.** and Hu, B.X., Numerical modeling of seawater intrusion in coastal karst aquifer with well-developed conduits: the development of VDFST-CFP (Variable Density Flow and Solute Transport ? Conduit Flow Process), invited by NFWFMD (Northwest Florida Water Management District), Midway, Florida, June 2015.
- Xu, Z.**, Hu, B.X. and Davis, H., Numerical study of a groundwater flow cycling controlled by seawater intrusion within karst conduit networks using MODFLOW-CFP, Southwest Florida Water Resources Conferences, Fort Myers, Florida, February 2015.
- Xu, Z.**, Hu, B.X. and Davis, H., A groundwater flow cycling controlled by seawater intrusion near Tallahassee and numerical simulation using MODFLOW-CFP. Natural Sciences Graduate Symposium, FSU, October 2014.

Xu, Z., Hu, B.X. and Davis, H., Numerical study of nitrate-N and chloride transport in a well-developed karst aquifer, Thalassic Society EOAS Student Symposium, FSU, November 2013.

Honors and Awards

J O'Brien Graduate Travel Grant, Dept. of EOAS, FSU (2016)
Dissertation Research Grant, College of Graduate Studies, FSU (2015)
Lyman Toulmin Memorial Fund, FSU (2015-2016)
Robert Lamar Parker Endowed Memorial Fund, FSU (2014-2015)
COGS Travel Grant, FSU (2015, 2014 & 2013)
Outstanding Undergraduate Student in Zhejiang, China (only 200 winners each year, 2012)
Panasonic Scholarship, ZJU (only 20 winners each year, 2011)
First-Class Scholarship for Outstanding Students, ZJU (2010)
Excellent Student Awards, ZJU (2011, 2010 & 2009)

Reviewer for Journals

Journal of Hydrology (JH)
Stochastic Environment Research and Risk Assessment (SERRA)
Environmental and Engineering Geoscience (EEG)
Journal of Water Resource and Hydraulic Engineering (JWRHE)

Memberships

American Geophysical Union (AGU)
Geological Society of America (GSA)
European Geosciences Union (EGU)