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EDUCATION AND TRAINING

2006 Ph.D., Hydrogeology/Geostatistics, University of California, Berkeley
2005 M.A., Statistics, University of California, Berkeley
2002 M.S., Environmental Engineering, University of California, Berkeley
2000 M.S., Atmospheric Sciences, Peking University, Beijing, China
2000 B.S., Geophysics, Peking University, Beijing, China

RESEARCH AND PROFESSIONAL EXPERIENCE

2010-present, Scientist / Senior Scientist, Earth Systems Science Division, Pacific Northwest National Laboratory, Richland, Washington
Developing uncertainty quantification and inversion approaches; solving problems related to carbon sequestration, oil/gas exploration, environmental remediation, climate modeling, and power system planning and operations

2007-2010, Assistant Professor, Department of Geology, the State University of New York at Buffalo, Buffalo, New York
Research and teaching in Inverse Methods, Geophysical Data Processing, Exploratory Data Analysis.

2006-2007, Postdoctoral Research Associate, Department of Civil and Environmental Engineering, University of California, Berkeley, Berkeley, California
Entropy- and MCMC-Bayesian inversion approaches for near surface geophysical data interpretation

2006, Hydrogeologist, Hydrogeophysics Inc., Albany, California
Stochastic modeling of wastewater discharges from the food processing industry in Central Valley

2001-2006, Research Assistant, Department of Civil and Environmental Engineering, University of California, Berkeley, Berkeley, California
Stochastic inversion of geophysical data for deep and shallow subsurface characterization

2000-2001, Research Assistant, Department of Civil and Environmental Engineering, Princeton University, Princeton, New Jersey
Rainfall characterization and variability analysis using weather radar data

1997-2000, Research Assistant, Department of Geophysics, Peking University, Beijing, China
Exploratory data analysis of global climate change and external forcing factors

SELECTED PUBLICATIONS

Hou Z, DH Bacon, DW Engel, G Lin, Y Fang, H Ren, and Z Fang. 2014. "Uncertainty analyses of CO2 plume expansion subsequent to wellbore CO2 leakage into aquifers." International Journal of Greenhouse Gas Control 27: 69-80.

Fang Z, Z Hou, G Lin, DW Engel, Y Fang, and PW Eslinger. 2014. "Exploring the effects of data quality, data worth, and redundancy of CO2 gas pressure and saturation data on reservoir characterization through PEST Inversion." Environmental Earth Sciences 71(7):3025-3037. doi:10.1007/s12665-013-2680-9

Bao J, Z Hou, Y Fang, H Ren, and G Lin. 2013. "Uncertainty quantification for evaluating impacts of caprock and reservoir properties on pressure buildup and ground surface displacement during geological CO2 sequestration." Greenhouse Gases: science and technology 3(5):338-358.

Hou Z, DW Engel, G Lin, Y Fang, and Z Fang. 2013. "An Uncertainty Quantification Framework for Studying the Effect of Spatial Heterogeneity in Reservoir Permeability on CO2 Sequestration." Mathematical Geosciences 45(7):799-817. doi:10.1007/s11004-013-9459-0

Huang M, Z Hou, LYR Leung, Y Ke, Y Liu, Z Fang, and Y Sun. 2013. "Uncertainty Analysis of Runoff Simulations and Parameter Identifiability in the Community Land Model - Evidence from MOPEX Basins." Journal of Hydrometeorology 14:1754-1772. doi:10.1175/JHM-D-12-0138.1

Scheibe TD, Z Hou, BJ Palmer, and AM Tartakovsky. 2013. "Pore-Scale Simulation of Intragranular Diffusion: Effects of Incomplete Mixing on Macroscopic Manifestations." Water Resources Research 49(7):4277-4294. doi:10.1002/wrcr.20333

Sun Y, Z Hou, M Huang, F Tian, and LYR Leung. 2013. "Inverse Modeling of Hydrologic Parameters Using Surface Flux and Runoff Observations in the Community Land Model." Hydrology and Earth System Sciences 17:4995-5011. doi:10.5194/hess-17-4995-2013

Hou Z, M Huang, LYR Leung, G Lin, and DM Ricciuto. 2012. "Sensitivity of Surface Flux Simulations to Hydrologic Parameters Based on an Uncertainty Quantification Framework Applied to the Community Land Model ." Journal of Geophysical Research. D. (Atmospheres) 117:D15108. doi:10.1029/2012JD017521

Hou Z, ML Rockhold, and CJ Murray. 2011. "Evaluating the impact of caprock and reservoir properties on potential risk of CO2 leakage after injection." Environmental Earth Sciences 66(8):2403-2415. doi:10.1007/s12665-011-1465-2

Hou Z, Y Rubin, GM Hoversten, D Vasco, and J Chen, 2006, Reservoir Parameter Identification Using Minimum Relative Entropy-Based Bayesian Inversion of Seismic AVA and Marine CSEM Data, Geophysics, 71(6), P.O77-O88.

Hou Z, and Y Rubin, 2005, On MRE Concepts and Prior Compatibility Issues in Vadose Zone Inverse and Forward Modeling, Water Resour. Res., 41, W12425, doi:10.1029/2005WR004082.

SYNERGISTIC ACTIVITIES

Associate editor, *J. of Environmental and Engineering Geophysics, Hydrology open*

Convener for American Geophysical Union (AGU), fall 2011, fall 2012, fall 2013, fall 2014

Reviewer for *J. of Hydrometeorology, Hydrology and Earth System Sciences, Water Resources Research, Advances in Water Resources, Atmosphere-Ocean, Journal of Applied Meteorology and Climatology, Journal of Advances in Modeling Earth Systems, Environmental Modeling and Software, J. of Atmospheric and Oceanic Technology, J. of Applied Geophysics, J. of Environmental and Engineering Geophysics, Environmental Earth Sciences, Journal of Hydrologic Engineering*

Proposal review boards for NSF, DOE, US Army ERDC

Member of American Geophysical Union (AGU), American Statistician Association (ASA), Environmental and Engineering Geophysical Society (EEGS), Society of Exploration Geophysicists (SEG), Institute of Electrical and Electronics Engineers (IEEE), IGERT SUNY.

Affiliated Faculty Member, SUNY Buffalo