

# Se Jong Cho

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## Profile

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I develop computer simulation models to organize complex landscape information and data for the development of management scenario narratives to inform policy decision analysis. Environmental problems, such as water pollution and land degradation, are essentially social problems; thus, I continue to work in multi- and inter-disciplinary research projects where we define and address these problems in social, economic, and environmental dimensions.

## Education

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**Johns Hopkins University** Baltimore, MD  
**PhD** Environmental Engineering and Management 2017  
*Dissertation:* Development of an integrated environmental management simulation model to address nonpoint source sediment pollution from intensive agricultural watershed in southern Minnesota  
*Committee:* Profs. Peter Wilcock, Benjamin Hobbs, and Ben Zaitchik,

**Johns Hopkins University** Baltimore, MD  
**MSE** Environmental Management and Economics 2014

**Johns Hopkins University** Baltimore, MD  
**MS** Environmental Engineering and Science 2009

**Northwestern University** Evanston, IL  
**BS** Civil Engineering 2003

## Professional Experience

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**The National Socio-Environmental Synthesis Center, University of Maryland** Annapolis, MD  
*Postdoctoral Research Fellow* 2018-Present  
*Collaborating Mentors:* Betsy Otto and Suzanne Ozment

Evaluation of green infrastructure impact on water resources management

- Develop simulation models to evaluate different land management scenarios on the water supply system
- Conduct spatial analysis to understand the current extent of green and grey infrastructures
- Collaborate in an effort to develop a decision analysis framework with TNC

**St. Anthony Falls Laboratory, University of Minnesota** Minneapolis, MN  
*Postdoctoral Research Associate* 2017-2018  
*Advisors:* Drs. Efi Foufoula-Georgiou, Karen Gran, Patrick Belmont, Peter Wilcock

Management of intensively managed landscape

- Collaborated in an effort to integrate multiple landscape simulation models to optimize management choices for nonpoint source sediment and nutrient source reduction
- Conducted landslide mapping using remote sensing and spatial analysis techniques

**Bechtel Power Corporation** Frederick, MD  
*Hydrologic and Hydraulic Engineer* 2008-2009

Conducted hydrologic and hydraulic engineering design and analysis for multiple fossil and nuclear power projects supported by Geotechnical & Hydraulic Engineering Services of Bechtel.

## Publications

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- Cho, S.J., Wilcock, P., Gran, K., (in prep). Sediment delivery simulation using topographic filtering.
- Cho, S.J., Brauderick, C., Dolph, C., Wilcock, P.,(in prep). Quantification of near-channel sediment loading using paired gage data and spatial analysis
- Cho, S.J., Wilcock, P., Belmont, P., Gran, K., Hobbs, B., 2019. Simulation model for collaborative decision-making on sediment source reduction in an intensively managed watershed. *Water Resource Research*. doi: 10.1029/2018WR024324
- Gran, K., Dolph, C., Baker, A., Bevis, M., Cho, S.J., Czuba, J.A., Dalzell, B., Danesh-Yazdi, M., Hansen, A., Kelly, S., Lang, Z., Schwenk, J., Belmont, P., Finlay, J.C., Kumar, P., Rabotyagov, S., Roehrig, G., Wilcock, P., Fofoula-Georgiou, E., 2019. The power of environmental observatories for advancing multidisciplinary research, outreach, and decision support: the case of the Minnesota River Basin. *Water Resources Research*. doi.org/10.1029/2018WR024211
- Cho, S. J., Wilcock, P., Hobbs, B., 2018. Topographic filtering simulation model for sediment source apportionment. *Geomorphology* 309C, 1-9. doi: 10.1016/j.geomorph.2018.02.014
- Mitchell, N., Kumarasamy, K., Cho, S., Belmont, P., Dalzell, B., Gran, K., 2018. Reducing High Flows and Sediment Loading through Increased Water Storage in an Agricultural Watershed of the Upper Midwest, USA. *Water* 10(8), 1053. doi: 10.3390/w10081053
- Cho, S. J., Wilcock, P., Gran, K., Belmont, P., Hobbs, B., 2017. Management Option Simulation Model (MOSM) and supporting documents. University of Minnesota Digital Conservancy, <http://hdl.handle.net/11299/191082>.
- Cho, S. J., 2017. Development of Data-Driven, Reduced-Complexity Watershed Simulation Models to Address Agricultural Non-Point Source Sediment Pollution in Southern Minnesota (Ph.D. Dissertation). Department of Environmental Health and Engineering, Johns Hopkins University, Baltimore, MD.
- Wilcock, P., Cho, S. J., Gran, K., Hobbs, B., Belmont, P., Bevis, M., Heitkamp, B., Marr, J., Mielke, S., Mitchell, N., Kumarasamy, K., 2016. CSSR: Collaborative for Sediment Source Reduction Greater Blue Earth River Basin. A Final Report for the EPA 319, Nonpoint Source Water Pollution Project Grants. Minneapolis, Minn.

## Conference Presentations

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- “Finding social innovation in the nexus of science and art” International Association of Landscape Ecology (US-IALE) 2019 Annual Meeting in Fort Collins, CO. Special Symposia *Art-science collaboration for ecology, conservation, and sustainability*
- “Quantification of near-channel sediment supply in deeply incising tributaries of the Minnesota River, accelerated by the anthropogenic influences on watershed hydrology” 2017 American Geophysical Union (AGU) Annual Fall Meeting in New Orleans, LA
- “Simulation model to link management choices and sediment delivery” 2016 Minnesota Water Resources Conference in Saint Paul, MN. Session: *Collaborative for sediment source reduction*
- “Reduced complexity model to simulate reductions in sediment delivery from an agricultural watershed in southern Minnesota” 2015 AGU Annual Fall Meeting in San Francisco, CA
- “Development of a Topographic Filter to identify dominant sediment source areas in a watershed” 2012 AGU Annual Fall Meeting in San Francisco, CA

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## Teaching Experience

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<b>Johns Hopkins University</b>	Baltimore, MD
Guest lecturer, <i>Social Theory for Engineers</i>	2016
Teaching assistant, <i>Principals of Geomorphology</i>	2013
Teaching assistant, <i>Introduction to Computation and mathematical modelling</i>	2012
Mathematics instructor, <i>Trigonometry, Precalculus, Calculus</i>	2003-2008
<b>Towson University</b>	Towson, MD
Guest lecturer, <i>Creativity in Arts</i>	2018

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## Computer skills

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MS Office: Word, PowerPoint, Access, and Excel Spreadsheet with macro design  
Geographical and aerial analysis software: ArcGIS and ERDAS  
Hydraulic and hydrologic assessment software: HEC-RAS, HEC-HMS, and SWMM  
Optimization algorithm software: CPLEX  
Statistical analysis software: R  
Engineering software: MATLAB, Netlogo agent-based model (ABM), VenSim/STELLA  
Programming language: VBA, C, Python

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## References

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Peter Wilcock, Department  
Head of Watershed Sciences  
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Benjamin Hobbs, Schad  
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Margaret Palmer  
Director of the National Socio-  
Environmental Synthesis  
Center, University of Maryland  
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