

# Yeowon Kim

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330 S Beck Ave. Tempe, Arizona, USA



## EDUCATION

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Aug 2014 -Aug 2018	<b>ARIZONA STATE UNIVERSITY</b> <i>Doctor of Philosophy in Sustainability</i> (Advisor: Dr. Mikhail V. Chester) <ul style="list-style-type: none"><li>Dissertation title: Safe-to-fail infrastructure for resilient cities under non-stationary climate</li><li>Keywords: Resilience; Sustainability; Infrastructure; Disaster risk management; Flood management; Water resource management; Climate change adaptation; Safe-to-fail design; Institutional decision making; Urban development; Social cohesion</li></ul>	Tempe, United States
Mar 2011 -Feb 2013	<b>KOREA UNIVERSITY</b> <i>Master of Science in Civil and Environmental Engineering</i> (Advisor: Dr. Seungkwan Hong) <ul style="list-style-type: none"><li>Thesis title: Fouling propensity and reversibility of organic, colloidal, and combined foulants in forward osmosis (FO) system: measurements and mechanisms</li><li>Keywords: Water and wastewater treatment; Water resource management; Desalination; Membrane technology</li></ul>	Seoul, Republic of Korea
Mar 2006 -Feb 2011	<b>KOREA UNIVERSITY</b> <i>Bachelor of Science in Civil and Environmental Engineering</i> <ul style="list-style-type: none"><li>Certified Accreditation Board for Engineering Education of Korea (ABEEK) program</li></ul>	Seoul, Republic of Korea
Mar 2003 -Feb 2006	<b>HANYOUNG FOREIGN LANGUAGE HIGH SCHOOL</b> <i>Majored in Chinese</i>	Seoul, Republic of Korea

## SKILLS

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- Language: Fluent in Korean (mother tongue) and English, Basic communication in Chinese
- Tools: ArcGIS, Adobe Premiere Pro, IBM SPSS, MATLAB, Microsoft Office, EPA Stormwater Management Model (SWMM)

## RESEARCH PROJECT

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RESEARCH PORTFOLIO: [HTTPS://ASU.DIGATION.COM/YEOWONKIM](https://asu.digication.com/yeowonkim)

Jan 2016 -present	<b>THE URBAN RESILIENCE TO EXTREMES SUSTAINABILITY RESEARCH NETWORK (UREX SRN)</b> <i>Research project, National Science Foundation, USA</i> <ul style="list-style-type: none"><li>Integrating social, ecological, and technical systems to devise, analyze, and support urban infrastructure decisions in the face of climatic uncertainty</li><li>Linking scholars with city and community practitioners to produce resilient infrastructure data, models, images, maps, stories, and on-the-ground projects in 10 cities (six continental U.S. and four Latin American) to accelerate innovative urban sustainability knowledge and application</li></ul>
Aug 2016 -present	<b>THE DYNAMICS OF MULTI-SCALAR ADAPTATION IN THE MEGALOPOLIS: AUTONOMOUS ACTION, INSTITUTIONAL CHANGE AND SOCIAL-HYDROLOGICAL RISK IN MEXICO CITY (MEGADAPT)</b> <i>Research project, National Science Foundation, USA</i> <ul style="list-style-type: none"><li>Addressing the challenge of reducing vulnerability under climate change to increased flooding, chronic water scarcity, and associated health outcomes in Mexico City</li></ul>

- May 2017  
-present
- THE CENTRAL ARIZONA-PHOENIX LONG-TERM ECOLOGICAL RESEARCH (CAP-LTER)**  
*Research project, National Science Foundation, USA*
- Developing alternative sustainable and resilient futures for Phoenix communities using the upscaling and downscaling approach to scenario development
- Jan 2011  
-Dec 2012
- EMERGING APPLICATIONS OF NANOTECHNOLOGY IN MEMBRANE-BASED DESALINATION AND WATER REUSE SYSTEMS**  
*Research project, World Class University (WCU) program, National Research Foundation of Korea, Ministry of Education, Science and Technology*
- Conducting an international collaborative research project (World Class University project funded by Ministry of Education, Science and Technology, Korea) with Prof. Menachem Elimelech of Yale University
  - Studying on forward osmosis (FO) fouling and rejection mechanisms
  - Application of nanomaterials incorporated membranes
- Jan 2011  
-Dec 2012
- SEAWATER ENGINEERING & ARCHITECTURE OF HIGH EFFICIENCY REVERSE OSMOSIS (SEAHERO) PROGRAM**  
*Research project, Ministry of Land, Transport and Maritime Affairs*
- Next generation reverse osmosis (RO) membrane analysis and process-diagnosis technology
  - Evaluation of RO membrane fouling potential by new fouling index

## PUBLICATIONS

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- 1) **Yeowon Kim**, Mikhail V. Chester, Daniel A. Eisenberg, and Charles L. Redman, The Infrastructure Trolley Problem: Positioning Safe-to-fail Infrastructure for Climate Change Adaptation (2018) *In review*
- 2) Mikhail V. Chester, Samuel Markolf, Andrew Fraser, Daniel Burillo, Emily Bondank, **Yeowon Kim**, Christopher Hoehne, Infrastructure and Climate Change, Book Chapter for Sustainable and Resilient Infrastructure (2018) *In review*
- 3) **Yeowon Kim**, Daniel A. Eisenberg, Emily N. Bondank, Mikhail V. Chester, Giuseppe Mascaro, B. Shane Underwood, Fail-Safe and Safe-to-Fail Adaptation: Decision-making for Urban Flooding under Climate Change, Climatic Change 145 (2017) 397-412. [doi.org/10.1007/s10584-017-2090-1](https://doi.org/10.1007/s10584-017-2090-1)
- 4) **Yeowon Kim**, Daniel A. Eisenberg, Emily N. Bondank, Mikhail V. Chester, Giuseppe Mascaro, B. Shane Underwood, Safe-to-Fail Climate Change Adaptation Strategies for Phoenix Roadways under Extreme Precipitation, ASCE International Conference on Sustainable Infrastructure 2017 (2017) 348-353. [doi.org/10.1061/9780784481202.033](https://doi.org/10.1061/9780784481202.033)
- 5) Seungtaek Lee, **Yeowon Kim**, Wai K. Chong, A statistical analysis of effectiveness of energy policy in the United States: Incentives vs. regulations, Procedia Engineering 118 (2015) 1282-1287. [doi.org/10.1016/j.proeng.2015.08.483](https://doi.org/10.1016/j.proeng.2015.08.483)
- 6) **Yeowon Kim**, Menachem Elimelech, Ho Kyong Shon, Seungkwon Hong, Combined organic and colloidal fouling in forward osmosis: Fouling reversibility and the role of applied pressure, Journal of Membrane Science 460 (2014) 206-212. [doi.org/10.1016/j.memsci.2014.02.038](https://doi.org/10.1016/j.memsci.2014.02.038)

## WORK EXPERIENCE

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- Aug 2014  
-present
- JULIE ANN WRIGLEY GLOBAL INSTITUTE OF SUSTAINABILITY** Tempe, United States  
*Postdoctoral Research Associate*
- City Comparisons Working Group, Urban Resilience to Extremes Sustainability Research Network (UREx SRN)
- Aug 2014  
-Aug 2018
- JULIE ANN WRIGLEY GLOBAL INSTITUTE OF SUSTAINABILITY** Tempe, United States  
*Graduate Research Associate*
- Working on advancing sustainability, resilience, climate risk management and institutional decision making for infrastructure development and climate change adaptation
- Feb 2014  
-Jul 2014
- UNESCO (UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION)** Paris, France  
*Intern, Division of Water Sciences*
- Developing the Ecohydrology of the 8<sup>th</sup> phase of International Hydrological Programme (IHP)

Preparing the 50th session of the IHP Bureau and the 21st session of the Intergovernmental Council of the IHP

Jul 2013 -Aug 2013	<b>INTERNATIONAL ENVIRONMENT EXPERT TRAINING PROGRAM</b> <i>Trainee, Ministry of Environment</i>	Seoul, Republic of Korea
	<ul style="list-style-type: none"> <li>Selected by competitive program and trained for 7-weeks to be accredited to work at international organizations as young professionals</li> <li>Interdisciplinary courses on environmental policies, regulations, international agreements and scientific backgrounds</li> </ul>	
Feb 2013 -Jun 2013	<b>KOREA ENVIRONMENT INSTITUTE</b> <i>Researcher, Division of Water Environment Policy</i>	Seoul, Republic of Korea
	<ul style="list-style-type: none"> <li>Advancing water environment and resources management policy at a national policy institute</li> <li>Conducting research projects funded by the Ministry of Environment; 1) A study of developing policies for non-point source pollutant management (stormwater management), 2) A study of developing topics for the 7<sup>th</sup> World Water Forum 2015</li> </ul>	
Jan 2011 -Jan 2013	<b>DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING, KOREA UNIVERSITY</b> <i>Graduate Research Assistant</i>	Seoul, Republic of Korea
	<ul style="list-style-type: none"> <li>Working on advanced water treatment, wastewater reuse, and desalination processes using forward/reverse osmosis membrane technology</li> </ul>	

### TEACHING EXPERIENCE

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Fall 2016	<b>CALCULUS-BASED MODELLING (SOS 212)</b> <i>Teaching Assistant, Arizona State University</i>	Tempe, United States
Spring 2016	<b>CALCULUS AND PROBABILITY (SOS 211)</b> <i>Teaching Assistant, Arizona State University</i>	Tempe, United States
Fall 2015	<b>CALCULUS AND PROBABILITY (SOS 211)</b> <i>Teaching Assistant, Arizona State University</i>	Tempe, United States
Spring 2015	<b>ECONOMICS FOR SUSTAINABILITY (SOS 325)</b> <i>Teaching Assistant, Arizona State University</i>	Tempe, United States
Fall 2012	<b>PHYSICAL AND CHEMICAL PROCESSES FOR WATER AND WASTEWATER TREATMENT</b> <i>Teaching Assistant, Korea University</i>	Seoul, Republic of Korea

### CONFERENCE AND WORKSHOP EXPERIENCE

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June 2018	<b>2018 INTERNATIONAL SYMPOSIUM ON SUSTAINABLE SYSTEMS AND TECHNOLOGY (ISSST)</b> <i>Oral presentation</i>	Buffalo, United States
	<ul style="list-style-type: none"> <li>Presentation title: 「Infrastructure Trolley Problem: Addressing Decision Trade-offs in Safe-to-fail Infrastructure Development」</li> </ul>	
Apr 2018	<b>THE 2018 AMERICAN ASSOCIATION OF GEOGRAPHERS (AAG) ANNUAL MEETING</b> <i>Oral presentation</i>	New Orleans, United States
	<ul style="list-style-type: none"> <li>Presentation title: 「Urban Climate Adaptation and Vulnerability: Assessing social, ecological and technological strategies in three U.S. cities」</li> </ul>	
Aug 2017	<b>RESILIENCE 2017</b> <i>Oral presentation</i>	Stockholm, Sweden
	<ul style="list-style-type: none"> <li>Presentation title: 「When is Safe-to-fail Safe?」</li> </ul>	
Aug 2017	<b>5TH ANNUAL SUMMER SCHOOL ON SUSTAINABLE CLIMATE RISK MANAGEMENT</b> <i>Hosted by the Network for Sustainable Climate Risk Management (SCRiM)</i>	State College, United States
Jun 2017	<b>2017 JOINT CONFERENCE OF INTERNATIONAL SOCIETY FOR INDUSTRIAL ECOLOGY (ISIE) AND INTERNATIONAL SYMPOSIUM ON SUSTAINABLE SYSTEMS AND TECHNOLOGY (ISSST)</b> <i>Oral presentation</i>	Chicago, United States

- Presentation title: 「Safe-to-Fail Climate Change Adaptation Strategies for Phoenix Roadways under Extreme Precipitation」
- Aug 2016      **RESILIENCE WEEK 2016**      Chicago, United States  
*Oral presentation*
- Presentation title: 「Urban flooding forecast for Phoenix roadways under increasing precipitation」
- May 2015      **INTERNATIONAL CONFERENCE ON SUSTAINABLE DESIGN, ENGINEERING AND CONSTRUCTION 2015**      Chicago, United States  
*Oral presentation*
- Presentation title: 「A statistical analysis of effectiveness of energy policy in the United States: Incentives vs. regulations」
- Aug 2013      **7TH IWA SPECIALISED MEMBRANE TECHNOLOGY CONFERENCE AND EXHIBITION FOR WATER AND WASTEWATER TREATMENT AND REUSE**      Toronto, Canada  
*Oral presentation, hosted by International Water Association*
- Presentation title: 「Propensity and reversibility of organic-colloid combined foulants in forward osmosis (FO) system: Effect of feed chemistry and pressure」
- Oct 2012      **THE 5<sup>TH</sup> INTERNATIONAL DESALINATION WORKSHOP**      Jeju, Republic of Korea  
*Oral presentation, hosted by the Center of Seawater Desalination Plant and European Desalination Society*
- Presentation title: 「Fouling reversibility in forward osmosis (FO): Pressurized vs. Non-pressurized system」
- Sep 2012      **2012 IWA WORLD WATER CONGRESS & EXHIBITION**      Busan, Republic of Korea  
*Oral presentation, hosted by International Water Association*
- Presentation title: 「A key mechanism in forward osmosis (FO) colloidal fouling: Accelerated cake-enhanced osmotic pressure」
- Apr 2012      **CONFERENCE AND EXHIBITION ON DESALINATION FOR THE ENVIRONMENT**      Barcelona, Spain  
*Oral presentation, hosted by European Desalination Society*
- Presentation title: 「Fouling propensity and reversibility of organic, colloidal, and combined foulants in forward osmosis (FO) system」, Nominated in top three for the Best Student Presenter
- Apr 2012      **2011 KSBB SPRING MEETING AND INTERNATIONAL SYMPOSIUM**      Changwon, Republic of Korea  
*Oral presentation, hosted by Korean Society of Biotechnology and Bioengineering*
- Presentation title: 「Beyond RO (Reverse osmosis): Future of Seawater Desalination」

## **AWARDS AND GRANTS**

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- Jan 2018      **2018 CAP-LTER ALL SCIENTIST MEETING AND RESEARCH SYMPOSIUM**      Tempe, United States  
*1<sup>st</sup> place, Poster contest*
- Presentation title: 「Downscaling regional scenarios: The application of social-ecological-technological framework」
- May 2017      **CAP-LTER GRADUATE GRANT FOR RESEARCH IN URBAN ECOLOGY AND URBAN SYSTEMS (\$6,000)**
- Mar 2017      **URBAN RESILIENCE TO EXTREMES SUSTAINABILITY RESEARCH NETWORK**      New York City, United States  
*2<sup>nd</sup> place, Poster contest at URExSRN All Hands Meeting 2017*
- Presentation title: 「Safe-to-Fail Infrastructure Adaptation Strategies: Decision-making for Urban Flooding under Climate Change」
- Dec 2016      **INSTITUTE FOR SOCIAL SCIENCE RESEARCH**      Tempe, United States  
*Honorable mention for Category 1- Completed research, 2016 Fall Grad Poster Contest*
- Presentation title: 「Communicating Climate Change in South Korean News Media」
- Oct 2016      **2016 ROCKY MOUNTAIN EMMY® AWARDS GALA & STUDENT PRODUCTION AWARDS**      Phoenix, United States  
*Finalist for News: General Assignment Category*

- Documentary film title: 「Tres Rios: A Constructed Wetland」 Link:  
<https://vimeo.com/147837180>

July 2016 **ASU GRADUATE COLLEGE TRAVEL GRANT (\$900)**

Oct 2008 **KOREAN SOCIETY OF CIVIL ENGINEERS (KSCE) CONFERENCE & CIVIL EXPO**  
*1<sup>st</sup> place, Undergraduate student presentation award*

Daejeon, Republic of Korea

### **PROFESSIONAL SERVICE**

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#### **GRANT REVIEWER**

2018 **2018 CAP LTER GRADUATE GRANT REVIEW PANEL**

#### **JOURNAL REVIEWER**

2017~ **JOURNAL OF INFRASTRUCTURE SYSTEMS**  
**TRANSPORTATION RESEARCH BOARD**

#### **Conference Reviewer**

2018 **International Symposium on Sustainable Systems and Technology (ISSST)**