

SAE YUN KWON

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EDUCATION & CURRENT POSITION

- Massachusetts Institute of Technology**, Cambridge, MA, USA 9/2015 - present
Post-doctoral Associate, Institute for Data, Systems, and Society
Joint Program on the Science and Policy of Global Change
- University of Michigan**, Ann Arbor, MI, USA 9/2010 - 4/2015
Ph.D., Earth and Environmental Sciences
Science, Technology, and Public Policy Certificate Program, The Gerald Ford School of
Public Policy
- Queen's University**, Kingston, ON, Canada 9/2004 - 4/2009
B.S., Biology (specialization)

AWARDS & HONORS

- 2016 John Dorr Graduate Academic Achievement Award, Earth and Environmental Sciences,
University of Michigan
- 2015 Rackham Travel Grant for International Conferences, University of Michigan
- 2014 Rackham Pre-Doctoral Fellowship Award, University of Michigan
- 2013 Best Student Poster Award, 11th International Conference on Mercury as a Global
Pollutant 2013, Edinburgh, Scotland
- 2013 Rackham Travel Grant for International Conferences, University of Michigan
- 2013 Outstanding Graduate Student Instructor Award, Earth and Environmental Sciences,
University of Michigan
- 2012 The Scott Turner Award, Earth and Environmental Sciences, University of Michigan
- 2010 Rackham Travel Grant for International Conferences, University of Michigan
- 2009 Best Poster Award, Inquiry at Queen's Undergraduate Research Conference
- 2009 Merit for Quality Writing, Evolutionary Ecology of Humans, Queen's University

RESEARCH EXPERIENCE

**Institute for Data, Systems, and Society & Joint Program on the Science and Policy of
Global Change** 9/2015 - present

Post-doctoral Associate, Massachusetts Institute of Technology

- Developing & coupling agricultural models for mercury to the atmospheric-chemistry-transport model (GEOS-Chem) to quantify present & future mercury levels in China rice.
- Assessing socioeconomic & public health cost of mercury contamination in rice using the China Regional Energy Model (CREM).
- Investigating global trends in atmospheric mercury.
- Advisor: Noelle Selin (Institute for Data, Systems, and Society)

Biogeochemistry and Environmental Isotope Geochemistry Laboratory 9/2010 - 4/2015
Ph.D. student & research assistant, University of Michigan

- Developed mercury stable isotope measurements as natural biogeochemical and ecological tracers for mercury in natural ecosystems.
- Identified dominant mercury sources, biogeochemical processes, and fate in diverse ecosystem (lakes, streams, rivers, estuaries, forests) using the mercury isotope tracer.

- Advisor: Joel D Blum (Earth and Environmental Sciences)

Environmental Chemistry and Monitoring Laboratory 9/2009 - 12/2009
Intern, School of Environmental Public Health, Seoul National University

- Assessed mercury concentrations in highly consumed marine fish and shellfish in Korea
- Advisor: Kyung Duck Zho (School of Environmental Public Health)

Department of Biology 9/2008 - 4/2009
Honors thesis student, Queen's University

- Characterized food web structure and mercury biomagnification trends in tropical streams using stable carbon and nitrogen isotopes
- Advisor: Linda Campbell (Department of Biology)

Ontario Power Generation Canada 9/2008 - 4/2009
Biology expert & communication manager

- Led a collaborative project with the Ontario Power Generation and the Queen's University Technology, Engineering & Management (TEAM) to develop sustainable mechanical barriers for Lake Sturgeon at hydropower generating systems

Yonsei Cardiovascular Research Institute 5/2006 - 8/2006
Research assistant, Yonsei University, Seoul, South Korea

- Isolated stem cells from rats to determine potential treatments for myocardial injury
- Advisor: Ki Cheol Hwang

PUBLICATIONS

Kwon SY, Selin NE. 2016. Uncertainties in atmospheric mercury modeling for policy evaluation.

Curr Pollution Rep 1-12.

Kwon SY, Blum JD, Madigan DJ, Block BA, Popp BN. 2016. Quantifying mercury isotope dynamics in captive Pacific Bluefin tuna (*Thunnus orientalis*). *Elementa: Science of the Anthropocene* 4: 000088.

Kwon SY, Blum JD, Nadelhoffer K, Dvonch JT, Tsui MTK. 2015. Isotopic study of mercury sources and transfer between a freshwater lake and adjacent forest food web. *Sci Tot Environ* 532: 220-229.

Kwon SY, Blum JD, Chen C, Meattley D. 2014. Mercury isotope study of sources and exposure pathways of methylmercury in estuarine food webs in the Northeastern USA. *Environ Sci Technol* 48: 10089-10097.

Kwon SY, Blum JD, Chesney E, Chirby M. 2013. Application of mercury isotopes for tracing trophic transfer and internal distribution of mercury in marine fish feeding experiments. *Environ Chem Toxicol* 32: 2322-2330.

Tsui MTK, Blum JD, Finlay JC, Balogh SJ, **Kwon SY**, Nollet YH. 2013. Photodegradation of methylmercury in stream ecosystems. *Limnol Oceanogr* 58: 1-13.

Kwon SY, Blum JD, Basu N, Head JA, Madenjian C, Solomon D. 2012. Absence of isotope

fractionation of methylmercury in freshwater aquatic food webs. *Environ Sci Technol* 46: 7527-7534.

Tsui MTK, Blum JD, **Kwon SY**, Finlay JC, Balogh SJ, Nollet YH. 2012. Sources and transfers of methylmercury in adjacent river and forest food webs. *Environ Sci Technol* 46: 10957-10964.

Kwon SY, McIntyre PB, Flecker AS, Campbell L. 2012. Mercury biomangification in the food web of a neotropical stream. *Sci Tot Environ* 417-418: 92-97.

Jang YS, Lee SJ, Chung NS, Kim HJ, Hwang KC, Lim SY, Chang WC, Song BW, Cha MJ, **Kwon SY**, Han SM. 2006. Differential suppressions of phospholipase C Isozymes in H₂O₂-induced oxidative stress of rat aortic smooth muscle cells. *Korean Tissue Engineering and Regenerative Medicine Society Cell Therapy Center* 3: 301-306.

SEMINARS

Multidisciplinary Graduate Education for Research Universities, Global Teamwork Lab, University of Tokyo, Tokyo, Japan 3/2016

- Introduced multidisciplinary approaches & actors in education and research settings.
- Oral presentation on “Experience as a student & mentor & instructor: Multidisciplinary programs at University of Michigan” and “Mercury contamination in food items: Engaging multidisciplinary actors”

National Institute of Environmental Research, Ministry of Environment, South Korea

Invited speaker 8/2011, 8/2013

- Introduced analytical techniques & applications for mercury stable isotope measurements
- Oral presentation on “Stable mercury isotopes: Background, and measurements” and “Stable mercury isotopes: Applications in natural environments”

CONFERENCES & MEETINGS

2016 18th International Conference on Heavy Metals in the Environment, Ghent, Belgium

Oral presentation on “Quantifying present and future mercury deposition and bioaccumulation to rice in China”

2016 Abdul Latif Jameel World Water and Food Security (JWAFS) Food and Water Conference, MIT, Cambridge, MA

Poster presentation on “Quantifying mercury contamination of rice & its impact on food security in China”

2016 Tsinghua-MIT China Energy & Climate Project (CECP), MIT, Cambridge, MA

Poster presentation on “Quantifying mercury contamination of rice & its impact on food security in China”

2015 American Geophysical Union Fall Meeting, San Francisco, USA

Poster presentation on “Assessing mercury cycling and trends in the context of the Minamata Convention”

2015 12th International Conference on Mercury as a Global Pollutant, Jeju Island, South Korea

Oral presentation on “Isotopic study of mercury sources and transfer between a freshwater lake and adjacent forest food web”

2014 M-Cubed symposium, University of Michigan, Ann Arbor, MI

- Poster presentation on “Mercury stable isotope study of sources and transport pathways of methylmercury in freshwater lakes and terrestrial ecosystems”*
- 2014 Gordon Research Conference on Oceans and Human Health, Biddeford, ME
Poster presentation on “Mercury isotope study of sources and exposure pathways of methylmercury in estuarine food webs in the Northeastern USA”
- 2014 University of Michigan Biological Station Winter Research Meeting, Ann Arbor, MI
Poster presentation on “Mercury isotope study of sources and transport pathways of methylmercury in freshwater lake and terrestrial ecosystems”
- 2013 M-Cubed symposium 2013, University of Michigan, Ann Arbor, MI
Poster presentation on “Mercury in Michigan Ecosystems”
- 2013 11th International Conference on Mercury as a Global Pollutant, Edinburgh, Scotland
Oral presentation on “Application of mercury isotopes for tracing trophic transfer and internal distribution of mercury in marine fish feeding experiments”
Poster presentation on the “Mercury isotopic compositions in forest food webs”
- 2013 University of Michigan Biological Station Winter Research Meeting, Ann Arbor, MI
Oral presentation on “Isotopic composition of mercury in terrestrial food webs: How is methylmercury formed and degraded in forests”
- 2011 10th International Conference on Mercury as a Global Pollutant, Halifax, Canada
Oral presentation on “Measurement of mercury isotope fractionation during trophic transfer in juvenile yellow perch”
- 2009 9th International Conference on Mercury as a Global Pollutant, Guizhou, China
Poster presentation on “Mercury Biomagnification in the Food Web of a Tropical Andean Stream”
- 2009 Gananoque Environmental Sciences and Engineering Conference, Ottawa, Canada
Oral presentation on “Mercury Biomagnification in the Food Web of a Tropical Andean Stream”

TEACHING EXPERIENCE

Undergraduate Introduction to Oceanography

Winter 2011 - 2013

Teaching assistant for Prof. David Lund and Prof. Brian Arbic

- Led and organized weekly laboratory sections, comprised of observation, experiments, discussion, and problem sets relevant to oceanography
- Developed and improved teaching materials for the weekly laboratory sections

Undergraduate Introduction to Environmental Sciences and Geography

Fall 2013

Teaching assistant for Prof. Joel Blum

- Led weekly discussion sections on topics relevant to environmental sciences and geography

Certificate: Teaching certificate from the Kaufman Teaching Certificate Program (KTCP), MIT, Cambridge, MA

MENTORSHIP & LEADERSHIP

13th International Conference on Mercury as a Global Pollutant (ICMGP) 1/2016 - present
Providence, RI, USA

- Serving as the community outreach & mentorship committee for the upcoming ICMGP conference

Tsinghua-MIT China Energy & Climate Project (CECP)

4/2016

Joint Program on the Science and Policy of Global Change, MIT

- Organized the student poster session

Graduate Student Mentor

9/2013 - 4/2015

Earth and Environmental Sciences, University of Michigan

- Led new graduate student orientations and teaching assistant meetings to improve department's teaching quality
- Evaluated teaching skills for individual teaching assistants in the department

Undergraduate student thesis advisor for Rachel Ross

4/2014 - 1/2015

Earth and Environmental Sciences, University of Michigan

- Thesis title "Mercury biomagnification in the food web of freshwater lake and adjacent forest ecosystems"

Undergraduate student thesis advisor for Michelle Chirby

6/2012 - 4/ 2013

Program in the Environment, University of Michigan

- Thesis title "Bioaccumulation of mercury in the brain, muscle, and liver tissues of inshore pompano and offshore amberjack from the Gulf of Mexico"

Society for Conservation Biology

9/2007 - 4/2008

Sustainable Campus Committee Executive, Kingston Chapter, Canada

REVIEWER & MEMBERSHIP

- Manuscript reviewer for Environment Science & Technology, Science of the Total Environment, Elementa: Science of the Anthropocene, Environment and Natural Resources Research, Science Technology and Medicine
- Memberships: Society for Environmental Toxicology and Chemistry (SETAC), Association for Women in Science (AWIS)

LANGUAGES & OTHER SKILLS

- Fluent in English & Korean, basic French
- GEOS-Chem, China Regional Energy Model (C-REM), Python, unix, ArcGIS, Matlab