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**Yeonuk Kim, PhD Candidate**

Institute for Resources, Environment and Sustainability,

University of British Columbia (UBC) [2017 – present]

411-2202 Main Mall, Vancouver, BC, V6T 1Z4

Email: yeonuk.kim.may@gmail.com

# ORCID: orcid.org/0000-0003-2993-8687; Researcher ID: ABC-2175-2020

# Education and professional experience

***Education:***

Ph. D. Candidate, University of British Columbia, Canada. [2017 – present]

Fast-track transfer from MSc. to PhD, University of British Columbia, Canada. [2018]

BSc., Rural Systems Engineering (*Cum laude*), Seoul National University, South Korea. [2016]

***Professional experience:***

Graduate Research Assistant, University of British Columbia (PI: Dr. Mark S. Johnson) [2017 – present]

Research Associate, National Center for Agro-Meteorology, South Korea [2016]

Undergraduate Research Assistant, Seoul National University (PI: Dr. Joon Kim) [2014 – 2015]

# Honors and awards

Graduate program

2020 – 2022. President’s Academic Excellence Initiative PhD Award. UBC

2018 – 2022. Four Years Doctoral Fellowships. UBC

2017 – 2022. International Tuition Award. UBC

2017 – 2018. Faculty of Science Graduate Award. UBC

2019. Mitacs Globallink Research Award. Mitacs

2018. Award by President of Korea Water Resources Corporation. Idea contest for sustainable water management in South Korea

Undergraduate program

2017. Excellent Degree Thesis Award. College of Agriculture and Life Science, SNU

2015. Grand Prize (Award by President of SNU). SNU Undergraduate Research Program, SNU

2015. Evergreen Scholarship. SNU Evergreen Scholarship Foundation

2014 – 2015. Agricultural Engineering Scholarship. SNU Alumni Association of Agricultural Engineering

2011, 2014-2015. Merit Based Scholarship (Scholarship of Superior Academic Performance). SNU

2009. National Scholarship for Science and Engineering. Korea Student Aid Foundation

# Courses taught

Module developer and delivery. Ecohydrology of Watersheds and Water Systems (ENVR 420, UBC), Guest lecture topic: Evapotranspiration theory and applications [2019 – 2022]

Teaching Assistant*.* Ecohydrology of Watersheds and Water Systems (ENVR 420, UBC) [2018]

Teaching Assistant*.* Land, Food and Community 1 (LFS 250, UBC) [2017 – 2018]

# Research projects

Current projects

Improving Estimates of Evapotranspiration and Land Surface Relative Humidity Using Satellite-Derived Soil Moisture and Vegetation Optical Depth from SMAP-SMOS and Land Surface Temperature from Sentinel-3, C$ 250,000 from *Canadian Space Agency*. **Co-Investigator** [2021 – present]

※ Yeonuk Kim wrote the original draft of the project proposal in consultation with PI (Dr. Mark Johnson).

Previous projects

Agricultural Water Innovation in the Tropics (AgWIT) project funded by the EU Joint Call for the [Water Joint Programming Initiative](http://www.waterjpi.eu/index.php?option=com_content&view=article&id=440&Itemid=1008) 2016, *Natural Sciences and Engineering Research Council of Canada.* **Graduate Research Assistant** [2017 – 2020]

Constructing the foundation of core technologies for custom-made agricultural & forest meteorological services, *Korea Meteorological Administration.* **Research Associate** [2016]

Constructing the terrestrial ecosystem carbon database for the Carbon- Tracker-Asia improvement, *Korea Meteorological Administration.* **Undergraduate Research Assistant** [2015]

Development of time series database for CO2 fluxes and investigation of ecosystem carbon dynamics, *Korea Meteorological Administration.* **Undergraduate Research Assistant** [2014 – 2015]

# Research interests

Land-atmosphere interactions, ecohydrology, micrometeorology, land surface modeling, satellite remote sensing, water-carbon-energy nexus, machine learning, climate change impacts adaptation and mitigation

**Selected publications**

1. **Kim, Y.**, García, M., Black, T. A. & Johnson, M. S. Assessing the complementary role of Surface Flux Equilibrium (SFE) theory and Maximum Entropy Production (MEP) principle in the estimation of actual evapotranspiration. [under review in *Journal of Advances in Modeling Earth Systems*]*.*

※ SCI. 2020 IF=6.660, Rank=9/94 (Meteorology & Atmospheric Sciences). Time Cited: NA.

1. **Kim, Y.**, García, M., & Johnson, M. S. Land-atmosphere feedbacks reduce evaporative demand in a warming climate: implications at local and global scales. [under review in *Earth’s Future*]*.*

※ SCI. 2020 IF=7.495, Rank=6/200 (Geosciences, Multidisciplinary). Time Cited: NA.

1. **Kim, Y.**, Morillas, L., Garcia, M., Weber, U., Black, T. A. & Johnson, M. S. (2021). Relative humidity gradients as a key constraint on terrestrial water and energy fluxes. *Hydrology and Earth System Sciences.* 25 (9), 5175-5191. doi: 10.5194/hess-25-5175-2021

※ SCI. 2020 IF=5.748, Rank=7/98 (Water Resources). Time Cited: 2.

※ This article was selected as EGU highlights by European Geosciences Union.

1. **Kim, Y.**, Johnson, M. S., Knox, S., Black, T. A., Dalmagro, H. J., Kang, M., Kim, J. & Baldocchi, D. (2020). Gap-filling approaches for eddy covariance methane flux: a comparison of three machine learning algorithms and a traditional method with and without principal component analysis. *Global Change Biology.* 26 (3), 1499-1518. doi:10.1111/gcb.14845.

※ SCI. 2020 IF=10.863, Rank=9/274 (Environmental Sciences). Time Cited: 55.

1. **Kim, Y.**, Talucder, M. S. A., Kang, M., Shim, K. -M., Kang, N. & Kim, J. (2016). Interannual variations in methane emission from an irrigated rice paddy caused by rainfall during the aeration period. *Agriculture, Ecosystems & Environment.* 223, 67-75. doi: 10.1016/j.agee.2016.02.032

※ SCI. 2020 IF=5.567, Rank=1/57 (Agriculture, Multidisciplinary). Time Cited: 35.

**Selected presentation and posters**

1. **Kim, Y.** & Johnson, M. S. (2022). The sensitivity of evaporation to soil moisture: the role of relative humidity gradient. *2022 SMAP Canada Workshop.* online (Invited)
2. **Kim, Y.**, Johnson, M. S., Knox, S., Black, T. A., Dalmagro, H. J., Kang, M., Kim, J., Ryu, Y., Baldocchi, D. (2019). CH4 flux gap-filling approaches for eddy covariance data: a comparison of three machine learning algorithms and marginal distribution sampling method with and without principal component analysis*. 2019 EGU General Assembly.* Vienna, Austria (Poster)
3. **Kim, Y.** & Johnson, M. S. (2017). Spectral entropy as a mean to quantify water stress history for natural vegetation and irrigated agriculture in a water-stressed tropical environment. *2017 AGU Fall Meeting.* New Orleans, Louisiana, USA (Poster)
4. **Kim, Y.**, Talucder, M. S. A., Kang, M., Kang, N., Shim, K. -M. & Kim, J. (2015). Changes in methane emission from rice paddy triggered by rainfall during the mid-season Drainage (in Korean). *The 2015 Korean Meteorological Society Fall Conf.* Jeju, Korea (Oral)

**Journal referee**

*Earth’s Future*; *Hydrology and Earth System Sciences*; *Journal of Hydrology*; *Remote Sensing of Environment*

**Workshop and other activities**

2019. Visiting PhD student (three months). Dr. Monica García’s group at Department of Environmental Engineering, Technical University of Denmark

2019. Invited workshop participant. 2019 AmeriFlux Early Career Workshop, Boulder, CO, USA

2019. Workshop participant. CLM (Community Land Model) / CTSM (Community Terrestrial Systems Model) tutorial, National Center for Atmospheric Research (NCAR) Mesa Lab, Boulder, CO, USA

2016. Workshop participant. The International Workshop on Agromet and GIS Applications for Agricultural

Decision Making (AgMP, WMO), Jeju, South Korea