Chung-Gil Jung, Ph.D.

Postdoctoral Research Associate (Focus: Data Sciences and Water Resources Engineering)

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EDUCATION

Sep. 2014 – Aug. 2018	**Ph.D.**	**Konkuk University** Civil and Environmental System Eng. *(Focus: Hydrology)*	Seoul, South Korea
Sep. 2010 – Aug. 2012	**M.S.**	**Konkuk University** Civil and Environmental System Eng. *(Focus: Hydrology)*	Seoul, South Korea
Mar. 2004 – Aug. 2010	**B.S.**	**Konkuk University** Civil and Environmental System Eng.	Seoul, South Korea

PROFESSIONAL EXPERIENCES & EMPLOYMENT

Dec. 2018 – Present	**Postdoctoral research Associate**	**Texas A&M AgriLife Research Center at El Paso**	Texas, South Korea
Aug. 2018 – Nov. 2018	**Postdoctoral researcher**	**Konkuk University** School of Civil and Environmental Engineering, College of Engineering	Seoul, South Korea
Sep. 2014 – Aug. 2018	**Graduate Research Assistant**	**Konkuk University** Civil and Environmental System Eng.	Seoul, South Korea
Sep. 2012 – Aug. 2014	**Researcher**	**Korea Institute of Civil, Engineering and Building Technology** Department of Water Resources	Ilsan, South Korea
Nov. 2010 – Aug. 2012	**Graduate Research Assistant**	**Konkuk University** Civil and Environmental System Eng.	Seoul, South Korea
Mar. 2009 – Aug. 2010	**Research Assistant**	**Konkuk University** Civil and Environmental System Eng.	Seoul, South Korea

TEACHING EXPERIENCES

Mar. 2015 – Jun. 2015	**Teaching Assistant**	**Konkuk University** Remote Sensing for Environment (1 semester) Prepared lecture presentations, and conducted	Seoul, South Korea
Sep. 2014 – Dec. 2014	**Teaching Assistant**	**Konkuk University** Spatial Information Engineering (1semesters) Prepared lecture presentations, and conducted	Seoul, South Korea

Mar. 2009 – Jun. 2010	**Teaching Assistant**	**Konkuk University** Spatial Information Engineering (1 semesters) Prepared lecture presentations, and conducted	Seoul, South Korea
Sep. 2008 – Dec. 2009	**Teaching Assistant**	**Konkuk University** Remote Sensing for Environment (1 semesters) Prepared lecture presentations, and conducted	Seoul, South Korea

HONORS & AWARDS

2017	**The Best Student Presentation Award** at the 2017 PAWEES International Conference, Taichung, Taiwan
2017	**Prize for the best paper** presented at the 2017 International Symposium on Weather Radar and Hydrology, Korea University, Seoul, South Korea
2017	**Prize for the best paper** presented at the 2017 annual meeting of the Korea Society of Hazard Mitigation, Konkuk university, Seoul, South Korea
2012	**Prize for the best paper** presented at the 2012 Annual Meeting of the Korea Water Resources Association, Kangwon land resort, Jeongseon, South Korea
2012	**General Prize Award** presented at the 2012 graduation ceremony, Konkuk University, Seoul, South Korea

RESEARCH EXPERIENCES

2014 – 2018 Climate change adaptation technology for watershed management (Sponsored by Ministry of Land, Infrastructure, and Transport)

- I was responsible for SWAT modeling considering operation of weirs reservoirs.

2014 – 2018 Development of technology for monitoring, evaluation, and prediction of global and local water related disaster using various observation system (Sponsored by Ministry of Land, Infrastructure, and Transport)

- I was responsible for development of distributed hydrologic model for tracing stream drying phenomena.
- I was responsible for development of runoff prediction model using Artificial Neural Network (ANN) algorithm.

2014 –2017 Development of integrated system for Korea watershed characteristics database and flood estimation software (Sponsored by Ministry of Land, Infrastructure, and Transport)

- I was responsible for development of lumped concept model based GIS platform for flood forecast.

2016 – 2017 Operation of hydrological radar and development of a web-mobile warning platform (Sponsored by Korea Institute of Construction Technology)

- I was responsible for handling Rada data for data assimilation and simulating distributed runoff model for flood disaster assessment.

2014 – 2015 Impact assessment of climate change on water quality in a regional scale using a land surface model (Sponsored by Ministry of Environment)

- I was responsible for implementing LM3V model in South Korea and evaluating the future water ecology.

2012 – 2014 Development of hydro-meteorological information production technology considering climate change (Sponsored by Korea Meteorological Administration)

- I was responsible for assessing the effect on watershed hydrology by RCP

scenarios using SWAT model.

2011 – 2012	Construction of linkage database on operation and management information for the heightened agricultural reservoir (Sponsored by Korea Rural Community Corporation) - I was responsible for assimilating agricultural reservoir data.
2010 – 2011	Development of natural fluvial guided method (Sponsored by Korea Environmental Industry & Technology Institute) - I was responsible for trying to find a streambed scouring and sedimentation characteristics through CCHE2D model using 2-domentional analysis.
2010 – 2012	Development of nonpoint source pollution reduction techniques and modeling the effect of agricultural best management practices (BMPs) on water quality (Sponsored by Korean Ministry of Environment) - I was responsible for assessing best management practice (BMP) using SWAT and HSPF models.
2010 – 2011	Application of the SAWT-K model considering future climate and land use changes (Sponsored by Korea Institute of Construction Technology) - I was responsible for assessing SWAT modeling results with climate and land-use changes.
2009 – 2011	Development of Flood Damage Prediction Model (Sponsored by Ministry of Public Safety and Security) - I was responsible for evaluating dam-break simulation using HEC-HMS model.

RESEARCH INTERESTS

- River-aquifer interaction modeling
- Watershed and urban hydrology Analysis from models such as SWAT and SWMM for storm events
- Assessment of drying stream and drought in watershed
- Development of model for interaction between watershed and urban hydrology using Radar
- Environmental assessment of Best Management Practice (BMP)
- Machine learning & Deep learning liked to forecasting hydrologic components
- Data sciences using deep learning based on Recurrent Neural Network
- Cost effects from BMPs and Low Impact Development (LID)

PROFESSIONAL AFFILIATIONS

- Member, Korean Society of Agricultural Engineers (KSAE) since 2010
- Member, Korean Society of Civil Engineers (KSCE) since 2010
- Member, Korea Water Resources Association (KWRA) since 2010

COMPUTER SKILLS

Hydrologic Model:	SWAT (semi-distributed model), HEC-HMS (lumped model), KIMSTORM (distributed model), DrySAT-WFT (distributed model), LM3 (land surface model), SWMM (Storm Water Management Model)
Ecological Model	Regional Hydro-Ecologic Simulation System (RHESSys)
Hydraulic Model:	HEC-RAS
Water Quality Model:	SWAT, HSPF, CE-QUAL-W2
Land Use Change Model:	CLUE-s

Satellite Image Processing:	Land cover classification, NDVI and LAI analysis (Landsat, Terra MODIS, QuickBird), Land surface temperature (Terra MODIS)
Programming Skill:	Fortran, Python, R, Arc-python
Static Software	SPSS, FARD (frequency analysis of design rainfall)
Development Algorithm	Multi linear regression for soil moisture, Multi quantile regression for soil moisture, Artificial neural network for prediction of runoff, Conditional merging algorithm
Machine learning and deep learning by Python	Lasso & Ridge regression, Logistic regression, K-nearest neighbor, Naïve Bayes, Classification and Regression Trees (CART), Random forest, Neural network, Support vector machine (SVM), K-means clustering, Hierarchical clustering, Recurrent Neural Network

SERVICE

Reviewer	Journal of Korea Water Resources Association (plSSN: 1226-6280, in Korean)
Reviewer	Ecological Engineering (lSSN: 0925-8574)
Certificates	7th Machine learning camp using Python

PH.D. DISSERTATION

- **Chung-Gil Jung,** 2018. Quantification and Prediction of Stream Drying Phenomena Using Grid-Based Hydrological Modeling and Artificial Neural Network. Ph.D. Dissertation, Konkuk University, Seoul, South Korea.

MASTER'S THESIS

- **Chung-Gil Jung,** 2012. Comparison of HSPF and SWAT Models for the Evaluation of Nonpoint Source Pollution in as Small Rural Watershed. M.S. Thesis, Konkuk University, Seoul, South Korea.

MANUSCRIPTS IN REVIEW

International journals

1. **Jung, C.G.** and S.J. Kim, (Under Review) Empirical estimation of the spatial sediment transport capacity coefficient using the rain erosivity factor and SWAT model results in the Han river basin, South Korea. *Hydrology and Earth System Sciences* **(IF: 4.437)**.

2. **Jung, C.G.**, Y.G. Lee, J.W. Lee and S.J. Kim, (Under Review) A Quantile Regression Based Spatial Soil Moisture Estimation of South Korea Using Terra MODIS NDVI, LST and Daily Ground Rainfalls after Filtering Ground Soil Outliers via Isolation Forest Technique. *Remote Sensing*, 9(8), 870-889 **(IF: 3.749)**

PUBLICATIONS

International journals

1. **Jung, C.G.**, J.Y. Park, S.J. Kim and G.A. Park, 2014. The SRI (system of rice intensification) water management evaluation by SWAPP (SWAT-APEX Program) modeling in an agricultural watershed of South Korea. *Paddy Water Environ*, 12(1), 251-261 **(IF: 0.916).**

2. **Jung, G.G.**, D.R. Lee, and J.W. Moon, 2016. Comparison of the penman monteith and regional

calibration of Hargreaves equation for actual evapotranspiration using SWAT-simulated results in seolma-cheon basin, South Korea. *Hydrological Sciences Journal*, 61(4), 793-800 (**IF: 2.222).**

3. **Jung, C.G.** and S.J. Kim, 2017. Comparison of the damaged Area caused by an agricultural dam-break flood wave using HEC-RAS and UAV Surveying. *Agricultural Sciences,* 8(10): 1089-1104, DOI:10.4236/as.2017.810079, 1089-1104 **(IF: 1.15).**

4. **Jung, C.G.** and S.J. Kim, 2017. SWAT modeling of nitrogen dynamics considering atmospheric deposition and nitrogen fixation in a watershed Scale. *Agricultural Sciences*, 8(4): 326-340, DOI:10.4236/as.2017.84024 **(IF: 1.15).**

5. **Jung, C.G.** and S.J. Kim, 2017. Evaluation of land use change and groundwater use impact on stream drying phenomena using a grid-based continuous hydrologic model. *Paddy Water Environ* 15(1), 111-122 **(IF: 0.916).**

6. **Jung, C.G.**, Y.G. Lee, Y.H. Cho and S.J. Kim, 2017. A study of spatial soil moisture estimation using a multiple linear regression model and MODIS land surface temperature data corrected by conditional merging. *Remote Sensing*, 9(8), 870-889 **(IF: 3.749)**

7. **Jung, C.G.** and S.J. Kim, 2018. Assessment of the water cycle impact by the Budyko curve on watershed hydrology using SWAT and CO_2 concentration derived from Terra MODIS GPP. *Ecological Engineering*, 118(1), 179-190 **(IF: 3.023)**

8. Lee, M.J., **C.G. Jung**, E. Shevliakova, S. Malyshev, H.J. Han, S.J. Kim, K.H. Kim and P. Jaffe, 2018. Control of Nitrogen Exports from River Basins to the Coastal Ocean: Evaluation of Basin Management Strategies for Reducing Coastal Hypoxia. *Journal of Geophysical Research*, 123(10), 3111-3123 **(IF: 3.48)**

9. Lee, Y.G., **C.G. Jung (corresponding author)** and S.J. Kim, 2019. Spatial distribution of soil moisture estimates using a multiple linear regression model and Korean geostationary satellite (COMS) data. *Agricultural Water Management*, **(IF: 3.082)**

Updated on December 18, 2018