Seokhyeon Kim

Research Associate, Ph.D., M.Eng.

- UNSW Water Research Centre, School of Civil and Environmental Engineering, University of New South Wales (UNSW) Sydney, NSW 2052, Australia
- Email: seokhyeon.kim@unsw.edu.au; seokhyn.kim@gmail.com
- Webpage: https://steelpl.github.io/

Education

- **Doctor of Philosophy** (Water Resources Engineering and Remote Sensing of Environment) || Jul 2013 – Nov 2017
  - School of Civil and Environmental Engineering, UNSW Sydney, NSW, Australia
    (UNSW Sydney ranking in 2021 – QS: 44th; QS (civil engineering): 11th; AWRU (water resources): 5th)
  - Thesis title: *Improvements and applications of satellite-derived soil moisture for flood forecasting*
  - Supervisors: Ashish Sharma, Fiona Johnson, Yi Liu Y. (co-supervisor)
- **Master of Engineering** (Water Resources Engineering) || Mar 2006 – Feb 2008
  - School of Civil and Environmental Engineering, Korea University, Seoul, Republic of Korea
  - Thesis title: *Study for Improving Water Distribution System Reliability*
  - Supervisor: Joong Hoon Kim
- **Bachelor of Engineering** (Civil and Environmental Engineering) || Mar 1997 – Feb 2001
  - School of Civil and Environmental Engineering, Korea University, Seoul, Republic of Korea

Professional Experiences

- **Associate manager ||** Water resources engineering in Hyundai Engineering and Construction Co., Ltd., Seoul, Republic of Korea || Jan 2008 – Jul 2013
- **Compulsory military service (1st lieutenant) ||** Republic of Korea Army || Jul 2001 – Sept 2004

Journal Publication

[IF: Impact Factor/C: #Citations from Google Scholar]

[1] **Kim S.**, Anabalón A., Sharma A. (2020) An Assessment of Concurrency in Evapotranspiration Trends Across Multiple Global Datasets, *Journal of Hydrometeorology*, Published (online), **[IF:3.891/C:0]**

[2] **Kim S.**, Pham H., Liu Y., Marshall L., Sharma A. (2020). Improving the combination of satellite soil moisture datasets by considering error cross-correlation: A comparison between triple collocation (TC) and extended double instrumental variable (EIVD) alternatives, *IEEE Transactions on Geoscience and Remote Sensing*, Published (online), **[IF:6.120/C:0]**

[3] Kim S., Mehrotra R., **Kim S.**, Sharma A. (2020) Probabilistic forecasting of Cyanobacterial concentration in riverine systems using environmental drivers, *Journal of Hydrology*, Published (online), **[IF:4.405/C:0]**

[4] Zhang R., **Kim S. [corr-auth]**, Sharma A., Lakshmi V. (2020). Identifying relative strengths of SMAP, SMOS-IC, and ASCAT to capture temporal variability using a model combination approach, *Remote Sensing of Environment*, 252, 112126, **[IF:8.218/C:0]**

[5] **Kim S.**, Ajami H., Sharma A. (2020). Using remotely sensed information to improve vegetation parameterization in a semi-distributed hydrological model (SMART) for upland catchments in Australia, *Remote Sensing*, 12(18), 3501, **[IF: 4.509/C:0]**

[6] Magan B., **Kim S.**, Wasko C., Barbero R., Moron V., Nathan R., Sharma A. (2020). Impact of atmospheric circulation on the rainfall-temperature relationship in Australia, *Environmental Research Letters*, 15(9), 094098, **[IF: 6.192/C:0]**

[7] Moradi S., Agostino A., Gandomkar Z., **Kim S.**, Hamilton L., Sharma A., Henderson R., and Leslie G. (2020). Quantifying natural organic matter concentration in water from climatological parameters using different machine learning algorithms, *H2Open Journal*, 3(1), 328-343, **[IF: NA/C:0]**

[8] **Kim S.**, Eghdamirad S., Sharma A., Kim J. H. (2020). Uncertainty Quantification of uncertainty in projections of extreme daily precipitation, *Earth and Space Science*, 2020, e2019EA001052-T, **[IF: 2.15/C:2]**

[9] Hagan D., Wang G., **Kim S.**, Parinussa R., Liu Y., Ullah W., Bhatti S., Ma X., Jiang T., Su B. (2020). Maximizing Temporal Correlations in Long-Term Global Satellite Soil Moisture Data Merging, *Remote Sensing*, 12 (13), 2164, **[IF: 4.509/C:2]**

[10] Kim S., **Kim S.[corr-auth]**, Mehrotra R., Sharma A. (2020). Predicting cyanobacteria occurrence using climatological and environmental controls, *Water Research*, 175, 115639, **[IF:7.913/C:1]**

[11] Kim T., Ley T., Kang S., Davis J., **Kim S.**, Amrollahi P. (2020). Using Particle Composition of Fly Ash to Predict Strength and Resistivity of Concrete, *Cement and Concrete Composites*, 107, 103493, **[IF:5.127/C:4]**

[12] **Kim S.**, Zhang R., Pham H., Sharma A. (2019). A review of satellite-derived soil moisture and its usage for flood estimation, *Remote Sens Earth Syst Sci*, 2, 225–246, **[IF: NA/C:4]**

[13] **Kim S.**, Jun H. D., Yoo D. G., Kim J. H. (2019). A framework for improving reliability of water distribution systems based on a segment-based minimum cut-set approach, *Water*, 11(7), 1524, **[IF:2.524/C:1]**

[14] Pham H., **Kim S.**, Johnson F., Marshall L. (2019). Using 3D robust smoothing to fill land surface temperature gaps at the continental scale, *Int J Appl Earth Obs Geoinf*, 82, 10879, **[IF:4.846/C:3]**

[15] Zhang R., **S. Kim[corr-auth]**, Sharma A. (2019). A comprehensive validation of the SMAP Enhanced Level-3 Soil Moisture product using ground measurements over varied climates and landscapes, *Remote Sensing of Environment*, 223, 82-94, **[IF:8.218/C:19]**

[16] **Kim S.**, Sharma A. (2019). The role of floodplain topography in deriving basin discharge using passive microwave remote sensing, *Water Resources Research*, 55(2), 1707-1716, **[IF:4.14/C:4]**

[17] Khan U., Ajami H., Tuteja N., Sharma A., **Kim S.** (2018). Catchment Scale Simulations of Soil Moisture Dynamics Using an Equivalent Cross-Section based Hydrological Modelling Approach, *Journal of Hydrology*, 564, 944-966, **[IF:4.405/C:10]**

[18] **Kim S.**, Paik K., Johnson F., Sharma A. (2018). Building a flood warning framework for ungauged locations using low resolution, open access remotely sensed surface soil moisture, precipitation, soil and topographic information, *IEEE J. of Selected Topics in Applied Earth Observations and Remote Sensing*, 11(2), 375-387, **[IF:3.392/C:15]**

[19] **Kim S.**, Balakrishnan K., Liu Y., Johnson F., Sharma A. (2017). Spatial Disaggregation of Coarse Soil Moisture Data by Using High Resolution Remotely Sensed Vegetation Products, *IEEE Geoscience and Remote Sensing Letters*, 14(9), 1604-1608, **[IF:3.534/C:10]**

[20] Silva A., Subasinghe K., Rajapaksha C., Raveenthiran K., **Kim S.,** Young M., Perera H. N. R., Araki S. (2016). Assessment of Design Alternation via 2D Physical Modelling in the Main Breakwater of Colombo Port Expansion Project. *Journal of Japan Society of Civil Engineers, Ser. B2 (Coastal Engineering)*, 72(2), I_1129-I_1134, **[IF: NA/C:0]**

[21] **Kim S.**, Parinussa R., Liu Y., Johnson F., Sharma A. (2016). Merging Alternate Remotely-Sensed Soil Moisture Retrievals Using a Non-Static Model Combination Approach, *Remote Sensing*, 8 (6), 518, **[IF: 4.509/C:8]**

[22] **Kim S.**, Parinussa R., Liu Y., Johnson F., Sharma A. (2015). A framework for combining multiple soil moisture retrievals based on maximizing temporal correlation, *Geophysical Research Letters*, 42 (16), 2015GL064981, **[IF:4.58/C:26]**

[23] **Kim S.**, Liu Y., Johnson F., Parinussa R., Sharma A. (2015). A global comparison of alternate AMSR2 soil moisture products: Why do they differ? *Remote Sensing of Environment*, 161 (0), 43-62, **[IF: 8.218/C:103]**

[24] Jun H. D., **Kim S.**, Yoo D. G., Kim J. H. (2009). Evaluation of the reliability improvement of a water distribution system by changing pipe, *Journal of Korea Water Resources Association*, 42 (6), 505-511, **[IF: NA/C:5]**

❖ **Conference paper**

[1] Young M., Hayman-Joyce J., **Kim S.** (2012). Use of Single Layer Concrete Armour Units as Toe Reinforcement, *Proceedings of the Coastal Engineering Conference*, 1 (33), 48, **[IF: NA/C:3]**

Selected Presentations

[1] **Kim S.**, Zhang R., Sharma A., Lakshmi V. Improvements of satellite observations through data merging: status and challenges, *American Geophysical Union (AGU) fall meeting 2020*, San Francisco, CA, USA

[2] **Kim S.**, Pham H., Liu Y., Sharma A., Marshall L. Combining geophysical variables for maximizing temporal correlation without reference data, *The 23rd International Congress on Modelling and Simulation (MODSIM2019)*, Canberra, Australia

[3] **Kim S. [Invited]**, Guo Y., Wasko C., Sharma A. On soil moisture, rain and flood extremes in a warming climate – using satellite remote sensing to define future antecedent conditions, *The Korean Society of Climate Change Research (KSCC) 2018*, Jeju, Republic of Korea

[4] **Kim S.**, Ajami H., Sharma A. Incorporating an operational satellite-derived leaf area index into a computationally efficient semi-distributed hydrologic modelling application (SMART), *The 22nd International Congress on Modelling and Simulation (MODSIM2017)*, Hobart, Australia

[5] **Kim S.**, Liu Y., Johnson F., Sharma A. A temporal correlation-based approach for spatial disaggregation of remotely sensed soil moisture, *American Geophysical Union (AGU) fall meeting 2016*, San Francisco, CA, USA

[6] **Kim S.**, Liu Y., Johnson F., Parinussa R., Sharma A. Reducing Structural Uncertainty in AMSR2 Soil Moisture Using a Model Combination Approach, *American Geophysical Union (AGU) fall meeting 2014*, San Francisco, CA, USA

[7] **Kim S.**, Liu Y., Johnson F., Parinussa R., Sharma A. Improvement of Soil Moisture Dataset Combining AMSR2 Soil Moisture Products, *The Australian Energy and Water Exchange Initiative (OzEWEX) 2014*, Canberra, ACT, Australia

Awards & Scholarship

- **Postgraduate Writing Fellowship** (AUD 6,500) || UNSW Sydney || May 2017 – Aug 2017
- **Tuition Fee and Top-up Scholarship ||** UNSW Sydney || Jul 2013 – Jan 2017
- **Administrative Assistant Scholarship ||** Korea University || Fall Semester, 2007
- **GS E&C Corporation Scholarship** || GS Engineering & Construction Corporation, Seoul, Republic of Korea || Fall Semester, 2006
- **The Second Stage of Brain Korea 21 Scholarship** || The Brain Korea 21, National Research Foundation of Korea, Daejeon, Republic of Korea || Spring Semester, 2006

Certification

- **Professional Engineer – Skill Level 1 Civil Engineer ||** Engineers Australia || Apr 2018
- **Engineer Civil Engineering ||** Human Resources Development Service of Korea || Oct 2000

Languages

Korean, English

Skills & Expertise

Remote sensing of environment, water resources, optimization, MATLAB, Python, ArcGIS, QGIS

Research Experiences

- **Research Associate ||** UNSW Sydney || Apr 2017 –
  - Environmental applications of variously sourced data (satellite/reanalysis/ground)
- **Ph.D. Student ||** UNSW Sydney || Jul 2013 – Mar 2017
  - Improvements and applications of satellite-derived soil moisture for flood forecasting
- **Master Student ||** Korea University || Mar 2006 – Feb 2008
  - Improving the reliability of water distribution system

Teaching Experiences

- **Post-Doctoral Teaching Assistant ||** UNSW Sydney || Jul 2017 –
  - Teaching, coordinating and consulting for *Catchment and Water Resources Modelling*, *Water Resources Engineering*; Academic supervision of masters/honours students
- **Teaching Assistant ||** UNSW Sydney || Jul 2013 – Mar 2017
- **Teaching Assistant ||** Korea University || Mar 2006 – Feb 2008

Professional activities

- **Reviewer for Scholarly Journal**: International Journal of Applied Earth Observation and Geoinformation, Journal of Hydrology, Remote Sensing of Environment, Stochastic Environmental Research and Risk, PLOS ONE, KSCE Journal of Civil Engineering, ISPRS Journal of Photogrammetry and Remote Sensing, Environmental Research Letters
- **Conference session convener**: Asia Oceania Geosciences Society (AOGS) 2020
- **Professional membership**: Engineers Australia (EA), Australian Water Association (AWA), Korea Water Resources Association (KWRA), Korean Society of Civil Engineers (KSCE)

Projects Involved

- **Research Associate ||** UNSW Sydney || Apr 2017 –
  - Australian Research Council (ARC) Discovery Project (DP) || *Assessing Water Supply Security in a Nonstationary Environment*, (DP200101326) || May 2020 –
  - ARC DP || *A Fourier approach to address low-frequency variability bias in hydrology*, (DP180102737) || May 2019 – April 2020
  - ARC Linkage Project, funded by WaterNSW and Sydney Water || *Adapting catchment monitoring and portable water treatment to climate change* (LP160100620) || Apr 2017 – May 2019
- **Ph.D. candidate ||** UNSW Sydney || Jul 2013 – Mar 2017
  - ARC DP || *Reducing Flood Loss –Data Assimilation Framework for Improving Forecasting Capability in Sparsely Gauged Regions* (DP140102394) || Jul 2013 – Mar 2017
  - *Soil Moisture Active Passive Experiment – the 4th campaign* ***(SMAPEx-4)*** **||** May 2015

Referees

- **Professor Ashish Sharma** (Ph.D. and current supervisor): School of Civil and Environmental Engineering, UNSW Sydney, a.sharma@unsw.edu.au
- **A/Professor Fiona Johnson** (Ph.D. supervisor): School of Civil and Environmental Engineering, UNSW Sydney, Sydney, f.johnson@unsw.edu.au
- **Professor Yi Liu** (Ph.D. co-supervisor): School of Geographical Sciences, Nanjing University of Information Science and Technology (NUIST), yi.liu@nuist.edu.cn
- **Dr. Raj Mehrotra** (senior researcher in research group): School of Civil and Environmental Engineering, UNSW Sydney, Sydney, raj.mehrotra@unsw.edu.au
- **Dr. Robert Parinussa** (former senior researcher in research group): Johan Cruyff Institute, Amsterdam, Netherlands, robertparinussa@cruyffinstitute.org