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학력

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병역사항

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논문실적

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

❖ **학술지**

[1] Kim S., Mehrotra R., **Kim S. [corr-auth]**, Sharma A. (2021) Assessing countermeasure effectiveness in controlling cyanobacterial exceedance in riverine systems using probabilistic forecasting alternatives, *Journal of Water Resources Planning and Management*, Accepted, **[IF:3.405/C:0]**

[2] **Kim, S.**, Sharma, A., Liu, Y. Y., & Young, S. I. (2021). Rethinking Satellite Data Merging: From Averaging to SNR Optimization, TechRxiv (submitted to IEEE TGRS), **[IF:NA/C:0]**

[3] Kim S., Mehrotra R., **Kim S.**, Sharma A. (2021) Probabilistic forecasting of Cyanobacterial concentration in riverine systems using environmental drivers, *Journal of Hydrology*, 593, 125626, **[IF:4.405/C:0]**

[4] Zhang R., **Kim S. [corr-auth]**, Sharma A., Lakshmi V. (2021). 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:2]**

[5] **Kim S.**, Anabalón A., Sharma A. (2021) An Assessment of Concurrency in Evapotranspiration Trends Across Multiple Global Datasets, *Journal of Hydrometeorology*, 22(1), 231-244, **[IF:3.891/C:0]**

[6] **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:1]**

[7] 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:2]**

[8] 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:4]**

[9] 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:6]**

[10] **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]**

[11] 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:1]**

[12] **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:3]**

[13] 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:4]**

[14] **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:5]**

[15] 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:7]**

[16] **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:2]**

[17] Zhang R., **Kim S.[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:36]**

[18] **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:7]**

[19] 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:11]**

[20] **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:17]**

[21] **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:12]**

[22] **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:10]**

[23] 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]**

[24] **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:31]**

[25] **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:121]**

[26] 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:6]**

❖ 컨퍼런스

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

학술대회 발표 실적 (주발표자)

[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. [초청]**, 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

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- 2006 년 3 월 – 2008 년 2 월   **고려대학교** 석사과정
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  - 2017 년 4 월 – 2019 년 5 월: ARC Linkage Project / *Adapting catchment monitoring and portable water treatment to climate change* (LP160100620)
- 박사과정
  - 2013 년 7 월 – 2017 년 3 월: ARC DP / *Reducing Flood Loss –Data Assimilation Framework for Improving Forecasting Capability in Sparsely Gauged Regions* (DP140102394)
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