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학력

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논문

[IF-JCR2022]

1. Liu, S., Kim, S., Glamore, W., Tamburic, B., & Johnson, F. (2024). Remote sensing of water colour in small southeastern Australian waterbodies. *J. Environ. Manage.*, 352, 120096., **[8.7]**
2. Zhang, R., Kim, S.(교신), Kim, H., Fang, B., Sharma, A., & Lakshmi, V. (2023). Temporal Gap-Filling of 12-Hourly SMAP Soil Moisture Over the CONUS Using Water Balance Budgeting, *Water Resour. Res.*, 59(12), e2023WR034457, **[5.4]**
3. Tie, J., Kim, S.(교신), & Sharma, A. (2023). How does increasing temperature affect the sub-annual distribution of monthly rainfall? *Environmental Research: Climate*, 2(1), 015004, **[-]**
4. Visser J., Kim S., Wasko C., Nathan R., Sharma A. (2022) The impact of climate change on operational estimates of Probable Maximum Precipitation, *Water Resour. Res.,* 58(11), e2022WR032247, **[5.4]**
5. He W., Kim S.(교신), Wasko C., Sharma A. (2022) A global assessment of change in flood volume with surface air temperature, *Advances in Water Resources,* 165, 104241, **[4.7]**
6. Kim S., Sharma A., Wasko C., Nathan R. (2022) Linking total precipitable water to precipitation extremes globally, *Earth's Future,* 10(2), e2021EF002473, **[8.2]**
7. Yoon H.N., Marshall L., Sharma A., Kim S. (2022) Bayesian model calibration using surrogate streamflow in ungauged catchments, *Water Resour. Res.,* 58, e2021WR031287, **[5.4]**
8. Lee S., Kim S., and Moon S. (2022) Development of Car-free Street Mapping (CfSM) Model using an Integrated System with Unmanned Aerial Vehicle, Aerial Mapping Camera and Deep Learning Algorithm, *J. Comput. Civ. Eng.*, 36(3), 04022003, **[6.9]**
9. Kim S., Sharma, A., Liu, Y., Young, S. I. (2022) Rethinking Satellite Data Merging: From Averaging to SNR Optimization, *IEEE Trans. Geosci. Remote Sens.*, 60, 1-15, **[8.2]**
10. Kim S., Dong J., Sharma A. (2021) A triple collocation-based comparison of three L-band soil moisture datasets, SMAP, SMOS-IC, and SMOS, over varied climates and land covers, *Front. Water.*, 3, 64, **[ESCI]**

11. Kim S., Mehrotra R., Kim S., Sharma A. (2021) Assessing countermeasure effectiveness in controlling cyanobacterial exceedance in riverine systems using probabilistic forecasting alternatives, *J. Water Resour. Plan. Manag.*, 147(10), 04021062, [3.1]
12. Kim S., Mehrotra R., Kim S., Sharma A. (2021) Probabilistic forecasting of Cyanobacterial concentration in riverine systems using environmental drivers, *J. Hydrol.*, 593, 125626, [6.4]
13. Zhang R., Kim S.(교신), Sharma A., Lakshmi V. (2021). Identifying relative strengths of SMAP, SMOS-IC, and ASCAT to capture temporal variability using a model combination approach, *Remote Sens. Environ.*, 252, 112126, [13.5]
14. Kim S., Anabalón A., Sharma A. (2021) An Assessment of Concurrency in Evapotranspiration Trends Across Multiple Global Datasets, *J. Hydrometeorol.*, 22(1), 231-244, [3.8]
15. 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 Trans. Geosci. Remote Sens.*, 59(9), 7285-7295, [8.2]
16. 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, *Environ. Res. Lett.*, 15(9), 094098, [6.7]
17. Kim S., Kim S.(교신), Mehrotra R., Sharma A. (2020). Predicting cyanobacteria occurrence using climatological and environmental controls, *Water Res.*, 175, 115639, [12.8]
18. 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, *Cem. Concr. Compos.,* 107, 103493, [10.5]
19. 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 Sens.,* 12(18), 3501, [5.0]
20. 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, [ESCI]
21. Kim S., Eghdamirad S., Sharma A., Kim J. H. (2020). Quantification of uncertainty in projections of extreme daily precipitation, *Earth and Space Sci.*, 2020, e2019EA001052-T, [3.1]
22. 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 Sens.*, 12 (13), 2164, [5.0]
23. 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, [-]
24. 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, [7.5]
25. 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, [3.4]
26. Zhang R., Kim S.(교신), Sharma A. (2019). A comprehensive validation of the SMAP Enhanced Level-3 Soil Moisture product using ground measurements over varied climates and landscapes, *Remote Sens. Environ.*, 223, 82-94, [13.5]
27. Kim S., Sharma A. (2019). The role of floodplain topography in deriving basin discharge using passive microwave remote sensing, *Water Resour. Res.,* 55(2), 1707-1716, [5.4]
28. 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, *J. Hydrol.*, 564, 944-966, [6.4]
29. 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. Sel. Top. Appl. Earth Obs. Remote Sens.*, 11(2), 375-387, [5.5]
30. 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 Geosci. Remote. Sens. Lett.*, 14(9), 1604-1608, [4.8]
31. 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 Sens.*, 8 (6), 518, [5.0]

32. 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. *J. Jpn. Soc. Civ. Eng., Ser. B2 (Coastal Engineering)*, 72(2), I_1129-I_1134, [-]
33. Kim S., Parinussa R., Liu Y., Johnson F., Sharma A. (2015). A framework for combining multiple soil moisture retrievals based on maximizing temporal correlation, *Geophys. Res. Lett.*, 42 (16), 2015GL064981, [5.2]
34. 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 Sens. Environ.*, 161 (0), 43-62, [13.5]
35. 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, *J. Korea Water Resour. Assoc.*, 42 (6), 505-511, [-]

❖ 컨퍼런스

1. Young M., Hayman-Joyce J., Kim S. (2012). Use of Single Layer Concrete Armour Units as Toe Reinforcement, *Coast. Eng. Proc.*, 1 (33), 48, [-]

국제학술대회 (주발표자)

1. Kim S., Lee G., Sharma A. Evaluating the Impact of Rainfall Duration on the Relationship between Atmospheric Moisture and Extreme Precipitation, *MODSIM 2023*, Darwin, Australia
2. Kim S., Sharma A., Wasko C., Nathan R. How does total precipitable water link to precipitation extremes?, *MODSIM 2021*, Sydney, Australia
3. Kim S., Zhang R., Sharma A., Lakshmi V. Improvements of satellite observations through data merging: status and challenges, *AGU fall meeting 2020*, San Francisco, CA, USA
4. Kim S., Pham H., Liu Y., Sharma A., Marshall L. Combining geophysical variables for maximizing temporal correlation without reference data, *MODSIM 2019*, Canberra, Australia
5. 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, *KSCC 2018*, Jeju, Republic of Korea
6. Kim S., Ajami H., Sharma A. Incorporating an operational satellite-derived leaf area index into a computationally efficient semi-distributed hydrologic modelling application (SMART), *MODSIM 2017*, Hobart, Australia
7. Kim S., Liu Y., Johnson F., Sharma A. A temporal correlation-based approach for spatial disaggregation of remotely sensed soil moisture, *AGU fall meeting 2016*, San Francisco, CA, USA
8. Kim S., Liu Y., Johnson F., Parinussa R., Sharma A. Reducing Structural Uncertainty in AMSR2 Soil Moisture Using a Model Combination Approach, *AGU fall meeting 2014*, San Francisco, CA, USA
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  - NASA SMAP 토양수분 데이터 검증 캠페인 (현장 데이터 측정)/Soil Moisture Active Passive Experiment – the 4th campaign (SMAPEx-4)
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