김 석 현

- 직책: 조교수, Ph.D., M.Eng.
- 소속: 경희대학교 공과대학 사회기반시스템공학과
- 이메일: shynkim@khu.ac.kr; seokhyn.kim@gmail.com
- 웹페이지: https://sites.google.com/view/wrebigdl/

학력

- 2013 년 7 월 – 2017 년 11 월 **UNSW Sydney** 공학박사 (수자원공학/원격탐사)
  - 학위논문: *Improvements and applications of satellite-derived soil moisture for flood forecasting*
  - 지도교수: Ashish Sharma, Fiona Johnson (joint), Yi Liu (co)
- 2006 년 3 월 – 2008 년 2 월 **고려대학교** 사회환경시스템공학과 공학석사 (수자원공학)
  - 학위논문: *Study for improving water distribution system reliability* (영문)
  - 지도교수: 김중훈
- 1997 년 3 월 – 2001 년 2 월 **고려대학교** 토목환경공학과 공학사

주요경력

- 2022 년 3 월 – **경희대학교 공과대학 사회기반시스템공학과** 조교수
- 2017 년 4 월 – 2022 년 2 월 **UNSW Water Research Centre** 박사후 연구원
- 2013 년 7 월 – 2017 년 3 월 **UNSW Sydney** 박사과정 (논문제출: 2017/3; 학위수여: 2017/11)
- 2008 년 1 월 – 2013 년 7 월 **현대건설** 대리 토목설계실 수자원/환경 설계담당

병역사항

- 2001 년 10 월 – 2004 년 9 월 **대한민국육군** (중위 만기전역)

수상 및 장학금

- 2021 년 12 월 **MSSANZ** Early Career Research Excellence (ECRE) Award
- 2013 년 – 2021 년 **UNSW Sydney** Early Career Academic Seed Grants, Strategic Research Fund, Postgraduate Writing Fellowship, and Tuition fee, Stipend and Top-up Scholarship

논문

[IF-JCR2021]

1. Tie, J., Kim, S., & Sharma, A. (2023). How does increasing temperature affect the sub-annual distribution of monthly rainfall? *Environmental Research: Climate*, 2(1), 015004, **[-]**
2. 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, **[6.159]**
3. He W., **Kim S.**, Wasko C., Sharma A. (2022) A global assessment of change in flood volume with surface air temperature, *Advances in Water Resources,* 165, 104241, **[5.361]**
4. **Kim S.**, Sharma A., Wasko C., Nathan R. (2022) Linking total precipitable water to precipitation extremes globally, *Earth's Future,* 10(2), e2021EF002473, **[8.852]**
5. Yoon H.N., Marshall L., Sharma A., **Kim S.** (2022) Bayesian model calibration using surrogate streamflow in ungauged catchments, *Water Resour. Res.,* 58, e2021WR031287, **[6.159]**
6. 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, **[5.802]**
7. **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, **[8.125]**
8. **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]**
9. 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, **[3.457]**
10. Kim S., Mehrotra R., **Kim S.**, Sharma A. (2021) Probabilistic forecasting of Cyanobacterial concentration in riverine systems using environmental drivers, *J. Hydrol.*, 593, 125626, **[6.708]**

11. Zhang R., Kim S., 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, [13.850]
12. Kim S., Anabalón A., Sharma A. (2021) An Assessment of Concurrency in Evapotranspiration Trends Across Multiple Global Datasets, *J. Hydrometeorol.*, 22(1), 231-244, [4.871]
13. 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, [8.125]
14. 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, [6.947]
15. Kim S., Kim S., Mehrotra R., Sharma A. (2020). Predicting cyanobacteria occurrence using climatological and environmental controls, *Water Res.*, 175, 115639, [13.400]
16. 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, [9.930]
17. 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, [5.349]
18. 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]
19. 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, [3.680]
20. 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, [5.349]
21. 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, [-]
22. 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, [7.672]
23. 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, [3.530]
24. Zhang R., Kim S., 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, [13.850]
25. 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, [6.159]
26. 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, [6.708]
27. 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, [4.715]
28. 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, [5.343]
29. 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, [5.349]
30. 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, [-]
31. 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, [5.576]
32. 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, [13.850]

33. 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, [-]

학술대회 (주발표자)

1. Kim S., Sharma A., Wasko C., Nathan R. How does total precipitable water link to precipitation extremes?, *MODSIM 2021*, Sydney, Australia
2. 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
3. Kim S., Pham H., Liu Y., Sharma A., Marshall L. Combining geophysical variables for maximizing temporal correlation without reference data, *MODSIM 2019*, Canberra, Australia
4. 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
5. 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
6. 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
7. 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
8. Kim S., Liu Y., Johnson F., Parinussa R., Sharma A. Improvement of Soil Moisture Dataset Combining AMSR2 Soil Moisture Products, *OzEWEX 2014*, Canberra, ACT, Australia

자격증

- Professional Engineer - Skill Level 1 Civil Engineer (Engineers Australia); **토목기사** (한국산업인력공단)

전문분야 및 보유기술

수문학/수자원공학, 인공위성 원격탐사, MATLAB, Python, ArcGIS/QGIS

연구경력

- 2013 년 7 월 - 2022 년 2 월 **UNSW Sydney** 박사과정, **UNSW Water Research Centre** 박사후 연구원
  - 기후변화-환경 민감도 분석
  - 원격탐사 데이터 검증, 개선 및 수문학적 활용
  - 녹조발생 예측 모형 개발
- 2006 년 3 월 - 2008 년 2 월 **고려대학교** 석사과정
  - 상수관망 신뢰도 개선 및 최적화

교육경력

- 2022 년 3 월 - **경희대학교** 조교수
  - 학부: 공학프로그래밍입문, 수치해석 및 연습, 사회기반시스템디자인 1 & 2, 수리학, 데이터분석 및 연습
  - 대학원: 기후변화더적응, 수자원환경원격탐사, 유역 및 수자원 모델링
- 2013 년 7 월 - 2020 년 3 월 **UNSW Sydney** 조교, **UNSW Sydney** Post-doctoral teaching assistant
  - 과목: *Catchment and Water Resources Modelling* (UG), *Water Resources Engineering* (PG)
  - 코디네이팅 및 컨설팅 (620 명), 강의, 강의 및 평가자료 준비, Moodle(수업관리시스템) 관리
  - 석사(연구) 연구지도 (1 명): 논문 3 편 게재 (논문번호 9,10,15)
  - 석사(코스워크) 및 학부(honour) 논문 지도 (22 명): 논문 3 편 게재 (논문번호 1,11,14,24)
- 2006 년 3 월 - 2007 년 12 월 **고려대학교** 조교

학술활동

- **학술지 리뷰**: *Remote Sensing of Environment, Journal of Hydrology, Environmental Research Letters, KSCE Journal of Civil Engineering* 등
- **학회 세션 주관**: AOGS 2020; MODSIM 2021, 2023
- **저널**: MDPI Remote Sensing (topic editor, volunteer reviewer); Frontiers in Water (associate editor)
- **학회:** 대한원격탐사학회 (정회원), 한국수자원학회 (정회원), 대한토목학회 (정회원), Engineers Australia (정회원); Australian Water Association (정회원)

참여프로젝트

- 수행 중
  - *탄소중립 컨설팅 및 갈등관리 융합대학원* (한국에너지기술평가원, 산업통상자원부)
  - *지능화기반의 수요자 맞춤형 기후변화 리스크 평가 및 적응연구* (한국환경공단, 환경부)
  - *지구온난화에 의한 대기 수분량의 증가와 이에 따른 극한 강우의 변화 예측 (한반도를 중심으로)* (경희대학교)
- 완료 (2013-2022)
  - *Assessing Water Supply Security in a Nonstationary Environment* (DP200101326) funded by Australian Research Council (ARC)
  - *A Fourier approach to address low-frequency variability bias in hydrology* (DP180102737) funded by ARC
  - *Adapting catchment monitoring and portable water treatment to climate change* (LP160100620) funded by ARC
  - NASA SMAP 토양습윤 데이터 검증 캠페인 (현장 데이터 측정)/Soil Moisture Active Passive Experiment – the 4th campaign (SMAPEx-4)
  - 2*Reducing Flood Loss –Data Assimilation Framework for Improving Forecasting Capability in Sparsely Gauged Regions* (DP140102394) funded by ARC