

김석현(金晳賢)



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학력

- 2013 년 7 월 – 2017 년 11 월 **UNSW Sydney* 공학박사** (수자원/환경 원격탐사)
 - * *UNSW Sydney 순위 (2022) – QS (종합): 43 위; QS (토목공): 12 위; ARWU 2021 (수자원): 8 위*
 - 학위논문: “Improvements and applications of satellite-derived soil moisture for flood forecasting”
 - 지도교수: [Ashish Sharma](#), [Fiona Johnson](#) (joint supervisor), [Yi Liu](#) (co-supervisor)
- 2006 년 3 월 – 2008 년 2 월 **고려대학교 사회환경시스템공학과 공학석사** (수자원시스템공학)
 - 학위논문: “Study for improving water distribution system reliability” (영문)
 - 지도교수: [김중훈](#)
- 1997 년 3 월 – 2001 년 2 월 **고려대학교 토목환경공학과 공학사**

주요경력

- 2017 년 4 월 – 현재 **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 수혜

- 2021 년 5 월 **UNSW Sydney Strategic Research Fund** (AUD 4,000)
- 2017 년 5 월 – 2017 년 8 월 **UNSW Sydney Postgraduate Writing Fellowship** (AUD 6,500)
- 2013 년 7 월 – 2017 년 1 월 **UNSW Sydney Tuition fee & top-up Scholarship**
- 2007 년 가을학기 **고려대학교 조교장학금**
- 2006 년 가을학기 **GS 건설 장학금**
- 2006 년 봄학기 **한국연구재단 BK21 2 단계 장학금**

논문실적

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

❖ 학술지

- [1] **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, *Frontiers in Water*, 3, 64, [IF:NA/C:0]
- [2] Kim S., Mehrotra R., **Kim S.[교신]**, Sharma A. (2021) Assessing countermeasure effectiveness in controlling cyanobacterial exceedance in riverine systems using probabilistic forecasting alternatives, *Journal of Water Resources Planning and Management*, In production, [IF:3.404/C:0]
- [3] **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]
- [4] 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:4.500/C:0]
- [5] 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 Sensing of Environment*, 252, 112126, [IF:9.085/C:2]

- [6] **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]
 - [7] **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:5.855/C:1]
 - [8] 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: 6.096/C:2]
 - [9] Kim S., **Kim S.[교신]**, Mehrotra R., Sharma A. (2020). Predicting cyanobacteria occurrence using climatological and environmental controls, *Water Research*, 175, 115639, [IF:9.130/C:4]
 - [10] 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:6.257/C:7]
 - [11] **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]
 - [12] 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:2]
 - [13] **Kim S.**, Eghdamirad S., Sharma A., Kim J. H. (2020). Quantification of uncertainty in projections of extreme daily precipitation, *Earth and Space Science*, 2020, e2019EA001052-T, [IF: 2.312/C:3]
 - [14] 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]
 - [15] **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:8]
 - [16] 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:4.650/C:8]
 - [17] **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:2.544/C:3]
 - [18] 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 Sensing of Environment*, 223, 82-94, [IF:9.085/C:38]
 - [19] **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:4.309/C:8]
 - [20] 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:4.500/C:11]
 - [21] **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:3.827/C:16]
 - [22] **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:3.833/C:13]
 - [23] **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]
 - [24] 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]
 - [25] **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:4.497/C:30]
 - [26] **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: 9.085/C:123]
 - [27] 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]
- ❖ **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

보유자격증

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

보유기술 및 전문분야

수리/수문학, 인공위성 원격탐사, 환경데이터 분석, 최적화, MATLAB, Python, ArcGIS, SAGA-GIS

연구경력

- 2017 년 4 월 – 현재: **UNSW Water Research Centre** 박사후 연구원
 - 데이터 기반 온도-환경 (유량, 강우 등) 민감도 분석
 - 데이터 기반 한국 4 대강 녹조발생 예측 모형 개발
 - 원격탐사 데이터의 수문학적 활용 (홍수 모니터링, 수문 모형 개선 및 검증)
 - 원격탐사 데이터 해석, 검증 및 개선 (공간해상도, 정확도)
- 2013 년 7 월 – 2017 년 3 월: **UNSW Sydney** 박사과정
 - 원격탐사 검증, 개선 (공간해상도, 정확도) 및 수문학적활용
- 2006 년 3 월 – 2008 년 2 월 **고려대학교** 석사과정
 - 상수관망 신뢰도 개선 및 최적화

교육경력

- 2017 년 4 월 – 2020 년 3 월 **UNSW Sydney** Post-doctoral teaching assistant
 - 담당과목: 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 [2] [4] [9])
 - 석사(코스웍) 및 학부(honour) 논문 지도 (22 명): 논문 3 편 게재 (논문번호 [5] [8] [18])
- 2013 년 7 월 – 2017 년 3 월 **UNSW Sydney** 조교
- 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 10 개 저널
- **학회 세션:** Asia Oceania Geosciences Society (AOGS) 2020, International Congress on Modelling and Simulation (MODSIM) 2021

- **저널:** MDPI Remote Sensing (topic editor, volunteer reviewer)
- **학회:** 대한원격탐사학회 (정회원), 한국수자원학회 (정회원), 대한토목학회 (정회원), Engineers Australia (정회원); Australian Water Association (정회원)

참여프로젝트

- 박사후 연구원
 - 2020 년 4 월 – 현재: Australian Research Council (ARC) Discovery Project (DP) / *Assessing Water Supply Security in a Nonstationary Environment* ([DP200101326](#))
 - 2019 년 5 월 – 2020 년 4 월: ARC DP / *A Fourier approach to address low-frequency variability bias in hydrology* ([DP180102737](#))
 - 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](#))
 - 2015 년 5 월 – 2015 년 5 월: NASA SMAP 토양습윤 데이터 검증 캠페인 (현장 데이터 측정) / Soil Moisture Active Passive Experiment – the 4th campaign ([SMAPEX-4](#))

참고인 목록

- **Professor Ashish Sharma** (박사과정 및 박사후 과정 지도교수): School of Civil and Environmental Engineering, UNSW Sydney, a.sharma@unsw.edu.au
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- **Dr Yi Y. Liu** (박사과정 지도교수, co-supervisor): School of Civil and Environmental Engineering, UNSW Sydney, Australia, yi.liu@unsw.edu.au
- **Dr. Raj Mehrotra** (연구실 선임 연구원): School of Civil and Environmental Engineering, UNSW Sydney, Sydney, raj.mehrotra@unsw.edu.au
- **Dr. Robert Parinussa** (연구실 前선임 연구원): Cycling Sports Group/Cannondale, Amsterdam, North Holland, Netherlands, r_parinussa@hotmail.com
- **Professor Joong Hoon Kim (김중훈)** (석사과정 지도교수): 고려대학교 건축사회환경공학과, jaykim@korea.ac.kr