Haein Shin

Postdoctoral Researcher

hishin@yonsei.ac.kr | Yonsei University | Seoul, Republic of Korea

Ph.D., Earth System Sciences

RESEARCH INTERESTS

Sedimentology: Fluvio-deltaic morphodynamics | Quantitative stratigraphy | Experimental geomorphology | Sediment transport modeling

Remote Sensing & GIS: Imaging spectroscopy | Geospatial analysis

EXPERIENCE

2025 – Present — **Postdoctoral Researcher**

Yonsei University, Seoul

2022 – 2023 — **Visiting Researcher** | PI, NRF-USA Research Grant

University of Texas at Austin, Jackson School of Geosciences

- Led 6-month collaborative research as **Principal Investigator** funded by NRF Korea
- Conducted experimental research on infiltration processes on alluvial fans
- Collaborated with Prof. Joel P.L. Johnson, Dept. of Earth and Planetary Sciences

2016 – 2019 — **Full-time Student Researcher**

Chungnam National University, Remote Sensing & GIS Lab

- Natural hazard monitoring based on remote sensing and GIS
- 3-D geological modeling: REE minerals (Turkey), mineralized zones (Mongolia)

EDUCATION

2019 – 2025 — **Ph.D. in Earth System Sciences, Yonsei University**

Advisor: Prof. Wonsuck Kim

- Thesis: Morphodynamics and Stratigraphic Records of Alluvial Fan associated with Upstream Boundary Conditions: Physical Experiments and Computational Modeling

2014 – 2016 — **M.S. in Astronomy, Space Science and Geology, Chungnam National University**

Advisor: Prof. Jeahyung Yu

- Thesis: Remote Sensing Approaches on Moisture Content Mapping for Coastal Sediments

2010 – 2014 — **B.S. in Geology and Earth Environmental Sciences, Chungnam National University**

JOURNAL ARTICLES

FIRST AUTHOR — 5 publications

Haein Shin, Wonsuck Kim (2025). Spatio-temporal variations on alluvial fan channel width under constant upstream boundary conditions. *Scientific Reports*, 15, 10874. doi:10.1038/s41598-025-94465-5

Haein Shin, Wonsuck Kim, Hyojae Lee, Joel P.L. Johnson, Chris Paola (2023). Fossilized autogenic responses of grain-size transition to sediment supply and water discharge. *Sedimentology*, 71(4), 1270–1290. doi:10.1111/sed.13173

Haein Shin, Jaehyung Yu, Lei Wang, Yongsik Jeong, Jieun Kim (2020). Spectral interference of heavy metal contamination on spectral signals of moisture content for heavy metal contaminated soils. *IEEE Trans. Geosci. Remote Sens.*, 58(4), 2266–2275. doi:10.1109/TGRS.2019.2946297

Haein Shin, Jaehyung Yu, Yongsik Jeong, Lei Wang, Dong-Yoon Yang (2017). Case-based regression models for moisture content using SWIR reflectance. *IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.*, 10(10), 4512–4521. doi:10.1109/JSTARS.2017.2723912

Haein Shin, Jaehyung Yu, Jieun Kim, Dong-Yoon Yang, Gilljae Lee (2015). Mapping moisture content of coastal sediments using ASTER data. *Remote Sensing Letters*, 6(6), 488–497. doi:10.1080/2150704X.2015.1049379

CO-AUTHOR 6 publications

Chenliang Wu, Sojung Jung, Junsung Kwon, Minsik Kim, **Haein Shin**, Duhwan Keum, Jiyoung Lee, Zhi Li, Ryan Herring, Oluwadamilare O. Odugbesan, Wonsuck Kim, Kyle M. Straub (2026). Universal geomorphic rules govern meandering channel cutoffs. *GRL* (in submitted).

Hyojae Lee, Wonsuck Kim, Joel P.L. Johnson, **Haein Shin**, Duhwan Keum, Yunhyeong Lee, Wook-Hyun Nahm (2025). Experimental investigation of water and sediment discharge effects on alluvial fan margin roughness. *Journal of Sedimentary Research*, 95(3).

Wonsuck Kim, Jaehyeong Lee, Yunhyeong Lee, Minsik Kim, **Haein Shin** (2025). A coupled model for rift basin evolution: Interactions of tectonics, sea-level cycle, and sediment network. *Journal of Sedimentary Research* (in review).

Minsik Kim, **Haein Shin**, Wook-Hyun Nahm, Wonsuck Kim (2023). Dynamic equilibrium position prediction model for the confluence area of Nakdong River. *Economic and Environmental Geology*, 56(4), 435–445.

Yongsik Jeong, Jaehyung Yu, Lei Wang, **Haein Shin**, Sang-Mo Koh, Gyesoon Park (2018). Cost-effective reflectance calibration method for small UAV images. *International Journal of Remote Sensing*, 39(21), 7225–7250.

Jieun Kim, Jaehyung Yu, Lei Wang, Hongxing Li, **Haein Shin** (2016). Morphological characteristics of the ice margins of Antarctic ice shelves and outlet glaciers extracted from ICESat Laser altimetry. *Terrestrial, Atmospheric & Oceanic Sciences*, 27(4), 451–462.

□ CONFERENCE PRESENTATIONS

Haein Shin, Wonsuck Kim (2025). Alluvial Fan Retreat: Tank Experiments. EGU25-15509 (Poster), *EGU General Assembly*, Vienna, Austria

Haein Shin, Wonsuck Kim (2023). Alluvial Fan Retreat: Tank Experiments. EP41D-2365 (Poster), *AGU Annual Meeting*, San Francisco, CA.

Haein Shin, Hyojae Lee, Wonsuck Kim (2022). Spatiotemporal Evolution of Channel Width in an Alluvial Fan: Tank Experiment. EP55A-02 **(Oral)**, *AGU Annual Meeting*, Chicago, IL.

Haein Shin, Wonsuck Kim, Hyojae Lee, Chris Paola (2021). Fossilized Autogenic Response of Grain-Size Transition to Sediment Supply and Water Discharge. EP35D-1344, *AGU Annual Meeting*, New Orleans, LA.

Haein Shin, Wonsuck Kim, Chris Paola (2020). Stratigraphic Signals of Autogenic Processes in a Bimodal Alluvial Fan: Laboratory Experiments. *AGU Annual Meeting*, Online.

Wonsuck Kim, Elizabeth Reaves, **Haein Shin** (2019). Linking delta shoreline and foreset-bottomset transition trajectories: Experiment and theory. *AGU Fall Meeting*.

Haein Shin, Jaehyung Yu, Ji-Hye Shin, Yongsik Jeong, Seyoung Kim, Gilljae Lee (2017). Spectral response of romaine lettuce by uptake of Zn. *IGARSS 2017*.

□ SKILLS

- Sediment Transport Modeling ●●●●●
- MATLAB ●●●●●
- Python ●●●●○
- ArcGIS / ENVI ●●●●○
- R / SPSS ●●●●○
- Spectral Analysis (XRD, XRF) ●●●●○
- Petrel (SLB) ●●●○○
- Physical Experiments ●●●●●

□ AWARDS & HONORS

Best Oral Presentation Award, Korean Society of Economic and Environmental Geology 2025

Petrel Geological & Geophysical Interpretation Certificate, SLB 2025

Jeong Kwang-Ho Alumni Outstanding Paper Award, Yonsei University 2024

Best Oral Presentation Award, Korean Society of Economic and Environmental Geology 2023

Best Poster Presentation Award, Korea Association for Quaternary Research 2017

Best Oral Presentation Award, Korean Society of Economic and Environmental Geology 2016

□ FUNDING & FELLOWSHIPS

NRF-USA Research Grant — Principal Investigator (6 months, UT Austin) 2022–2023

POSCO Industry-Academic Scholarship 2021