HAEIN SHIN

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Research interests

- Morphodynamics and stratigraphic records of autogenic processes in an alluvial fan
- Flume experiment
- Remote sensing and GIS

Education

Ph.D. Candidate in Earth System Science, Yonsei University *Sep. 2019 -*
Advisor: Dr. Wonsuck Kim

Ph.D. Candidate in Astronomy, Space Science and Geology, Chungnam National University
Advisor: Dr. Jeahyung Yu

M.S. in Astronomy, Space Science and Geology, Chungnam National University
Thesis: *Remote Sensing Approaches on Moisture Content Mapping for Coastal Sediments (2016)*

B.S. in Geology and Earth Environmental Sciences, Chungnam National University

Journal Articles

Haein Shin, Wonsuck Kim, (2025) Spatio-temporal variations on alluvial fan channel width in response to grain size on the channel bed under constant upstream boundary conditions, *Scientific Reports (in review)*

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 (in review)*

Haein Shin, Wonsuck Kim, Hyojae Lee, Johnson Joel, and Chris Paola. Fossilized Autogenic Responses of Grain-size Transition to Sediment Supply and Water Discharge: Alluvial Fan Experiment, *Sedimentology,* 71(4), 1270-1890, DOI: 10.1111/sed.13173

Minsik Kim, **Haein Shin**, Wook-Hyun Nahm, and Wonsuck Kim, (2023) Dynamic equilibrium position prediction model for the confluence area of Nakdong river. Economic and Environmental Geology, 56(4), 435-445. DOI: 10.9719/EEG.2023.56.4.435

Haein Shin, Jaehyung Yu, Lei Wang, Yongsik Jeong, and Jieun Kim. (2020) Spectral Interference of Heavy Metal Contamination on Spectral Signals of Moisture Content for Heavy Metal Contaminated Soils, *IEEE Transactions on Geoscience and Remote Sensing.* 58(4), 2266-2275

Haein Shin, Jaehyung Yu, Yongsik Jeong, Lei Wang, and Dong-Yoon Yang. (2017). Case-based regression models defining the relations between moisture content and shortwave infrared reflectance of beach sands, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 10(10), 4512-4521

Haein Shin, Jaehyung Yu, Jieun Kim, Dongyoon Yang, and Gilljae Lee. (2015). Mapping the moisture content of coastal sediments using ASTER data for spectroscopic and mineralogical analyses: a case study in South Korea, *Remote Sensing Letters*, 6(6), 488-497

Haein Shin, Jaehyung Yu, Sungji Bae, Dongyoon Yang and Min Han. (2016). Analysis of quaternary sedimentary environment based on 3D geological modeling for Saban-ri, Haeri-myeon, Gochang, *Economic and Environmental Geology*, 49(4), 2016, 291-299. (in Korean)

Yongsik Jeong, Jaehyung Yu, Lei Wang, **Haein Shin**, Sang-mo Koh, and 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, and **Haein Shin**. (2016). Morphological characteristics if the ice margins of Antarctic ice shelves and outlet glaciers extracted from ICESat Laser altimetry along-track profiles, *Terrestrial, Atmospheric & Oceanic Sciences*, 27(4), 451-462.

Conference

H Shin, and W Kim (2023) Alluvial Fan Retreat: Tank Experiments: Abstract EP41D-2365 presented at 2023 American Geophysical Union Annual Meeting, San Francisco, CA, 11-15 Dec.

H Shin, H Lee, and W Kim (2022) Spatiotemporal Evolution of Channel Width in an Alluvial Fan: Tank Experiment: Abstract EP55A-02 (Oral presentation) presented at 2022 American Geophysical Union Annual Meeting, Chicago, IL & Online Everywhere, 12-16 Dec.

H Shin, W Kim, H Lee, and C Paola (2021) Fossilized Autogenic Response of Grain-Size Transition to Sediment Supply and Water Discharge: Experiments for Alluvial Fans: Abstract EP35D-1344 presented at 2021 American Geophysical Union Annual Meeting, New Orleans, LA & Online Everywhere, 13 – 17 Dec.

H Shin, W Kim, and C Paola (2020) Stratigraphic Signals of Autogenic Processes in a Bimodal Alluvial fan: Laboratory Experiments. 2020 American Geophysical Union Annual Meeting, Online Everywhere, 7 – 11 Dec.

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

H Shin, J Yu, JH Shin, Y Jeong, S Kim and G Lee (2017) Spectral response of romaine lettuce by uptake of ZN. IGARSS 2017

Research Experience

CHUNGNAM NATIONAL UNIVERSITY in REMOTE SENSING & GIS LAB Daejeon, South Korea
Full-time Student Researcher (Remote Sensing and GIS analyst) ***May 2013 – Nov. 2018***

- **Natural hazard monitoring based on remote sensing and GIS**
  Designated as a project member for natural hazard monitoring projects; monitoring coastal processes, exploring mineral resources, and observing heavy metal contamination and mine reclamation

- **3-D geological modeling**
  Designated as a project member for 3D geological modeling projects; 3D modeling in REE minerals zones in Turkey, mineralized zone in Mongolia and North Korea

Teaching Experience

YONSEI UNIVERSITY Seoul, South Korea

Sedimentary Environments (ESS4133-01) *2019 Fall*
Sedimentary Petrology (ESS3102-01) *2020 Spring*

CHUNGNAM NATIONAL UNIVERSITY Daejeon, South Korea

Resources Geology (21955-00) & Ore Deposit Geology (12474-00) *2016 Spring, 2013 Fall*
Remote Sensing (21951-00) & GIS (29079-00) *2014 Spring, 2015 Fall*

Awards & Certificates

Petrel Geological and Geophysical Interpretation, SLB: *2025*
Jeong Kwang-Ho Alumni Graduate Student Outstanding Paper Award, Yonsei University: *2024*
Fossilized Autogenic Responses of Grain-size Transition to Sediment Supply and Water Discharge: Alluvial Fan Experiment
Best Oral Presentation Award, the Korean Society of Economic and Environmental Geology *2023*
Ultralight Flying Device (Drone) Pilot *2021*
Best Poster Presentation Award, the Korea Association for Quaternary Research *2017*
Best Oral Presentation Award, the Korean Society of Economic and Environmental Geology *2016*
2nd Prize, COREA (Campus Ore Reserve Estimation Arena), Korea Resources Corporation *2015*
Korean Government Certificate of Engineer Applied Geologist *2015*

Funding

Expending Science and Technology Cooperation with USA program, NRF (USA 12000) *2022.12~2023.02*
International Competitiveness Enhancement Program, Yonsei University (USD 4000) *2022*
Yonsei Junior Convergence Research, Group: Droner (USD 2700) *2021*
POSCO International Industry-Academic Scholarship Student *2021*

Research Skills and Software

Research Skills

- Spectral Analysis apparatus: Analytical Spectral Device Labspec 5100 portable spectrometer
- X-ray diffraction (XRD), and X-ray fluorescence (XRF)

Software

- Spectral Analysis Software: the Spectral Geologist 7.5 (TSG 7.5)
- GIS Software: ArcGIS
- Image Processing Software: ENVI
- Geological Modeling Software: SKUA-GOCAD
- Programming Language: MATLAB
- Statistical Software: SPSS and R program