Sun, Changwan

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Research Interests

- Planetary radar science
- Planetary geophysics
- Planetary interiors
- Comparative planetology

Education

- **M.E.** Geophysical Exploration (Aug., 2017)
  University of Science and Technology (UST), Daejeon, Korea
  Advisor : Kyeong Ja Kim
  Total GPA of 4.30 / 4.50
  Thesis: "Investigation of a Possible Lunar Lava Tube in the North of the Rima Galilaei Using the Surface Range of Kaguya Lunar Radar Sounder (LRS) Data"

- **B.S.** Energy and Resources Engineering (Feb., 2015)
  National Korea Maritime and Ocean University (KMOU), Busan, Korea
  Total GPA of 3.63 / 4.50

Research Experience

Estimation of the lateral displacement of faults
(Supervisor :Jin-Hyuck Choi, Mentor: Takao Kobayashi), May, 2020-Feb., 2021

- Tried to image paleo-channels cut by paleo-earthquakes from GPR investigation in order to assess the lateral displacement of faults (Tools: Fortran90 and Python).

Investigation of a Possible Lunar Lava Tube (Mentor: Takao Kobayashi), Dec., 2016–Aug., 2017

- Found an anomalous discrepancy at a certain possible lunar lava tube by comparing the Kaguya surface range data with the simulated surface range data (Tools: Fortran90, Matlab, and QGIS).

Volcanic Rock Sample Analysis (Mentor: Kyeong Ja Kim), Feb., 2015–Aug., 2017

- Analyzed elemental composition of rock core samples from Ulleung Island, Korea and King's bowl, Idaho, USA with X-ray spectrometer.

Landsat Image Data Analysis (Mentor: Seung-Gyun Baek), Mar., 2014–June, 2014

- Analyzed Dadaepo shoreline alteration by increase in its neighboring artificial structures in Nakdong river delta plain with Landsat image classification. (Tools: Erdas Imagine and ArcGIS).

Field and Space Mission Experience

Sampling of lunar analogous rock samples, 2015

- Sampled volcanic rocks in Korea: Daegu, Kyeongju, Gongju, and Jinhae.

Preparations for Korean Lunar Mission (with Kyeong Ja Kim), 2015–2017

- Involved in the Space Core Technology and Development Project and Korea Pathfinder Lunar Orbiter (KPLO) Mission. This involved understanding and dealing with critical issues and concerns in the development of space instruments (esp. Gamma-Ray Spectrometer).

GPR survey in the Southeastern faults of Korea (with Takao Kobayashi), June, 2019–Feb., 2021

- Used GSSI Model 570 with central frequency 100 MHz and compared radargram with the cross section of the trenches dug to examine paleo-earthquakes.

Publications and Presentations

- K. J. Kim, **C. Sun**, J. Heldmann, D. Lim, E. Yi, Y. Choi, Y.S. Lee, "Comparative geochemical analysis of king's bowl, IDAHO and Ulleung island volcanic rocks, Korea", 50th Lunar and Planetary Science Conference, vol. 50, no. 2132, 2019.
- **C. Sun**, T. Kobayashi, K. J. Kim, and Y. J. Choi, "Investigation of a Possible Lunar Lava Tube in the North of the Rima Galilaei Using the Surface Range of Kaguya Lunar Radar Sounder (LRS) Data," Korean Journal of Remote Sensing, vol. 33, no. 3, pp. 313-324, 2017.
- K. J. Kim et al (including **C. Sun**), "Introduction to the Gamma-ray Spectrometer for the Korea Pathfinder Lunar Orbiter and Current Development Status," NASA Exploration Science Forum, 2017.
- **C. Sun**, T. Kobayashi, K. J. Kim, and Y. J. Choi, "Kaguya LRS Orbit Data Correction Using Cross Correlation Technique," Korean Space Science Society, 2017.
- **C. Sun**, T. Kobayashi, K. J. Kim, and Y. J. Choi, "Analysis of Kaguya Lunar Radar Sounder Surface Range Data for Detection of Possible Lunar Lava Tubes," Korean Space Science Society, 2016.
- **C. Sun**, K. J. Kim, T. Kobayashi, and S. R. Lee, "The Values of the Asteroid Resources and Interior Exploration Methods," Korean Space Science Society, 2015.

Honors and Awards

- **Two and a half full-year Scholarship (5 semesters, UST)**, Mar. 2015–Aug. 2017
  Funded by Geological Research Center, Korea Institute of Geoscience and Mineral resources (KIGAM), Space Core Technology and Development Project, and Korea Pathfinder Lunar Orbiter (KPLO) Mission
- **First Overseas Exchange Program 2016 (UST)**, Feb. 2016–Mar. 2016, Tokyo, Japan
  Funded by University of Science and Technology
  Visited Research Institute Science and Engineering, Waseda University (with Dr. Hasebe)
- **First Award in Capstone Design** (Dept. of Energy & Resources Eng., KMOU), 2014
- **Merit-based Scholarships (KMOU)**, 2009, 2010, 2014