

Seulgi Moon

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DEGREES

2007–2013 **Stanford University,** CA, USA
Ph.D. Geological and Environmental Sciences.
Advisor: George Hilley & Page Chamberlain

2005–2007 **Seoul National University** Seoul, Korea
M.S. Earth System Science.
Advisor: Youngsook Huh

2001–2005 **Seoul National University** Seoul, Korea
B.S., Earth System Science, *summa cum laude*.

EMPLOYMENT

2015 – **University of California, Los Angeles** CA, USA
Assistant Professor, Dept. of Earth, Planetary, and Space Sciences

2013 – 2015 **Massachusetts Institute of Technology** MA, USA
Postdoctoral Associate, Dept. of Earth, Atmospheric, Planetary and Sciences

AWARDS AND HONORS

NSF Faculty Early Career Development Program (CAREER) Award, 2019
Postdoctoral Scholars Mentoring Awards Nominee, University of California, Los Angeles, 2018
Alexander von Humboldt Research Fellowship recipient, 2013
Gabilan Stanford Graduate Fellowship, Stanford University, 2008-2011
High Academic Achievement Award, Seoul National University, 2003-2004

PUBLICATIONS

Citation metrics available from Google Scholar (<https://goo.gl/RRLCtA>)

* UCLA Geomorphology group student/postdoc/visitor

Articles

20. Adrian M., Karin Ebert, Bradley W. Goodfellow, Clas Hättestrand, Jakob Heyman, Maarten Krabbendam, **Seulgi Moon**, and Arjen P. Stroeven (2019), Past and future impact of glacial erosion in Forsmark and Uppland. TR-19-07, Swedish Nuclear Fuel And Waste Management Co, Stockholm, Sweden
19. Brown*, N.D., and **S. Moon** (2019), Revisiting erosion rate estimates from luminescence profiles in exposed bedrock surfaces using stochastic erosion simulations, *Earth and Planetary Science Letters*, 528, 115842

18. Lin, J*, **S. Moon**, A. Yong, L. Meng, and P. Davis (2019), Length-Scale-Dependent Relationships between VS30 and Topographic Slopes in Southern California, *Bulletin of the Seismological Society of America*, 109(6), pp.2614-2625, doi:10.1785/0120190076.
17. X. Zhang*, Z. Xu, W. Liu, **S. Moon**, T. Zhao, H. Jiang, J. Zhang, Y. Wu, X. Zhou, L., (2019), Geochemical and Sr isotopic characteristics of the Yalong River basin, eastern Tibetan Plateau: implications for chemical weathering and controlling factors, *Geochemistry, Geophysics, Geosystems*, 20(3), pp.1221-1239.
16. **S. Moon**, D.J. Merritts, N.P., Snyder, P. Bierman, A., Sanquini, J.C. Fosdick, and G.E. Hilley (2018), Erosion of coastal drainages in the Mendocino Triple Junction region (MTJ), northern California, *Earth and Planetary Science Letters*, 502, pp.156-165.
15. B. A. Flinchum, W. S. Holbrook, D. Rempe, **S. Moon**, C. S. Riebe, B. Carr, J. L. Hayes, J. St. Clair, and M. P. Peters (2018), Critical zone structure under a granite ridge inferred from drilling and three-dimensional seismic refraction data, *Journal of Geophysical Research: Earth Surface*, 123, pp. 1317–1343.
14. S.P Faulk*, J.L. Mitchell, **S. Moon**, J.M Lora (2017), Regional patterns of extreme precipitation on Titan consistent with observed alluvial fan distribution, *Nature Geoscience*, 10, pp.827-831.
13. D.E. Ibarra, **S. Moon**, J.K. Caves, C.P. Chamberlain, K. Maher (2017), Concentration–discharge patterns of weathering products from global rivers. *Acta Geochimica*, 36, pp. 405-409.
12. **S. Moon**, J. T. Perron, S. Martel, W. S. Holbrook, J. St. Clair (2017), A model of three-dimensional topographic stresses with implications for bedrock fractures, surface processes and landscape evolution, *Journal of Geophysical Research: Earth Surface*, 122, pp. 823-846
11. D. E. Ibarra, J. K. Caves, **S. Moon**, D. L. Thomas, J. Hartmann, C. P. Chamberlain, et al., (2016), Differential weathering of basaltic and granitic catchments from concentration–discharge relationships, *Geochimica et Cosmochimica Acta*, 190, pp. 265-293.
10. B. W. Goodfellow, G. E. Hilley, S. M. Webb, L. Sklar, **S. Moon**, and C. A. Olson (2016), The chemical, mechanical, and hydrological evolution of weathering granitoid, *Journal of Geophysical Research: Earth Surface*, 121, pp. 1410–1435.
9. J. St. Clair[#], **S. Moon**[#], W. S. Holbrook, J. T. Perron, C. S. Riebe, S. J. Martel, et al. (2015), Geophysical imaging reveals topographic stress control of bedrock weathering, *Science*, 350, pp. 534-538. ([#]equal contribution)
8. **S. Moon**, E. Shelef, and G. E. Hilley (2015), Recent topographic evolution and erosion of the deglaciated Washington Cascades inferred from a stochastic landscape evolution model, *Journal of Geophysical Research: Earth Surface*, 120, pp. 856-876.
7. **S. Moon**, C. P. Chamberlain, and G. E. Hilley (2014), New estimates of silicate weathering rates and their uncertainties in global rivers, *Geochimica et Cosmochimica Acta*, 134, pp. 257-274.
6. **S. Moon**, C. Page Chamberlain, K. Blisniuk, N. Levine, D. H. Rood, and G. E. Hilley (2011), Climatic control of denudation in the deglaciated landscape of the Washington Cascades, *Nature Geoscience*, 4, pp. 469-473.

5. G. E. Hilley, C. P. Chamberlain, **S. Moon**, S. Porder, and S. D. Willett (2010), Competition between erosion and reaction kinetics in controlling silicate-weathering rates, *Earth and Planetary Science Letters*, 293, pp. 191-199.
4. **S. Moon**, Y. Huh, and A. Zaitsev (2009), Hydrochemistry of the Amur River: Weathering in a Northern Temperate Basin, *Aquatic Geochemistry*, 15, pp. 497-527.
3. J. B. Borges, Y. Huh, **S. Moon**, and H. Noh (2008), Provenance and weathering control on river bed sediments of the eastern Tibetan Plateau and the Russian Far East, *Chemical Geology*, 254, pp. 52-72.
2. J. Yoon, Y. Huh, I. Lee, **S. Moon**, H. Noh, and J. Qin (2008), Weathering Processes in the Min Jiang: Major Elements, $^{87}\text{Sr}/^{86}\text{Sr}$, $\delta^{34}\text{S}_{\text{SO}_4}$, and $\delta^{18}\text{O}_{\text{SO}_4}$, *Aquatic Geochemistry*, 14, pp. 147-170.
1. **S. Moon**, Y. Huh, J. Qin, and N. van Pho (2007), Chemical weathering in the Hong (Red) River basin: Rates of silicate weathering and their controlling factors, *Geochimica et Cosmochimica Acta*, 71, pp. 1411-1430.

Papers in review/ revision

1. N. Brown*, **S. Moon**, E. Rhodes, Using feldspar TL thermochronology to resolve recent fluvial erosion into the Yucaipa Ridge tectonic block, Southern California (*in revision*)
2. Kirkpatrick* H., **S. Moon**, A. Yin, M. Harrison, Impact of fault damage on eastern Tibet topography (*in revision*)
3. Moon, S., Perron, J.T., Martel, S.J., Goodfellow, B.W., Mas Ivars, D., Hall, A., Heyman, J., Munier, R., Näslund, J.-O., Simeonov, A., Stroeven, A.P., Present-day stress fields influence bedrock fracture openness in the deep subsurface (*submitted*).
4. Li* G., and S. Moon, Topographic stress limits the size of bedrock landslide (*in prep*)

Theses and other publications

2. Moon, S. (2013), Classical views in geomorphology imaged and reconciled using cosmogenic isotopes, topographic analysis, and numerical modeling. PhD thesis, Stanford University
1. Moon, S. (2007), Chemical weathering in the Hong (Red) and Amur River basins, MS thesis, Seoul National University

Selected conference abstracts (since 2015)

1. **Moon, S.**, Perron, J. T., Martel, S., Holbrook, W.S., St. Clair, J., and Singha, K., (2015) Three-dimensional topographic stress controls on bedrock fractures and landscape evolution, AGU Fall Meet., EP52D-01 (*invited*)
2. **Moon, S.**, Merritts, D., Snyder, N., Sanquini, A., Fosdick, J., Hilley G.E., (2015) Denudation and topographic response of the coastal drainages near the Mendocino Triple Junction Region (MTJ), Northern California, AGU Fall Meeting, EP33D-02 (*invited*)

3. Faulk S*, **Moon S.**, Mitchell J., Lora J., (2016) Quantifying precipitation variability on Titan using a GCM and implications for observed geomorphology, Annual meeting of Division for Planetary Sciences of the American Astronomical Society
4. Emmons* B., **Moon S.**, Brown N., Blisniuk K., Rhodes E., (2016) Applying newly developed luminescence dating to alluvial fans in the Anza Borrego Desert, southern California, SCEC Fall Meeting
5. Lin* J., **Moon S.**, Meng L., Davis P., (2016) Topographic Influence on Near-Surface Seismic Velocity in southern California, SCEC Fall Meeting
6. Chang* E., Peltzer G., **Moon S.**, (2016) Fault scarp degradation analysis at Dragon's Back using high resolution topography data, SCEC Fall Meeting
7. **Moon, S.**, Chamberlain C.P., and Hilley, G.E., (2016) Uncertainty assessment in quantification of silicate weathering rates in global rivers, Goldschmidt Conference (*keynote*)
8. **Moon, S.**, Perron, J. T., Martel, S., Holbrook, W.S., St. Clair, J., and Singha, K., (2016) Interplay between tectonics and topography: Topographic stress controls on bedrock fractures and surface processes, AGU Fall Meeting, EP14B-01 (*invited*)
9. Lin* J., **Moon S.**, Meng L., Davis P., (2016) Topographic Influence on Near-Surface Seismic Velocity in southern California, AGU Fall Meeting, S33B-2835.
10. Faulk S*, **Moon S.**, Mitchell J., Lora J., (2016) Quantifying Precipitation Variability and Relative Erosion Rates on Titan Using a GCM and Implications for Observed Geomorphology, AGU Fall Meeting, P33F-07.
11. Lin* J., **Moon S.**, Young A., Meng L., Davis P., (2017) Linking Subsurface and Surface Processes: Insights on Vs30, SCEC Fall Meeting.
12. Brown* N., **S. Moon**, and E. J. Rhodes, (2017) Using luminescence signals from bedrock feldspars to quantify rapid cooling in the San Bernardino Mountains, Southern California, Geological Society of America *Abstracts with Programs*. Vol. 49, No. 6
13. **Moon S.**, Goodfellow B., Perron, J. T., Martel S. J. et al., (2017) Interaction of strong compressive stresses with topography: implications for bedrock fractures in Forsmark, Sweden, Geological Society of America *Abstracts with Programs*. Vol. 49, No. 6 (*invited*)
14. **Moon S.**, Perron, J. T., and Martel S. J., (2017) Topographic stress and catastrophic collapse of volcanic islands, Geological Society of America *Abstracts with Programs*. Vol. 49, No. 6 (*invited*)
15. Ibarra, D.E., **Moon, S.**, Winnick M., Wymore M., Caves-Rugenstein, J.K., Chamberlain, C.P., McDowell W., and Maher, K., (2017), Partitioning concentration-discharge patterns of weathering products from monolithologic catchments to global rivers, AGU Fall Meeting, EP54D-08 (*invited*)
16. Goehring B., Blisniuk K., **Moon S.**, (2017) Investigating the usefulness of cosmogenic in situ ¹⁴C for the dating of alluvial fan surfaces, AGU Fall Meeting, EP32CD-06
17. **Moon S.**, Perron, J. T., and Martel S. J., (2017) Topographic stress and catastrophic collapse of volcanic islands, AGU Fall Meeting, EP52B-08

18. McKinney* E., **Moon S.**, (2017) Rainfall-induced slope failures near Los Angeles detected by time series of high-resolution satellite imagery, AGU Fall Meeting, EP51B-1637
19. Lin* J., **Moon S.**, Young A., Meng L., Martin A. J., Davis P., (2017) Linking subsurface and surface processes: Implications for seismic hazards in southern California, AGU Fall Meeting, EP51B-1715
20. Kirkpatrick* H., **Moon S.**, Harrison M., Yin A. (2017) Quantifying ¹⁰Be-derived erosion rates from the Min Shan in the eastern margin of the Tibetan Plateau, AGU Fall Meeting, T44B-03
21. Faulk S*, Lora J., Mitchell J., **Moon S.**, (2017) The influence of runoff and surface hydrology on Titan's weather and climate, AGU Fall Meeting, P12D-06.
22. Abbat J. A., Angelopoulos V., Masongsong E., Yang J., Medina H., **Moon S.**, Davis P., (2017) Magnetic profiling of the San Andreas Fault using a dual magnetometer UAV aerial survey system. AGU Fall Meeting, NS31A-0004.
23. Paige D.A, Curren I. S., Russell P. S., **Moon S.**, and Boyd A. K. (2018) The Distribution of Antipodal Ejecta from the Tycho Impact: Observations and Models, European Planetary Science Congress 2018, EPSC2018-603
24. Curren I. S., Russell P. S., Paige D. A., and **Moon S.** (2018) Geologic Evidence for an Impact Ejecta Origin of Tycho's Antipode Terrain, European Planetary Science Congress 2018, EPSC2018-748
25. Hall A.M, Goodfellow B.W., Heyman J., **Moon S** et al., (2018) Glacial erosion of the Sub-Cambrian Peneplain in Sweden, European Geosciences Union, EGU2018-13835-1 (*invited*)
26. Brown*, N.D., **Moon, S.**, Stock, J.M., Sabbeth, L., (2018) Dating offset alluvial terraces to understand the ongoing break-up of a microcontinent. the 12th New World Luminescence Dating Workshop.
27. **Moon S.**, Perron, J. T., Martel S. J., Goodfellow B., et al., (2018) The controls of present-day topographic stress on subsurface bedrock fracture openness in Forsmark, Sweden, AGU Fall Meeting, EP14A-08.
28. Shao, K*, **Moon, S.**, Li, G., (2018) Climatic and tectonic controls of erosion in the eastern end of Himalaya, AGU Fall Meeting, EP21C-2256.
29. Li, G.*, **Moon, S.**, (2018) Tectonic and climatic controls on landsliding at the eastern margin of the Tibetan Plateau, AGU Fall Meeting, EP23A-04.
30. Brown*, N.D., **Moon, S.**, Stock, J.M., Sabbeth, L., Martin-Barajas., A., Pina-Paez, A., (2018) Integrating high-resolution topography, geochronology, and elemental analyses to constrain the active break-up of a microcontinent, EP51D-1861
31. Kirkpatrick* H., **Moon S.**, Harrison M., Yin A. (2018) Analyzing lithologic and tectonic controls on erosion rates in the Min Shan region of eastern Tibet, AGU Fall Meeting, T23B-0350
32. Eppinger, B., Hayes, J., Cosans, C., Putnam, S., Harman, C., Holbrook, S., Moon, S., (2018) Deep Critical Zone Architecture of Perpendicular Ridges in a Northern Maryland Piedmont Catchment as Imaged by Seismic Tomography AGU Fall Meeting, NS-41B-0836

INVITED TALKS

- 2019 UCLA, Earth, Planetary, and Space Science
California Institute of Technology
GSA Fall meeting (1 *invited*)
- 2018 Swedish Nuclear Fuel and Waste Management Company, Sweden
UCLA Physical Sciences Faculty Lunch Seminar
- 2017 Pomona College
Stanford University
University of California, Santa Barbara
Swedish Nuclear Fuel and Waste Management Company, Sweden
GSA Fall meeting (2 *invited*)
- 2016 University of Wyoming
China Academy of Sciences Institute of Geology and Geophysics
University of California, San Diego
University of Oregon, Eugene
University of Washington, Seattle
Goldschmidt Conference (*keynote*)
AGU Fall meeting, Earth & Planetary Surface Processes focus group (*invited*)
- 2015 University of Pittsburgh
University of California at Los Angeles
ETH Zurich, Swiss
Seoul National University, Korea
Yonsei University, Korea
University of Utah
University of Southern California
California Institute of Technology
AGU Fall meeting, Earth & Planetary Surface Processes focus group (2 *invited*)
- 2014 University of California at Berkeley
University of Massachusetts at Amherst
University of Michigan at Ann Arbor
- 2013 Seoul National University, Korea
Korea Basic Science Institute, Korea

UCLA SERVICES*Participation*

- 2nd Annual Faculty Workshop on Best Practices in Teaching, 9/27/2015
NSF Day (NSF funded one-day workshop for proposal writing), 01/22/2016
Insight into Philanthropy workshop, 03/29/2016
Preparing for Academic Personnel Review Luncheon, 5/17/2016

Committees

- EPSS faculty committee on web site, 07/2016 - present
EPSS faculty committee on departmental clean lab facility, 07/2016 – present
EPSS faculty committee on faculty search, 11/2016 – present
EPSS faculty committee on merit review, 07/2017 – present
Division of Physical Sciences ad-hoc reviewer for graduate student fellowship, 09/2017

Academics

- EPSS Undergraduate and graduate advisor, 2015 – present
Ph.D. committee: Sean Faulk, Michael Lawson, Chris McGuire, Margaret Deng, Abijah Simon, Erin Leonard, Haotian Xu, Lior Rubanenko, Kynan Hughson, Raquel Nuno, Ellen Alexander, Heather Kirkpatrick

M.S. thesis committee: Margaret Deng, Jessica Lin

Outreach

EPSS communication event “Total Solar Eclipse Trip 2017”, 05/2015 – 08/2017

EPSS high school and college student visits, 05/2015 - present

TEACHING

EPSS 13: Natural Disaster (Spring 19, enrollments 75)

EPSS 61: Geologic Maps (Fall 16, enrollments 39; Fall 17, enrollments 29)

EPSS 298: Special Topics in EPSS: Historic Papers in Geomorphology (Fall 16, enrollments 6)

EPSS 165: Tectonic Geomorphology (Spring 16, enrollments 9; Spring 17, enrollments 12; Spring 18, enrollments 11)

EPSS 199, 595: Direct Research

STUDENT SUPERVISED

Undergraduate students

Rebecca Lewis 2018-

Christina Kitamikado 2019-

Graduate students

Heather Kirkpatrick 2016- (primary co-adviser: Mark Harrison)

Kevin Shao 2017-

Justin Higa 2018-

Marina Argueta 2019-

Boontigan Kuhasubpasin 2019- (primary co-adviser: Carolina Lithgow-Bertelloni)

Postdoc researcher

Sourav Saha 2019-

UCLA Geomorphology Group Alumni

Nathan Brown (postdoc at UC Berkeley)

Gen Li (postdoc at Caltech)

Sean Faulk, Ph.D. (Primary advisor, Jonathan Mitchell)

Chris McGuire, Ph.D. (Primary advisor, Abby Kavner)

Jessica Lin, M.S. (Geologist, CH2M and Jacobs)

Emmons McKinney (Graduate student at Cal Poly Pomona)

Shawn Lu (Research Assistant at NTU)

Emil Chang (Graduate student at USC)

Ryan Missel (Graduate student at SJSU)

EXTERNAL SERVICE

Journal reviewer of Journal of Geophysical Research: Earth Surface, Geology, Earth and Planetary Science Letters, Geochimica et Cosmochimica Acta, Nature Geoscience, Hydrologic Processes, Earth Surface Processes and Landform, Geochemistry, Geophysics, Geosystems

Proposal reviewer or panel for Army Research Office, NSF Geomorphology and Land-use Dynamics program, NSF PREEVENTS, Swiss-NSF, ACS Petroleum Research Fund

Members of American Geophysical Union, Geological Society of America, European Association of Geochemistry, Southern California Earthquake Center

Organizing committee for Annual SoCal Geomorphology Symposium, 2018 – present

Serve as a judge for Annual Los Angeles Basin Earth and Planetary Sciences Student Research Symposium, AGU Outstanding Student Paper Awards

FUNDING

Current

NSF- Geomorphology and Land-use Dynamics and Hydrology: CAREER: Understanding the Effects of Bedrock Fractures and Weathering on Shallow and Deep-seated Landslides (\$ 537,659; 01/2020 – 01/2024), PI Moon

NSF-Tectonics: Collaborative Research: Structural Constraints on Microcontinent Formation, Gulf of California (\$ 329,083; 09/2017 – 08/2020), PI Moon, with Joann Stock at Caltech as Lead-PI.

Swedish Nuclear Fuel and Waste Management Company (SKB): Examination of Geologic and Topographic Stress Controls on Bedrock Fracturing at Forsmark, Sweden (\$161,344; 11/2018-)

USGS Earthquake Hazard Program: Influence of Sediment Dynamics and Alluvial Fan Formation on Paleoseismic Studies in Southern California, North America (\$65,690; 3/2020 - 3/2021, PI: Seulgi Moon, with postdoc Sourav Saha).

Past

USGS Earthquake Hazard Program: Collaborative Research: Earthquake Recurrence on the Banning Strand of the San Andreas Fault (\$44,377; 6/2018 - 6/2019, PI: Seulgi Moon, with Sally McGill at CSUSB as Lead-PI.

NASA-Cassini Data Analysis: Understanding the Controlling Factors of Titan's Climate, Weather and Methane Hydrology in Space and Time (\$ 388,666; 06/2016 – 07/2019), Co-PI Moon with J. Mitchell as PI.

UCLA Faculty Career Development Award: Investigation of along-strike variations in millennial-scale erosion rates in the Himalaya: High erosion rates in the eastern Himalaya? (\$14,942; 08/18-07/19)

USC SCEC 2017: Characterizing seismic site conditions in southern California based on topographically induced stress and bedrock fractures (\$ 24,000; 05/2017 – 04/2018), PI Moon with L. Meng, P. Davis as Co-PI.

USC SCEC 2017: Understanding strain accumulation and transfer between the SSAF, San Gorgonio Pass and the ECSZ Part I. Re-evaluating fault geometry, fault activity and slip rate on the Mission Creek-Mill faults from the Coachella Valley through the San Gorgonio Pass (\$50,000; \$5,930 for UCLA; 05/17-04/18)

USC SCEC 2016: Characterizing seismic site conditions in southern California based on topographically induced stress and bedrock fractures (\$ 30,000; 02/2016 – 01/2017), PI Moon with L. Meng as Co-PI.

Prime Lab Seed Grant, “Quantifying lithologic and tectonic controls on ¹⁰Be-derived erosion rates in the eastern margin of Tibet” (\$10,200; 06/23/2017)

UCLA Faculty Research Grant/Trans-disciplinary Seed Grant: The impact of future climate change on landslide hazards in the Washington Cascades, USA (\$5979; 07/2016-06/2017)

UCLA Faculty Research Grant/Trans-disciplinary Seed Grant: Examination of topographic stress controls on seismic site conditions and earthquake-induced hazards (\$7760; 07/2017-06/2018)

UCLA Office of Instructional Development Instructional Improvement Project, EPSS Geomagnetic Drone

Enhanced Survey Instrument (GEODESI) (\$6,000; 07/2016-06/2017) with PI Angelopoulos

UCLA Office of Instructional Development mini grant for EPS 165 (\$580; 07/2015-06/2016)

UCLA Council on Research Travel grant (\$1,350; 07/2015-06/2016).

National Center for Airborne Laser Mapping (NCALM) Seed Grant (2011)

Geological Society of America, Graduate Student Research Grant (\$2963; 2011)

Stanford University, McGee Research Grant (\$3800; 2011)