

Yuem Park

Ph.D. candidate - Earth & Planetary Science

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Education

University of California, Berkeley - Berkeley CA, United States of America

2015-present

PH.D. CANDIDATE IN EARTH & PLANETARY SCIENCE

Coursework includes: Designing, Visualizing, & Understanding Deep Neural Networks; Applied Machine Learning; Statistics & Multivariate Data Analysis for Research; Introduction to Climate Modeling; Geomorphology; Stable Isotope Ecology; Stable Isotope Geochemistry; Isotopic Geochemistry

Princeton University - Princeton NJ, United States of America

2011-2015

A.B. IN GEOSCIENCES WITH HIGH HONORS

Coursework includes: Sedimentology; Structural Geology; Rocks; Mineralogy; Physics & Chemistry of Earth's Interior; Geophysics; Geochemistry; Fundamentals of Solid Earth Science; Introduction to Atmospheric Sciences; Evolutions & Catastrophes; Interacting with Data; Computing for Physical & Social Sciences; General Computer Science; Differential Equations; Linear Algebra; Multivariable Calculus; General Chemistry; General Physics

Honours & Awards

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| Certificate for Distinguished Teaching University of California, Berkeley | 2018 |
| Chevron-Xenel Ph.D. Gateway Fellowship University of California, Berkeley | 2015 |
| Department of Geosciences Arthur F. Buddington Award Princeton University | 2015 |
| Elected to membership in the Society of Sigma Xi Princeton University | 2015 |

Publications

- Park, Y.**, Swanson-Hysell, N., Xian, H., Fu, H., Condon, D., Zhang, S., Macdonald, F., 2019, Paleomagnetic and geochronologic data from the Banxi Group and the position of South China within the supercontinent Rodinia during the early Neoproterozoic: *Manuscript in preparation*
- Park, Y.**, Maffre, P., Godd ris, Y., Macdonald, F., Anttila, E., Swanson-Hysell, N., 2019, Emergence of the Southeast Asian islands as a driver for Neogene cooling: *Manuscript submitted*
- Park, Y.**, Swanson-Hysell, N., Macdonald, F., Lisiecki, L., 2018, Evaluating the relationship between large igneous province area and Earth's long-term climate state: *Manuscript accepted*, preprint doi:10.31223/osf.io/p9ndf
- Park, Y.**, Swanson-Hysell, N., MacLennan, S., Maloof, A., Gebreslassie, M., Tremblay, M., Schoene, B., Alene, M., Anttila, E., Tesema, T., Condon, D., Haileab, B., 2019, The lead-up to the Sturtian Snowball Earth: Neoproterozoic chemostratigraphy time-calibrated by the Tambien Group of Ethiopia: *GSA Bulletin*, vol. TBD, pp. TBD, doi:10.1130/B35178.1
- Macdonald, F., Swanson-Hysell, N., **Park, Y.**, Lisiecki, L., Jagoutz, O., 2019, Arc-continent collisions in the tropics set Earth's climate state: *Science*, vol. 364, pp. 181–184, doi:10.1126/science.aav5300
- MacLennan, S., **Park, Y.**, Swanson-Hysell, N., Maloof, A., Schoene, B., Gebreslassie, M., Anttila, E., Tesema, T., Alene, M., and Haileab, B., 2018, The arc of the Snowball: U-Pb dates constrain the Islay anomaly and the initiation of the Sturtian glaciation: *Geology*, vol. 46, pp. 539–542, doi:10.1130/G40171.1
- Park, Y.**, Eddy, M., Schoene, B., 2015, A low angle fault contact between the Skagit Gneiss and the Skymo Complex: explaining the rapid exhumation of the North Cascades crystalline core, WA: *Princeton University Senior Thesis*

Presentations

4. **Park, Y.**, Maffre, P., Godd ris, Y., Macdonald, F., Anttila, E., Swanson-Hysell, N., 2019, Emergence of the Southeast Asian islands as a driver for Neogene cooling: *Talk presented at the American Geophysical Union Fall Meeting, San Francisco, CA.*
3. **Park, Y.**, Swanson-Hysell, N., Xian, H., Fu, H., Condon, D., Zhang, S., Macdonald, F., 2018, Paleomagnetic and geochronologic data from the Banxi Group and the position of South China within the supercontinent Rodinia during the early Neoproterozoic: *Poster session presented at the the Council of the International Geoscience Programme 648 Field Symposium, Yichang, China.*
2. **Park, Y.**, MacLennan, S., Swanson-Hysell, N., Maloof, A., Schoene, B., Alene, M., Tremblay, M., Anttila, E., Haileab, B., 2016, The onset of the Sturtian Snowball Earth: new geochronology and chemostratigraphy from the Tambien Group of Ethiopia: *Poster session presented at the American Geophysical Union Fall Meeting, San Francisco, CA.*
1. **Park, Y.**, Anttila, E., MacLennan, S., Swanson-Hysell, N., Maloof, A., Schoene, B., Haileab, B., 2015, Newly discovered exposures of Neoproterozoic diamictite within the Samre Fold-Thrust Belt of northern Ethiopia: *Poster session presented at the American Geophysical Union Fall Meeting, San Francisco, CA.*

Teaching

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| EPS 115: Stratigraphy and Earth History (GSI) University of California, Berkeley | Spring 2020 |
| EPS 101: Field Geology and Digital Mapping (GSI) University of California, Berkeley | Spring 2019 |
| EPS 115: Stratigraphy and Earth History (GSI) University of California, Berkeley | Spring 2018 |
| EPS 50: The Planet Earth (GSI) University of California, Berkeley | Spring 2017 |
| EPS 115: Stratigraphy and Earth History (Reader) University of California, Berkeley | Spring 2016 |

Funding

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| Lewis and Clark Fund for Exploration and Field Research in Astrobiology (\$4,915) NASA Astrobiology Institute/American Philosophical Society | 2018 |
| Graduate Student Research Grant - First Tier (\$2,500) Geological Society of America | 2018 |
| Graduate Student Field Support Fund (\$53,452) University of California, Berkeley | Fall 2016-Spring 2017 |

Machine Learning

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| Hurricane Harvey flood damage Convolutional neural network using transfer learning to detect flood damage from satellite imagery of Greater Houston. | https://github.com/yuempark/detect-flood-damage |
| Surrogate climate model (work in progress) Random forests to quickly estimate climatology given simple tectonic boundary conditions. Such a model is desirable in paleoclimate research because it would allow Earth history researchers to cheaply explore several paleogeographic scenarios in which boundary conditions are poorly constrained. | https://github.com/yuempark/predict-climatology |
| Google Merchandise Store customer revenue Random forests and logistic regression to predict future customer revenue. Predictions were made based on a dataset in which the labels are heavily imbalanced. | https://github.com/yuempark/DSW2019-revenue-prediction |

Field Work

Tambien Group, Ethiopia (19 weeks)

2015, 2017, 2018

Field mapping, section measurement, and sample collection to develop stratigraphic, isotopic, and geochronologic data for the interval leading into the Cryogenian 'Snowball Earth' glaciations.

Banxi Group, China (8 weeks)

2016

Field mapping, section measurement, and sample collection to develop stratigraphic and paleomagnetic data to constrain the configuration of the supercontinent Rodinia and test proposed true polar wander events.

Skymo Complex, USA (12 weeks)

2013, 2014

Field mapping and sample collection to develop petrographic and thermobarometric data to understand rapid exhumation of arc middle crust along strike-slip fault systems.

Technical Skills

Computing

Python, scikit-learn, TensorFlow, Keras, NumPy, Pandas, matplotlib, cartopy, Jupyter, QGIS, GitHub, LaTeX, Illustrator, GPlates

Research

Machine learning, multivariate and statistical methods, Earth system modeling, geochemical measurements, field mapping, sample collection, geochronology, paleomagnetism