Yuem Park

Ph.D. - Data & Earth Scientist

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Education

University of California, Berkeley - Berkeley CA, United States of America   2015-2020

Ph.D. 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

George D. Louderback Fellowship   2020
   Department of Earth & Planetary Science, University of California, Berkeley

Certificate for Distinguished Teaching   2018
   University of California, Berkeley

Chevron-Xenel Ph.D. Gateway Fellowship   2015
   University of California, Berkeley

Arthur F. Buddington Award   2015
   Department of Geosciences, Princeton University

Membership in the Society of Sigma Xi   2015
   Princeton University

Publications

7. **Park, Y.**, Swanson-Hysell, N., Xian, H., Fu, H., Condon, D., Zhang, S., Macdonald, F., 2021, Tonian paleomagnetism from South China permits an inclusive Rodinia or Bitter Springs Stage true polar wander, but not both: *in review*

6. **Park, Y.**, Swanson-Hysell, N., Macdonald, F., Lisiecki, L., 2021, Evaluating the relationship between large igneous province area and Earth's long-term climate state: *Large Igneous Provinces: A Driver of Global Environmental and Biotic Changes, Geophysical Monograph 255*, doi:10.1002/9781119507444.ch7

5. **Park, Y.**, Maffre, P., Goddéris, Y., Macdonald, F., Anttila, E., Swanson-Hysell, N., 2020, Emergence of the Southeast Asian islands as a driver for Neogene cooling: *Proceedings of the National Academy of Sciences*, doi:10.1073/pnas.2011033117

4. **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., 2020, The lead-up to the Sturtian Snowball Earth: Neoproterozoic chemostratigraphy time-calibrated by the Tambien Group of Ethiopia: *GSA Bulletin*, vol. 132, pp. 1119-1149, doi:10.1130/B35178.1

3. 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

2. 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

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

5. **Park, Y.**, 2020, Planetary cooling, tectonics, and weathering from 1 billion years ago to the present: *Talk presented at the UC Berkeley Earth & Planetary Science department seminar*.

4. **Park, Y.**, Maffre, P., Goddéris, 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*.

Machine Learning Projects

5. **Ames, Iowa house prices prediction**   https://github.com/yuempark/Ames-house-prices
   Ensembled gradient boosted random forests to predict house prices in Ames, Iowa.

4. **San Francisco weather forecast**   https://github.com/yuempark/SFO-weather-prediction
   Recurrent neural network to forecast weather at San Francisco International Airport.

3. **Hurricane Harvey flood damage detection**   https://github.com/yuempark/detect-flood-damage
   Convolutional neural network using transfer learning to detect flood damage from satellite imagery of Greater Houston.

2. **Google Merchandise Store customer revenue prediction**   https://github.com/yuempark/DSW2019-revenue-prediction
   Random forests and logistic regression to predict future customer revenue.

1. **Mini-project collection**   https://github.com/yuempark/applied-machine-learning
   K-nearest neighbours, gradient descent, Naive Bayes, random forest, k-means clustering, and principal components analysis used to explore a variety of datasets.

Technical Skills

Computing

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

Research

Machine learning, multivariate statistics, Earth system modeling, isotope geochemistry, field mapping, sample collection, geochronology, paleomagnetism, stratigraphy

Funding

Lewis and Clark Fund for Exploration and Field Research in Astrobiology ($4,915)   2018
NASA Astrobiology Institute/American Philosophical Society

Graduate Student Research Grant - First Tier ($2,500)   2018
Geological Society of America

Graduate Student Field Support Fund ($53,452)   2016-2017
University of California, Berkeley

Teaching

EPS 115: Stratigraphy and Earth History (GSI)   Spring 2020
University of California, Berkeley

EPS 101: Field Geology and Digital Mapping (GSI)   Spring 2019
University of California, Berkeley

EPS 115: Stratigraphy and Earth History (GSI)   Spring 2018
University of California, Berkeley

EPS 50: The Planet Earth (GSI)   Spring 2017
University of California, Berkeley

EPS 115: Stratigraphy and Earth History (Reader)   Spring 2016
University of California, Berkeley

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.