James Gearon — Curriculum Vitae

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Date of Birth	26^{th} April 1997	**Website**	jameshgrn.github.io
Citizenship	USA	**Profiles**	

Personal Profile

I am a sedimentologist focused on marrying big-data analytics, remote sensing, geostatistics, and sedimentology. I use combinations of large datasets, novel and established analytical methods , and old fashioned fieldwork to constrain surface processes, including sedimentary dynamics, ecogeomorpholgy, Critical Zone processes, depositional architectures, and sediment-water interfaces in the modern and ancient setings.

Education

2021-Pres. Ph.D in Sedimentology & Remote Sensing - Indiana University–Bloomington

Advisor: Douglas Edmonds
GPA: N/A / 4.0

2019-2021 MS in Sedimentology - The University of Texas at Austin

Advisors: Cornel Olariu & Ronald J. Steel
GPA: 4.0 / 4.0
Masters Thesis - *The Supply-Generated Sequence: A New Sequence–Stratigraphic Model for Fluvio-Lacustrine Deposits*

2015-2019 BS Honors, Special Honors in Geology - The University of Texas at Austin

Certificate in Creative Writing
GPA: 3.6 / 4.0
Undergraduate Thesis - *Geomorphic Influences on Canopy Architecture of Larrea tridentata in Northern Mojave Desert, Nevada, USA*
Advisor: Michael H. Young

Research Experience

Feb. 2020-Jan. 2021 Earth Science Information Partners (ESIP) Winter 2020 RFP Grant
Principal Investigator

Authored a proposal as PI to develop the Global Lake Level Database. Three separate databases (USGS, G-REALM, and HydroWeb) were merged and are hosted in an AWS RDS Database with an attached API. To provide ease-of-access to end-dusers, I developed a pythonic front-end LakePy designed to rapidly access up-to-date water levels from the Global Lake Level Database back-end.

Aug. 2019- UT Austin, Jackson School of Geosciences, Dynamic Stratigraphy Group
May 2021 *Master's Student*

Developing thesis project to constrain single lacustrine sedimentation "events" or deposodes and how they appear in the rock record using drone orthophotogrammetry, logged section and well-log analysis. My field area is in Uinta Basin, UT in the Middle Green River formation. To better understand the high-frequency response of lacustrine deltas to base level rise, I am also investigating modern lake deltas using original remote sensing algorithms. Presented poster at AAPG ACE 2020 meeting.

June 2017- Bureau of Economic Geology, Undergraduate Honors Thesis
May 2019 *Undergraduate Research Assistant to Dr. Michael Young*

Built algorithms in Python to measure and chart spatial properties of vegetation of a large alluvial deposit in Southern California based on remote sensing data, presented poster at AGU 2018 and GSA 2019. Gained experience in processing and analyzing Lidar and Multi-Spectral Imagery data using Python. Wrote undergraduate thesis based on this work finding statistically significant relationships between plant size and spacing based on soil age and clay content.

Nov. 2015- University of Texas Institute for Geophysics, Undergraduate Research Project
April 2017 *Undergraduate Research Assistant to Drs. Joseph Levy & Tim Goudge*

Assisted in the mapping and general geomorphological analysis of Martian Chaos terrain, utilizing ArcGIS and Python for detailed geostatistical evaluation and interpretation of data. Presented poster at 2017 Lunar & Planetary Science Conference in Houston, Texas

Field Experience

July 2020 Field Season in 9-Mile Canyon, Uinta Basin, Utah

Conducted a month of field-work in the Sunnyside Delta Interval (after Remy et al., 1991) of the Middle Green River Formation. 1000m of logged section was produced, as well as 20GB of Drone Imagery. *Takeaways: lacustrine sequence stratigraphy, self-directed field work, drone imagery acquisition*

Nov. 2019 Borrego Springs Field Trip w/ Ron Steel & Cornel Olariu

Attended trip for "Clastic Depositional Systems". Logged 100m of section in the Lycium turbidite units. *Takeaways: rift-basin sequences, distinguishing source from turbidite grain character, antidune outcrop examples*

Mar. 2019 Peruvian Andean Geology Trip w/ Dan Breecker & Liz Cassel

Attended 10-day trip as a part of the UT Austin Undergraduate Research Honors Program. *Takeaways: Andean tectono-stratigraphy, Fold-Thrust-Belt sedimentology/sequences, growth strata*

July 2018 UT Austin Field Camp

Attended the 6-week, 6,600-mile mobile field course from UT covering many aspects of geological study. Professors included David Mohrig, Tim Goudge, Rowan Martindale, Dan Breecker, Jaime Barnes, Danny Stockli, Mark Helper. *Takeaways: geologic field mapping, rock/mineral ID, stratigraphic log interpretation, and more.*

Mar. 2018 Book Cliffs Sedimentology Short Course w/ Ron Steel

Attended a 10-day trip to NE Utah as a part of the UT Austin Undergraduate Honors Research Program. *Takeaways: western interior seaway formation/deposition, hyperpicnites, lacustrine carbonates, shelf behavior primer*

Teaching Experience

Fall 2020 Teaching Assistant: GEO 416K *Earth Materials*

Course taught by Dr. Elizabeth Catlos. I led two 4-hour labs and instructed students on a range of topics from mineralogy, crystallography, and petrology and assisted professor in re-designing course for online instruction due to COVID-19

Spr. 2020 Teaching Assistant: GEO 316P *Sedimentary Rocks*

Course taught by Dr. Cornel Olariu. I Created quizzes and extra credit assignments for 84 petroleum engineering students whiel achieving an average student evaluation score of 4.3/5.00. Further assisted professor in re-designing course for online instruction due to COVID-19

Fall 2019 Teaching Assistant: GEO 401 *Physical Geology*

Course taught by Drs. Jaime Barnes & Daniel Breecker. I led three two-hour lab sessions with 45 students total emphasizing practical aspects of geology including mineral & rock identification, field hydrology, map-reading, and structural interpretation. Achieved an average student evaluation score of 4.63/5.00

Employment History

May 2019- Chevron Corporation ETC, 1111 Bagby St. Houston, TX 77002
Aug. 2019 *Data Engineering Intern*

Developed a Python package for full stack analytics model deployment from DevOps repository to production-level, server-hosted models to be queried for prediction results via REST API. Built in customizable functionalities to track model metrics throughout successive runs and fully deploy most accurate models utilizing container services. Gained experience in Software Engineering, VCS, Spark Python, Microsoft Azure, Databricks, and MLflow.

July 2018 - Chevron Corporation ETC, 1111 Bagby St. Houston, TX 77002
Aug. 2018 *Technical Computing Intern*

- Worked in Subsurface Workflows dept. on workflow regression testing for Petrel 2016.3, 2017.4, and 2018.1.
- Worked with Petrophysics team on machine learning applications for lithofacies identification. Gained experience in Microsoft Visual Studio, Geolog 18.0, and Pythonic data analytics.

Additional Activities

Fall 2020 - Spr. 2021 UT Austin: Technology Enhanced Education Oversight Committee (C-14)
Graduate Student Assembly Representative

Function: to evaluate and formulate policy on technology-enhanced education and make recommendations on such matters to the Faculty Council. We meet monthly to discuss current issues within the context of technology and higher education. This year we have passed a resolution recommending the creation of a school-wide dedicated Education Technology Officer to better coordinate between stakeholders.

Publications

[1] James H Gearon and Michael H Young. Geomorphic controls on shrub canopy volume and spacing of creosote bush in northern mojave desert, usa. *Landscape Ecology*, pages 1–21, 2020.

Media Coverage

Dec. 2020 'Big Data' Enables First Census of Desert Shrub *Jackson School of Geosciences*

Grants & Fellowships

Feb. 2020- Dec. 2020 Earth Science Information Partners (ESIP) Winter RFP 2020
Principal Investigator

Funded $8,000: Developing an Open-Source Workflow and Toolset for Quantifying Lacustrine Sedimentation using Publicly Available Data

Aug. 2021- May. 2022 Grassman Fellowship
Ph.D Student

Awarded by the Indiana University Department of Earth & Atmospheric Sciences on a yearly basis

Presentations & Posters

[1] James H. Gearon and Douglas A. Edmonds. Automated river profiling from space: A 21st century solution to an inconvenient problem. In *AGU Fall Meeting 2021*. AGU, 2021.

[2] James A Gearon, Cornel Olariu, and Ronald J Steel. **The Supply-Generated Sequence: A New Sequence-Stratigraphic Model for Fluvio-Lacustrine Deposits**. In *IMAGE Online Meeting, USA-2021*. IMAGE, 2021.

[3] James A Gearon. **LakePy: A Python Package for Accessing and Manipulating Lacustrine Time-Series Data**. In *USGS & ESIP IT&I & CDI TechStack Working-group*. USGS ESIP, 2021.

[4] James Hooker Gearon, Cornel Olariu, and Ronald Steel. Quantifying high-frequency lacustrine sedimentation patterns using publicly available data. In *AGU Fall Meeting 2020*. AGU, 2020.

[5] Michael Young and James Hooker Gearon. Geomorphic controls on shrub canopy volume and spacing of creosote bush in northern mojave desert, usa. In *AGU Fall Meeting 2020*. AGU, 2020.

[6] James A Gearon, Cornel Olariu, and Ronald J Steel. **Proximal to Distal Changes of Thin Lacustrine Deltas in the Ancient and Modern**. In *AAPG Annual Online Meeting, USA-2020*. AAPG, 2020.

[7] Developing an open-source database and pythonic toolset for quantifying lacustrine sedimentation using publicly available data. In *ESIP Summer Meeting 2020*.

[8] James A Gearon, Cornel Olariu, and Ronald J Steel. **Unveiling lake delta architectures in modern and ancient systems by mapping river flood deposodes**. In *RioMAR Annual Meeting in Houston, Texas, USA-2019*. RioMAR, 2019.

[9] James A Gearon and Michael H Young. Geomorphic controls on shrub canopy size and spacing of creosote bush in northern mojave desert, usa. In *GSA Annual Meeting in Phoenix, Arizona, USA-2019*. GSA, 2019.

[10] James Hooker Gearon and Michael Young. Geomorphic influence on canopy structure in eldorado valley, nevada. *AGUFM*, 2018:H13G–1799, 2018.

[11] James A Gearon, Joseph S Levy, and Timothy A Goudge. Making sense of chaos: Geomorphic investigations of martian chaos terrain. In *LPSC Annual Meeting in Houston, Texas, USA-2017*. LPSC, 2017.

Departmental & Campus

Water, Climate & Earth Seminar (UT)

- **Oct. 2020**: Geomorphic controls on shrub canopy volume and spacing of creosote bush in northern Mojave Desert, USA

Eco-Lunch (UT)

- **Oct. 2020**: Geomorphic controls on shrub canopy volume and spacing of creosote bush in northern Mojave Desert, USA

Honors & Awards

Nov. 2020 Invited Speech: Jackson School of Geosciences Scholarship Luncheon

May 2019 - 7 Semesters of University Honors

May 2019 - 5 Semesters Jackson Matrix Scholarship

April 2017-2nd Place in R.L. Folk and E. F. McBride Petrography Contest

Professional Organizations

American Association of Petroleum Geologists - *Active Member*

Geological Society of America - *Active Member*

The Society of Sedimentary Geology - *Active Member*

Earth Science Information Partners - *Project Principal Investigator 2020*

EarthCube - *Member*

Programming & Software

Authored

- **LakePy**
- **Global Lake Level Database**

- **Proficient in:**

  Python - Pandas, NumPy, Sci-Kit Learn, Rasterio, GDAL, SciPy, Flask, GeoPandas, Boto3, Dask, Seaborn, Matplotlib, Sci-kit Image, OpenCV, Folium, Google Earth Engine

  R - dplyr, tidyverse, broom, fitdistrplus, ggplot2

  Bash/Zsh - antigen, iterm2

  LaTeX & Markdown - technical writing

- **Experience with:**

  Julia
  JavaScript
  Scala/Spark

- **Miscellaneous Software**

  Docker/Docker Compose - building and utilizing images
  ArcGIS/QGIS/Global Mapper - Remote Sensing
  MySQL/Amazon Aurora - database operations
  Amazon Web Services - experience with RDS, S3, Aurora Serverless, Lambda, API Gateway
  git - source version control
  PyCharm - development
  Azure - database operations
  Petrel - geologic operations

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