

# Harrison Martin

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## Education

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2018 - Present **PhD Candidate, Geoscience (GPA: 3.99)**

Indiana University, Bloomington, IN, U.S.A.

Supervisor: **Dr. Doug Edmonds**

**Thesis:**

- Using mathematical modeling and remote sensing to study meandering river avulsion in alluvial basins over stratigraphic timescales.
- Investigating bend-scale mechanics of meandering and sediment transport in rivers using drone-based lidar and bathymetry.

Minor: **Scientific Computing**

2015-2018 **MSc, Geoscience (Thesis-based) (GPA: 3.85)**

University of Calgary, Calgary, AB, Canada

Supervisor: **Dr. Stephen Hubbard**

**Thesis title:** Stratigraphic Characterization of an Early Cretaceous Channel-belt Avulsion: Implications for Paleoenvironmental Interpretations of the McMurray Formation, Alberta.

- Developed a regional-scale stratigraphic framework and a series of maps describing regional trends and local complexities in a prolific, extensively drilled basin.
- Used an understanding of modern fluvial avulsion mechanics to understand the evolutionary history of an ancient river, with implications for paleoenvironment and backwater effects in a large, shallow fluvial-deltaic system.
- Published in the *Journal of Sedimentary Research*.

2011-2015 **Honours BSc, Integrated Science, with a Concentration in Earth & Environmental Sciences (final year GPA: 3.95)**

McMaster University, Hamilton, Ontario, Canada

Supervisor: **Dr. Janok Bhattacharya**

Program Director: **Dr. Carolyn Eyles**

Minor: **GIS**

## Work and Research Experience

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2020-2021 **Associate Instructor, Indiana University**

- *Sedimentation & Tectonics* – EAS-E 333
- *Natural Disasters, Sustainability, and the Future of Civilization* – COLL-C 105

2018-Present **Research Assistant, Indiana University**

- Conducted field and computational research towards my PhD dissertation.

- Fall 2016      **Geology Exploration Term Student, Statoil [now Equinor] Canada Ltd.**
- Investigated sediment provenance (via detrital zircon analysis) and reservoir properties as part of a regional assessment of several East Coast Canada frontier basins in Statoil's Canadian exploration team.
  - Detrital zircon work included analysis of data from both the American and European portions of the North Atlantic Conjugate Margin.
  - Given the freedom to contribute to research direction, with interim and final presentations and deliverables.
- Summer 2016    **Consortium Secondee, BP Canada Energy Group ULC**
- Conducted research on my Master's thesis at the BP Calgary office, utilizing BP data and employee experience.
- 2015-2017      **Teaching Assistant, University of Calgary**
- *Introduction to Petroleum Geology* – GLGY 577
  - *Surficial Systems* – GLGY 353
- 2014            **Teaching Assistant, McMaster University**
- *Earth and the Environment* – EARTHSC 1G03
- Summer 2014    **Field Assistant, McMaster University**
- Under Dr. Janok Bhattacharya, in the Ferron Sandstone of Utah, U.S.A.
  - Assisted graduate students with fieldwork and simultaneously collected data for my own thesis research in plan-view bar-scale fluvial scaling relationships.

## **Honors, Awards, and Funding**

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- 2021-2023      Future Investigators in NASA Earth and Space Science and Technology (NASA FINESST)  
*National Aeronautics and Space Administration (NASA)*
- 2021-2022      Dissertation Research Fellowship (turned down due to NASA FINESST)  
*Indiana University, College of Arts and Sciences*
- 2021            IAS Postgraduate Research Grant  
*International Association of Sedimentologists*
- 2020            GSA CARES  
*Geological Society of America*
- 2020            John Barrett Patton Endowment Fund Award  
*Indiana University*
- 2018-2019      Chevron Oil Company Graduate Fellowship  
*Indiana University*

2016-2017	Queen Elizabeth II Graduate (Master's) Scholarship <i>University of Calgary</i>
2016	David Wilson Memorial Graduate Scholarship in Geoscience <i>University of Calgary</i>
2016	1 <sup>st</sup> Place Team, Imperial Barrel Awards Competition, Canada Region <i>University of Calgary</i>
2015-2016	ConocoPhillips Canada Graduate Scholarship in Applied Basin Studies <i>University of Calgary</i>
2011-2015	Summa Cum Laude <i>McMaster University</i>
2011, 2012, 2014, 2015	Dean's Honour List <i>McMaster University</i>
2011	McMaster Honour Award, Level II <i>McMaster University</i>

## **Publications, Presentations, and Academic Experiences**

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- Peng, Y., Hagstrom, C.A., Horner, S.C., Hodgson, C., **Martin, H.K.**, Leckie, D.A., Pedersen, P.K., and Hubbard, S.M., (*In Review*). Low-accomodation foreland basin response to long-term transgression: A record of change from continental-fluvial and marginal-marine to open-marine sequences: *Marine and Petroleum Geology* (In Review).
- **Martin, H.K.** and Edmonds, D.A., (*In Review/Preprint*). The push and pull of abandoned channels: How floodplain processes and healing affect avulsion dynamics and alluvial landscape evolution in foreland basins: *Earth Surface Dynamics*. DOI: 10.5194/esurf-2021-82 (Preprint).
- Pradel, D., and 19 others, including **Martin, H.K.**, (2021). Edenville and Sanford Dam Failures: Field Reconnaissance Report: *American Society of Civil Engineers*, 164 pp. DOI: 10.1061/9780784415764.
- Edmonds, D.A., **Martin, H.K.**, Valenza, J., Henson, R., Weissmann, G.S., Miltenberger, K., Mans, W., Moore, J.R., Slingerland, R.L., Gibling, M.R., Bryk, A.B., and Hajek, E.A., (2021). Rivers in reverse: Upstream-migrating dechannelization and flooding cause avulsions on fluvial fans: *Geology*, v. 49. DOI: 10.1130/G49318.1.
- Horner, S., Hubbard, S., **Martin, H.K.**, Hagstrom, C., and Leckie, D., (2019). The impact of Aptian glacio-eustasy on the stratigraphic architecture of the Athabasca Oil Sands, Alberta, Canada: *Sedimentology*, v. 66(5), p. 1600-1642. DOI: 10.1111/sed.12545.
- **Martin, H.K.**, Hubbard, S.H., Hagstrom, C.A., Horner, S.C., and Durkin, P.R., (2019). Planform Recognition and Implications of a Cretaceous-age Continental-scale River Avulsion Node in the Western Interior Basin, Alberta, Canada: *Journal of Sedimentary Research*, v. 89(7), p. 610-628. DOI: 10.2110/jsr.2019.37.
- Horner, S.C., Hubbard, S.M., **Martin, H.K.**, and Hagstrom, C.A., 2019. Reconstructing basin-scale drainage dynamics with regional subsurface mapping and channel-bar scaling, Aptian, Western Canada Foreland Basin: *Sedimentary Geology*, v. 385, p. 26-44. DOI: 10.1016/j.sedgeo.2019.03.012.

- Poster Presenter, AGU Annual Meeting (2021)
- Oral Presenter, SEPM Annual Meeting (2021; Accepted, Event Cancelled)
- Oral Presenter, AGU Annual Meeting (2020; Virtual Event)
- Oral Presenter, GSA Annual Meeting (2020; Virtual Event)
- Oral Presenter, SEPM Annual Meeting (2020; Accepted, Event Cancelled)
- Poster Presenter, AGU Annual Meeting (2019)
- Oral Presenter, GSA Annual Meeting (2018)
- Poster Presenter, International Conference on Fluvial Stratigraphy, Calgary, AB (2017)
- Oral Presenter, Poster Presenter, CSPG Annual Conference in Calgary, AB (2017)
- Invited Speaker, Shell Canada Luncheon at the University of Calgary (2015)
- Poster Presenter, McMurray Geology Consortium Annual Meeting, Calgary (2015, 2016, 2017; internal)
- Poster Presenter, AAPG Annual Conference in Denver, CO (2015)
- Vice President and Co-Founder, AAPG McMaster Student Chapter (2014-2015)
- VP Academic, Integrated Science Society, McMaster University (2013-2014)
- Co-Lead, QSL Consortium Field Trip to Utah (August 2013)

## **Skills and Technical Proficiencies**

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- Applied machine learning skills; independently designed and completed a term research project using large raster datasets.
- Interpreted >4,400 wireline well logs and >1.5 mi of drill core for my MSc thesis.
- Comfortable and competent presenter and communicator, through multiple media.
- Experience planning and constructing mathematical models in Matlab.
- Proficient in Matlab and Adobe Illustrator.
- Intermediate in ArcGIS and GeoScout, experience with Petrel, DZStats.
- Experience conducting fieldwork safely and efficiently.