Dr. Jesse Ray Reimink

(Updated October 11, 2021)

Current Position: Assistant Professor of Geosciences, Pennsylvania State University

Current address: 411 Deike Building

Department of Geosciences

The Pennsylvania State University University Park, PA, 16802, USA

Email: jreimink@psu.edu Phone: 1-814-865-6666

APPOINTMENTS:

2019-present Assistant Professor, Department of Geosciences, The Pennsylvania State

University

2015-2019 Postdoctoral Fellow, Department of Terrestrial Magnetism, Carnegie Institution

for Science

EDUCATION:

2011-2015 PhD student, Department of Earth and Atmospheric Sciences, University of

Alberta: Defended with no revisions, October 26, 2015

2010-2011 MSc student, Department of Earth and Atmospheric Sciences, University of

Alberta: Upgraded to PhD program prior to completion of MSc

2005-2009 Bachelor of Science; Hope College, Holland, Michigan, USA

Geology Major with a Biology Minor

RESEARCH CONTRIBUTIONS:

PEER REVIEWED PUBLICATIONS: Google Scholar Link

*denotes co-first authors listed alphabetically, * denotes student author

2020

- 17. **Reimink, J.R.,** Davies, J.H.F.L., Ielpi, A., Global zircon analysis records a gradual rise of continental crust throughout the Neoarchean, *Earth and Planetary Science Letters*, 54, 116654 https://doi-org/10.1016/j.epsl.2020.116654
- 16. Aarons, S.M., **Reimink, J.R.**, Greber, N.D., Heard, A.W., Zhang, Z., and Dauphas, N., Titanium isotopes constrain a magmatic transition at the Hadean-Archean boundary in the Acasta Gneiss Complex, *Science Advances*, 6, no. 50 https://doi.org/10.1126/sciadv.abc9959
- 15. **Reimink, J. R.**, Carlson, R. W. & Mock, T. D. A cavity ion source for high-ionization efficiency neodymium isotope-ratio analyses in the geosciences. *J. Anal. At. Spectrom.* 35, 2337–2350 (2020). https://doi.org/10.1039/D0JA00228C
- 14. Reimink, J.R., Mundl-Petermeier, A., Carlson, R.W., Shirey, S.B., Walker, R.J., Pearson, D.G., 2020. Tungsten Isotope Composition of Archean Crustal Reservoirs and Implications for Terrestrial μ182W Evolution. *Geochemistry, Geophysics, Geosystems* 21, https://doi.org/10.1029/2020GC009155
- 13. *Bauer, A.M., ***Reimink, J.R.**, Chacko, T., Foley, B.J., Shirey, S.B., Pearson, D.G., Zircon evidence for the progressive onset of mobile-lid tectonics, *Geochemical Perspectives Letters* (2020) **14**, 1-6 https://doi.org/10.7185/geochemlet.2015

12. **Reimink, J.R.,** Davies, J.H.F.L., Bauer, A.M., Chacko, T., A comparison between zircon from the Acasta Gneiss Complex and the Jack Hills region, *Earth and Planetary Science Letters* (2020) **531**, 115975 https://doi-org/10.1016/j.epsl.2019.115975

2019

- 11. Carlson, R.W., Garçon, M., O'Neil, J., **Reimink, J.R.**, and Rizo, H., The Nature of Earth's First Crust. *Chemical Geology* (2019) **530**, 119321. https://doi-org/10.1016/j.chemgeo.2019.119321
- 10. **Reimink, J.R.**, Pearson, D.G., Shirey, S.B., Carlson, R.W., Ketchum, J.F.W., Onset of new, progressive crustal growth in the central Slave craton at 3.5 Ga. *Geochemical Perspectives Letters* (2019) **10**, 8–13. https://doi.org/10.7185/geochemlet.1907

2018

- 9. Davies, J.H.F.L., Sheldrake, T., **Reimink, J.R.**, Wotzlaw, J.F., Möck, C., Finlay, A.J., Isochrons revisited: a new mixture model approach. *Geochemistry, Geophysics, and Geosystems*. (2018) **19**, 4025–4047 http://dx.doi.org/10.1029/2018GC007548
- 8. **Reimink, J.R.,** Bauer, A.M., Chacko, T., *Invited Review:* Chapter 15: The Acasta Gneiss Complex, in *Earth's Oldest Rocks, Vol. 2*, eds. V Bennett, M. Van Kranendonk, and J.E. Hofmann. Springer, (2018).
- 7. Mundl, A., Walker, R.J., **Reimink, J.R.**, Rudnick, R.L., Gaschnig, R.M., Temporal evolution of ¹⁸²W in the Upper Continental Crust. *Chemical Geology* (2018) **494**, 144-152 https://doi.org/10.1016/j.chemgeo.2018.07.036
- 6. Reimink, J.R., Chacko, T., Carlson, R.W., Shirey, S.B., Liu, J., Stern, R.A., Bauer, A.M., Pearson, D.G., Heaman, L.M., Petrogenesis and tectonics of the Acasta Gneiss Complex derived from integrated petrology and ¹⁴²Nd and ¹⁸²W extinct nuclide-geochemistry. *Earth and Planetary Science Letters* (2018) 494, 12–22, https://doi.org/10.1016/j.epsl.2018.04.047

Pre-2017

- 5. **Reimink, J.R.,** Davies, J.H.F.L., Chacko, T., Stern, R.A., Heaman, L.M., Pearson, D.G., Sarkar, C., Schaltegger, U., Creaser, R.A. No evidence for Hadean continents within Earth's oldest known zircon-bearing rock unit. *Nature Geoscience* (2016) **9,** 777–780, https://doi:10.1038/ngeo2786
- 4. **Reimink, J.R.,** Chacko, T., Stern, R.A., Heaman, L.M. The birth of a cratonic nucleus: lithogeochemical evolution of the 4.02–2.94 Ga Acasta Gneiss Complex. *Precambrian Research* (2016) **281**, 453–472, https://doi:10.1016/j.precamres.2016.06.007
- 3. **Reimink, J.R.,** Davies, J.H.F.L., Waldron, J.W.F., Rojas, X.D. Dealing with discordance: a novel approach for analyzing detrital zircon U-Pb datasets. *Journal of the Geological Society* (2016) **17,** 577–585, https://doi.org/10.1144/jgs2015-114
- 2. **Reimink, J. R.,** Chacko, T., Stern, R. A. & Heaman, L. M. Earth's earliest evolved crust generated in an Iceland-like setting. *Nature Geoscience* (2014) **7,** 529–533, https://doi:10.1038/ngeo2170
- 1. Hansen, E; **Reimink, JR**; Harlov, D. Titaniferous accessory minerals in very low-grade metamorphic rocks, Keweenaw Peninsula Michigan, USA. *Lithos* (2010) **116**, 167–174, https://doi.org/10.1016/j.lithos.2010.02.001

Currently Submitted

- Timmerman, S., **Reimink, J.R.**, Vezinet A, Nestola F, Banas A, Stachel T, RA Stern, Y Luo, C Sarkar, A Ielpi, C Mircea, V Jackson, DG Pearson. Mesoarchean diamond formed in rapidly thickened lithosphere. *in review EPSL*
- *Bilak, G.S., Niemetz, K., Reyes, A.V., **Reimink, J.R.**, Chacko, T., Dufrane, S.A., Belosevic, M., Ketchum, J.W.F., Prospecting for ancient crustal relics in the Acasta Gneiss Complex using detrital zircons in Pleistocene eskers, *submitted to G3*

- Garber, J.M., Holder, R.H., **Reimink, J.R.**, Smye, A.J., and Feineman, M.D. Punctuated shifts on a plate-tectonic background: a KDE-based compositional investigation of the continental igneous rock record, *in review at EPSL*
- Cipar, J, Smye, A.J., Garber, J.M., **Reimink, J.R.**, Ghost Garnet reveals lithospheric thinning in the Rio Grande Rift, *submitted to EPSL*

OTHER PUBLICATIONS:

- Davies, J.H.F.L., Reimink, J.R., Earth's rock-solid connections between Canada and Australia contain clues about the origin of life. *The Conversation*, June 17, 2020 https://theconversation.com/earths-rock-solid-connections-between-canada-and-australia-contain-clues-about-the-origin-of-life-130380
- 1. Bowring, S., Chacko, T., Heaman, L.H., **Reimink, J.R.** Acasta Gneiss Complex, in *Encyclopedia of Scientific Dating Methods*, eds. WJ Rink and J Thompson. Springer, 2015.

FUNDING OBTAINED (Total: NSF = \$940,767):

- NSF-EAR, Mesoarchean diamond-bearing sediments: implications for Archean continental roots and their surface expression. (*Sole PI, EAR-CH-2118161 \$385,650*) 2021-2023
- NSF-I&F, Collaborative Proposal: Development of a high-efficiency mass spectrometer: transitioning a high-efficiency ion source to a modern mass spectrometer (*Lead-PI, EAR-IF-2017252 \$46,019*)

PIs – Jesse Reimink and Rick Carlson

2020-2021

• NSF-I&F, Development of a Simplified Cavity Thermal Ionization Source for Geosciences (*Co-PI, EAR-IF-1758571 \$177,199*)

PIs – Rick Carlson and Jesse Reimink

2018-2019

 NSF-OCE, Exploration of the Earliest Crust Forming Events on Earth Grant proposal based on Reimink's Carnegie Fellowship proposal (named Postdoc, OCE-1524384, \$331,899)
 PIs – Richard Carlson and Steven Shirey

2015-2018

University of Alberta:

• Circumpolar/Alberta Boreal Research Grant Northern fieldwork support grant, \$4500

2011

Hope College:

Michigan Space Grant Consortium Undergraduate Fellowship
 undergraduate summer research grant, \$5000
 Michigan Space Grant Consortium Undergraduate Fellowship
 undergraduate summer research grant, \$5000

SERVICE AND OUTREACH CONTRIBUTIONS:

SCIENTIFIC SERVICE ACTIVITIES:

Reviewer (~10-14 papers/yr, 1-3 grants/year):

- Nature, Nature Communications, Nature Geoscience, Science, Science Advances, Geology, Geochemical Perspectives Letters, Earth and Planetary Science Letters, Geochemistry/Geophysics/Geosystems, Geochimica et Cosmochimica Acta, Gondwana Research, Chemical Geology, Precambrian Research, Lithos, Terra Nova
- NSF Postdoctoral Fellowship Program, NSF EAR Program, Swiss National Science Foundation

Committee Service:

•	Strategic Hiring Committee Member, Penn State Geosciences	2021
•	Departmental Executive Committee Member, Penn State Geosciences	2020-
•	Graduate Entrance Committee, Penn State Geosciences	2019-
•	Carnegie Institute Postdoctoral Association Representative	2017-2018

Memberships:

- American Geophysical Union
- Geochemical Society
- Mineralogical Society of American

Session Convener:

- Goldschmidt, 2021
- Goldschmidt, 2019
- American Geophysical Union Fall Meeting, 2018
- Goldschmidt, 2018
- American Geophysical Union Fall Meeting, 2017
- European Geophysical Union Spring Meeting, 2017
- American Geophysical Union Fall Meeting, 2016

SCIENCE OUTREACH:

- Co-host; PLANETGEO Podcast, 2020-present www.planetgeocast.com
 - o Served as co-host, editor, producer
 - o Co-host with former high school teacher
 - o >65 episodes produced
 - >25,000 total listens
 - o >10 interviews with top Geoscience professionals
- The Conversation article co-written about our *EPSL* paper, July 2020
 - o https://theconversation.com/earths-rock-solid-connections-between-canada-and-australia-contain-clues-about-the-origin-of-life-130380
- Interviewed Roadhouse Radio (Vancouver) about Nature Geoscience paper, September 2016
- Smithsonian Museum docent teaching, Radiometric Dating Techniques, June 2016
- Kamloops Exploration Group Lecture Series, 2015 (invited) Forming the early crust on Earth. *February 19, 2015*
- Interviewed on CBC Radio Show *Quirks and Quarks with Bob McDonald* about *Nature Geoscience* paper http://www.cbc.ca/quirks/episode/2014/05/31/2014-05-31/
- Guest Lecturer, Hudsonville High School Geology, 2011–present; lectures titled *Radiogenic Isotope Geology*, and *Careers in Geology*

TEACHING AND SUPERVISING CONTRIBUTIONS:

SUPERVISING:

The Pennsylvania State University:

•	Supervisor, Erik Schoonover, PhD Student	2021-present
•	Supervisor, Cristy Stoian, MSc student	2020-present

University of Alberta:

•	Mentor - Grayson Bilak-University of Alberta MSc student	2017-2019
•	Co-supervisor; Mike Belosevic EA427 Directed Study	2013

TEACHING:

The Pennsylvania State University:

•	Instructor, Solid Earth Isotope Geochemistry (GEOSC 518E)	2021-present
•	Instructor, Early Earth and Solar System (GEOSC 497)	2021-present
•	Instructor, Introduction to Isotope Geochemistry (GEOSC 518A)	2021-present
•	Instructor, Physical Geology (GEOSC 001)	2020-present
•	Instructor, Introduction to Field Geology (GEOSC 470)	2020
•	Instructor, Earth Materials (GEOSC 201)	2020
•	Instructor, Evolution of the Crust (GEOSC 497)	2019

University of Alberta:

•	Instructor, Precambrian Geology (EA432)	2014
•	Guest Lecturer, Precambrian Geology (EA432)	2012-2013
•	Guest Lecturer, Geochemistry (EA320)	2013
•	Teaching Assistant, Igneous Petrology (EA331)	2011-2013
•	Teaching Assistant, Metamorphic Petrology (EA332)	2012-2014
•	Teaching Assistant, Advanced Geology Field School (EA333)	2011-2014
•	Teaching Assistant, Mineralogy II (EA232)	2011
•	Teaching Assistant, Mineralogy I (EA224)	2010

INVITED TALKS:

University of Colorado, Boulder, Departmental Seminar, Sept. 2021

University of Regina, Geoscience Department Weekly Seminar, Apr. 2021

Harvard University, EPS Departmental Colloquium Series, Oct. 2020

Laurentian University, Departmental Colloquium Series, Oct. 2020

University of Florida, Department of Geological Sciences, Mar. 2020 (Canceled due to Covid19)

American Geophysical Union Annual Meeting, 2019, Novel Technological Advances in Mass Spectrometry Session

Geological Survey of Canada Logan Club Talk Series, Oct. 2019

American Museum of Natural History, Earth and Planetary Sciences, Apr. 2019

Yale University, Mar. 2019

University of British Columbia, EOAS Seminar, Jan. 2019

Simon Fraser University, Departmental Seminar, Jan. 2019

Keynote, Northwest Territories Geoscience Forum, Nov. 2018

Smithsonian Institution Department of Mineral Sciences, Oct. 2018

George Mason University Observatory's Evening Under the Stars Public Lecture Series, Apr. 2017

University of Ottawa Seminar Series, Nov. 2016

University of Quebec at Montreal Seminar Series, Nov. 2016

Reimink, JR; Chacko, T; Davies, JHFL; Pearson, DG; Stern, RA; Heaman, LM; Carlson, RW; Shirey, SB. The birth of a cratonic core recorded by changes in petrological processes within the Hadean-Eoarchean Acasta Gneiss Complex, *AGU Fall Meeting*, 2016, *Oral Presentation*

MIT Geochemistry Colloquium, Oct. 2016

University of Maryland Geochemistry Colloquium, Oct. 2016

DTM Weekly Seminar, Feb. 2016

AWARDS AND SCHOLARSHIPS:

Carnegie Postdoctoral Fellowship

2015

• Department of Terrestrial Magnetism, Carnegie Institution for Science

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• Journal of the Geological Society, Young Author of the Year Award	2016	
Canadian National Awards:		
 Foundation Scholarship, Mineralogical Association of Canada (PhD) Mary-Claire Ward Geoscience Award, Geological Association of Canada and Prospector's & Developer's Association of Canada 	2014 (\$5000) 2015 (\$5000)	
•	2013 (\$3000)	
University of Alberta:		
 Faculty of Science Dean's Excellence Award Mary Louise Imrie Graduate Student Travel Award Outstanding Teaching Assistant Award Evelyn Wigham PhD Scholarship in Geology GL Cumming Memorial Graduate Scholarship Christopher Scarfe Memorial Graduate Scholarship 	2015 (\$9000) 2015 (\$1300) 2014 2014 (\$1800) 2014 (\$2500) 2012 (\$1700)	
Hope College:		
 Otto Vander Velde All-Campus Award Presidential Scholarship Reinking Memorial Scholarship MI Byrd Honors Scholarship NCAA Division III First Team All-American, Men's Basketball Michael Visser Memorial Book Award – GES Department Faculty Book Award – GES Department Ancient Mystic Order of the Trilobite Award – GES Department Others: Student talk award – Northwest Territories Geoscience Forum Science Award – Hudsonville High School 	2009 2005-2009 2008-2009 2005-2007 2009 2008 2007 2006	
Carnegie Institution for Science:	_	
 Geochemistry/Geophysics Seminar Organizer DTM/GL Postdoctoral Association representative 	2016 2016	
University of Alberta:		
Weekly Seminar Coordinator, EASGeology Representative, EAS graduate student society	2012-2014 2011	
Hope College:		
Team-Elected Captain, Men's Basketball	2007-2009	

RECENT CONFERENCE PRESENTATIONS:

Garber, JM; Holder, RM; Smye, AJ; Reimink, JR; Feineman, MD; The Punctuated Continuum of Plate Tectonics Revealed by Global Igneous Rocks *Oral Presentation AGU Fall Meeting*, 2020
Reimink, JR; Davies, JHFL; Ielpi, A; A new analysis of the global detrital zircon record with inferences regarding the growth and rise of the continental crust, *Oral Presentation AGU Fall Meeting*, 2020
Vezinet, A; Reimink JR; Pearson, DG; Luo, Y; Ielpi, A; Timmerman, S; Banas, S; Stachel, T; Nestola, F; Stern, RA; Mircea, C; Jackson, V; Mesoarchean deposition age for diamond-bearing

- metasediment of the northwestern Slave craton, Nunavut Territory (Canada) , Oral Presentation AGU Fall Meeting, 2020
- Timmerman, S; Pearson, DG; Nestola, F; Bana, A; Stachel, T; Stern, RA; **Reimink, JR**; Vezinet, A; Ielpi, A; Mircea, C; Jackson, V; Diamond-Bearing Metasediments Point to Thick, Cool Lithospheric Root Established by the Mesoarchean beneath Parts of the Slave Craton (Canada), *Oral Presentation AGU Fall Meeting*, 2020
- Kamber, B; Schoenberg, R; Murphy, D; O'Neill, H; **Reimink, JR**: Elevated 208, 207, ²⁰⁶Pb/²⁰⁴Pb by Volatile Degassing from Impact Melts, *Goldschmidt* 2020
- **Reimink, JR**; Davies, JHFL; Chacko T; Bauer, A; What can We Learn from Old Ditrital Zircon? A Comparison between Zircon from Acasta and Jack Hills, *Goldschmidt* 2020
- Schannor, M; Freymuth, H; **Reimink, JR**; Moreira, H; Rehkamper, M; Williams, H; Thallium Isotopic Composition of Earth's Earliest Continental Crust, *Goldschmidt* 2020
- Garber, J; Holder, R; Smye, AJ; **Reimink, JR**; Igneous Geochemical Evidence for Continuous Plate Tectonics Since ~3.5 Ga, *Goldschmidt* 2020
- **Reimink, JR**; Carlson, RW; Mock, T; Recent advances in cavity-thermal ionization mass spectrometry for high-precision isotope analysis, *Oral Presentation AGU Fall Meeting*, 2019 (Invited)
- Bauer, AM; **Reimink, JR**; Chacko, T; Foley, BJ; Shirey, SB; Pearson, DG; Zircon Hf isotope evidence for a global transition between stagnant- and mobile-lid tectonics, *AGU Fall Meeting*, 2019
- Carlson, RW; **Reimink, JR**; Shirey, SB; Pearson, DG; Ketchum, JFW; The Transition from Hadean Crustal Working to Archean Craton Growth: The Example from the Slave Craton, *Oral Presentation, Geological Society of America Annual Meeting*, 2019 (Invited)
- **Reimink, JR**; Pearson, DG; Shirey, SB; Carlson, RW; A Mundl-Petermeier; RJ Walker Extinct radionuclide signatures from juvenile crustal blocks within the Slave craton, *Goldschmidt Conference*, 2019, Oral Presentation
- **Reimink, JR**; Carlson, RW; Mock, T; McBay, EH; Hexel, CR. Pushing beyond the current limits on Ndisotope ratio measurement precision, *AGU Fall Meeting*, 2018, *Oral Presentation*
- Carlson, RW; **Reimink, JR**; Shirey, SB; Pearson, DG; Mundl A; Walker, RJ; Ketchum, JWF. The Transition from Reworking of Hadean Crust to Generation of New Archean Crust: The Slave craton Perspective, *AGU Fall Meeting 2018, Poster Presentation*
- Bauer, A; **Reimink, JR**; Chacko, T; Transition from shallow- to deep-seated melting and inception of mobile lid tectonics at ~3.6 Ga in the Acasta Gneiss Complex, *AGU Fall Meeting 2018, Oral Presentation* (Invited)
- **Reimink, JR;** Carlson, RW; Shirey, SB; Pearson, DG; Ketchum, JWF. The Diverse Origins of Cratonic Nuclei—A Perspective from the Slave Craton, *Goldschmidt Conference 2018, Oral Presentation*
- Davies, JHFL; **Reimink, JR**; What can we learn from old detrital zircon? A comparison between zircon from Acasta and Jack Hills. *Goldschmidt Conference 2018, Poster Presentation*
- Mundl, A.; Walker, RJ; **Reimink, JR**; Rudnick, RL; Gaschnig, RM. Compositional changes in the UCC through time revealed by tungsten isotopes, *AGU Fall Meeting*, 2017, *Invited Oral Presentation*
- **Reimink, JR**; Carlson, RW; Shirey, SB; Pearson, DG; Kamber, BS. On the origin of cratonic 'high-mu' isotopic signatures, *AGU Fall Meeting*, 2017, *Poster Presentation*
- Davies, JHFL; Sheldrake, T; **Reimink JR**; Moeck, C; Finlay, A. Isochrons revisted: a new approach to dealing with excess scatter, *Geological Society of America Annual Meeting*, 2017
- **Reimink, JR**; Carlson, RW; Shirey, SB; Pearson, DG. Crustal Evolution of the Archean Slave Craton, NWT, Canada, *Goldschmidt Conference* 2017, *Oral Presentation*
- **Reimink, JR**; Chacko, T; Davies, JHFL; Pearson, DG; Stern, RA; Heaman, LM; Carlson, RW; Shirey, SB. The birth of a cratonic core recorded by changes in petrological processes within the Hadean-Eoarchean Acasta Gneiss Complex, *Oral Presentation AGU Fall Meeting 2016* (Invited)
- **Reimink, JR**; Chacko, T; Davies, JHFL; Pearson, DG; Stern, RA; Heaman, LM; Carlson, RW; Shirey, SB. Petrogenesis of the 4.02 Ga Idiwhaa tonalitic gneiss and implications for crust formation on the early Earth, *Goldschmidt Conference* 2016, *Oral Presentation*
- Davies, JHFL; **Reimink, JR**. Extracting extra information from detrital zircon datasets using discordant data, *Goldschmidt Conference* 2016, *Poster Presentation*
- **Reimink, JR**; Chacko, T; Davies, JHFL; Stern, RA; Pearson, DG; Heaman, LM; Creaser, RA; Detailed Petrochronology of the 4.02 Ga Idiwhaa Tonalitic Gneiss: Evidence Regarding Amount of Preexisting Hadean Continental Crust, *Geological Society of America Annual Meeting*, 2015, *Oral Presentation*

- **Reimink, JR**; Chacko, T; Stern, RA; Heaman, LM; Lithogeochemistry and distribution of 4.0–3.4 Ga units of the Acasta Gneiss Complex, NWT, Canada. *AGU/GAC/MAC Joint Meeting*, 2015, *Poster Presentation*
- **Reimink, JR**; Chacko, T; Stern, RA; Heaman, LM; Davies, JHFL; Pearson, DG; Creaser, RA; An Iceland-like Setting for Generation of a ~4.02 Ga tonalite, Acasta Gneiss Complex, Canada. *AGU/GAC/MAC Joint Meeting*, 2015, *Oral Presentation*
- **Reimink, JR**; Davies, JHFL; Rojas, X; Waldron, JWF; A new method for evaluating age distributions of detrital zircon datasets by incorporating discordant data. *European Geophysical Union Annual Meeting*, 2015, *Poster Presentation*