

## Dr. Jesse Ray Reimink

(Updated April 14, 2021)

*Current Position:* Assistant Professor of Geosciences, Pennsylvania State University

*Current address:* 411 Deike Building

Department of Geosciences

The Pennsylvania State University

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### APPOINTMENTS:

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| <b>2019-present</b> | Assistant Professor, Department of Geosciences, The Pennsylvania State University          |
| <b>2015-2019</b>    | Postdoctoral Fellow, Department of Terrestrial Magnetism, Carnegie Institution for Science |

### EDUCATION:

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|------------------|---|
| <b>2011-2015</b> | PhD student, Department of Earth and Atmospheric Sciences, University of Alberta: <i>Defended with no revisions, October 26, 2015</i>       |
| <b>2010-2011</b> | MSc student, Department of Earth and Atmospheric Sciences, University of Alberta: <i>Upgraded to PhD program prior to completion of MSc</i> |
| <b>2005-2009</b> | Bachelor of Science; Hope College, Holland, Michigan, USA<br><i>Geology Major with a Biology Minor</i>                                      |

### PEER REVIEWED PUBLICATIONS: (378 citations, h-index of nine)

\* denotes student, +denotes co-first authors listed alphabetically

**2020**

- Reimink, J.R.**, Davies, J.H.F.L., Ielpi, A., Global zircon analysis records a gradual rise of continental crust throughout the Neoproterozoic, *Earth and Planetary Science Letters*, accepted
- 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*, accepted
- 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>
- 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  $\mu^{182}\text{W}$  Evolution. *Geochemistry, Geophysics, Geosystems* **21**, <https://doi.org/10.1029/2020GC009155>
- +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
- 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

## 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.
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.

## 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
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 <sup>182</sup>W 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 <sup>142</sup>Nd and <sup>182</sup>W extinct nuclide-geochemistry. *Earth and Planetary Science Letters* (2018) **494**, 12–22, [doi.org/10.1016/j.epsl.2018.04.047](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, [doi:10.1038/ngeo2786](https://doi.org/10.1038/ngeo2786)
4. **Reimink, J.R.**, Chacko, T., Stern, R.A., Heaman, L.M. The birth of a cratonic nucleus: litho-geochemical evolution of the 4.02–2.94 Ga Acasta Gneiss Complex. *Precambrian Research* (2016) **281**, 453–472, [doi:10.1016/j.precamres.2016.06.007](https://doi.org/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, [doi.org/10.1144/jgs2015-114](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, [doi:10.1038/ngeo2170](https://doi.org/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, [doi.org/10.1016/j.lithos.2010.02.001](https://doi.org/10.1016/j.lithos.2010.02.001)

## OTHER PUBLICATIONS:

2. 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 = \$555,117):**

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- 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* 2008
- Michigan Space Grant Consortium Undergraduate Fellowship  
*undergraduate summer research grant, \$5000* 2007

**AWARDS AND SCHOLARSHIPS:**

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*Carnegie Postdoctoral Fellowship* 2015

- Department of Terrestrial Magnetism, Carnegie Institution for Science

*Papers*

- Journal of the Geological Society, Young Author of the Year Award 2016

*Canadian National Awards:*

- Foundation Scholarship, Mineralogical Association of Canada (PhD) 2014 (\$5000)
- Mary-Claire Ward Geoscience Award, Geological Association of Canada and Prospector's & Developer's Association of Canada 2015 (\$5000)

*University of Alberta:*

- Faculty of Science Dean's Excellence Award 2015 (\$9000)
- Mary Louise Imrie Graduate Student Travel Award 2015 (\$1300)
- Outstanding Teaching Assistant Award 2014
- Evelyn Wigham PhD Scholarship in Geology 2014 (\$1800)
- GL Cumming Memorial Graduate Scholarship 2014 (\$2500)
- Christopher Scarfe Memorial Graduate Scholarship 2012 (\$1700)

*Hope College:*

- Otto Vander Velde All-Campus Award 2009
- Presidential Scholarship 2005-2009
- Reinking Memorial Scholarship 2008-2009
- MI Byrd Honors Scholarship 2005-2007
- NCAA Division III First Team All-American, Men's Basketball 2009
- Michael Visser Memorial Book Award – GES Department 2008
- Faculty Book Award – GES Department 2007

- Ancient Mystic Order of the Trilobite Award – GES Department 2006

*Others:*

- Student talk award – Northwest Territories Geoscience Forum 2014 (\$1000)
- Science Award – Hudsonville High School 2005

**PROFESSIONAL ACTIVITIES:**

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*Reviewer:*

- 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

*Committees:*

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

*Member:*

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

*Session Convener:*

- American Geophysical Union Fall Meeting, 2016-2018; European Geophysical Union Spring Meeting, 2017; Goldschmidt, 2018-2020

**TEACHING AND SUPERVISORY EXPERIENCE:**

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*The Pennsylvania State University:*

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

*University of Alberta:*

- Grayson Bilak-University of Alberta MSc student 2017-2019
- Instructor, Precambrian Geology (EA432) 2014
- Co-supervisor; Mike Belosevic EA427 Directed Study 2013
- 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

## **LEADERSHIP POSITIONS:**

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### *Carnegie Institution for Science:*

- Geochemistry/Geophysics Seminar Organizer 2016
- DTM/GL Postdoctoral Association representative 2016

### *University of Alberta:*

- Weekly Seminar Coordinator, EAS 2012-2014
- Geology Representative, EAS graduate student society 2011

### *Hope College:*

- Team-Elected Captain, Men's Basketball 2007-2009

## **INVITED TALKS:**

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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

## **MEDIA AND SCIENCE OUTREACH:**

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- Co-host; PlanetGeo Podcast, 2020-present
- The Conversation article co-written about our *EPSL* paper, July 2020
- 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*

## **RECENT CONFERENCE PRESENTATIONS:**

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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*

Veizinet, 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**; Veizinet, 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, <sup>206</sup>Pb/<sup>204</sup>Pb by Volatile Degassing from Impact Melts, *Goldschmidt 2020*

**Reimink, JR**; Davies, JHFL; Chacko T; Bauer, A; What can We Learn from Old Detrital Zircon? A Comparison between Zircon from Acasta and Jack Hills, *Goldschmidt 2020*

Schannon, 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 Nd-isotope 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 revisited: 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 Pre-existing Hadean Continental Crust, *Geological Society of America Annual Meeting, 2015, Oral Presentation*
- Reimink, JR;** Chacko, T; Stern, RA; Heaman, LM; Lithochemistry 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*