

## JOHN A. TARDUNO

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### Academic Career:

2021-present Distinguished Scientist, Laboratory for Laser Energetics, U. Rochester, Rochester, NY.  
2019-present Dean for Research; Arts, Science & Engineering, University of Rochester  
2016-2019 Chair, Department of Earth and Environmental Sciences, Univ. Rochester, N.Y.  
2005-present Professor of Physics and Astronomy, University of Rochester, Rochester, NY.  
2000-present Professor of Geophysics, University of Rochester, Rochester, NY.  
1998-2006 Chair, Department of Earth and Environmental Sciences  
1996 Associate Professor of Geophysics, University of Rochester, Rochester, NY.  
1993 Assistant Professor of Geophysics, University of Rochester, Rochester, NY.  
1990 Assistant Research Geophysicist, Scripps Institution of Oceanography, La Jolla, Ca.  
1989 National Science Foundation Postdoctoral Fellow, ETH, Zürich, Switzerland  
1988 JOI/USSAC Ocean Drilling Fellow, Stanford University, Stanford, Ca.  
1987 Ph.D. (Geophysics), Stanford University, Stanford, Ca  
1987 M.S. (Geophysics) Stanford University, Stanford Ca.  
1983 B.S. (Geophysics) Lehigh University, Bethlehem Pa.

### Honors and Awards:

Phi Beta Kappa (1983)  
Fellow, Geological Society of America (1998)  
JOI/USSAC Distinguished Lecturer (2000-2001)  
Goergen Award for Distinguished Achievement and Artistry in Undergraduate Teaching (2001)  
Fellow, American Association for the Advancement of Science (2003)  
American Geophysical Union/Geomagnetism and Paleomagnetism Section Bullard Lecturer (2004)  
Fellow, John Simon Guggenheim Foundation (2006-2007)  
Edward Peck Curtis Award for Excellence in Undergraduate Teaching (2007)  
Fellow, American Geophysical Union (2007)  
GSA Structure and Tectonics Outstanding Publication Award (2014)  
Honorary Professor, University of KwaZulu-Natal, South Africa (2014)  
Price Medal, Royal Astronomical Society (2016)  
Petrus Peregrinus Medal, European Geosciences Union (2017)  
Japan Society for the Promotion of Science Invitational Fellow (2017)  
William R. Kenan, Jr., Professor (2018)  
Distinguished Lecturer, AGU College of Fellows (2021-2022)

**Memberships:** GSA, AGU, EGU, FRAS, AAAS, GS, MetSoc

**Research Narrative:** I use paleomagnetism to better understand the nature of the mantle and core, as well as the history of the geodynamo and its relationship to planetary habitability. My work has included paleomagnetic measurements documenting rapid southward motion of the Hawaiian hotspot in Earth's mantle forming the Emperor Seamounts, and paleomagnetism applied to the timing, location and impact of mantle plume volcanism, specifically Ontong Java Plateau and the High Arctic large igneous province. My group contributed the first archeomagnetic measurements from southern Africa, providing evidence for recurrence of the South Atlantic Anomaly. My research group developed the single silicate crystal paleointensity technique and have applied it to *i.* paleointensity history versus reversal frequency and mantle control of the geodynamo; *ii.* evidence for late formation of the inner core and near collapse of the dynamo. *iii.* studies of the most ancient geodynamo, magnetopause and magnetic shielding, bearing on planetary habitability and *iv.* studies of meteorite parent bodies (e.g., pallasites) and lunar magnetism.

**Marine Geology and Geophysics Experience:**

paleomagnetist, Western Equatorial Pacific ODP Leg 130, Ontong Java Plateau (1990)  
paleomagnetist, Mid-Pacific Mountains ODP Leg 143 (1992)  
Co-chief scientist and lead proponent, Hawaiian-Emperor Hotspot Test ODP Leg 197 (2001)

**Select Field Experience:**

2022 Botswana, archeomagnetism  
2022 Cryogenian intrusions and Ediacaran sediments, Namibia and South Africa  
2022 Ediacaran and Cambrian intrusions, Brazil  
2021 Ediacaran intrusions, Jordan 2020 Singhbhum craton, India  
2019, 2018, Wichita Mountains, Oklahoma, Cambrian paleointensity  
2018 Nain Province, Labrador, Proterozoic paleointensity  
2017 Tokoro Belt, Hokkaido, Japan, Mesozoic tectonics  
2016 Botswana and South Africa, archeomagnetism  
2016, 2012, 2011 Western Australia Archean (Pilbara and Yilgarn cratons)  
2015-1990 High Canadian Arctic, led 11 expeditions, Mesozoic lavas and paleoclimate  
2014, 2011 Zimbabwe, Archean Great Dyke and related units  
2014, Botswana and Zimbabwe, archeomagnetism  
2014, 2011, 2009, 2008, 2007, 2004, 2003 South Africa Archean; archeomagnetism  
2014, 2012 Northern Quebec, Canada, Cambrian Sept Iles Complex and Cambrian dikes  
2011, 2007, 2005, New Zealand (Chatham Islands) Mesozoic lavas  
2010 Central India (Chhattisgarh) Archean  
2007, 2006 Mauritania, Mesozoic dykes  
2006 Eastern Australia, Permian  
1998, 1996 Eastern India (Rajmahal Traps) Mesozoic lavas

### **Select External Service Activities:**

Member, Joint Oceanographic Institutions (JOIDES) Lithosphere Panel, 1992-1995  
Liaison, JOIDES Ocean History Panel, 1992-1995  
Member, AGU Geomagnetism and Paleomagnetism Executive Committee, 1996-2000  
Chair, JOIDES Scientific Steering and Evaluation Committee, Earth's Interior, 1997- 1999  
This panel was composed of 16 international members charged with nurturing and reviewing scientific proposals for scientific drilling.  
Co-chaired Marine Geology and Geophysics Working Group 1998 SCICEX Planning Meeting  
(see Arctic Ocean Science from Submarines: A Report Based on the SCICEX 2000 Workshop, published by Applied Physics Laboratory, University of Washington, 1999).  
Member, Editorial Board for *Geology*, 2001-2003  
Member, National Science Foundation Geophysics Panel, 2002-2004  
Co-convener, "A Workshop on the Amerasian Basin and its Margins", Washington, DC, 2004  
G-cubed Guest editor, Movement, Dynamics and Geochemical Evolution of the Hawaiian Hotspot Theme, 2003-2004  
Member, Review Advisory Committee, Institute for Rock Magnetism, University of Minnesota, 2005-2010  
Invited Speaker, AGU Geophysical Information for Teachers (GIFT) workshop, Fall, 2005  
Member, Integrated Ocean Drilling Program Detailed Planning Group 2006-2007 Member, National Science Foundation Ocean Sciences Panel, 2007  
Editor, *Geochemistry, Geophysics, Geosystems (G-cubed)*, 2005-2008; Senior Editor, 2009  
Chair, Institute for Rock Magnetism, University of Minnesota, Review and Advisory Committee, 2006-2010  
Member, AGU Fleming Medal Committee, 2010-2012  
Chair, Norwegian Research Council Virtual Panel, 2011-2012  
Editorial Committee, *Frontiers of Earth Science, China*, 2011-  
Member, National Science Foundation Panel, 2011  
Member, Proposal Evaluation Panel, Integrated Ocean Drilling Program 2012-2013  
Member, National Science Foundation Panel, 2014  
Member, Science Evaluation Panel, International Ocean Discovery Program 2014-2015  
Member, AGU Fleming Medal Committee, 2015-2017  
Lead Editor (Guest), *Earth Planets Space*, 2017-2019  
Deputy Editor, *Earth and Planetary Physics*, 2017-  
Outstanding Reviewer for *Geophysical Journal International*, 2019  
Chair, EGU Petrus Peregrinus Award Committee for 2018, 2019-2020  
Reader, Guggenheim Foundation, 2019-  
Member, National Science Foundation Panel, 2023

### **Select University of Rochester Service, last 7 years:**

Member, Faculty Council Steering Committee, 2014-2015  
Director of Undergraduate Studies in Geosciences, 2014-2016  
Member, Faculty Senate Executive Committee 2014-2016  
Member, Cabinet of Department Chairs 2016-2019  
Member, University Committee on Research Policy 2017-2018, ex officio 2019-

Chair, School of Arts & Sciences Faculty Decanal Review Committee 2019  
Lead, AS&E Research Team 2019-  
Conflict of Interest Committee 2019-  
Research Compliance Committee 2019-  
IT Governance Committee 2019-  
Committee on Science and Security 2019-  
Research Executive Committee 2019-  
Coronavirus response and restart committees, AS&E Research Lead  
AS&E COVID command team, 2020-2021  
CURT (Coronavirus University Response Team) 3/2020-6/2020  
CURT 2.0 Emergency Operating Command, 6/2020-2022 (recognized by University of Rochester's "2020 Award")  
CURT 2.0 River Campus Operations, 6/2020-2022  
Thurgood Marshall College Fund-University of Rochester Collaboration Steering Committee 2021-

### **Select Media, Public Lecture and Teaching Outreach Activities:**

*N.Y. Times* Interview with Bill Broad on recent decay of Earth's dipole magnetic field: (Will Compasses Point South?, 2004)  
*CNN* interview with Lou Dobbs on decay of Earth's dipole magnetic field, 2004  
Interviews on global change for Rochester-based documentary (Comfort Zone), see <http://comfortzoneproject.com>  
Lecturer for University of Hawaii Seminar on Advanced Plate Tectonics (see article Seminar 2.0: Learning with Skype and Video Podcasts, P. Wessel et al., *Eos*, vol. 90, 2009)  
Science Teachers Association of New York State/Earth Science Teachers 2009 Speaker  
University of Rochester Interview on Arctic paleoclimate distributed via YouTube (<http://www.youtube.com/watch?v=5ZISVQSBYCE>)  
Rochester Museum & Science Center 2013 Richard C. Shultz Science on the Edge Lecturer "Crocodiles at the Poles: Viewing the Past and Future Ice-free Arctic"  
WXXI Rochester Radio Interview on Arctic paleoclimate 2013 Rochester Science Café speaker on Arctic expeditions 2013  
Interviews for article in *N.Y. Times* on our research (Newly Discovered Prehistoric Bird Lived Near a Balmy North Pole) 2016  
Article for *The Conversation*, "Does an anomaly in the Earth's magnetic field portend a coming pole reversal?", reprinted by *Newsweek* 2017  
Interview for NHK Japan TV on South Atlantic Anomaly (aired 2017)  
GIFT (Geophysical Information for Teachers) Lecturer at EGU, 2018  
*BBC* interview (podcast) on inner core formation, 2019  
*BBC* filming for the *Discovery Channel* on the South Atlantic Anomaly in South Africa, 2019 (aired 2021)  
*BBC* interview on the Absence of a long-lived lunar magnetic field, 2021  
Interview for *Science News* on inner core by Paul Voosen, 2022  
Interview for *The Guardian* on inner core by Robin McKie, 2022  
Interview for *Physics World* on plate tectonics, stagnant lid and life by James Dacey, 2023

**Graduate Advisor:** Michael McWilliams (Stanford University)

**Postdoctoral Advisor:** William Lowrie (ETH)

**Teaching:**

EES101 Introduction to the Geological Sciences (14 years); EES102Q/202, Earthquakes, Volcanoes and Mountain Ranges: A Field Quest in California (10 years); EES 252/452, Marine Geology, EES 255/455, Planetary Science; EES 256/456, Paleomagnetism; EES 258/458, Hotspots and Plate Motions; EES299 Field Geology

**Postdoctoral Research Advisees:** Yoichi Usui (Kanazawa University), Vincent Hare (University of Capetown), Richard Bono (Florida State University), Wentao Huang (Institute of Tibetan Plateau Research).

**Graduate Research Advisees (Principal EES Advisor only):**

Wenlai Tian (MS 1998), Michael Myers (MS 1998), Rory Cottrell (MS, 1999; PhD 2000, now Scientist, University of Rochester), Alexei Smirnov (MS, 2000; PhD 2002; now Professor, Michigan Tech University), Olga Libman (MS 2002), Pavel Doubrovine (MS, 2003, Ph.D. 2008, now Researcher at CEED, Norway), Dorothy Bauch (MS 2006), Deborah Vandermark (MS 2006), Anna Wendt (MS 2008), Julia Voronov (MS, 2009), Yoichi Usui (PhD 2009 Tohoku University, now Associate Professor, Kanazawa University), Julia Nelson (MS, 2010), Richard Bono (PhD, 2016, now Assistant Professor Florida State University), Matthew Dare (MS, 2016), Ben Crummins (MS, 2021), Tim O'Brien (PhD, 2021), Josh Bridges (PhD, 2023), Tinghong Zhou (PhD candidate), Atma Anand (PhD candidate, joint with Physics and Astronomy), Jack Schneider (MS candidate), Yoseph Muhabaw (PhD candidate).

**Undergraduate Research Advisees:**

Anna Synder (Undergraduate research project, 1995), Sarah Wilkison (BS Senior thesis, 1997), Bethany Daeffler (Undergraduate research project, 1998), Olga Libman (BS Senior thesis, 1998), Howard Scher (BS Senior thesis, 1999; now Associate Professor, University of Southern Carolina), Sara Pruss (BS Senior thesis, 1999; now Professor, Smith College), Chris Butzer (BS Senior thesis, 2000), Nadia Albers (Undergraduate Research project, 2002), Matt Friedman (BS Senior thesis, 2002, now Associate Professor, University of Michigan), Peter Lippert (BS Senior thesis, 2002; now Associate Professor, University of Utah), Allyson O'Kane (Undergraduate research project, 2003), Kathy Bailey (BS Senior thesis, 2003), Gwen Olton (Undergraduate research project, 2004), Chris Hayes (Undergraduate research project, 2005), Dan Sinnott (BS Senior thesis, 2005), Dorothy Bauch (BS Senior thesis, 2005), Kara Morris, (Undergraduate research project, 2006), Grant Dauber (Undergraduate research project, 2006), Curtis Congreave (Undergraduate research project, 2006), Holly Brown (BS Senior thesis, 2006), Anna Wendt (BS Senior thesis 2007), Allison Sail (BS Senior thesis, 2008), Stephanie Mason (BS Senior thesis, 2008), Julia Voronov (BS undergraduate research project, 2008), Valerie Morris (BS undergraduate research project, 2008), Julia Nelson (BS undergraduate research 2009), Richard Bono (BS Senior thesis, 2010, now Assistant Professor,

Florida State University), Julianna Hopkins (BS Senior thesis, 2010), Austen Erickson (BS Senior thesis, 2010), Cecilia Scribner (BS Senior thesis, 2012), Robert McKinley (BS Senior thesis 2013), Paul Kintner (BS undergraduate research 2013), Emily Kraus (BS Senior thesis 2013), Alexandra Kuznetsov (BA research 2013), Samantha Tramontano (BS Senior thesis 2013), Catherine Harmer (REU project, 2013), Divya Persaud (REU project, 2013), Courtney Wagner (REU project, 2014; Senior Thesis, 2015), Susanna Chhibber (undergraduate field research, 2016), Siri Goldman (undergraduate field research 2016), Hannah Topkins (undergraduate field research, 2016), Sebastian Fearn (BS Senior thesis, 2018), Frank Padgett III (BS Senior thesis, 2019), Ben Crummins (BS Senior thesis, 2021), Zuanna Rafalowska (BA Senior thesis, 2022), Allison Lloyd, Kaela Brunner (current).

### **Invited Presentations:**

Boston University, Bremen University (Germany); Brock University (Canada); California Institute of Technology; Canadian Geological Survey (Ottawa); Carnegie Institution; Colgate University; ETH Zurich (Switzerland); Franklin & Marshall College; Geological Survey of Japan/AIST; Hobart and William Smith Colleges (Woodrow Lecture); George Mason University (AGU College of Fellow Lecture); Goldschmidt Conference (Lyon, France); Idaho State University; Kochi University (Japan); Lehigh University; Indian Institute of Geomagnetism, Navi Mumbai (India); Indian Institute of Technology Bhubaneswar; Indian Institute of Technology Mumbai (AGU College of Fellows Lecture); Ludwigs-Maximilians-Universitaet Muenchen (Germany); MIT; Michigan Tech; Nanjing University (China), Northwestern University; Ocean Drilling Program (Texas A&M University); Paleomagnetism and Geochronology Laboratory, Beijing (China); Princeton University, Rutgers University; Scripps Institution of Oceanography (University of California, San Diego); Stanford University; State University of New York Albany; State University of New York Brockport; State University of New York Buffalo; Syracuse University; Tohoku University (Japan); Tongji University (China); Trinity College; University of Akron; University of Alaska Anchorage; University of Arizona; University of California Berkeley; University of California Santa Cruz; University of Chicago; University of Hokkaido (Japan), University of Michigan; University of Minnesota; University of Munster (Germany); University of Oslo (Norway), University of Rhode Island; University of Rochester (Earth and Environmental Sciences, Physics and Astronomy, LLE, Provost Seminars, Alumni Association); University of Southern California; University of Tokyo (Komaba); University of Toronto (Canada); University of Toronto Scarborough (Canada); Universitaet Tuebingen (Germany); University of Wisconsin River Falls; University of Wisconsin, Madison; University of Wyoming; Yale University; AGU; JpGU; EGS; EGU; GSA; IGC; AOGS; Cider; IRIS Keynote speaker, Compres Keynote speaker, JOIDES meetings (post-cruise, SCICOM), Peninsula Geological Society (California), NUNA Keynote speaker (Canada), Institute for Rock Magnetism Conferences, SEDI, Science Teachers Association of New York State/Earth Science Teachers Speaker; ESF ArchEnv Mid-term Conference Vienna (Austria); Earthref.org MagIC Keynote speaker; BEPIS Keynote speaker; AGU Chapman Conference on Large-scale Volcanism in the Arctic Keynote Speaker (Selfoss, Iceland); Geocosmos invited Plenary speaker (virtual/Saint-Petersburg, Russia)

## Publications

>120 publications, including 14 first-authored papers in *Science* and *Nature*

Tarduno, J. A., Cottrell, R. D., Bono, R. K., Rayner, N., Davis, W. J., Zhou, T., Nimmo, F., Hofmann, A., Jodder, J., Ibañez-Mejía, M., Watkeys, M. K., Oda, H., Mitra, G. Hadean to Paleoproterozoic stagnant lid tectonics recorded by the paleomagnetism of single zircons of South Africa and Australia, *Nature*, 618, 531–536, 2023.

Li, Y.-X., Tarduno, J., Jiao, W., Liu, X., Peng, S., Xu, S., Yang, A., Yang, Z., 2023. Late Cambrian geomagnetic instability after the onset of inner core nucleation. *Nature Communications* 14, 4596, 2023.

Bridges, J.D., Tarduno, J.A., Cottrell, R.D., Herbert, T.D. Rapid strengthening of westerlies accompanied intensification of Northern Hemisphere glaciation. *Nature Communications* 14, 3905, 2023.

Cottrell, R.D., Bono, R.K., Channell, J.E.T., Bunge, H.-P., Tarduno, J.A., No Late Cretaceous true polar wander oscillation and implications for stability of Earth relative to the rotation axis, *Earth and Planetary Science Letters*, 620, 2023.

Zhou, T., Tarduno, J. A., Nimmo, F., Cottrell, R. D., Bono, R. K., Ibanez-Mejia, M., Huang, W., Hamilton, M., Kodama, K. P., Smirnov, A. V., Crummins, B., Padgett, F. Early Cambrian renewal of the geodynamo and the origin of inner core structure, *Nature Communications* 13, 4161, 2022.

Sims, C.R., Lerch, R.A., Tarduno, J.A., Jacobs, R.A, Conceptual knowledge shapes visual working memory for complex visual information, *Scientific Reports* 12, 8088, 2022.

Tarduno, J.A., R.D. Cottrell, K. Lawrence, R.K. Bono, W. Huang, C.L. Johnson E.G. Blackman, A.V. Smirnov, M. Nakajima, C.R. Neal, T. Zhou, M. Ibanez-Mejia, H. Oda, B. Crummins, Absence of a long-lived lunar paleomagnetsphere, *Science Advances*, 7, eabi7647, 2021.

Anand, A., J. Carroll-Nellenback, E.G. Blackman, J.A. Tarduno, Asteroid magnetization from the early solar wind, *Monthly Notices of the Royal Astronomical Society*, 509, 2957–2968 (2021/2022)

Nichols, C.I.O., Bryson, J.F.J., Cottrell, R.D., Fu, R.R., Harrison, R.J., Herrero-Albillos, J., Kronast, F., Tarduno, J.A., Weiss, B.P., A time-resolved paleomagnetic record of Main Group pallasites: Evidence for a large-cored, thin-mantled parent body, *Journal of Geophysical Research*, 126, e2021JE006900, 2021.

Tarduno, J.A., Cottrell, R.D., Bono, R.K., Oda, H., Davis, W.J., Fayek, M., van 't Erve, O., Nimmo, F., Huang, W., Thern, E., Fearn, S., Mitra, G., Smirnov, A.V., Blackman, E.G., Paleomagnetism indicates that primary magnetite in zircon records a strong Hadean geodynamo, *Proceedings National Academy of Sciences*, 117, 2309-2318, 2020.

- O'Brien, T., Tarduno, J.A., Anand, A., Smirnov, A.V., Blackman, E.G., Carroll-Nellenback, J. Krot, A.N., Arrival and magnetization of carbonaceous chondrites in the asteroid belt before 4562 million years ago, *Communications Earth & Environment* 1, 54, 2020.
- Huffman, T.N., Whitelaw, G, Tarduno, J.A., Watkeys M.K., Woodborne, D., The Rhino Early Iron Age site, Thabazimbi, South Africa, *Azania: Archaeological Research in Africa* 55, 360-388, 2020.
- Bono, R.K., J.A. Tarduno, H.-P. Bunge, Hotspot motion caused the Hawaiian-Emperor Bend and LLSVPs are not fixed, *Nature Communications*, 10:3370, 2019.
- Tarduno, J.A., Oda, H., Yamamoto, Y., Xuan, C., Lascu, I. Fukuma, K., Special issue "Recent advances in geo-, paleo-, and rock-magnetism", *Earth, Planets and Space*, 71, 68, 2019.
- Kodama, K.P., L.K. Carnes, J.A. Tarduno and C. Berti, Paleointensity of the 1.3 billion-yr-old Gardar basalts, southern Greenland revisited: no evidence for onset of inner core growth, *Geophysical Journal International*, 217, 1974-1987, 2019.
- Tarduno, J.A., and Koppers, A.A.P. When hotspots move: The new view of mantle dynamics made possible by scientific ocean drilling, *Oceanography*, 32, 150-152, 2019.
- Bono, R.K., J.A. Tarduno, F. Nimmo, and R.D. Cottrell, Young inner core inferred from Ediacaran ultra-low geomagnetic field intensity, *Nature Geoscience*, 12, 143-147, 2019.  
see review by P. Driscoll, Geodynamo recharged, *Nature Geoscience*, 12, 83– 84. 2019.
- Bono, R.K., Tarduno, J.A., Cottrell, R.D., Primary pseudo-single and single-domain magnetite inclusions in quartzite cobbles of the Jack Hills (Western Australia): implications for the Hadean geodynamo, *Geophysical Journal International*, 216, 598-608, 2019.
- Tarduno, J.A., Subterranean clues to the future of our planetary magnetic shield, *Proceedings National Academy of Sciences*, DOI: 10.1073/pnas.1819025116, 2018.
- Huffman, T.N., M., Manyanga, J.A. Tarduno and M.K. Watkeys, The archaeological context of recent archaeomagnetic research in Zimbabwe, *Southern African Humanities*, 31, 205-21, 2018.
- Blackman, E.G., and J.A. Tarduno, Mass and energy capture from stellar winds for magnetized and unmagnetized planets: implications for atmospheric erosion and habitability, *Monthly Notices of the Royal Astronomical Society*, 5146-5155, 481, 2018.
- Hare, V.H., J.A. Tarduno, T. Huffman, M.K. Watkeys, P.C. Thebe, M. Manyanga, R.K. Bono, R.D. Cottrell, New directional records from Iron-Age southern Africa (ca. 425–1550 CE) and implications for the South Atlantic Anomaly, *Geophysical Research Letters*, 45, doi.org/10.1002/2017GL076007, 2018.
- Bono, R.K., J.A. Tarduno, M.S. Dare, G. Mitra, R.D. Cottrell, Cluster analysis on a sphere: Application to magnetizations from metasediments of the Jack Hills, Western Australia, *Earth and Planetary Science Letters*, 484, 67-80, doi.org/10.1016/j.epsl.2017.12.007/2017, 2018.

- Cottrell, R.D., J.A. Tarduno, R. K. Bono, M. S. Dare, and G. Mitra, The inverse microconglomerate test: Further evidence for the preservation of Hadean magnetizations in metasediments of the Jack Hills, Western Australia, *Geophys. Res. Lett.*, 43, 4215–4220, doi:10.1002/2016GL068150, 2016.
- Bono, R.K., J. Clarke, J.A. Tarduno and D. Brinkman, A large ornithurine bird (*Tingmiatornis arctica*) from the Turonian High Arctic: Climatic and evolutionary implications, *Scientific Reports*, 6:38876, 2016.
- Dare, M.S., J.A. Tarduno, R.K. Bono. R.D. Cottrell, J.S. Beard, and K.P. Kodama, Detrital magnetite and chromite in Jack Hills quartzite cobbles: Further evidence for the preservation of primary magnetizations and new insights into sediment provenance, *Earth and Planetary Science Letters*, 451, 298-314, 2016.
- Huffman, T.N., P.C. Thebe, M.K. Watkeys and J.A. Tarduno, Ancient metallurgy in the Tswapong Hills, Botswana: preliminary report on archaeological context, *Southern African Humanities*, 28, 119-133, 2016.
- Bono, R.K., J.A. Tarduno, and R.D. Cottrell, Comment on: Pervasive remagnetization of detrital zircon host rocks in the Jack Hills, Western Australia and implications for records of the early dynamo, by Weiss et al. (2015) *Earth and Planetary Science Letters*, 450, 406-408, 2016.
- Smirnov, A.V., J.A. Tarduno, E.V. Kulakov, S.A. McEnroe, and R.K. Bono, Palaeointensity, core thermal conductivity and the unknown age of the inner core, *Geophys. J. Int.*, 205, 1190-1195, 2016.
- Tarduno, J.A., Cottrell, R.D., Davis, W.J., Nimmo, F., and Bono, R.K., A Hadean to Paleoproterozoic geodynamo recorded by single zircon crystals, *Science*, 349, 521-524, 2015.  
*see review by J. Aubert, Ancient planetary dynamos, take two, Science, 349, 475-476, 2015.*
- Tarduno, J.A., M. Watkeys, T. Huffman, R.D. Cottrell, E.G. Blackman, A. Wendt, C.A. Scribner, C.L. Wagner, Antiquity of the South Atlantic Anomaly: Evidence for top-down control on the geodynamo, *Nature Communications*, 6:7865, 2015.
- Bono, R.K. and J.A. Tarduno, Stable Earth, reversing field in the Ediacaran: A single silicate crystal study of the ca. 565 Ma Sept-Iles Intrusive Suite in Laurentia, *Geology*, 43, 131-134, 2015.
- Tarduno, J.A., E. Blackman, and E. Mamajek, Detecting the oldest geodynamo and attendant shielding from the solar wind: Implications for habitability, *Physics of Earth and Planetary Interiors*, 233, 68-87, 2014.
- Tarduno, J.A., and R.D. Cottrell, Signals from the ancient geodynamo: A paleomagnetic field test on the Jack Hills metaconglomerate, *Earth and Planetary Science Letters*, 367, 123-132, 2013.
- Tarduno, J.A., R.D. Cottrell, F. Nimmo, J. Hopkins, J. Voronov, A. Erickson, E. Blackman, E.R.D. Scott and R. McKinley, Evidence for a dynamo in the main group pallasite parent body, *Science*, 338, 939-942, 2012.

- Tarduno, J.A., Geomagnetism: Hum from the quiet zone, *Nature Geoscience*, 5, 161-162, 2012.
- Neukirch, L.P. and J.A. Tarduno, T.N. Huffman, M.K. Watkeys, C.A. Scribner and R.D. Cottrell, An archeomagnetic analysis of brunt grain bin floors from ca. 1200 to 1250 AD Iron-age Africa, *Physics Earth Planetary Interiors*, 190-191, 71-79, 2012.
- Smirnov, A.V. and J.A. Tarduno, Evolving core conditions ca. 2 billion years ago detected paleosecular variation, *Physics Earth Planetary Interiors*, 187, 225-231, 2011.
- Smirnov, A.V. and J.A. Tarduno, Development of a low-temperature insert for the measurement of remanent magnetization direction using superconducting quantum interference device rock magnetometers, *Geochemistry, Geophysics, Geosystems*, 12, Q04Z23, 2011.
- Tarduno, J.A., R.D. Cottrell, M.K. Watkeys, A. Hofmann, P.V. Doubrovine, E.E. Mamajek, D. Liu, D.G. Sibeck, L.P. Neukirch and Y. Usui, Geodynamo, Solar wind, and magnetopause 3.4 to 3.45 billion years ago, *Science*, 327, 1238-1240, 2010.  
*see review by M. Jardine, Sunscreen for the young Earth, Science, 327, 1206-- 1207, 2010.*
- Aubert, J., J.A. Tarduno and C.L. Johnson, Observations and models of the long-term evolution of Earth's magnetic field, *Space Sci. Rev.*, 155, 337-370, 2010.
- Smirnov, A.V., and J.A. Tarduno, Co-location of eruption sites of the Siberian Traps and North Atlantic Igneous Province: Implications for the nature of hotspots and mantle plumes, *Earth Planet. Sci. Lett.*, 297, 687-690, 2010.
- Tarduno, J.A., H.-P. Bunge, N. Sleep and U. Hansen, The bent Hawaiian-Emperor hotspot track: Inheriting the mantle wind, *Science*, 324, 50-53, 2009.
- Tarduno, J.A., Geodynamo history preserved in single silicate crystals: Origins and long-term mantle control, *Elements*, 5, 217-222, 2009.
- Usui, Y., J.A. Tarduno, M. Watkeys, A. Hofmann and R.D. Cottrell, Evidence for a 3.45 billion-year-old magnetic remanence from conglomerates of South Africa, *Geochem. Geophys. Geosystems (G-cubed)*, 10, Q09Z07, 2009.
- Doubrovine, P.A., J.A. Tarduno and X. Zhao, On the magnetostratigraphic age of Nauru Basin basalts of the western Pacific Ocean and timing of Ontong Java volcanism, *Earth Planet. Sci. Lett.*, 287, 175-184, 2009.
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### **Books and Edited Volumes Publications**

Duncan, R.A., J.A. Tarduno, and D.W. Scholl, *Proceedings of the Ocean Drilling Program, Scientific Results Volume 197*, College Station, TX (Ocean Drilling Program), 2006 (edited volume).

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### **General Interest Publication**

Articles in *The Conversation*, over 900,000 total reads

Tarduno, J.A., V. Hare, Does an anomaly in the Earth's magnetic field portend a coming pole reversal?, *The Conversation*, February 5, 2017

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