

Daniel Woodworth

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Research Interests

Paleomagnetism, marine magnetic anomalies, global plate tectonics, Pacific tectonics and geodynamics, true polar wander, hotspot motion, mantle circulation modeling, plate driving forces

Academic Experience

Postdoctoral Research Fellow

2022 – present

Department of Earth and Atmospheric Sciences
University of Houston, TX, USA

Education

Ph.D, Geoscience

2022

Rice University, Houston, TX, USA

Thesis: High-Resolution Pacific Apparent Polar Wander Since the Paleocene: Evidence for Two Episodes of True Polar Wander and Two True Polar Stillstands (Advisor: Richard G. Gordon)

B.Sc, Geology

2014

Texas Christian University, TX, USA

Teaching Experience

Teaching Assistant

2016 – 2021

Rice University

Fall 2020–2021

Inhabiting Planet Earth

Fall 2019

Introduction to the Earth

Fall 2018

Inter-regional 2D Seismic Interpretation

Spring 2016–2019

ArcGIS for Geoscientists

Conference Abstracts

Woodworth, D., Wu, J., and Colli, L. Geodynamic and Mantle Structure Tests of a 50-Ma Change in Pacific Absolute Plate Motion. AGU23

Gordon, R.G., Woodworth, D., and Gaastra, K.M. Cenozoic and Late Cretaceous Apparent Polar Wander of the Pacific Plate: Implications for Pole Precision, True Polar Wander, and Plate Motion Circuits. AGU23, San Francisco, California, 2023

- Gordon, R.G., **Woodworth, D.**, and Gaastra, K.M. Cenozoic and Late Cretaceous Apparent Polar Wander of the Pacific Plate: Implications for True Polar Wander and Global Plate Motion Circuits. EGU23, Vienna, Austria, 2023.
- Gordon, R.G., Gaastra, K.M., and **Woodworth, D.** The Plate Motion Circuit Relating the Motion of the Pacific Plate to the Continental Plates. AGU Fall Meeting 2022, Chicago, IL, 2022.
- Woodworth, D.**, Gordon, R.G., and Gaastra, K.M. Challenges to Establishing a Global Paleolatitude Framework: Paleomagnetic Inconsistencies in the Plate Circuit Through Antarctica. AGU Fall Meeting 2021, New Orleans, LA, 2021.
- Woodworth, D.** and Gaastra, K.M. Automatic Segmentation of Geophysical Trackline Data Applied to Pacific-Rivera Motion. AGU Fall Meeting, 2021, New Orleans, LA, 2021.
- Gordon, R.G., **Woodworth, D.** and Gaastra, K.M. Placing the Paleo-Pacific Plate in Paleolatitude and Paleo-Declination. AGU Fall Meeting 2021, New Orleans, LA, 2021.
- Gaastra, K.M., Gordon, R.G., and **Woodworth, D.** New Age for the Eocene Bends in Pacific Hotspot Tracks: Implications for Relative Timing of Global Eocene Tectonic and Paleoclimatic Events. AGU Fall Meeting 2021, New Orleans, LA, 2021.
- Woodworth, D.**, Gordon, R.G., and Gaastra, K.M. Skewness Pole from Magnetic Anomaly C21n Implies Rapid Early Eocene True Polar Wander. EGU21, Vienna, Austria, 2021.
- Woodworth, D.** and Gordon, R.G. Timing of Eocene True Polar Wander Inferred from Pacific Plate Marine Magnetic Anomalies. AGU Fall Meeting 2020.
- Gordon, R.G., **Woodworth, D.** and Seidman, L.S. Paleogene True Polar Wander, Origin of the Hawaiian-Emperor Bend, Paleolatitude of Ellesmere Island, and Cenozoic Climate Change. GSA Annual Meeting 2019, Phoenix, AZ, 2019.
- Woodworth, D.** and Gordon, R.G. Further Evidence for a Stationary Hawaiian Hotspot During Formation of the Emperor Seamount Chain: Skewness Analysis of Pacific Plate Magnetic Anomaly 24r. AGU Fall Meeting 2018, Washington, DC, 2018.
- Gordon, R.G., **Woodworth, D.** and Seidman, L.S. Apparent Polar Wander of the Pacific Plate Over the Past 80 Ma: Implications for Motion Between Hotspots, Origin of the Hawaiian-Emperor Bend, True Polar Wander, and Global Hotspot Motion. AGU Fall Meeting 2018, Washington, DC, 2018.
- Woodworth, D.** and Gordon, R.G. True Polar Wander and the Origin of the Hawaiian-Emperor Bend: New Evidence. AGU Fall Meeting 2017, New Orleans, Louisiana, 2017
- R.G. Gordon and **Woodworth, D.** and Gordon, R.G. Apparent Polar Wander of the Pacific Plate Since the Cretaceous and Implications for True Polar Wander and for the Plate Motion Circuit Through Antarctica. AGU Fall Meeting 2017, New Orleans, Louisiana, 2017
- Woodworth, D.** and Gordon, R.G. Hawaiian Hotspot Motion, Hotspot Reference Frames, and True Polar Wander since ~50 Ma BP. Industry-Rice Earth Science Symposium, Houston, Texas, 2017.
- Woodworth, D.** and Gordon, R.G. Pacific Plate Deformation due to Plate Motion Relative to the Spin Axis on a Nonspherical Earth. AGU Fall Meeting 2016, San Francisco, California, 2016.
- Woodworth, D.** and Gordon, R.G. The Rate of Intraplate Deformation due to Plate Motion Relative to the Spin Axis of an Oblate Spheroidal Earth. Industry-Rice Earth Science Symposium, Houston, Texas, 2016.
- Woodworth, D.** and Gordon, R.G. Intraplate Deformation Due to Motion of Plates over a Nonspherical Earth. AGU Fall Meeting 2015, San Francisco, California, 2015.
- Woodworth, D.** Investigating a Possible Impact Structure in North-Central Oklahoma. TCU SRS 2014, Fort Worth, Texas, 2014.
- Alsleben, Helge, Enderlin, Milton, Kiesel, Meredith, and **Woodworth, D.** Using XRF Analyses to Understand the Effects of Compositional Variations on Rock Strength Determined from Micro-Mechanical Devices. GSA 2013, Denver, Colorado, 2013.

Adams, Ashley, DuBose, Megan, **Woodworth, D.**, and Holbrook, John. Apparent Non-Coincident Coupling of the Missouri River Trunk System to Mid-Continent Climate Change. GSA 2013, Denver, Colorado, 2013.

Woodworth, D., DuBose, Megan, and Adams, Ashley. Morphology of the Holocene Missouri River in Northwestern Missouri. GSA 2013, Denver, Colorado, 2013.

Woodworth, D., Alsleben, Helge, and Enderlin, Milton. Alternative Methods of Measuring Strength Anisotropy in the Barnett Shale. AAPG Southwest Section Meeting, Fredericksburg, Texas, 2013.

Publications

Gaastra, K.M., Gordon, R.G., and **Woodworth, D.** Quantification of Pacific Plate Hotspot Tracks Since 80 Ma. *Tectonics*, 41 (7), 2022.

Woodworth, D. and Gordon, R.G. "Paleolatitude of the Hawaiian Hot Spot Since 48 Ma: Evidence for a Mid-Cenozoic True Polar Stillstand Followed by Late Cenozoic True Polar Wander Coincident With Northern Hemisphere Glaciation." *Geophysical Research Letters*, 45 (21), 2018.

Zheng, L., Gordon, R.G., and **Woodworth, D.** "Pacific Plate Apparent Polar Wander, Hot Spot Fixity, and True Polar Wander During the Formation of the Hawaiian Island and Seamount Chain From an Analysis of the Skewness of Magnetic Anomaly 20r (44 Ma)." *Tectonics*, 37 (7), 2018.

Adams, A., **Woodworth, D.**, and DuBose, M. "Surficial Geologic Map of the Big Lake 7.5' Quadrangle, Holt County, Missouri." University of South Dakota Press.

DuBose, M., **Woodworth, D.**, and Adams, A. "Surficial Geologic Map of the Craig 7.5' Quadrangle, Holt County, Missouri." University of South Dakota Press.

Woodworth, D., Adams, A., and DuBose, M. "Surficial Geologic Map of the Corning 7.5' Quadrangle, Holt County, Missouri." University of South Dakota Press.

Honors and Awards

NSF Earth Science Postdoctoral Fellowship	2022
AGU Outstanding Student Paper Award	2018
IRESS 3rd-Place Poster	2016
Rice University Sam and Helen Worden Fellowship	2015
TCU Energy Institute Dan Jarvie Award	2013
AAPG Southwest Section Scholarship	2013

Volunteer Experience

GIESS Committee, 2017-2019

Coordinated speaker selection and awards for the Department of Earth, Environmental, and Planetary Science graduate seminar

Klein Forest High School, February 2015

Spoke to senior-level earth science classes on developments in tectonics

Society of Physics Students Physics Olympics, August 2013 – May 2014

Coordinated with local high schools

Designed projects to encourage interest in physics as part of TCU Physics “Physics Olympics”

TCU Department of Physics and Astronomy, August 2013 – May 2014

Tutored students in physics and astronomy classes

Society of Physics Students, May 2012 – May 2014

Secretary (2012) and president (2013-2014)

Sigma Gamma Epsilon, May 2011 – May 2014

Treasurer (2011-2014)