

# Garrett W. Tate, Ph.D.

Department of Earth and Environmental Sciences  
Vanderbilt University, Nashville, TN 37240  
g.tate@vanderbilt.edu, (615) 322-6086  
my.vanderbilt.edu/gtate

## PROFESSIONAL EXPERIENCE

### *Vanderbilt University*

2017-pres. Research Assistant Professor and Senior Lecturer

### *Chevron Energy Technology Company*

2014-16 Earth Scientist, Structural Geology Team

## EDUCATION

### *Princeton University, Department of Geosciences*

2014 Ph.D. with dissertation titled: "Structural Deformation, Exhumation and Uplift of the Timor Fold-Thrust Belt"

2011 M.A. with concentrations in structural geology and thermochronology

### *Rice University*

2009 B.S. cum laude in Earth Science, geology track

2009 B.A. cum laude in Mathematics

## TEACHING

### *Vanderbilt University*

2018-19 EES 1510 and 1510L The Dynamic Earth: Introduction to Geological Sciences

2018 MLAS 6500 Understanding Natural Disasters

2017-18 EES 3340 Structural Geology and Rock Mechanics

2017 EES 3891/5891 Special Topics: Applied Structural Geology and Tectonics

### *Chevron Energy Technology Company*

2015 Applied Concepts of Structural Geology

### *Princeton University (Assistant in Instruction)*

2013 GEO 499: Environmental Change, Poverty, and Conflict

GEO 197: Environmental Decision Making

2011 GEO 203: Geology

GEO 102: Climate: Past, Present, and Future

2010 GEO 103: Natural Disasters

### *Rice University (Teaching Assistant)*

2009 ESCI 334: Geological and Geophysical Techniques

## FUNDING

*Pending* NSF Antarctic Earth Sciences, (\$390,864), PI: Morgan, D.J. **Co-PI: Tate, G. W.**, 9/2019 – 8/2022, Unlocking the glacial history of the McMurdo Dry Valleys, Antarctica by fingerprinting glacial tills with detrital zircon U-Pb age populations.

2018 USGS EDMAP No. G18AC00101, (\$9,980), **PI: Tate, G. W.**, 5/2018 – 4/2019, Geologic mapping of parts of Unicoi and Carter Counties, TN: fault architecture and Appalachian duplex development.

## AWARDS

2013 Arnold Guyot Teaching Award, Princeton University Geosciences Department

2009 Torkild Rieber Award in Geology, outstanding graduating senior in the Rice Earth Science Department

2009 Outstanding Teaching Assistant award in the Rice Earth Science Department

- 2008 Eugen Merten Memorial Prize in Geology and Geophysics, outstanding junior student in the Rice Earth Science Department
- 2008 Houston Geological Society Foundation Undergraduate Scholarship

## MENTORING

### *Vanderbilt Senior Honors Theses*

- current* Andrea Richardson: Geologic map of the northeastern Unicoi and northwestern Iron Mountain Gap Quadrangles, Tennessee Appalachians
- 2018 Emily Sharp: Geologic mapping of foreland-dipping duplex structures in the southwestern Mountain City Window, Tennessee Appalachians

### *Vanderbilt summer researchers*

- 2018 Isabella Calzolano: Geologic mapping, Unicoi and Carter Counties, TN
- 2018 Carol Wan: Geologic mapping, Unicoi and Carter Counties, TN

## PUBLICATIONS

- In prep* **Tate, G.W.**, Richardson, A. E.\*, E. Sharp\*, I. A. Calzolano\*, and L. Wan\*, Duplex kinematics in the southern Mountain City Window from new geologic mapping.
- In prep* **Tate, G.W.**, Normal fault inversion and shifting stress states within the southern Hikurangi accretionary prism.
- In prep* **Tate, G. W.**, S. D. Willett, N. McQuarrie, L. Goren, and M. Fox, Dynamic river networks in Timor-Leste: feedbacks between surface processes and tectonics.
- Tate, G. W.**, N. McQuarrie, H. Tiranda, D. J. J. Van Hinsbergen, R. Harris, J. Zachariasse, M. G. Fellin, P. W. Reiners, and S. D. Willett (2017), Reconciling regional continuity with local variability in structure, uplift and exhumation of the Timor orogen, *Gondwana Research*, 49, 364-386
- Tate, G. W.**, N. McQuarrie, D. J. J. van Hinsbergen, R. R. Bakker, R. Harris, and H. Jiang (2015), Australia going down under: Quantifying continental subduction during arc-continent accretion in Timor-Leste, *Geosphere*, 11, 1860-1883.
- Aben, F. M., M. J. Dekkers, R. R. Bakker, D. J. J. van Hinsbergen, W. J. Zachariasse, **G. W. Tate**, N. McQuarrie, R. Harris, and B. Duffy (2014), Untangling inconsistent magnetic polarity records through an integrated rock magnetic analysis: a case study on Neogene sections in East Timor, *Geochemistry, Geophysics, Geosystems*, 15, 2531–2544.
- Tate, G. W.**, N. McQuarrie, D. J. J. van Hinsbergen, R. R. Bakker, R. Harris, S. Willett, P. W. Reiners, M. G. Fellin, M. Ganerød, and W. J. Zachariasse (2014), Resolving spatial heterogeneities in exhumation and surface uplift in Timor-Leste: Constraints on deformation processes in young orogens, *Tectonics*, 33, 1089–1112.

## CONFERENCE ABSTRACTS

\* = student author

- Tate, G.W.** (2018), Deciphering shifts in faulting, sedimentation, and stress state in the southern Hikurangi accretionary prism using structural interpretation of seismic reflection data, Abstract T51I-0288, 2018 Fall Meeting, AGU, Washington, DC, Dec 10-14.
- Richardson, A. E.\*, **G. W. Tate**, I. A. Calzolano, and L. Wan (2018), Geologic map of the northeastern Unicoi and northwestern Iron Mountain Gap Quadrangles, Tennessee Appalachians, Abstract 196-3, 2018 Annual Meeting, GSA, Indianapolis, IN, Nov 4-7.
- Tate, G.W.**, E. Sharp\*, and A. E. Richardson\* (2018), Modeling duplex kinematics using new field mapping in the Mountain City Window, Eastern Tennessee, Abstract 19-T14, 2018 GSA Southeastern Section Meeting, Knoxville, TN, Apr 12-13.

- Richardson, A. E.\*, **G. W. Tate**, and E. Sharp\* (2018), Geologic map of the southern Erwin Quadrangle, Tennessee Appalachians, Abstract 11-T18, 2018 GSA Southeastern Section Meeting, Knoxville, TN, Apr 12-13.
- Tate, G. W.**, N. McQuarrie, H. Tiranda, D. J. J. Van Hinsbergen, R. Harris, J. Zachariasse, M. G. Fellin, P. W. Reiners, and S. D. Willett (2017), Synchronous Late Miocene arc-continent collision across Timor: field constraints on plate boundary reorganization, Abstract 56-10, 2017 Annual Meeting, GSA, Seattle, WA, Oct 22-26.
- Sharp, E. \*, **G.W. Tate**, and A.E. Richardson\* (2017), Geologic map of foreland-dipping duplex structures in the southwestern Mountain City Window, Chestoa Quadrangle, Tennessee Appalachians, Abstract 287-10, 2017 Annual Meeting, GSA, Seattle, WA, Oct 22-26.
- Tate, G.W.** (2017), Linking faulting, sedimentation, and wedge dynamics in the Hikurangi accretionary prism of New Zealand using seismic mapping and structural modeling, FACET II: Feedbacks Among Climate, Erosion and Tectonics, Eugene, OR, 21-28 July.
- Tate, G.W.**, Willett, S., McQuarrie, N., Goren, L., Fox, M. (2013) Documenting feedbacks between surface processes and structural deformation in East Timor using stream profile and drainage network analysis, Abstract EP33B-0883, 2013 Fall Meeting, AGU, San Francisco, CA, 9-13 Dec.
- Tate, G.W.**, McQuarrie, N., van Hinsbergen, D.J., Bakker, R., Reiners, P.W., Willett, S. (2012) Resolving rock exhumation versus surface uplift during arc-continent accretion on the island of Timor by integrating thermochronology and micropaleontology data, Abstract T23I-02, 2012 Fall Meeting, AGU, San Francisco, CA., 3-7 Dec.
- Tate, G.W.**, McQuarrie, N., Bakker, R., van Hinsbergen, D.J.J., Harris, R.A. (2010) Active Arc-Continent Accretion in Timor-Leste: New Structural Mapping and Quantification of Continental Subduction, Abstract T51A-1996, 2010 Fall Meeting, AGU, San Francisco, CA, 13-17 Dec.
- Tate, G.W.** and Morgan, J.K. (2008) Three-Dimensional Particle Dynamics Simulations of Oblique Plate Convergence Using Bonded Particle Assemblages, Abstract T23B-2020, 2008 Fall Meeting, AGU, San Francisco, CA, 15-19 Dec.
- Tate, G.W.** and Morgan, J.K. (2008) Three-Dimensional Particle Dynamics Simulations of Oblique Plate Convergence, Abstract 129-3, 2008 Joint Annual Meeting, GSA, Houston, TX, 5-9 Oct.