

# Adam F. Holt

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## Employment

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- University of Miami** Aug. 2019 – present  
Assistant Professor  
Department of Marine Geosciences,  
Rosenstiel School of Marine, Atmospheric, and Earth Science
- Massachusetts Institute of Technology** Aug. 2016 – Jul. 2019  
Postdoctoral Associate/Fellow  
Department of Earth, Atmospheric and Planetary Sciences

## Education

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- University of Southern California**, Los Angeles 2011 – 2016  
Ph.D. in Geological Sciences  
Advisor: Thorsten W. Becker  
Dissertation title: Trench migration, slab bending, and mantle flow at subduction zones
- Imperial College**, London 2007 – 2011  
M.Sci. Geophysics (First-class honors)

## Publications

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- Goldberg, S. L., and **Holt, A. F.**: 2024. Characterizing the complexity of subduction zone flow with an ensemble of multiscale global convection models. *Geochem., Geophys., Geosys.*, 25, doi:10.1029/2023GC011134.
- Turino, V., and **Holt, A. F.**: 2024. Spatio-temporal variability in slab temperature within dynamic 3-D subduction models. *Geophys. J. Int.*, doi:10.1093/gji/ggad489.
- Clennett, E. J., **Holt, A. F.**, Tetley, M. G., Becker, T. W., Faccenna, C.: 2023. Assessing plate reconstruction models using plate driving force consistency tests. *Sci. Rep.*, doi:10.1038/srep2300487
- Holt, A. F.**, The Topographic Signature of Mantle Pressure Build-Up Beneath Subducting Plates: Insights from Spherical Subduction Models. *Geophys. Res. Lett.*, doi:10.1029/2022gl100330.
- Behr, W. M., **Holt, A. F.**, Becker, T. W., Faccenna, C.: 2022. The effects of plate interface rheology on subduction kinematics and dynamics. *Geophys. J. Int.*, 230, doi:10.1093/gji/ggac075.
- Holt, A. F.**, and Condit, C. B.: 2021. Slab temperature evolution over the lifetime of a subduction zone. *Geochem., Geophys., Geosys.*, 22, doi:10.1029/2020GC009476.
- Faccenna, C., Becker, T. W., **Holt, A. F.**, and Brun, J-P.: 2021. Mountain building, mantle convection, and supercontinents: Holmes (1931) revisited. *Earth Planet. Sci. Lett. (Frontiers)*, 564, doi:10.1016/j.epsl.2021.116905

- Royden, L. H., and **Holt, A. F.**: 2020. Subduction dynamics and mantle pressure: (i) An Analytical Framework Relating Subduction Geometry, Plate Motion, and Asthenospheric Pressure. *Geochemistry, Geophysics, Geosystems.*, doi: 10.1090/2020GC009032, 2020.
- Holt, A. F.**, and Royden, L. H.: 2020. Subduction dynamics and mantle pressure: (ii) Towards a Global Understanding of Slab Dip and Upper Mantle Circulation. *Geochemistry, Geophysics, Geosystems.*, doi: 10.1002/2019GC008771, 2020.
- Holt, A. F.**, Royden, L. H., Becker, T. W., Faccenna, C.: Slab interactions in 3-D subduction settings: The Philippine Sea Plate region. *Earth and Planetary Science Letters.* 489, 72-83, 2018.
- Király, A., **Holt, A. F.**, Funicello, C., Capitanio, F., Faccenna, C.: Modeling slab-slab interactions: Dynamics of a double-sided subduction system. *Geochemistry, Geophysics, Geosystems.*, doi: 10.1002/2017GC007199, 2018.
- Faccenna, C., **Holt, A. F.**, Becker, T. W., Lallemand, S., Royden, L. H.: Dynamics of the Ryukyu/Izu-Bonin-Marianas double subduction system. *Tectonophysics.*, doi:10.1016/j.tecto.2017.08.011, 2017.
- Holt, A. F.**, Royden, L., and Becker, T. W.: The dynamics of double slab subduction. *Geophys. J. Int.*, 209 250-265, 2017.
- Faccenna, C., Oncken, O., **Holt, A. F.**, and Becker, T. W.: Initiation of the Andean Orogeny by lower mantle subduction. *Earth Planet. Sci. Lett.*, 463, 189-201, 2017.
- Holt, A. F.** and Becker, T. W.: The effect of a power-law mantle viscosity on trench retreat rate. *Geophys. J. Int.*, doi:10.1093/gji/ggw392, 2016.
- Holt, A. F.**, Buffett, B. A., and Becker, T. W.: Overriding plate thickness control on subducting plate curvature. *Geophys. Res. Lett.*, 42, 3802-3810, doi:10.1002/2015GL063834, 2015.
- Jagoutz, O., Royden, L., **Holt, A. F.**, and Becker, T. W.: Anomalously fast convergence of India and Eurasia caused by double subduction. *Nature Geoscience*, 8, 475-478, doi: 10.1038/NGEO2418, 2015.
- Holt, A. F.**, Becker, T. W., and Buffett, B. A.: Subduction dynamics and overriding plate stress in thermo-mechanical subduction models. *Geophys. J. Int.*, 201, 172-192, doi: 10.1093/gji/ggv011, 2015.
- Sun, D., Miller, M. S., **Holt, A. F.**, and Becker, T. W.: Hot upwelling conduit beneath the Atlas Mountains, Morocco. *Geophys. Res. Lett.*, 41, 8037-8044, doi:10.1002/2014GL061884, 2014.

## Teaching Experience

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### Course Instructor (University of Miami)

Natural Disasters: Hollywood vs. Reality (GSC 107)	Spring 2020, 2021, 2022, 2023; Fall 2024
Geodynamics (MGS 723)	Fall 2021, 2023
Summer Field Geology (GSC 580, co-instructor)	Summer 2023
Subduction Zone Geodynamics (MGS 710)	Fall 2024

### Graduate Teaching Assistant (University of Southern California):

Earth Sciences major course, Geophysics and Geoengineering (GEOL 440)	2014
Earth Sciences general course, Earthquakes (GEOL 240)	2013
Earth Sciences general course, Crises of a Planet (GEOL 108)	2012

## Grants and Awards

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UM Provost's Early Career Award for Faculty Excellence	2023
AGU Editors' Citation for Excellence in Refereeing	2022
NSF-EAR Geophysics: Collaborative Research: Probing feedbacks between thermal structure, petrologic transformation, and rheologic evolution within dynamically evolving subduction zones, Lead PI (UM: \$287,776)	2021
NSF-EAR Geophysics: Constraining multi-scale interactions between slabs and mantle flow within Western Pacific subduction zones, 06/2022-06/2025, Sole PI (UM: \$349,874).	2021
XSEDE/ACCESS Research Allocations (supercomputing resources) Recent allocation (2023): \$21,474 worth of compute time/storage.	yearly 2018-2024
JpGU Outstanding Student Presentation Award	2016
EGU Outstanding Student Poster Award	2016
Outstanding Teaching Awards, University of Southern California	2012, 2013
Provost's Ph.D. Fellowship, University of Southern California	2011
Edward Glorney Scholarship (highest Earth Sciences GPA), Imperial College	2011

## Service and Mentorship

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### **Internal (University of Miami):**

Ph.D. supervision: Valeria Turino (2020-present), Tao Zhao (from Fall '23), Zonglin Gao (From Fall '23)

Postdoc supervision: Samuel Goldberg (NSF EAR Postdoc fellowship; 2021-2022), Ryan Stoner (2022-present), Gabe Epstein (NSF EAR Postdoc fellowship; from Fall '23).

Ph.D. committee: Farzaneh Zanjani, Bhuvan Varugu, Sara Mirzaee.

Undergraduate mentees: Chantal Newallo (2020), Jazmin Garza (2021-2022), Reid Jansen (2022-present).

### **External:**

External Ph.D. examiner: Roma Tre University [Italy]; Monash University [Australia]; Australia National University [Australia].

Proposal reviews: NSF EAR Earthscope/GeoPRISMS/CSEDI/Geophysics/Postdoctoral Fellowships, DFG (German Research Foundation), RSF (Russian Science Foundation).

Manuscript reviews: Nature; Nature Geosci.; Nature Comm.; Geology; J. Geophys. Res.; Geochem., Geophys., Geosyst.; Tectonics; Phys. Earth Planet. Int.; Geophys. J. Int.; Scientific Reports; Tektonika; Geophys. Res. Lett.; Earth Planet. Sci. Lett.; Progress in Earth and Planet. Sci.; Tectonophysics; Solid Earth; Frontiers; Science Advances.

Workshops: Session convenor and workshop co-organizer - AGU/SEG convergent margins workshop (2022); Session convenor - GSA annual meeting (2022).

Committees: Computational Infrastructure for Geodynamics (CIG) Science Steering Committee and Education Working Group (2023-).