Adam F. Holt

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Employment

University of Miami Aug. 2019 – present
Assistant Professor
Department of Marine Geosciences, RSMAS

Massachusetts Institute of Technology Aug. 2016 – Jul. 2019
Postdoctoral Associate/Fellow
Department of Earth, Atmospheric and Planetary Sciences

Education

University of Southern California, Los Angeles 2011 – 2016
Ph.D. in Geological Sciences
Thesis 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

Holt, A. F., and Condit, C. B.: 2021 Slab temperature evolution over the lifetime of a subduction zone. In press at *Geochemistry, Geophysics, Geosystems.*

Faccenna, C., Becker, T. W., **Holt, A. F.**, and Brun, J-P.: 2021. Mountain budling, 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.**, Funiciello, 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. *Tectonophys.*, 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.: Growth of the Andean Cordillera controlled 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

Course Instructor (University of Miami)

Earth Sciences general course, Natural Disasters (GSC 107)	2020, 2021
Forthcoming: Geodynamics (MGS 723)	2021

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

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
XSEDE Research Allocations (Supercomputing time)	2018, 2019, 2020
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 geoscience degree score), Imperial College	2011

Service and Mentorship

Ph.D. Supervision (University of Miami: UM): Valeria Turino (2020-present), Yidan Wang (2021-present).

Ph.D. Committee (UM): Farzaneh Zanjani, Bhuvan Varugu, Sara Mirzaee.

Undergraduate Mentees (UM): Chantal Newallo (2020), Jazmin Garza (2021-present)

External Ph.D. examiner: Arthur Briaud (Roma Tre University)

Manuscript reviews: Nature; Nature Geosci.; Nature Comm., Geology; J. Geophys Res.; Geochem., Geophys., Geosyst.; Tectonics; Phys. Earth Planet. Int.; Geophys. J. Int; Scientific Reports; Geophys. Res. Lett.; Earth Planet. Sci. Lett.; Tectonophys.; Solid Earth.

Proposal reviews: NSF Earthscope, NSF GeoPRISMS, NSF Geophysics, NSF EAR Postdoc.

Invited Talks/Seminars

University of Florida (Department seminar)	2021
University of Memphis (Department seminar)	2021
ETH Zurich (Geophysical Fluid Dynamics seminar)	2019
Royal Holloway, University of London	2019
Harvard University (Solid Earth weekly seminar)	2018
CEED, University of Olso (Department seminar)	2018
Claude Bernard University Lyon 1 (Department seminar)	2018
Columbia LDEO (Geophysics weekly seminar)	2017
Roma Tre Università (Subduction short course)	2017

Selected Conference Abstracts (Last 4 years)

Condit, C. B., Guevara, V., French, M. E., **Holt, A. F.**, and J. R. Delph (2021). Warm thermal structures in subduction zones lead to ample dehydration at the depths of deep slow slip and tremor and resultant transformations in viscous rheology. EGU General Assembly 2021, Virtual.

McKeegan, R. C., Guevara, V., **Holt, A. F.**, and C. B. Condit (2021). Exhumation of subducted mafic rocks in a dynamically evolving thermal structure: constraints from phase equilibria modelling. EGU General Assembly 2021, Virtual.

Condit, C. B., Guevara, V., Delph, J. R., French, M. E., and **A. F. Holt** (2021). Forarc dehydration in warm subduction zones provides ample fluids at the depths of episodic slip and tremor. EGU General Assembly 2021, Virtual.

Holt, A. F., and C. B. Condit (2020). Modeling slab temperature evolution through the lifetime of a subduction zone. AGU Fall Meeting 2020, Virtual.

Behr, W., **Holt, A. F.**, Becker, T. W., and C. Faccenna (2019). Plate speeds modulated by sediment subduction: insights from numerical models. EGU General Assembly 2020, Virtual.

Holt, A. F. and L. H. Royden (2019). Subduction dynamics and mantle pressure: Towards a global understanding of slab dips AGU Fall Meeting 2019, San Francisco.

Holt, A. F. and L. H. Royden (2018). Global subduction dynamics: links between slab dip angles, dynamic pressure, and lower mantle mass flux. AGU Fall Meeting 2018, Washington DC.

Tetley, M. G, **Holt, A. F.,** T. W. Becker (2018). Exploring the range of reconstructed plate tectonic motions within global geodynamic constraints. AGU Fall Meeting 2018, Washington DC.

Holt, A. F. and L. H. Royden (2018). Western Pacific subduction dynamics: slab dip Fall Meeting s and mantle pressure. CIG/CGU Joint Meeting 2018, Niagara Falls.

Holt, A. F., L. Royden, T. W. Becker, C. Faccenna (2017). 3-D subduction dynamics in the western Pacific: mantle pressure, plate kinematics, and dynamic topography. AGU Fall Meeting 2017, New Orleans.

Faccenna, C., Oncken, O., **Holt, A. F.**, Becker, T. W (2017). Initiation of the Andean orogeny by lower mantle subuction. EGU General Assembly 2017, Vienna.