

# Shi Joyce Sim

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## RESEARCH INTERESTS

Early Earth, fluid dynamics, geodynamics, melt in the mantle, multi-phase flows, numerical modeling, parallel computing, plate tectonics, planetary formation and evolution

## EDUCATION

**Ph.D., Earth Sciences** **2018**

University of California, San Diego

Advisers: Dave R. Stegman and James Day

Committee: Marc Spiegelman, Donna Blackman, Jeff Gee and Juan Carlos Del Alamo

**M.S., Mechanical Engineering** **2013**

University of California, San Diego

**B.S., Earth Science (honors)** **2011**

University of California, San Diego

## RESEARCH EXPERIENCE

**Postdoctoral Researcher (DTM)** **April 2018**

Carbon transport at subduction zones using two-phase flow numerical models.

**Graduate Student Researcher (UCSD)** **2014 – 2018**

Analyzed mantle convection model outputs to look at depths of mid-ocean ridges through Earth's evolution and developed two phase flow input codes, M3LT, for TerraFERMA software to study melt focusing at mid-ocean ridges. Advisers: Dave Stegman, James Day and Marc Spiegelman

**Graduate Student Researcher (UCSD)** **2011 – 2014**

Impact of vent asymmetry on explosive volcanic eruptions. Advisor: Darcy Ogden

**Undergraduate Research Assistant (UCSD)** **2010 – 2011**

Crust project, data compilation of crustal thicknesses from various seismic reflection surveys.

## OFFSHORE FIELD EXPERIENCE (23 days at sea)

R/V *Revelle*, 23 days at sea 01/2014  
Multibeam bathymetry, CHIRP, and sediment coring in Ninety-East Ridge

## TEACHING EXPERIENCE

**SIO10: The Earth** Spring 2017  
Teaching Assistant for Prof. Adrian Borsa

**SIO15: Natural Hazards** Fall 2010  
Teaching Assistant for Prof. Gabi Laske

## HONORS AND AWARDS

CIDER 2015 Group Research Proposal grant (\$5,000) 2015

Paul G. Silver Young Scholar Research Enhancement Award, IGPP, SIO 2015

Earth Science (B.S. Honors) Top of Class Award, Thurgood Marshall College and  
Scripps Institution of Oceanography, 2011

AGU Outstanding Student Paper Award, Fall AGU meeting 2010

## PROFESSIONAL ACTIVITIES

**Session co-chair**, DI session on ‘Lithosphere-asthenosphere boundary’ 2017  
*Fall AGU meeting*

**Participant**, Melt in the Mantle workshop 2016  
*University of Cambridge, UK*

**Participant**, CIDER pre-AGU workshop 2015  
*UC Berkeley*

**Participant**, CIDER summer program 2015  
*UC Berkeley*

**Participant**, Volcanology field trip to Kamchatka 2013  
*University of Alaska, Fairbanks*

**Participant**, Infrasound post-IAVCEI workshop 2013  
*Kagoshima, Japan*

**Co-organizer**, Earth Section Seminar 2013-2013  
*Scripps Institution of Oceanography, UC San Diego*

## PEER-REVIEWED PUBLICATIONS

[2] **S. J. Sim**, M. Spiegelman, D.R. Stegman, C. Wilson (in review) M3LT: A new open source model to explore the dynamics of Melt in the Mantle beneath Mid-ocean ridge, *Geochem. Geophys. Geosyst.*.

[1] **S. J. Sim**, D.R. Stegman, N. Coltice, (2016) Influence of Continental growth on mid-ocean ridge depth, *Geochem. Geophys. Geosyst.*, 17 (11), 4425-4437.

## MANUSCRIPTS IN PREPARATION

[1] **S. J. Sim**, M. Spiegelman, D.R. Stegman, C. Wilson (in prep.) Large scale organization of multiple melt focusing mechanisms in two-phase flow models of mid-ocean ridges.

## INVITED PRESENTATIONS

[1] “Microseismic Signatures of Hurricane Katrina (2005) and Ioke (2006),” *Fall AGU meeting*, Dec. 2011

## CONFERENCE PRESENTATIONS

[7] “V51D-0403: A focus on melt focusing” (poster) *Fall AGU meeting*, Dec. 2017

[6] “P31D-2084: The effects of continental growth on global sea level” (poster) *Fall AGU meeting*, Dec. 2015

[5] “Ocean depth through deep time” (oral) *Comparative Tectonics and Geodynamics of Venus, Earth and Rocky Exoplanets*, Caltech, May. 2015

[4] “Effects of Vent Asymmetry on Plume Dynamics for Explosive Eruptions” (poster) *IAVCEI meeting*, Japan, Jul. 2013

[3] “V41B-2791: Effects of Vent Asymmetry on Explosive Eruptions” (poster) *Fall AGU meeting*, Dec. 2012

[2] “): NH51A-1692 Source Analysis of Two Unique Microseismic Signatures of Hurricane Katrina (2005) and Ioke (2006)” (poster) *Fall AGU meeting*, Dec. 2011

[1] “NH13A-1142 Comparison of the Microseism of Katrina (2005) and Ioke (2006)” (poster) *Fall AGU meeting*, Dec. 2010

## LEADERSHIP AND OUTREACH EXPERIENCE

**Women and Minorities in Science (SIO) 2012 – 2017**  
Organize workshops and networking

**Team for Inclusion and Diversity in Education and Science (SIO) 2012 – 2016**

Organize community events and discussion sessions on diversity

**Mechanical Engineering Graduate Women group (UCSD)      2014 – 2016**

Organize workshops and networking events across departments