

Diego Melgar | Ph.D.

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Education

Scripps Institution of Oceanography <i>Ph.D., Geophysics</i>	La Jolla, CA <i>August 2014</i>
Scripps Institution of Oceanography <i>M.S., Geophysics</i>	La Jolla, CA <i>August 2010</i>

Academic Positions

Ann and Lew Williams Chair of Earth Sciences	University of Oregon <i>2/2021-present</i>
Assistant Professor	University of Oregon <i>10/2017-present</i>
Research Geodesist	University of California Berkeley <i>9/2015-9/2017</i>
Postdoctoral Fellow <i>Supervisor: Dr. Richard Allen</i>	University of California Berkeley <i>8/2014-9/2015</i>
Graduate Student Researcher <i>Supervisor: Dr. Yehuda Bock</i>	Scripps Institution of Oceanography <i>9/2009-8/2014</i>

Honors, Fellowships and Research Awards

- 2016:** Charles F. Richter Early Career Award, Seismological Society of America
2014: Edward Frieman Prize for Excellence in Graduate Research, Scripps Institution of Oceanography
2012-2014: NASA Earth and Space Sciences Fellowship

Publications

Citation Report: <http://bit.ly/1Ehv2Y9>

Peer Reviewed

* denotes student or postdoc as first author

In review

- (73) V. Kuna, **Melgar, D.**, Meira, A, (2020). Evaluation of the Grillo sensor, a low-cost accelerometer for IoT-based Real-time seismology, *Seism. Res. Lett.*, in review.
- (72) **D. Melgar** (2020). The January 26th, 1700 Cascadia Earthquake as Part of an Event Sequence, *J. Geophys Res.*, in review.
- (71) J.T. Lin*, **Melgar, D.**, Thomas, A.M. & Searcy, J. (2020). Early warning for great earthquakes

from characterization of crustal deformation patterns with deep learning, *J. Geophys Res.*, in review.

(70) Z. Hongcai*, **Melgar, D.**, Searcy, J., Sahakian, V.J., & Lin J.T. (2020). Learning source, path, and site effects: CNN-based Onsite Intensity Prediction for Earthquake Early Warning *Bull. Seism. Soc. Am.*, in review

(69) K. Aslam*, Thomas, A.M., & **Melgar, D.** (2020). Modeling the effect of the Fore-arc Deformation Style of the Cascadia Subduction Zone on its Shallow Earthquake Rupture behavior. *J. Geophys Res.*, in review

(68) E.F. Salazar-Monroy*, **Melgar, D.**, Garcia-Guzmán, L., (2020). Probabilistic Tsunami Hazard Assessment of the Mexican Subduction Zone with Stochastic Sources, *J. Geophys. Res.*, in review

(67) L. Vazquez , Medina, M., Riquelme, S. & **Melgar, D.** (2020). Numerical simulation of tsunami coastal amplitudes in the Pacific Coast of Mexico based on non uniform k^{-2} slip distributions. *Pure Appl. Geophys.*, in review

(66) D. Small* & **Melgar, D.**(2020). Geodetic Coupling Models as Constraints on Stochastic Earthquake Ruptures: An Example Application to PTHA in Cascadia. *J. Geophys. Res.*, in review

(65) T. Taymaz, Ganas, A., Yolsal-Çevikbilen, S., et al. (2020). Source Mechanism and Rupture Process of the 24 January 2020 Mw 6.7 Doğanyol-Sivrice Earthquake obtained from Seismological Waveform Analysis and Space Geodesy Observations on the East Anatolian Fault Zone. *Tectonophysics.* in review

Published or in press

(64) B.W. Crowell & **Melgar, D.** (2020). Slipping the Shumagin Gap: A Kinematic Coseismic and Early Afterslip Model of the Mw 7.8 Simeonof Island, Alaska, Earthquake *Geophys. Res. Lett.*, doi:10.1029/2020GL090308

(63) Z. Hongcai*, **Melgar, D.** & Goldberg, D.E. (2020). Magnitude calculation without saturation from strong motion waveforms. *Bull. Seism. Soc. Am.*, doi:10.1785/0120200133

(62) A.L. Williamson*, Rim, D., LeVeque, R.J., Adams, L.M., **Melgar, D.**, & Gonzalez, F.I. (2020). A Source Clustering Approach for Efficient Inundation Modeling and Regional Scale PTHA, *Frontiers Earth Sci.*, doi:10.3389/feart.2020.591663

(61) **D. Melgar**, Ruiz-Angulo, A., Perez-Campos, X., et al. (2020). Energetic Rupture and Tsunamiogenesis during the 2020 M7.4 La Crucecita, Mexico Earthquake. *Seism. Res. Lett.*, doi:10.1785/0220200272

(60) A.L. Williamson*, **Melgar, D.**, Crowell, B.W., Arcas, D., Melbourne, T.I., Wei, Y., Kwong, K. (2020). Near-field tsunami forecasting along the Cascadia subduction zone using rapid GNSS source models, *J. Geophys. Res.*, doi:10.1029/2020JB019636

(59) M. Ramírez-Herrera, Corona, N., Cerny, et al. (2020). Sand deposits reveal great earthquakes and tsunamis at the Mexican Pacific Coast. *Scientific Reports*, 10, 11452.

(58) **D. Melgar**, Ganas, A., Taymaz, T., et al. (2020) Rupture Kinematics of January 24, 2020 Mw 6.7 Doganyol-Sivrice, Turkey Earthquake on the East Anatolian Fault Zone Imaged by Space Geodesy, *Geophys. J. Int.*, 223(2), 862-874

(57) A.L. Williamson*, **Melgar, D.**, Xu., X., Milliner, C., (2020). The 2018 Palu Tsunami: Coeval Landslide and Coseismic Sources *Seism. Res. Lett.*, doi: 10.1785/0220200009

- (56) D.E. Goldberg* & **Melgar, D.**, (2020). Generation and validation of P-waves in broadband models of large earthquakes, *Bull. Seism. Soc. Am.*, doi:10.1785/0120200049
- (55) J.T. Lin*, Aslam, K., A.M. Thomas & **D. Melgar** (2020). Evidence for overlapping regions of coseismic and slow slip on the Hawaiian decollement, *Earth Planet. Sci. Lett.*, 544, 116353
- (54) **D. Melgar**, Crowell, B.W., Melbourne, T.I., Szeliga, W., Santillan, M. & Scrivner, C. (2020). Noise Characteristics of Operational Real-Time High-Rate GNSS Positions in a Large Aperture Network *J. Geophys. Res.*, e2019JB019197
- (53) Fauvel, K., Balouek-Thomert, **D.**, **Melgar**, et al. (2020). A Distributed Multi-Sensor Machine Learning Approach to Earthquake Early Warning. In Proceedings of the AAAI Conference on Artificial Intelligence, 34(01), pp. 403-411.
- (52) P.A. Inchin, Snively, J.B., Zettergren, M.D., Williamson, A. & **Melgar, D.** (2020). Mesosphere airglow disturbances driven by nonlinear infrasonic waves after a large earthquake, *J. Geophys. Res.*, 125(6), e2019JA027628.
- (51) D.E. Goldberg* **Melgar, D.**, Sahakian, V.J., Thomas, A.M., Xu, X. & Crowell, B.W. (2020). Complex Multi-Fault Rupture During the 2019 Ridgecrest, CA Earthquakes, *Geophys. Res. Lett.*, 47(3), e2019GL086382.
- (50) **D. Melgar**, Melbourne, T., Crowell, B.W., Szeliga, W., Santillan, M, Scrivner, C., (2020). Real-Time High-Rate GNSS Displacements: Performance Demonstration During the 2019 Ridgecrest, CA Earthquakes, *Seism. Res. Lett.*, 91(4), 1943-1951.
- (49) A.L. Williamson, **Melgar, D.**, & Rim, D. (2019). The Effect of Large Earthquake Kinematics on Tsunami Propagation, *J. Geophys. Res.*, doi:10.1029/2019JB017522
- (48) J. González, González, G., Aránguiz, R., **Melgar, D.**, Zamora, N., Shrivastava, M.N., Das, R., Catalán, P.A., & Cienfuegos, R., (2019) A hybrid deterministic and stochastic approach for tsunami hazard assessment in Iquique, Chile, *Nat. Haz.*, doi:10.1007/s11069-019-03809-8
- (47) D.E. Goldberg*, **Melgar, D.** & Bock, Y. (2019). Seismogeodetic P-wave Amplitude: No Evidence for Strong Determinism, *Geophys. Res. Lett.*, doi:10.1029/2019GL083624
- (46) **D. Melgar** & Hayes, G.P. (2019). The correlation lengths and hypocentral positions of great earthquakes, *Bull. Seism. Soc. Am.*, doi:10.1785/0120190164
- (45) V. J. Sahakian, **Melgar, D.** & Muzli, M. (2019). Weak Near-Field Behavior of a Tsunami Earthquake: Towards Real-Time Identification for Local Warning, *Geophys. Res. Lett.*, doi:10.1029/2019GL083989.
- (44) J.T. Lin*, Chang, W.L., **Melgar, D.**, Thomas, A., Chiu, C.Y., (2019). Quick Determination of Earthquake Source Parameters from GPS Measurements: A Study of Suitability for Taiwan, *Geophys. J. Int.*, 219(2), 1148-1162.
- (43) **D. Melgar**, Williamson, A.L., & Salazar-Monroy, E.F. (2019). Differences between heterogeneous and homogeneous slip in regional tsunami hazards modeling, *Geophys. J. Int.*, 219(1), 553-562..
- (42) **D. Melgar** & Hayes G.P. (2019). Characterizing large earthquakes before rupture is complete, *Sci. Adv.*, 5(5), eaav2032.
- (41) C.J. Ruhl*, **Melgar, D.**, Chung, A., Grapenthin, R., & Allen, R.M. (2019). Ground Motion Estimates in Earthquake Early Warning: Performance with a Global Seismic and Geodetic Data Set, *J.*

Geophys. Res., doi:10.1029/2018JB016935

- (40) Allen, R.M. & **D. Melgar** (2019). Earthquake early warning: Advances, scientific challenges, and societal needs, *Annual Reviews*, Vol. 47
- (39) **D. Melgar** & Ruiz-Angulo, A. (2018). Long-lived tsunami edge waves from the M8.2 Tehuantepec, Mexico earthquake, *Geophys. Res. Lett.*, doi:10.1029/2018GL080823.
- (38) D. Goldberg*, **D. Melgar**, Bock, Y. & Allen, R.M. (2018). Geodetic Observations of Weak Determinism in Rupture Evolution of Large Earthquakes, *J. Geophys. Res.*, doi:10.1029/2018JB015962.
- (37) C.J. Ruhl*, **D. Melgar**, et al. (2018). A Global Database of Strong Motion Displacement GNSS Recordings and an Example Application to PGD Scaling, *Seism. Res. Lett.*, doi:10.1785/0220180177.
- (36) J. R. Murray, et al., (2018). Development of a Geodetic Component for the U.S. West Coast Earthquake Early Warning System, *Seism. Res. Lett.*, doi:10.1785/0220180162
- (35) V. Sahakian, **D. Melgar**, Quintanar, L., Ramirez-Guzman, L., Perez-Campos, X., Balthay, A.S, (2018). Ground Motions from the September 7th and 19th 2017 Tehuantepec and Puebla-Morelos, Mexico Earthquakes, *Bull. Seism. Soc. Am.*, doi:10.1785/0120180108
- (34) M. Celebi, V. Sahakian, **D. Melgar** & Quintanar, L., (2018). The M7.1 September 19, 2017 Puebla-Mexico City Earthquake: Spectral Ratios Confirm Mexico City Zoning, *Bull. Seism. Soc. Am.*, doi:10.1785/0120180100
- (33) **D. Melgar**, et al. (2018). Deep Embrittlement and Complete Rupture of the Lithosphere during the M8.2 Tehuantepec Earthquake, *Nat. Geo.*, doi:10.1038/s41561-018-0229-y.
- (32) B.W. Crowell, **Melgar, D.** & Geng, J. (2018). Hypothetical real-time GNSS modeling of the 2016 Mw 7.8 Kaikoura Earthquake: Perspectives from ground motion and tsunami inundation prediction, *Bull. Seism. Soc. Am.*, doi.org/10.1785/0120170247.
- (31) **D. Melgar**, Perez-Campos, X., Ramirez-Guzman, L., Spica, Z., Espindola, V.H., Hammond, W.C. & Cabral-Cano, E., (2018). Bend Faulting at the Edge of a Flat Slab: The 2017 Mw7.1 Puebla-Morelos, Mexico Earthquake, *Geophys. Res. Lett.*, doi:10.1002/2017GL076895
- (30) S., Watanabe, Bock, Y., **Melgar, D.**, & Tadokoro, K. (2018). Spatial constraints for tsunami generation by precise seafloor GPS-A observations along the Nankai Trough, Japan, *J. Geophys. Res.*, 123, doi:10.1002/2017JB014799
- (29) **D. Melgar** & Hayes, G.P. (2017). Systematic Observations of the Slip-pulse Properties of Large Earthquake Ruptures, *Geophys. Res. Lett.*, doi: 10.1002/2017GL074916.
- (28) C.J. Ruhl*, **Melgar, D.**, Grapenthin, R., & Allen, R.M. (2017). The Value of Real-Time GNSS to Earthquake Early Warning, *Geophys. Res. Lett.*, DOI: 10.1002/2017GL074502
- (27) **D. Melgar**, Riquelme, S., Xu, X., Baez, J. C., Geng, J., & Moreno, M. (2017). The first since 1960: A large event in the Valdivia segment of the Chilean Subduction Zone, the 2016 M7.6 Melinka earthquake. *Earth Planet. Sci. Lett.*, 474, 68-75.
- (26) **D. Melgar**, Ganas, A., Geng, J., Liang, C. & Fielding, E.J. (2017), Source characteristics of the 2015 Mw6.5 Lefkada, Greece, strike-slip earthquake, *J. Geophys. Res.* 122(3), 2260-2273.
- (25) J.K Saunders* et al. (2016), Seismogeodesy using GNSS and low-cost MEMS accelerometers: perspectives for earthquake early warning and rapid response, *Bull. Seism. Soc. Am.*, 106(6),

2469-2489.

(24) **D. Melgar**, LeVeque, R.J., Dreger, D.S. & Allen, R.M. (2016), Kinematic Rupture Scenarios and Synthetic Displacement Data: An Example Application to the Cascadia Subduction Zone, *J. Geophys. Res.*, 121, doi:10.1002/2016JB013314.

(23) Y. Bock and **Melgar, D.** (2016), Physical Applications of GPS Geodesy: A Review, *Reports on Progress in Physics*, 79(10), 106801.

(22) M. Fuentes, Riquelme, S., Medina, M., **Melgar, D.** et al. (2016), A study of the 2015 Mw 8.3 Illapel earthquake and tsunamis. Numerical and analytic approaches, 173(6), 1847-1858.

(21) S.Riquelme, Bravo, F., **Melgar, D.**, et al. (2016), W-phase source inversion using high-rate regional GPS data for large earthquakes, *Geophys. Res. Lett.*, 43, doi:10.1002/2016GL068302.

(20) **D. Melgar**, Fan, W., Geng, J., et al. (2016), Slip segmentation and slow rupture to the trench during the 2015, Mw8.3 Illapel, Chile earthquake, *Geophys. Res. Lett.*, 42, doi:10.1002/2015GL067369.

(19) **D. Melgar**, Allen, R.M., Riquelme, S., et al. (2016), Local tsunami warnings: Perspectives from recent large events, *Geophys. Res. Lett.*, 42, doi:10.1002/2015GL067100.

(18) Lindsey, E.O., Natsuaki, R., Xu, X., Shimada, M., Hashimoto, M., **Melgar., D.** & Sandwell, D.T., (2015), Line of Sight Displacement from ALOS-2 Interferometry: M7.8 Gorkha Earthquake and Mw 7.3 Aftershock, *Geophys. Res. Lett.*, doi: 10.1002/2015GL065385.

(17) Galetzka, J., **Melgar, D.**, Genrich, J.F., et al., (2015), Slip pulse and resonance of Kathmandu basin during the 2015 Mw 7.8 Gorkha earthquake, Nepal Imaged with Space Geodesy, *Science*, doi: 10.1126/science.aac6383.

(16) **D. Melgar**, Crowell, B.W., Geng, et al. (2015), Earthquake Magnitude Calculation without Saturation from the Scaling of Peak Ground Displacement, *Geophys. Res. Lett.*, doi:10.1002/2015GL064278.

(15) **D. Melgar**, Geng, J., Crowell, B.W., et al. (2015), Seismogeodesy of the 2014 M_w 6.1 Napa, California, Earthquake: Rapid Response and Modeling of Fast Rupture on a Dipping Strike-slip Fault, *J. Geophys. Res.*, doi:10.1002/2015JB011921.

(14) **D. Melgar** and Bock, Y. (2015), Kinematic Source Inversion and Tsunami Prediction with Regional Geophysical Data, *J. Geophys. Res.*, doi:10.1002/2014JB011832.

(13) B.W. Crowell, **Melgar, D.**, Bock, Y., et al. (2013), Earthquake Magnitude Scaling using Seismogeodetic Data, *Geophys. Res. Lett.*, doi: 10.1002/2013GL058391.

(12) **D. Melgar** and Bock, Y. (2013), Near-Field Tsunami Models with Rapid Earthquake Source Inversions from Land- and Ocean-Based Observations: The Potential for Forecast and Warning, *J. Geophys. Res.*, 118, doi:10.1002/2013JB010506.

(11) J. Geng, **Melgar, D.**, Bock, Y., et al. (2013), Recovering coseismic point ground tilts from collocated high-rate GPS and accelerometers, *Geophys Res. Lett.*, doi: 10.1002/grl.51001.

(10) **D. Melgar**, Crowell, B.W., Bock, Y. et al. (2013), Rapid modeling of the 2011 Mw 9.0 Tohoku-oki earthquake with seismogeodesy, *Geophys. Res. Lett.*, doi: 10.1002/grl.50590.

(9) J. Geng, Bock, Y., **Melgar, D.**, et al. (2013), A new seismogeodetic approach applied to GPS

and accelerometer observations of the 2012 Brawley seismic swarm: Implications for earthquake early warning, *Geochem. Geophys. Geosyst.*, doi: 10.1002/ggge.20144.

(8) **D. Melgar**, Bock, Y., Sanchez, D. et al.. (2013), On Robust and Reliable Automated Baseline Corrections for Strong Motion Seismology, *J. Geophys. Res.*, 119, 1-11, doi:10.1002/jgrb.50135.

(7) X. Perez-Campos, **Melgar, D.**, Singh, S.K., et al., (2013). Determination of tsunamigenic potential of a scenario earthquake in the Guerrero seismic gap along the Mexican subduction zone, *Seism. Res. Lett.*, 84(3), doi: 10.1785/0220120156.

(6) B.W. Crowell, Bock, Y. and **Melgar, D.** (2012), Real-time inversion of GPS data for finite fault modeling and rapid hazard assessment, *Geophys. Res. Lett.*, 39, doi:10.1029/2012GL051318.

(5) S.K. Singh, Perez-Campos, X., Iglesias, A. and **Melgar, D.** (2012), A Method for Rapid Estimation of Moment Magnitude for Early Tsunami Warning Based on Coastal GPS Networks, *Seism. Res. Lett.*, 83(3), 516-530.

(4) **D. Melgar**, Bock, Y. and Crowell, B.W., (2012), Real-Time Centroid Moment Tensor Determination for Large Earthquakes from Local and Regional Displacement Records, *Geophys. J. Int.*, doi:10.1111/j.1365-246X.2011.05297.x.

(3) Y. Bock, **Melgar, D.** and Crowell, B.W., (2011), Real-Time Strong-Motion Broadband Displacements from Collocated GPS and Accelerometers, *Bull. Seism. Soc. Am.*, 101(5) 2904-2925.

(2) **D. Melgar** and Perez-Campos, X., (2011), Eduquakes: How a Soccer Stadium Helps with an Education in Science and Seismology, *Seis. Res. Lett.*, 82(1), 115-120.

(1) **D. Melgar** and Perez-Campos, X., (2010) Imaging the Moho and Subducted Oceanic Crust at the Isthmus of Tehuantepec, Mexico, from Receiver Functions, *Pure Appl. Geophys.*, 168, 1449-1460.

Open file reports

(1) E.S. Cochran, et al., (2018). Research to improve ShakeAlert earthquake early warning products and their utility, US Geological Survey Open File Report (No. 2018-1131).

Data Sets

(5) **D. Melgar**, Melbourne, T., Crowell, B.W., Szeliga, W., Santillan, M, Scrivner, C. (2019). Real-Time High-Rate GNSS Displacements: Performance Demonstration During the 2019 Ridgecrest, CA Earthquakes (Version 1.0) [Data set]. Zenodo. <http://doi.org/10.5281/zenodo.3366342>

(4) C.J. Ruhl*, **Melgar, D.**, Chung, A., Grapenthin, R., and Allen, R.M. (2018). Earthquake Early Warning Global Test Suite (Version 1.0) [Data set]. Zenodo. <http://doi.org/10.5281/zenodo.1469833>

(3) **D. Melgar** and Ruhl, C.J. (2018). High-rate GNSS displacement waveforms for large earthquakes version 2.0 (Version 2.0) [Data set]. Zenodo. <http://doi.org/10.5281/zenodo.1434374>

(2) **D. Melgar** (2016). Cascadia FakeQuakes waveform data and scenario plots [Data set]. Zenodo. <http://doi.org/10.5281/zenodo.59943>

(1) **D. Melgar**, Pantoli, E., Restrepo, J., et al. (2013). Displacement Acquisition for the NEESR:BNCS Building Shaketable Test via GPS Sensors, Network for Earthquake Engineering Simulation (distributor),

Grants

- 2021-2024. \$419,701, NASA ESI, Co-I:** Three-Dimensional Kinematics and the Crustal Deformation of Tsunami Earthquakes
- 2021-2022. \$89,299, USGS EHP, PI:** Regional Automated Final Fault Inversion of Seismic and Geodetic Data: Towards 10-minute solutions
- 2019-2019. \$8,026, IRIS Internship, PI:** Tsunami Modeling of the 1787 Tehuantepec Earthquake: An International Undergraduate Internship in Seismology and Hazards
- 2019-2023. \$865,026, NASA DISASTERS, PI:** Local Tsunami Early Warning with GNSS Earthquake Source Products
- 2019-2020. \$85,268, USGS EHP, PI:** Physics Based Broadband Simulations for Earthquake Early Warning
- 2019-2021, \$427,189, NASA ESI, PI:** Machine Learning for Rapid Magnitude and Hazard Characterization of Large Earthquakes with HR-GNSS
- 2019-2022. \$405,494, NSF CSSI, PI:** Collaborative Research:Framework:Data:NSCI:HDR:GeoSCIFramework: Scalable Real-time Streaming Analytics and Machine Learning for Geoscience and Hazards Research
- 2017-2018. \$13,967, NASA RAPID, Co-I:** Evaluation of Real-Time GNSS Waveforms for Tsunami Warning at NOAA's Tsunami Warning Centers
- 2016-2017. \$14,567, NASA RAPID, Co-I:** Deploying NASA GNSS-based Technology at NOAA's Tsunami Warning Centers
- 2013-2014:** University of California Ship Funds award for student lead ocean research

Mentoring

Yu-Sheng Sun 2020-	Ph.D. Student <i>U. Oregon</i>
David Small (joint with D. Toomey) 2019-	Ph.D. Student <i>U. Oregon</i>
Sydney Dybing 2019-	Ph.D. Student <i>U. Oregon</i>
Sean Santellanes 2019-	Ph.D. Student <i>U. Oregon</i>
Jiun-Ting Lin (joint with A. Thomas) 2017-	Ph.D. Student <i>U. Oregon</i>
Dr. Khurram Aslam (joint with A. Thomas) 2019-,	Postdoctoral Fellow <i>U. Oregon</i>
Dr. Dara Goldberg 2019-2020, now at USGS National Earthquake Information Center	Postdoctoral Fellow <i>U. Oregon</i>
Dr. Amy Williamson 2018-2020, now at NOAA National Tsunami Warning Center	Postdoctoral Fellow <i>U. Oregon</i>

Dr. Christine Ruhl
2016-2018, now Asst. Prof. at University of Tulsa

Postdoctoral Fellow
UC Berkeley

External Mentoring

Miriam Vazquez Caamal

IRIS undergraduate intern
U. Oregon

Dara Goldberg

Dr. Yehuda Bock, Chair

Ph.D. Committee
UC San Diego

Jessie K. Saunders

Dr. Jennifer Haase, Chair

Ph.D. Committee
UC San Diego

Catherine Jeffries

Dr. Timothy Melbourne, Chair

M.S. Committee
Central Washington University

Dominga Sanchez

Undergraduate research

California Alliance for Minority Participation
UC San Diego

Service

National Academy of Sciences: Committee on Solid Earth Geophysics (2020-)

NOAA: Tsunami Science Technical Advisory Panel (2020-)

SSA: Annual Meeting Program Committee (2020)

NSF: EAR Geophysical Facilities Portfolio Review Committee (2020)

SZ4D: Steering Committee (2018-2020)

Associate Editor: Journal of Geophysical Research (2018-2020)

Associate Editor: Bulletin of the Seismological Society of America (2016-2018)

UNAVCO: Geodetic Infrastructure Advisory Committee Chair (2018-). Nomination Committee (2019-2020)

IRIS: International Development Seismology Committee (2018-2020)

ShakeAlert early warning project committees: Executive committee, geodesy committee, ground motion committee (2016-)

Meeting convener: 2016 Subduction zone observatory meeting, 2018 UNAVCO science workshop

American Geophysical Union: On-Demand Program Committee

Journal Reviewer: Geophysics Journal International, Bulletin of the Seismological Society of America, Seismological Research Letters, Geophysical Research Letters, Journal of Geophysical Research, Tectonophysics, Earth and Planetary Science Letters, Geofisica Internacional

Proposal Reviewer: National Science Foundation, Swiss National Science Foundation, FONDECYT (Chile)

Teaching

2020-: EARTH 616: Signal Processing

2019-: EARTH 201: Dynamic Planet Earth

2019-: EARTH 610: Crustal Deformation

2018-: EARTH 306: Earthquakes and volcanoes

2017-: EARTH 363: Computational tools for Earth Science

2011-2012: Teaching Assistant, SIO15 Natural Disasters. Instructor, Dr. Gabi Laske

2008-2009: Teaching Assistant, Complex Analysis for Geophysics. Instructor, Dr. Xyoli Perez-Campos

Operational Responsibilities

9/2015-9/2017, Bay Area Regional Deformation Network: While at UC Berkeley I was in charge of maintaining a 32 station real-time GPS network and its associated real-time data products. This includes finite fault algorithms that contribute to the ShakeAlert earthquake early warning system. I supervise one real-time programmer and coordinate maintenance with a field crew of 2 engineers.

Ocean Going Experience

6/2020 (postponed to 2021): Science party on-board the R/V Sikuliaq. Deploy 2 GNSS-A sites offshore Oregon. 10 days at sea.

6/2018: Science party on-board the R/V Elakha. Waveglider recovery for seafloor geodesy survey offshore Newport, OR. 2 days at sea.

12-2013-1/2014: Principal Investigator and Chief Scientist on-board the R/V Roger Revelle for the Multi Spectral Imaging of the Sunda Mega Thrust (MIST) expedition, Colombo, Sri Lanka to Kao-Hsiung, Taiwan. 28 days at sea.

Invited Seminars and Talks

Ecole Normale Supérieure, Institut du Physique du Globe: online, 2020

University of California Santa Barbara, Physics Department: online, 2020

Symposium on the Role of Machine Learning in Geophysics: National Academy of Sciences, Washington DC, 2019

Earthscope Finale Symposium: AAAS, Washington DC, 2019

Earthscope Speaker Series: University of Idaho, Santa Rosa State University, Michigan Technological University, San Diego State University, Calvin College, 2019

University of California Los Angeles: Los Angeles, CA, 2019

Oregon State University: Corvallis, OR, 2018

University of Oregon: Eugene, OR, 2017

Columbia University: Nyack, NY, 2017

University of Hawaii: Honolulu, HI, 2017

UC Santa Cruz, Department of Earth and Planetary Sciences: Santa Cruz, CA, 2016

Central Wash. Univ., Department of Geological Science: Ellensburg, WA, 2016

Stanford University, Department of Geophysics: Palo Alto, CA, 2016

USGS Earthquake Science Center: Menlo Park, CA, 2016, 2014

Japan Geosciences Union: Chiba, Japan, 2016

California Institute of Technology: Pasadena, CA, 2016

University of Texas, Institute of Geophysics: Austin, TX, 2016

University of Michigan, Dept. of Earth and Environmental Sciences: Ann Arbor, MI, 2015

University of Cambridge, Dept. of Earth Sciences: Cambridge, UK, 2015
University of Washington, Dept. of Earth and Space Sciences: Seattle, WA, 2015
University of California San Diego, Structural Engineering Dept.: San Diego, CA, 2015
University of Nevada Reno, Seismological Laboratory: Reno, NV, 2015
University of Arizona, Dept. of Geosciences: Tucson, Az, 2015
American Geophysical Union Annual Meeting: San Francisco, CA, 2014
UNAVCO Science Workshop: Broomfield, CO, 2014
IRIS Seismic Instrumentation Technology Symposium: Albuquerque, NM, 2013
9th Annual US-Japan Natural Resources Panel on Earthquake Research: Golden, CO, 2013
NOAA Pacific Marine Environmental Laboratory Seminar: Seattle, WA, 2013
University of Washington, Applied Math Seminar: Seattle, WA, 2013
3rd UNAVCO/COCONet Science Workshop: Tulum, Mexico, 2013
Seismological Society of America Annual Meeting: San Diego, CA, 2012
Universidad Nacional Autonoma de Mexico, Geophysics Institute Seminar: Mexico City, 2012
UNAVCO Workshop: RT-GPS Position Data Products & Formats: Boulder, CO, 2012
Earthscope National Meeting, RT-GPS Worksop: Austin, TX, 2011
Union Geofisica Mexicana, Annual Meeting: Puerto Vallarta, Mexico, 2011
UNAVCO Workshop: Toward a Unified GPS Network in Mexico: Puerto Vallarta, Mexico, 2010

Advisory Presentations and Briefings

House/senate staff on behalf of the SSA: Washington, DC, 2020
House appropriations majority staff: Washington, DC, 2018
UNESCO Pacific Tsunami Warning System Scientific Experts Meeting: Auckland, New Zealand, 2018
National Tsunami Warning Center: Palmer, AK, 2016
Briefing NSF director: Boulder, CO., 2015
California Spatial Reference Center: San Diego, CA., 2013
California Spatial Reference Center: San Diego, CA., 2012
USGS Advanced National Seismic System, Steering Committee: Boulder, CO, 2011
California Spatial Reference Center: San Diego CA., 2011

Outreach Talks

IRIS webinar: Geodesy for tsunami hazards, 2020
National Academy of Sciences webinar: Local tsunami warning for Cascadia, 2018
SCEC hazards collaboratory webinar: Tsunami science and warning, 2018
UGM webinar (in spanish): Earthquake early warning after the September earthquakes, 2018
UGM webinar (in spanish): Earthquake and tsunami early warning, 2017
UGM webinar (in spanish): Large earthquakes and tsunamis, 2016
Marin County Science Seminar: Marin, CA., 2015

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Birch Aquarium Perspectives Lecture: La Jolla, CA., 2015

Berkeley Breakfast Club: Berkeley, CA., 2015

International Workshops

Early Warning Systems Workshop: Santiago, Chile, 2015

Earthquake Research Institute: The summer school on Earthquake Science: Diversity of Earthquakes, Hakone, Japan, 2013

Pan-American Advanced Sciences Institute: The science of predicting and understanding tsunamis, storm surges and tidal phenomena, Valparaiso, Chile, 2013

Society of Industrial and Applied Math: Gene Golub Summer School: Simulation and Supercomputing in the Geosciences (Tsunamis), Monterey, CA, 2012

Pan-American Advanced Sciences Institute: New Frontiers in Seismological Research: Sustainable Networks, Earthquake Source Parameters, and Earth Structure, Quito, Ecuador, 2011

Computer Skills

Open Source Code Repositories: <http://github.com/dmelgarm>

Languages: Python, Fortran, C, Matlab, Shell script

Seismological Processing: ObsPy, SAC, Seisan

Geodetic Processing: Track, GMTSAR

Tsunami Modeling: GeoClaw

Marine Geophysics: MB System (swath bathymetry), SIOSEIS and PostSurvey (sub-bottom CHIRP profiling)

Image processing and Map Making: GMT, GeoMapApp

Languages

English: Native fluency

Spanish: Native fluency

French: Conversational

Societies and Memberships

American Geophysical Union

Seismological Society of America

Union Geofisica Mexicana

Society of Exploration Geophysics