

CURRENT POSITION:

Senior Research Fellow (Jul 2013 to present); Research Fellow (Feb 2010 to Jun 2013)

Earth Observatory of Singapore
Nanyang Technological University
50 Nanyang Avenue, N2-01a-14, Singapore 639798

meltzner@ntu.edu.sg
www.earthobservatory.sg

EDUCATION:

- Doctor of Philosophy in Geology, California Institute of Technology, 2010
- Master of Science (Geological Sciences), San Diego State University, 2006
- Bachelor of Science with honor (Geology), California Institute of Technology, 2000

PRIMARY RESEARCH INTERESTS:

- neotectonics, paleoseismology, paleogeodesy, and tectonic geomorphology
- earthquake recurrence, rupture repeatability, fault segmentation, and fault interactions
- changes in sea level in recent millennia and over the Holocene

SELECTED AWARDS AND HONORS:

- 2007 recipient of the Outstanding Student Paper Award, Seismology Section, American Geophysical Union Fall Meeting, December 2007, San Francisco, CA
- 2006 recipient of the Outstanding Student Presentation Award, Seismological Society of America Annual Meeting, April 2006, San Francisco, CA
- 2005 recipient of the Outstanding Student Presentation Award, Seismological Society of America Annual Meeting, April 2005, Incline Village, NV
- 2003–2004 recipient of the Special Institute Fellowship in the Division of Geological and Planetary Sciences at Caltech
- National Science Foundation (NSF) Graduate Research Fellowship
2002 Honorable Mention awardee
- recipient of various awards and scholarships in the Department of Geological Sciences at SDSU, 2001–2003
- winner of the 2000 Deans' Cup award (at Caltech), in recognition of efforts to improve the quality of undergraduate life at Caltech and to establish lines of communication with members of the faculty and administration; accompanied by a \$200 prize
- 1999–2000 recipient of the Ian Campbell Award in Geology (at Caltech), for outstanding performance in field geology courses during the 1999–2000 academic year; accompanied by the award of a Brunton Compass
- 1998–1999 recipient of the Fritz Burns Prize in Geology (at Caltech), in recognition of one's potential to make a significant contribution in the earth sciences through research; accompanied by a \$2500 grant to support ongoing research

ADVISING AND TEACHING:

- Co-advising 3 PhD students in the Asian School of the Environment (ASE) at NTU, 2012–present
- Advised 7 undergraduates through Caltech’s Summer Undergraduate Research Fellowships (SURF) program, 2013–2014
- Advised 3 undergraduates through NTU’s Undergraduate Research Experience on Campus (URECA) program, 2012–2015
- Teach occasional lectures for the *Living with Coastal Processes and Hazards* course at NTU

SCIENTIFIC COMMUNITY SERVICE:

- Refereed 23 manuscripts or manuscript revisions for publication, 2003–2015
- Reviewed 2 proposals for the National Science Foundation (NSF), 2011–2015
- 2014 American Geophysical Union Fall Meeting co-convener for the special session entitled “Science and Societal Lessons from a Decade of Giant Megathrust Earthquakes”
- External examiner for the PhD defense of Jennifer Weil Accardo, IPGP, France, June 2014
- Participant, GeoPRISMS Subduction Cycles & Deformation (SCD) Implementation Workshop, Austin, TX, January 2011
- 2010 American Geophysical Union Fall Meeting co-convener for the special session entitled “Subduction-Zone Segmentation over Multiple Earthquake Cycles”
- 2009 Geological Society of America Annual Meeting co-convener for the special session entitled “Paleogeodesy at Subduction Zones”
- 2006 Seismological Society of America Annual Meeting co-convener for the special session entitled “The Giant Sumatran Earthquakes of 2004 and 2005”

OUTREACH ACTIVITIES:

- Public lectures given to various polytechnic and high schools in Singapore
- Lecture given to foreign government officials as part of the Ministry of Foreign Affairs (MFA) Singapore course entitled “Natural Disaster Risk Reduction and Management,” August 2011
- Contributed to an exhibition at the Science Centre Singapore, “Earth: Our Untamed Planet”
- Development of a website, educational exercises (undergraduate level), and a trail guide for the lay public for the offset of Wallace Creek along the San Andreas fault in the Carrizo Plain. The website URL is <http://www.scec.org/wallacecreek/> and the brochure and class exercises are available in PDF format from the website.

PROFESSIONAL SOCIETIES:

- American Geophysical Union
- Geological Society of America
- Seismological Society of America
- Asia Oceania Geosciences Society
- Sigma Xi, The Scientific Research Society

PUBLISHED PAPERS:

- Meltzner, A.J. (2015). Earthquakes: The rise and fall of an island (News & Views), *Nature Geoscience* **8**, 501-502, doi:10.1038/ngeo2477.
- Meltzner, A.J., K. Sieh, H.-W. Chiang, C.-C. Wu, L.L.H. Tsang, C.-C. Shen, E.M. Hill, B.W. Suwargadi, D.H. Natawidjaja, B. Philibosian, and R.W. Briggs (2015). Time-varying interseismic strain rates and similar seismic ruptures on the Nias–Simeulue patch of the Sunda megathrust, *Quaternary Science Reviews* **122**, 258-281, doi:10.1016/j.quascirev.2015.06.003.
- Meltzner, A.J., and C.D. Woodroffe (2015). Coral microatolls, in *Handbook of Sea-Level Research*, I. Shennan, A.J. Long, and B.P. Horton (Editors), John Wiley & Sons, Ltd., Chichester, UK, 125-145, doi:10.1002/9781118452547.ch8.
- Fujino, S., K. Sieh, A.J. Meltzner, E. Yulianto, and H.-W. Chiang (2014). Ambiguous correlation of precisely dated coral detritus with the tsunamis of 1861 and 1907 at Simeulue Island, Aceh Province, Indonesia, *Marine Geology* **357**, 384-391, doi:10.1016/j.margeo.2014.09.047.
- Lee, J.-M., E.A. Boyle, I.S. Nurhati, M. Pfeiffer, A.J. Meltzner, and B. Suwargadi (2014). Coral-based history of lead and lead isotopes of the surface Indian Ocean since the mid-20th century, *Earth and Planetary Science Letters* **398**, 37-47, doi:10.1016/j.epsl.2014.04.030.
- Bursik, M., K. Sieh, and A. Meltzner (2014). Deposits of the most recent eruption in the southern Mono Craters, California: description, interpretation and implications for regional marker tephras, *Journal of Volcanology and Geothermal Research* **275**, 114-131, doi:10.1016/j.jvolgeores.2014.02.015.
- Meltzner, A.J., K. Sieh, H.-W. Chiang, C.-C. Shen, B.W. Suwargadi, D.H. Natawidjaja, B. Philibosian, and R.W. Briggs (2012). Persistent termini of 2004- and 2005-like ruptures of the Sunda megathrust, *Journal of Geophysical Research* **117**, B04405, doi:10.1029/2011JB008888.
- Meltzner, A.J., K. Sieh, H.-W. Chiang, C.-C. Shen, B.W. Suwargadi, D.H. Natawidjaja, B.E. Philibosian, R.W. Briggs, and J. Galetzka (2010). Coral evidence for earthquake recurrence and an A.D. 1390–1455 cluster at the south end of the 2004 Aceh–Andaman rupture, *Journal of Geophysical Research* **115**, B10402, doi:10.1029/2010JB007499.
- Rockwell, T., D. Ragona, G. Seitz, R. Langridge, M.E. Aksoy, G. Ucarkus, M. Ferry, A.J. Meltzner, Y. Klinger, M. Meghraoui, D. Satir, A. Barka, and B. Akbalik (2009). Paleoseismology of the North Anatolian fault near the Marmara Sea: implications for fault segmentation and seismic hazard, in *Paleoseismology: Historical and Prehistorical Records of Earthquake Ground Effects for Seismic Hazard Assessment*, K. Reicherter, A.M. Michetti, and P.G. Silva (Editors), The Geological Society, London, Special Publications **316**, 31-54, doi:10.1144/SP316.3.
- Mériaux, A.-S., K. Sieh, R.C. Finkel, C.M. Rubin, M.H. Taylor, A.J. Meltzner, and F.J. Ryerson (2009). Kinematic behavior of southern Alaska constrained by westward decreasing postglacial slip rates on the Denali fault, Alaska, *Journal of Geophysical Research* **114**, B03404, doi:10.1029/2007JB005053.
- Sieh, K., D.H. Natawidjaja, A.J. Meltzner, C.-C. Shen, H. Cheng, K.-S. Li, B.W. Suwargadi, J. Galetzka, B. Philibosian, and R.L. Edwards (2008). Earthquake supercycles inferred from sea-level changes recorded in the corals of West Sumatra, *Science* **322**, 1674-1678, doi:10.1126/science.1163589.
- Konca, A.O., J.-P. Avouac, A. Sladen, A.J. Meltzner, K. Sieh, P. Fang, Z. Li, J. Galetzka, J. Genrich, M. Chlieh, D.H. Natawidjaja, Y. Bock, E.J. Fielding, C. Ji, and D.V. Helmburger (2008). Partial rupture of a locked patch of the Sumatra megathrust during the 2007 earthquake sequence, *Nature* **456**, 631-635, doi:10.1038/nature07572.
- Shen, C.-C., K.-S. Li, K. Sieh, D. Natawidjaja, H. Cheng, X. Wang, R.L. Edwards, D.D. Lam, Y.-T. Hsieh, T.-Y. Fan, A.J. Meltzner, F.W. Taylor, T.M. Quinn, H.-W. Chiang, and K.H. Kilbourne (2008). Variation of initial $^{230}\text{Th}/^{232}\text{Th}$ and limits of high precision U–Th dating of shallow-water corals, *Geochimica et Cosmochimica Acta* **72**, 4201-4223, doi:10.1016/j.gca.2008.06.011.

- Taylor, F.W., R.W. Briggs, C. Frohlich, A. Brown, M. Hornbach, A.K. Papabatu, A.J. Meltzner, and D. Billy (2008). Rupture across arc segment and plate boundaries in the 1 April 2007 Solomons earthquake, *Nature Geoscience* **1**, 253-257, doi:10.1038/ngeo159.
- Konca, A.O., V. Hjorleifsdottir, T.-R. A. Song, J.-P. Avouac, D.V. Helmberger, C. Ji, K. Sieh, R. Briggs, and A. Meltzner (2007). Rupture kinematics of the 2005 M_w 8.6 Nias–Simeulue earthquake from the joint inversion of seismic and geodetic data, *Bulletin of the Seismological Society of America* **97**, S307-S322, doi:10.1785/0120050632.
- Meltzner, A.J., T.K. Rockwell, and L.A. Owen (2006). Recent and long-term behavior of the Brawley fault zone, Imperial Valley, California: an escalation in slip rate?, *Bulletin of the Seismological Society of America* **96**, 2304-2328, doi:10.1785/0120050233.
- Briggs, R.W., K. Sieh, A.J. Meltzner, D. Natawidjaja, J. Galetzka, B. Suwargadi, Y. Hsu, M. Simons, N. Hananto, I. Suprihanto, D. Prayudi, J.-P. Avouac, L. Prawirodirdjo, and Y. Bock (2006). Deformation and slip along the Sunda megathrust in the great 2005 Nias–Simeulue earthquake, *Science* **311**, 1897-1901, doi:10.1126/science.1122602.
- Subarya, C., M. Chlieh, L. Prawirodirdjo, J.-P. Avouac, Y. Bock, K. Sieh, A.J. Meltzner, D.H. Natawidjaja, and R. McCaffrey (2006). Plate-boundary deformation associated with the great Sumatra–Andaman earthquake, *Nature* **440**, 46-51, doi:10.1038/nature04522.
- Meltzner, A.J., K. Sieh, M. Abrams, D.C. Agnew, K.W. Hudnut, J.-P. Avouac, and D.H. Natawidjaja (2006). Uplift and subsidence associated with the great Aceh–Andaman earthquake of 2004, *Journal of Geophysical Research* **111**, B02407, doi:10.1029/2005JB003891.
- Meltzner, A.J., and T.K. Rockwell (2004). The Tejon Pass earthquake of 22 October 1916: an M 5.6 event on the Lockwood Valley and San Andreas faults, southern California, *Bulletin of the Seismological Society of America* **94**, 1293-1304, doi:10.1785/012003204.
- Klinger, Y., K. Sieh, E. Altunel, A. Akoglu, A. Barka, T. Dawson, T. Gonzalez, A. Meltzner, and T. Rockwell (2003). Paleoseismic evidence of characteristic slip on the western segment of the North Anatolian fault, Turkey, *Bulletin of the Seismological Society of America* **93**, 2317-2332, doi:10.1785/0120010270.
- Girty, G.H., J. Marsh, A. Meltzner, J.R. McConnell, D. Nygren, J. Nygren, G.M. Prince, K. Randall, D. Johnson, B. Heitman, and J. Nielsen (2003). Assessing changes in elemental mass as a result of chemical weathering of granodiorite in a Mediterranean (hot summer) climate, *Journal of Sedimentary Research* **73**, 434-443, doi:10.1306/091802730434.
- Meltzner, A.J., and D.J. Wald (2003). Aftershocks and triggered events of the great 1906 California earthquake, *Bulletin of the Seismological Society of America* **93**, 2160-2186, doi:10.1785/0120020033.
- Meltzner, A.J., and D.J. Wald (2002). Felt reports and intensity assignments for aftershocks and triggered events of the great 1906 California earthquake, *U. S. Geological Survey Open-File Report 02-37*, 301 pp.
- Scientists from USGS, SCEC, and CDMG (2000). Preliminary report on the 16 October 1999 M 7.1 Hector Mine, California, earthquake, *Seismological Research Letters* **71**, 11-23.
- Meltzner, A.J., and D.J. Wald (1999). Foreshocks and aftershocks of the great 1857 California earthquake, *Bulletin of the Seismological Society of America* **89**, 1109-1120.
- Meltzner, A.J., and D.J. Wald (1998). Foreshocks and aftershocks of the great 1857 California earthquake, *U. S. Geological Survey Open-File Report 98-465*, 115 pp.

THESES:

- Meltzner, A.J. (2010). Earthquake recurrence, clustering, and persistent segmentation near the southern end of the 2004 Sunda megathrust rupture, Ph.D. Dissertation, California Institute of Technology, 300 pp. and online supplement. <http://resolver.caltech.edu/CaltechTHESIS:06012010-082222484>
- Meltzner, A.J. (2006). Characterization of the long-term behavior of the Imperial and Brawley faults, Imperial Valley, California, Master's Thesis, San Diego State University, 149 pp. and 4 plates.
- Meltzner, A.J. (2000). Aftershocks of the great 1906 San Francisco earthquake, based on intensity observations, Undergraduate Thesis, California Institute of Technology, 66 pp.

SUBMITTED PAPERS AND MANUSCRIPTS IN PREPARATION:

- Tsang, L.L.H., A.J. Meltzner, B. Philibosian, E.M. Hill, J.T. Freymueller, and K. Sieh (2015). A 15-year slow slip event on the Sunda megathrust offshore Sumatra, *Geophysical Research Letters*, submitted.
- Meltzner, A.J., A.D. Switzer, B.P. Horton, D. Hill, Q. Qiu, E.M. Hill, J.M. Majewski, B.W. Suwargadi, and D.H. Natawidjaja (2015). A multi-peaked mid-Holocene relative sea-level highstand on the Sunda Shelf, Indonesia, manuscript in preparation.
- Meltzner, A.J., and T.K. Rockwell (2015). Evidence for non-characteristic slip and temporal clustering along the Imperial fault at Mesquite Basin, Imperial Valley, California, manuscript in preparation.

SELECTED ABSTRACTS:

- Meltzner, A.J., K. Sieh, H.-W. Chiang, C.-C. Wu, C.-C. Shen, L.L.H. Tsang, E.M. Hill, B.W. Suwargadi, D.H. Natawidjaja, B. Philibosian, and R.W. Briggs (2014). Similar seismic ruptures and interseismic strain rate variations on the Nias–Simeulue patch of the Sunda megathrust, Abstract G11B-0488 presented at the 2014 Fall Meeting, American Geophysical Union, San Francisco, California, 15–19 December.
- Tsang, L.L.H., A.J. Meltzner, E.M. Hill, J.T. Freymueller, D.H. Natawidjaja, B.W. Suwargadi, and K. Sieh (2014). Modeling temporal variations in interseismic subsidence rates recorded by corals in the Simeulue–Nias region, Sumatra: How can we explain them?, Abstract G11B-0489 presented at the 2014 Fall Meeting, American Geophysical Union, San Francisco, California, 15–19 December.
- Meltzner, A.J., A.D. Switzer, B.P. Horton, B.W. Suwargadi, D.H. Natawidjaja, N. Cahill, D. Hill, and J. Majewski (2014). Details of the mid-Holocene relative sea-level highstand at Belitung Island, Indonesia, on the Sunda Shelf, from coral microatolls, *GSA Abstracts with Programs* **46** (6), p. 179.
- Meltzner, A.J., K.A. Grijalva, A. Sladen, K. Sieh, R. Bürgmann, P. Banerjee, J.F. Genrich, D.H. Natawidjaja, B.W. Suwargadi, and J.E. Galetzka (2010). Moderate ruptures at a megathrust segment boundary: the M_w 7.2–7.3 Simeulue earthquakes of 2002, 2008, and 2010, Abstract T11D-2124 presented at the 2010 Fall Meeting, American Geophysical Union, San Francisco, California, 13–17 December.
- Rockwell, T.K., and A.J. Meltzner (2008). Non-characteristic slip and earthquake clustering on the Imperial fault, Mesquite Basin, Imperial Valley, California, *Eos, Transactions, American Geophysical Union* **89** (53), Fall Meet. Suppl., Abstract T11A-1845.
- Meltzner, A.J., L.M. Jones, and H. Kanamori (2005). Insight into a mystery: why do the longest strike-slip earthquake ruptures produce so few large aftershocks?, *Seismological Research Letters* **76**, p. 267.
- Rockwell, T.K., J. Young, G. Seitz, A. Meltzner, D. Verdugo, F. Khatib, D. Ragona, O. Altangerel, and J. West (2003). 3,000 years of ground-rupturing earthquakes in the Anza Seismic Gap, San Jacinto fault, southern California: time to shake it up?, *Seismological Research Letters* **74**, pp. 236-237.