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Professional Employment

Assistant, Associate, & Full Research Geophysicist	UCLA	1993 - present
Program Director, Geophysics Program	NSF	2013 - 2015
Professor, School of Earth & Space Science, Peking Univ., China		2008 - present
Research Fellow/Professor, Institute of Geology, CEA, China		2001 - 2008
Post-doctorate Scholar	UCLA	1991 - 1992

Education

Ph.D. in Geophysics and Space Physics	UCLA	1991
M.S. in Geophysics and Space Physics	UCLA	1985
B.S. in Geophysics	Peking Univ.	1982

Professional Experience

Board member, Advisory Committee on Science and Technology, China Earthquake Administration	2006-present
Guest Editor, Bull. Seismol. Soc. Am. special issue on “2008 Great Wenchuan earthquake”	2008-2010
Science Director, Crustal Deformation Research Center, Crustal Motion Observation Network of China, CEA, China	2002-2008
Board member, Southern California Integrated GPS Network (SCIGN) Coordinating Committee	1997-2000

Thesis Advisor

David Jackson

Selected Publications

- Jolivet, R., M. Simons, P. S. Agram, Z. Duputel, and **Z.-K. Shen**, Aseismic slip and seismogenic coupling along the central San Andreas Fault, *Geophys. Res., Lett.*, in press, 2015.
- Hao, M., Q. Wang, **Z. Shen**, et al., Present day crustal vertical movement inferred from precise leveling data in eastern margin of Tibetan Plateau, *Tectonophysics*, **632**, 281-292, 2014.
- He, P. C., and **Shen, Z. K.**, Rupture triggering process of Wenchuan earthquake seismogenic faults, *Chinese J. Geophys.*, **57**(10), 3308-3317, doi:10.6038/cjg20141018, 2014.
- Tao W., T. Masterlark, **Shen, Z. K.**, et al., Triggering effect of the Zipingpu Reservoir on the 2008 Mw7.9 Wenchuan, China, earthquake due to poroelastic coupling, *Chinese J. Geophys.*, **57**(10), 3318-3331, doi:10.6038/cjg20141019.
- Jiang, Z., M. Wang, Y. Wang, Y. Wu, S. Che, **Z.-K. Shen**, R. Burgmann, J. Sun, Y. Yang, H. Liao, and Q. Li, GPS constrained coseismic source and slip distribution of

- the 2013 Mw6.6 Lushan, China, earthquake and its tectonic implications, *Geophys. Res. Lett.*, **41**, doi:10.1002/2013GL058812, 2014.
- Wang, Y., F. Wang, M. Wang, **Z.-K. Shen**, and Y. Wan, Coulomb stress change and evolution induced by the 2008 Wenchuan earthquake and its delayed triggering of the 2013 Mw 6.6 Lushan earthquake, *Seismol. Res. Lett.*, **85**(1), 52-59, doi:10.1785/0220130111, 2014.
- Zeng, Y., and **Z.-K. Shen**, Fault network modeling of crustal deformation in California constrained using GPS and geologic observations, *Tectonophysics*, **612-613**, 1-14, 2014.
- Parsons, T., K. M. Johnson, P. Bird, J. M. Bormann, T. E. Dawson, E. H. Field, W. C. Hammond, T. A. Herring, R. McCaffrey, **Z.-K. Shen**, W. R. Thatcher, R. J. Weldon, II, and Y. Zeng, Appendix C: Deformation models for UCERF3, U.S. Geol. Surv. Open-File Report 2013-1165-C, and California *Geol. Surv. Special Report 228-C*, 2013.
- Sun, J., **Z.-K. Shen**, R. Burgmann, M. Wang, L. Chen, X. Xu, A three-step Maximum-A-Posteriori probability method for InSAR data inversion of coseismic rupture with application to the April 14, 2010 Mw 6.9 Yushu, China earthquake, *J. Geophys. Res.*, **118**, 4599-4627, doi:10.1002/jgrb.50244, 2013.
- Sun, J., **Z.-K. Shen**, R. Burgmann, X. Xu, Coseismic slip-distribution of the 24 March 2011 Tarlay (Myanmar) Mw 6.8 Earthquake from ALOS PALSAR Interferometry, *Bull. Seismol. Soc. Am.*, **103**, 2928-2936, doi:10.1785/0120120365, 2013.
- Wang, Y., M. Wang, **Z. Shen**, et al., Inter-seismic deformation field of the Ganzi-Yushu fault before the 2010 Mw 6.9 Yushu earthquake, *Tectonophysics*, **584**, 138-143, 2013.
- Burgess, W. P., A. Yin, C. S. Dubey, **Z.-K. Shen**, and T. K. Kelty, Holocene shortening across the Main Frontal Thrust zone in the eastern Himalaya, *Ear. Planet. Sci. Lett.*, **357-358**, 152-167, 2012.
- Jolivet, R., C. Lasserre, M.-P. Doin, S. Guillaso, G. Peltzer, R. Dailu, J. Sun, **Z.-K. Shen**, and X. Xu, Shallow creep on the Haiyuan Fault (Gansu, China), revealed by SAR Interferometry, *J. Geophys. Res.*, **117**, B06401, doi:10.1029/2011JB008732, 2012.
- Hao, M., **Z.-K. Shen**, Q. Wang, and D. Cui, Postseismic deformation mechanisms of the 1990 Mw 6.4 Gonghe, China earthquake constrained using leveling measurements, *Tectonophysics*, **532-535**, 205-214, 2012.
- Shen, Z.-K.**, R. King, D. Agnew, et al., A unified analysis of crustal motion in Southern California, 1970-2004: The SCEC Crustal Motion Map, *J. Geophys. Res.*, **116**, B11402, doi:10.1029/2011JB008549, 2011.
- Sun, J., K. Johnson, Z. Cao, **Z. Shen**, R. Burgmann, and X. Xu, Mechanical constraints on inversion for fault slip and geometry using InSAR data from the Oct. 6 2008 Mw 6.3 Dangxiong-Yangyi (Tibet) earthquake, *J. Geophys. Res.*, **116**, B01406, doi:10.1029/2010JB007849, 2011.
- Wang, F., **Shen, Z.-K.**, Wang, Y. Z., et al. Influence of the March 11, 2011 Mw 9.0 Tohoku-oki earthquake on regional volcanic activities. *Chinese Sci. Bull.*, **56**, 2077-2081, doi: 10.1007/s11434-011-4523-y, 2011
- Wang, M., Li, Q., Wang, F., Zhang, R., Wang, Y.-Z., Shi, H.-B., Zhang, P.-Z., **Shen, Z.-K.**, Far-field coseismic displacements associated with the 2011 Tohoku-oki

- earthquake in Japan observed by Global Positioning System. *Chinese Sci. Bull.*, **56**, 2419-2425, doi:10.1007/s11434-011-4588-7, 2011
- Klinger Y., C. Ji, **Z.-K. Shen**, and W. H. Bakun (editors), Special Issue on the 2008 Wenchuan, China, Earthquake, *Bull. Seism. Soc. Am.*, **100**(5B), 2010.
- Zhang, P. Z., X. Z. Wen, **Z.-K. Shen**, and J. H. Chen, Oblique, high-Angle, listric-reverse faulting and associated development of strain: The Wenchuan earthquake of May 12, 2008, Sichuan, China, *Annu. Rev. Earth Planet. Sci.* **38**, 351 – 80, 2010.
- Wan, Y., and **Z.-K. Shen**, Static Coulomb stress changes on faults caused by the 2008 Mw 7.9 Wenchuan, China earthquake, *Tectonophysics*, **491**, 105-118, doi:10.1016/j.tecto.2010.03.017, 2010.
- Wan, Y.-G., **Shen, Z.-K.**, et al., The mechanical effects of the 2008 Ms7.3 Yutian, Xinjiang earthquake on the neighboring faults and its tectonic origin of normal faulting mechanism, *Chinese J. Geophys.*, **53**(2), 280-289, doi:10.3969/j.issn.0001-5733.2010.02.006, 2010.
- Shen, Z.-K.**, J. Sun, P. Zhang, Y. Wan, M. Wang, R. Bürgmann, Y. Zeng, W. Gan, H. Liao, and Q. Wang, Slip maxima at fault junctions and rupturing of barriers during the 2008 Wenchuan earthquake, *Nature Geoscience*, **2**, 718-724, 2009.
- Hilley, G. E., K. M. Johnson, M. Wang, **Z.-K. Shen**, and R. Burgmann, Earthquake-cycle deformation and fault slip rates in northern Tibet, *Geology*, **37**, 31-34, doi:10.1130/G25157A.1, 2009.
- Cavalié O., C. Lasserre, M.-P. Doin, G. Peltzer, J. Sun, X. Xu, **Z.-K. Shen**, Measurement of interseismic strain across the Haiyuan fault (Gansu, China), by InSAR, *Ear. Planet. Sci. Lett.*, **275**(3-4), 246-257, 2008.
- Sun, J., **Z. Shen**, X. Xu, and R. Burgmann, Synthetic Normal faulting of the 9 January 2008 Nima (Tibet) Earthquake from Conventional and Along-track SAR Interferometry, *Geophys. Res. Lett.*, **35**, L22308, doi:10.1029/2008GL035691, 2008.
- Wang Y., Wang E., **Shen Z.** et al., GPS-constrained inversion of present-day slip rates along major faults of the Sichuan-Yunnan region, China, *Sci. China (D)*, **51**(9), 1267-1283, 2008.
- Wan, Y.-G., **Z.-K. Shen**, et al., Coseismic slip distribution of the 2001 Kunlun mountain pass west earthquake constrained using GPS and InSAR data, *Chinese J. Geophys.*, **51**(4), 1074-1084, 2008.
- Wan, Y.-G., **Z.-K. Shen**, et al., An algorithm of fault parameter determination using distribution of small earthquakes and parameters of regional stress field and its application to Tangshan earthquake sequence, *Chinese J. Geophys.*, **51**(3), 793-904, 2008.
- Wang, M., **Z.-K. Shen**, et al., GPS monitoring of temporal deformation of the Xianshuihe fault, *Sci. China (D)*, **51**(9), 1259-1266, 2008.
- Shen, Z.-K.**, D. D. Jackson, and Y. Y. Kagan, Implications of Geodetic Strain Rate for Future Earthquakes, With a Five-Year Forecast of M5 Earthquakes in Southern California, *Seismol. Res. Lett.*, **78**, 117-120, 2007.
- Gan, W., P. Zhang, **Z.-K. Shen**, et al., Present-day crustal motion within the Tibetan Plateau inferred from GPS measurements, *J. Geophys. Res.*, **112**, B08416, doi:10.1029/2005JB004120, 2007.

- Tao, W., **Shen Z.-K.**, et al., Crustal elasticity contrast across the East Kunlun fault in northern Tibet inferred from InSAR measurements of the 2001 Mw7.8 Kokoxili earthquake, *Chinese J. Geophys.*, **50**(3), 658-665, 2007.
- Sun, J.-B., Xu X.-W., **Shen Z.-K.**, et al., Parameter inversion of the 1997 Mani earthquake from INSAR co-seismic deformation field based on linear elastic dislocation model-I. Uniform slip inversion, *Chinese J. Geophys.*, **50**(4), 947-962, 2007.
- Sun, J.-B., Y.-L., Shi, **Z.-K. Shen**, et al., Parameter inversion of the 1997 Mani earthquake from INSAR co-seismic deformation field based on linear elastic dislocation model— II . Slip distribution inversion, *Chinese J. Geophys.*, **50**(4), 1390-1397, 2007.
- Zhang, D.-N., S.-Y. Yuan, and **Z.-K. Shen**, Numerical simulation of the recent crust movement and fault activities in Tibetan plateau, *Chinese J. Geophys.*, **50**(1), 148-157, 2007.
- Liu, M., Y. Yang, **Z.-K. Shen**, S. Wang, M. Wang, and Y. Wan., Active tectonics and intracontinental earthquakes in China: the kinematics and geodynamics, *Bull. Geol. Soc. Am. Spec. Pap.*, **425-19**, 299-318, 2007.
- Yu, H.-Z., **Z.-K. Shen**, et al., Increasing critical sensitivity of the Load/Unload Response Ratio before large earthquakes with identified stress accumulation pattern, *Tectonophysics*, **428** (1), 87-94, 2006.
- Calais, E., L. Dong, M. Wang, **Z.-K. Shen**, and M. Vergnolle, Continental deformation in Asia from a combined GPS solution, *Geophys. Res. Lett.*, **33**, L24319, doi:10.1029/2006GL028433, 2006.
- Wan, Y.-G., **Shen Z.-K.**, and Lan C.-X., Deviatoric stress level estimation according to principle axes rotation of stress field before and after large strike-slip type earthquake and stress drop, *Chinese J. Geophys.*, **49**(3), 731-739, 2006.
- Wang, M., Zhang P., **Shen Z.-K.**, et al., Far-filed coseismic displacements associated with the great Sumatra earthquakes of December 26, 2004 and March 29, 2005 constrained by Global Positional System, *Chinese Sci. Bull.*, **51**(14), 1771-1775, 2006.
- Shen, Z.-K.** et al., Contemporary crustal deformation around southeast borderland of Tibetan plateau, *J. Geophys. Res.*, **110**, B11409, doi:10.1029/2004JB003421, 2005.
- Shen, Z.-K.**, et al., Pole tide modulation of slow slip events at circum-Pacific subduction zones, *Bull. Seismol. Soc. Am.*, **95**(5), 2009-2015, doi:10.1785/0120050020, 2005.
- Zhang, P.-Z., **Z.-K. Shen** et al., Continuous deformation of the Tibetan plateau from global positioning system data, *Geology*, **32**, 809-812, 2004.
- Shen, Z.**, et al., Viscoelastic triggering between large earthquakes along the East Kunlun fault system, *Chinese J. Geophys.*, **46**(6), 1125-1138, 2003.
- Gan, W., P.-Z. Zhang, **Z.-K. Shen**, W. H. Prescott, and J. L. Svare, Initiation of deformation of the Eastern California Shear Zone: Constraints from Garlock fault geometry and GPS observations, *Geophys. Res. Lett.*, **30**, 1496-1499, 2003.
- Wang, M., **Z. Shen**, et al., Contemporary crustal deformation of the Chinese continent and tectonic block model, *Science in China (D)*, **46**(supp.), 25-40, 2003.

- Agnew, D. C., S. Owen, **Z.-K. Shen**, et al., Coseismic displacements from the Hector Mine, California, Earthquake: Results from survey-mode global positioning system measurements, *Bull. Seismol. Soc. Am.*, **92**, 1355-1364, 2002.
- Zang, S., Q. Chen, J. Ning, **Z.-K. Shen**, and Y. Liu, Motion of the Philippine Sea Plate consistent with the NUVEL-1A model, *Geophys. J. Int.*, **150**, 809-819, 2002.
- Owen, S., G. Anderson, D. C. Agnew, H. Johnson, K. Hurst, R. Reilinger, **Z.-K. Shen**, J. Svart, and T. Baker, Early postseismic deformation from the 16 October 1999 Mw 7.1 Hector Mine, California, earthquake as measured by survey-mode GPS, *Bull. Seismol. Soc. Am.*, **92**, 1423-1432, 2002.
- Shen, Z.-K.**, M. Wang, Y. Li, D. D. Jackson, A. Yin, D. Dong, and P. Fang, GPS study of crustal deformation associated with the Altyn Tagh fault system, *J. Geophys. Res.*, **106**, 7-30,621, 2001.
- Shen, Z.-K.**, C. Zhao, Y. Li, D. Jackson, P. Fang, D. Dong, and A. Yin, Contemporary crustal deformation in east Asia constrained by global positioning system measurements, *J. Geophys. Res.*, **105**, 5721-5734, 2000.
- Shen, Z.-K.**, D. Dong, T. Herring, K. Hudnut, D. Jackson, R. King, S. McClusky, and L. Sung, Geodetic measurements of southern California crustal deformation, *EOS, Trans. Am. Geophys. Union*, **78**, No. 43, pp. 477, 482, 1997.
- Jackson, D. D., **Z.-K. Shen**, D. Potter, X. Ge, L. Sung, Earthquakes and strain in southern California, *Science*, **277**, 1621-1622, 1997.
- Shen, Z.-K.**, D. D. Jackson, and B. X. Ge, Crustal deformation across and beyond the Los Angeles basin from geodetic measurements, *J. Geophys. Res.*, **101**, 27,957-27,980, 1996.
- Shen, Z.-K.**, X. B. Ge, D. D. Jackson, D. Potter, M. Cline, and L. Sung, Northridge earthquake rupture models based on the global Positioning System measurements, *Bull. Seismol. Soc. Am.*, **86**, 1B, S37-S48, 1996.
- Shen, Z.-K.**, Oblique subduction of a Newtonian fluid slab, *Pure Appl. Geophys.*, **145**, 561-577, 1996.
- Hudnut, K. W., **Z.-K. Shen**, et al., Co-seismic displacements of the 1994 Northridge, California, earthquake, *Bull. Seismol. Soc. Am.*, **86**, 1B, S19-S36, 1996.
- Liu, X., K. McNally, and **Z.-K. Shen**, Evidence for a role of the downgoing slab in earthquake slip partitioning at oblique subduction zones, *J. Geophys. Res.*, **100**, 15,351-15,372, 1995.
- Shen, Z.-K.**, D. D. Jackson, Y. Feng, M. Cline, M. Kim, P. Fang, and Y. Bock, Postseismic deformation following the Landers earthquake, California, June 28, 1992, *Bull. Seismol. Soc. Am.*, **84**, 780-791, 1994.
- Hudnut, K. W., Y. Bock, M. Cline, P. Fang, Y. Feng, J. Freymueller, X. Ge, W. K. Gross, D. D. Jackson, M. Kim, N. E. King, J. Langbein, S. C. Larsen, M. Lisowski, **Z.-K. Shen**, J. Svart, and J. Zhang, Co-seismic displacements of the 1992 Landers earthquake sequences, *Bull. Seismol. Soc. Am.*, **84**, 635-645, 1994.
- Shen, Z.-K.**, and D. D. Jackson, GPS reoccupation of early triangulation sites: tectonic deformation of the Southern Coast Ranges, *J. Geophys. Res.*, **98**, 9931-9946, 1993.
- Feigl, K. L., D. C. Agnew, Y. Bock, D. Dong, A. Donnellan, B. H. Hager, T. A. Herring, D. D. Jackson, T. H. Jordan, R. W. King, S. Larsen, K. M. Larson, M. H. Murray, **Z. Shen**, and F. H. Webb, Space geodetic measurement of crustal deformation in

central and southern California, 1984-1992, *J. Geophys. Res.*, **98**, 21,677-21,712, 1993.

Flatte, S. M., R. Wu, and **Z. Shen**, Nonlinear inversion of phase and amplitude coherence functions at NORSAR for a model of nonuniform heterogeneities, *Geophys. Res. Lett.*, **18**, 1269-1272, 1991.