

## Dr. Kelly Liu's publications

- Wang, T., Feng, J., Liu, K.H., & Gao, S.S. (2019). Crustal structure beneath the Malawi and Luangwa Rift Zones and adjacent areas from ambient noise tomography. *Gondwana Research*, **67**, 187-198. <https://doi.org/10.1016/j.gr.2018.10.018>.
- Abdelnabi, A.A., Abushalah, Y., Liu, K.H., & Gao, S.S. (2019). Integrated geological, geophysical, and petrophysical data to construct full field geological model of Cambrian-Ordovician and Upper Cretaceous Reservoir formations, Central Western Sirte Basin, Libya. *Interpretation*, **7**, T21-T37. <https://library.seg.org/doi/10.1190/int-2017-0236.1>.
- Zheng, T., Ding, Z., Ning, J., Chang, L., Wang, X., Kong, F., Liu, K.H., & Gao, S.S. (2018). Crustal azimuthal anisotropy beneath the southeastern Tibetan Plateau and its geodynamic implications. *Journal of Geophysical Research: Solid Earth*, **123**(11), 9733-9749. <https://doi.org/10.1002/2018JB015995>.
- Kong, F., Gao, S.S., Liu, K.H., Song, J., Ding, W., Fang, Y., Ruan, A., & Li, J. (2018). Receiver function investigations of seismic anisotropy layering beneath Southern California. *Journal of Geophysical Research: Solid Earth*, **123**(12), 10,672-10,683. <https://doi.org/10.1002/2018JB015830>.
- Kong, F., Wu, J., Liu, L., Liu, K.H., Song, J., Li, J., & Gao, S.S. (2018). Azimuthal anisotropy and mantle flow underneath the southeastern Tibetan Plateau and northern Indochina Peninsula revealed by shear wave splitting analyses. *Tectonophysics*, **747**, 68-78. <https://doi.org/10.1016/j.tecto.2018.09.013>.
- Qaysi, S., Liu, K.H., & Gao, S.S. (2018). A database of shear wave splitting measurements for the Arabian Plate. *Seismological Research Letters*, **89**, 2294-2298. <https://doi.org/10.1785/0220180144>.
- Sun, M., Fu, X., Liu, K.H., & Gao, S.S. (2018). Absence of thermal influence from the African Superswell and cratonic keels on the mantle transition zone beneath southern Africa: Evidence from receiver function imaging. *Earth and Planetary Science Letters*, **503**, 108-117. <https://doi.org/10.1016/j.epsl.2018.09.012>.
- Yu, Y., Gao, S.S., Liu, K.H., Yang, T., Xue, M., Le, K.P., & Gao, J. (2018). Characteristics of the mantle flow system beneath the Indochina Peninsula revealed by teleseismic shear wave splitting analysis. *Geochemistry Geophysics Geosystems*, **19**, 1519-1532. <https://doi.org/10.1002/2018GC007474>.
- Sun, M., Liu, K. H., Fu, X., & Gao, S. S. (2017). Receiver function imaging of mantle transition zone discontinuities beneath the Tanzania Craton and adjacent segments of the East African Rift System. *Geophysical Research Letters*, **44**. <https://doi.org/10.1002/2017GL075485>.
- Dahm, H. H., Gao, S. S., Kong, F., & Liu, K. H. (2017). Topography of the mantle transition zone discontinuities beneath Alaska and its geodynamic implications: Constraints from receiver function stacking. *Journal of Geophysical Research: Solid Earth*, **122**. <https://doi.org/10.1002/2017JB014604>.

- Lemnifi, A. A., Elshaafi, A., Browning, J., Aouad, N. S., El Ebaidi, S. K., **Liu, K. H.**, & Gudmundsson, A. (2017). Crustal thickness beneath Libya and the origin of partial melt beneath AS Sawda Volcanic Province from receiver function constraints. ***Journal of Geophysical Research: Solid Earth***, **122**. <https://doi.org/10.1002/2017JB014291>.
- Reed, C.A., **K.H. Liu**, Y. Yu, and S.S. Gao (2017). Seismic anisotropy and mantle dynamics beneath the Malawi Rift Zone, East Africa, ***Tectonics***, **45**, doi: 10.1002/2017TC004519.
- Yu, Y., S.S. Gao, **K.H. Liu**, T. Yang, M. Xue, and K.P. Le (2017). Mantle transition zone discontinuities beneath the Indochina Peninsula: Implications for slab subduction and mantle upwelling, ***Geophysical Research Letters***, **45**, <https://doi.org/10.1002/2017GL073528>.
- Yu, Y., T. D. Hung, T. Yang, M. Xue, **K.H. Liu**, and S.S. Gao, (2017). Lateral variations of crustal structure beneath the Indochina Peninsula, ***Tectonophysics***, <https://doi.org/10.1016/j.tecto.2017.05.023>.
- Liu, L., S.S. Gao, **K.H. Liu**, and K. Mickus (2017). Receiver function and gravity constraints on crustal structure and vertical movements of the Upper Mississippi Embayment and Ozark Uplift, ***Journal of Geophysical Research Solid Earth***, **122**, doi: 10.1002/2017JB014201. [pdf](#)
- Yang, B.B., Y. Liu, H. Dahm, **K.H. Liu**, and S.S. Gao (2017). Seismic azimuthal anisotropy beneath the eastern United States and its geodynamic implications, ***Geophysical Research Letters***, **44**, 1-9, doi: 10.1002/2016GL071227. [pdf](#)
- Yu, Y., **K.H. Liu**, Z. Huang, D. Zhao, C.A. Reed, M. Moidaki, J. Lei, and S.S. Gao (2017). Mantle structure beneath the incipient Okavango Rift Zone in southern Africa, ***Geosphere***, **13**, 102-111, doi: 10.1130/GES01331.1. [pdf](#)
- Reed, C.A., **K.H. Liu**, P. Chindandali, B. Massingue, H. Mdala, D. Mutamina, Y. Yu, and S.S. Gao (2016). Passive rifting of thick lithosphere in the southern East African Rift: Evidence from mantle transition zone discontinuity topography, ***Journal of Geophysical Research***, **121**, 8068-8079, doi: 10.1002/2016JB013131. [pdf](#)
- Cherie, S.G., S.S. Gao, **K.H. Liu**, A.A. Elsheikh, F.S. Kong, C.A. Reed, and B.B. Yang (2016). Shear wave splitting analyses in Tian Shan: Geodynamic implications of complex seismic anisotropy, ***Geochemistry Geophysics Geosystems***, **17**, 1975-1989, doi:10.1002/2016GC006269. [pdf](#)
- Reed, C.A., S.S. Gao, **K.H. Liu**, and Y. Yu (2016). The mantle transition zone beneath the Afar Depression and adjacent regions: Implications for mantle plumes and hydration, ***Geophysical Journal International***, **205**, 1756-1766, doi:10.1093/gji/ggw116.
- Kong, F.S., J. Wu, **K.H. Liu**, and S.S. Gao (2016). Crustal anisotropy and ductile flow beneath the eastern Tibetan Plateau and adjacent areas, ***Earth and Planetary Science Letters***, **442**, 72-79, doi: 10.1016/j.epsl.2016.03.003.

- Yang, B.B., **K.H. Liu**, H.H. Dahm, and S.S. Gao (2016). A uniform database of teleseismic shear wave splitting measurements for the western and central United States: December 2014 update, *Seismological Research Letters*, **87**, 295-300, doi: 10.1785/0220150213.
- Yu, Y., K.H. Liu, C.A. Reed, M. Moidaki, K. Mickus, E.A. Atekwana, and S.S. Gao (2015). A joint receiver function and gravity study of crustal structure beneath the incipient Okavango Rift, Botswana, *Geophysical Research Letters*, **42**, 8398-8405, doi: 10.1002/2015GL065811. [pdf](#)
- Yu, Y., S.S. Gao, M. Moidaki, C.A. Reed, and **K.H. Liu** (2015). Seismic anisotropy beneath the incipient Okavango rift: Implications for rifting initiation, *Earth and Planetary Science Letters*, doi:10.1016/j.epsl.2015.08.009.
- Kong, F.S., S.S. Gao, and **K.H. Liu** (2015), Applicability of the multiple-event stacking technique for shear-wave splitting analysis, *Bulletin of the Seismological Society of America*, **105**, 3156-3166, doi: 10.1785/0120150078.
- Yu, Y., **K.H. Liu**, M. Moidaki, C.A. Reed, and S.S. Gao (2015). No thermal anomalies in the mantle transition zone beneath an incipient continental rift: Evidence from the first receiver function study across the Okavango Rift Zone, Botswana, *Geophysical Journal International*, **202**, 1407-1418, doi:10.1093/gji/ggv229.
- Lemnifi, A., **K.H. Liu**, S.S. Gao, C.R. Reed, A. Elsheikh, Y. Yu, and A. Elmelade (2015). Azimuthal anisotropy beneath north central Africa from shear wave splitting analyses, *Geochemistry Geophysics Geosystems*, **16**, 1105-1114, doi: 10.1002/2014GC005706. [pdf](#)
- Yu, Y., J. Song, **K.H. Liu**, and S.S. Gao (2015). Determining crustal structure beneath seismic stations overlying a low-velocity sedimentary layer using receiver functions, *Journal of Geophysical Research*, volume, **120**, 3208-3218, doi: 10.1002/2014JB011610. [pdf](#)
- Wu, J., Z. Zhang, F.S. Kong, B.B. Yang, Y. Yu, **K.H. Liu**, and S.S. Gao (2015). Complex seismic anisotropy beneath western Tibet and its geodynamic implications, *Earth and Planetary Science Letters*, **413**, 167-175, doi: http://dx.doi.org/10.1016/j.epsl.2015.01.002.
- Kong, F.S., S.S. Gao, and **K.H. Liu** (2015). A systematic comparison of the transverse energy minimization and splitting intensity techniques for measuring shear-wave splitting parameters, *Bulletin of the Seismological Society of America*, **105**, 230-239, doi: 10.1785/0120140108.
- Elsheikh, A.A., S.S. Gao, and **K.H. Liu** (2014). Formation of the Cameroon Volcanic Line by lithospheric basal erosion: Insight from mantle seismic anisotropy, *Journal of African Earth Sciences*, **100**, 96-108, doi: 10.1016/j.jafrearsci.2014.06.011.
- Gao, S.S., and **K.H. Liu** (2014). Mantle transition zone discontinuities beneath the contiguous United States, *Journal of Geophysical Research*, **119**, doi: 10.1002/2014JB011253. [pdf](#)

- Mohamed, A.A., S.S. Gao, A.A. Elsheikh, **K.H. Liu**, Y. Yu, and R.E. Fat-Helbary (2014). Seismic imaging of mantle transition zone discontinuities beneath the northern Red Sea and adjacent areas, *Geophysical Journal International*, **199**, 648-657, doi:10.1093/gji/ggu284.
- Elsheikh, A.A., S.S. Gao, **K.H. Liu**, A.A. Mohamed, Y. Yu, and R.E. Fat-Helbary (2014). Seismic anisotropy and subduction-induced mantle fabrics beneath the Arabian and Nubian plates adjacent to the Red Sea, *Geophysical Research Letters*, **41**, 2376-2381, doi: 10.1002/2014GL059536. [pdf](#)
- Liu, K.H.**, A. Elsheikh, A. Lemnifi, U. Purevsuren, M. Ray, H. Refayee, B. Yang, Y. Yu, and S.S. Gao (2014). A uniform database of teleseismic shear wave splitting measurements for the western and central United States, *Geochemistry Geophysics Geosystems*, **15**, doi: 10.1002/2014GC005267. [pdf](#)
- Reed, C.A., S. Almadani, S.S. Gao, A. Elsheikh, S. Cherie, M. Abdelsalam, A. Thurmond, and **K.H. Liu** (2014). Receiver function constraints on crustal seismic velocities and partial melting beneath the Red Sea rift and adjacent regions, Afar Depression, *Journal of Geophysical Research*, **119**, 2138-2152, doi: 10.1002/2013JB010719. [pdf](#)
- Yang, B.B., S.S. Gao, **K.H. Liu**, A.A. Elsheikh, A.A. Lemnifi, H.A. Refayee, and Y. Yu (2014). Seismic anisotropy and mantle flow beneath the northern Great Plains of North America, *Journal of Geophysical Research*, **119**, 1971-1985, doi:10.1002/2013JB010561. [pdf](#)
- Gao, S.S., and **K.H. Liu** (2013). Imaging mantle discontinuities using multiply-reflected P-to-S conversions, *Earth and Planetary Science Letters*, doi: <http://dx.doi.org/10.1016/j.epsl.2013.08.025>.
- Refayee, H.A., B.B. Yang, **K.H. Liu**, and S.S. Gao (2013). Mantle flow and lithosphere-asthenosphere coupling beneath the southwestern edge of the North American Craton: Constraints from shear-wave splitting measurements, *Earth and Planetary Science Letters*, <http://dx.doi.org/10.1016/j.epsl.2013.01.031>.
- Liu, K. H.**, and S.S. Gao (2013). Making reliable shear-wave splitting measurements, *Bulletin of the Seismological Society of America*, **103**, 2680-2693, doi: 10.1785/0120120355.
- Gao, S.S., **K.H. Liu**, C.A. Reed, Y. Yu, B. Massinque, H. Mdala, M. Moidaki, D. Mutamina, E.A. Atekwana, S. Ingate, and A.M. Reusch (2013). SAFARI-Seismic Arrays For African Rift Initiation, *Eos, Transactions*, American Geophysical Union, **94**, 213-214, doi: 10.1002/2013EO240002. [pdf](#)
- Gao, S.S., and **K.H. Liu** (2012). AnisDep: A FORTRAN program for the estimation of the depth of anisotropy using spatial coherency of shear-wave splitting parameters, *Computers & Geosciences*, doi: 10.1016/j.cageo.2012.01.020. [pdf](#)
- Wang, B.Z., S.S. Gao, **K.H. Liu**, and E.S. Krebs (2012). High-accuracy practical spline-based 2D and 3D integral transformations in potential-field geophysics, *Geophysical Prospecting*, doi: 10.1111/j.1365-2478.2011.01026.x. [pdf](#)

- Satsukawa, T., M. Michibayashi, E.Y. Anthony, R.J. Stern, S.S. Gao, and **K.H. Liu** (2011). Seismic anisotropy of the uppermost mantle beneath the Rio Grande rift: Evidence from Kilbourne Hole peridotite xenoliths, New Mexico, *Earth and Planetary Science Letters*, **311** (1-2), pp. 172-181.
- Liu, K.H.** and S.S. Gao (2011). Estimation of the depth of anisotropy using spatial coherency of shear-wave splitting parameters, *Bulletin of the Seismological Society of America*, **101**, pp. 2153-2161, doi: 10.1785/0120100258.
- Bashir, L., S.S. Gao, K.H. Liu, and K. Mickus (2011). Crustal structure and evolution beneath the Colorado Plateau and the Southern Basin and Range Province: Results from receiver function and gravity studies, *Geochemistry Geophysics Geosystems*. [pdf](#)
- Gao, S.S., **K.H. Liu**, and MG. Abelsalam (2010). Seismic anisotropy beneath the Afar Depression and adjacent areas: Implications for mantle flow, *Journal of Geophysical Research*, **115**, B12330, doi:10.1029/2009JB007141. [pdf](#)
- Liu, K.H.**, and S.S. Gao (2010). Spatial variations of crustal characteristics beneath the Hoggar swell, Algeria, revealed by systematic analyses of receiver functions from a single seismic station, *Geochemistry Geophysics Geosystems*, **11**, Q08011, doi:10.1029/2010GC003091. [pdf](#)
- Liu, K.H.** (2009). NA-SWS-1.1: A uniform database of teleseismic shear-wave splitting measurements for North America, *Geochemistry, Geophysics, Geosystems*, **10**, Q05011, doi:10.1029/2009GC002440. [pdf](#)
- Atef, A., **K.H. Liu**, and S.S. Gao (2009). Apparent weekly and daily earthquake periodicities in the western United State, *Bulletin of the Seismological Society of America*, **99**, pp. 2273-2279, doi:10.1785/0120080217. [pdf](#)
- Gao, S.S., and **K.H. Liu** (2009). Significant seismic anisotropy beneath the southern Lhasa Terrane, Tibetan Plateau, *Geochemistry, Geophysics, Geosystems*, **10**, Q02008, doi:10.1029/2008GC002227. [pdf](#)
- Gao, S.S., **K.H. Liu**, R.J. Stern, G.R. Keller, J.P. Hogan, J. Pulliam, and E.Y. Anthony (2008). Characteristics of mantle fabrics beneath the southern-central United State: Constraints from shear-wave splitting measurements, *Geosphere*, **4**, pp. 411-417, doi:10/1130/GES00159.1. [pdf](#)
- Gao, S.S., T.M. Niemi, R.A. Black, **K.H. Liu**, R.R. Anderson, R.M. Joeckel, R.W. Busby, and J. Taber (2008). Rationale for a permanent seismic network in the Central Plains utilizing USArray, *Eos, Trans. Am. Geophys. Union*, **89**, No. 9, Page 85. [pdf](#)
- Liu, K.H.**, S.S. Gao, Y. Gao, and J. Wu (2008). Shear-wave splitting and mantle flow associated with the deflected Pacific slab beneath northeast Asia, *Journal of Geophysical Research*, **113**, B01305, doi:10.1029/2007JB005178. [pdf](#)
- Liu, K.H.**, and S.S. Gao (2006). Mantle transition zone discontinuities beneath the Baikal rift and adjacent areas, *Journal of Geophysical Research*, **111**, B11301, doi:10.1029/2005JB004099. [pdf](#)

- Nair, S.K., S.S. Gao, **K.H. Liu**, and P.G. Silver (2006). Southern African crustal evolution and composition: Constraints from receiver function studies, *Journal of Geophysical Research*, **111**, B02304, doi:10.1029/2005JB003802. [pdf](#)
- Gao, S.S., **K.H. Liu**, and C. Chen (2004). Significant crustal thinning beneath the Baikal rift zone: New constraints from receiver function analysis, *Geophysical Research Letters*, **31**, L20610, doi:10.1029/2004GL020813. [pdf](#)
- Gao, S.S., and **K.H. Liu** (2004), Seafloor asymmetry in the Atlantic Ocean, *Oceanic and Coastal Sea Research*, **3**, pp. 191-194.
- Liu, K.H.**, S.S. Gao, P.G. Silver, and Y. Zhang (2003). Mantle layering across central South America, *Journal of Geophysical Research*, **Vol. 108(B11)**, 2510, doi:10.1029/2002JB002208. [pdf](#)
- Hubbard, M.S., S.S. Gao, **K.H. Liu**, K.E. Nicolaysen, and C.G. Oviatt (2003). Great Plains workshop held to prepare for USArray deployment, *Eos, Trans. Am. Geophys. Union*, **84**, Pages 314 and 320.
- Gao, S.S., **K.H. Liu**, P.M. Davis, P.D. Slack, Y.A. Zorin, V.V. Mordvinova, and V.M. Kozhevnikov (2003). Evidence for small-scale mantle convection in the upper mantle beneath the Baikal Rift Zone, *Journal of Geophysical Research*, **108(B4)**, 2194, doi:10.1029/2002JB002039, pp. 5: 1-12. [pdf](#)
- Liu, K.H.** (2003). Effects of inelasticity on the apparent depth and detectability of seismic discontinuities in the mantle, *Geophysical Research Letters*, **30(9)**, 1455, doi:10.1029/2002GL015264. [pdf](#)
- Gao, S.S, P.G. Silver, **K.H. Liu**, and the Kaapvaal Seismic Group, Mantle discontinuities beneath southern Africa (2002). *Geophysical Research Letters*, **29**(10), p. 1291-1294, 10.1029/2001GL013834. [pdf](#)
- Liu, K.H.**, and S.S. Gao (2001). Characterization of a continuous, very narrow-band seismic signal near 2.08 Hz, *Bulletin of the Seismological Society of America*, **91**, No. 6, pp. 1910-1916.
- Silver, P.G., S.S. Gao, **K.H. Liu**, and the Kaapvaal Seismic Group (2001). Mantle deformation beneath southern Africa, *Geophysical Research Letters*, **28**, No. 13, 2493-2496. [pdf](#)
- Davis, P.M., J.L. Rubinstein, **K.H. Liu**, S. Gao, L. Knopoff (2000). Northridge earthquake damage caused by geologic focusing of seismic waves, *Science*, **289**, 1746-1750.
- Gao, S., P.M. Davis, **H. Liu**, P.D. Slack, A.W. Rigor, Yu.A. Zorin, V.V. Mordvinova, V.M. Kozhevnikov, and N.A. Logatchev (1999), SKS splitting beneath continental rift zones, Reply to Comment by Vauchez et al. on "SKS splitting beneath continental rift zones" by Gao et al., *Journal of Geophysical Research*, **104**, No. B5, pp. 10,791-10,794. [pdf](#)
- Liu, H.** (1998), Path and site effects on localized damage caused by the 1994 Northridge earthquake, *PhD thesis, UCLA*, 258pp.

- Gao, S., P.M. Davis, **H. Liu**, P.D. Slack, A.W. Rigor, Yu.A. Zorin, V.V. Mordvinova, V.M. Kozhevnikov, and N.A. Logatchev (1997), SKS splitting beneath continental rift zones, *Journal of Geophysical Research*, **102**., 22,781-22,797. [pdf](#)
- Liu, H.**, S. Gao, and P.M. Davis (1997), Analysis of Northridge aftershock amplitudes and damage, *Annual report of the Southern California Earthquake Center*, B8-B13.
- Davis, P.M., **H. Liu**, and S. Gao (1996), Progress report: Northridge earthquake aftershock analysis, *Annual report of the Southern California Earthquake Center*.
- Gao, S., **H. Liu**, P.M. Davis, and L. Knopoff (1996), Localized amplification of seismic waves and correlation with damage due to the Northridge earthquake: evidence for focusing in Santa Monica, *Bulletin of the Seismological Society of America*, **86**, No. 1B, pp. S209-S230. [pdf](#)
- Kohler, M.D., P.M. Davis, **H. Liu**, M. Benthien, S. Gao, G.S. Fuis, R.W. Clayton, D. Okaya, and J. Mori (1996), Data report for the 1993 Los Angeles Region Seismic Experiment (LARSE93), Southern California: a passive study from Seal Beach northeastward through the Mojave Desert, *USGS Open File Report*, OF 96-0085.
- Gao, S., **H. Liu**, P.M. Davis, L. Knopoff, and G. Fuis (1996), A 98-station seismic array to record aftershocks of the 1994 Northridge earthquake, *USGS Open File Report*, OF 96-690.
- Liu, H.**, P.M. Davis, and S. Gao (1995), SKS splitting beneath southern California, *Geophysical Research Letters*, **22**, No. 7, pp. 767-770. [pdf](#)
- Davis, P.M., S. Gao, **H. Liu**, P.D. Slack, M. Benthien, and D. Daniels (1994), Baikal 1992 seismic array project data report, *DARPA/NMRO and IRIS Data Management Center*.
- Gao, S., P.M. Davis, **H. Liu**, P. Slack, Y.A. Zorin, N.A. Logatchev, M. Kogan, P. Burkholder and R.P. Meyer (1994), Asymmetric upwarp of the asthenosphere beneath the Baikal rift zone, Siberia, *Journal of Geophysical Research*, **99**, No. B8, pp. 15,319-15,330. [pdf](#)
- Gao, S., P.M. Davis, **H. Liu**, P.D. Slack, Yu.A. Zorin, V.V. Mordvinova, V.M. Kozhevnikov, and R.P. Meyer (1994), Seismic anisotropy and mantle flow beneath the Baikal rift zone, *Nature*, **371**, pp. 149-151. [pdf](#)
- Gao, S., P.M. Davis, H. Liu, P.D. Slack, Yu.A. Zorin, N.A. Logatchev, M.G. Kogan, P.D. Burkholder, and R.P. Meyer (1994), Preliminary results of teleseismic studies of the mantle of the Baikal Rift, *Physics of the Earth, N7-8*: 113-122, Moscow, Russia. [html](#)
- Tian, C., D. Li, Z. Wang, **H. Liu**, and T. Liu (1986), A Synthetical study on beach dam facies in Eogene system Raoyang depression, *J. of East China Petroleum Inst.*, 10: 1-8.