

CURRICULUM VITAE



Lin Ma, Ph.D.

Professor

Department of Earth, Environmental, and Resource Sciences

University of Texas at El Paso

El Paso, TX 79968, USA

Phone 915.747.5218

Email: lma@utep.edu

EDUCATION AND ACADEMIC TRAINING

Postdoctoral fellow, Geochemistry, Jan 2009 - Dec 2010
Pennsylvania State University, University Park, PA, USA
Sponsor: Dr. Susan L. Brantley

Ph.D., Geochemistry, Sept 2003 - **Dec 2008**
University of Michigan, Ann Arbor, MI, USA
Advisor: Dr. M. Clara Castro

B.S., Geochemistry, Sept 1996 - Aug 2001
University of Science and Technology of China, Hefei, China
Advisor: Prof. Chen Jiangfeng

PROFESSIONAL EXPERIENCE

Professor, Sept 2023 – present

Department of Earth, Environmental, and Resource Sciences
University of Texas at El Paso

Associate Professor, Sept 2017 – Aug 2023

Department of Earth, Environmental, and Resource Sciences
Formerly known as Department of Geological Sciences
University of Texas at El Paso

Assistant Professor, Jan 2011 – Aug 2017

Department of Geological Sciences, University of Texas at El Paso

AWARDS AND HONORS

Outstanding Efforts in Securing Extramural Funding, ORSP, UTEP, 2022;
Outstanding Efforts in Securing Extramural Funding, ORSP, UTEP, 2021;
Outstanding Efforts in Securing Extramural Funding, ORSP, UTEP, 2020;
Outstanding Efforts in Securing Extramural Funding, ORSP, UTEP, 2016;
Outstanding Performance in Securing Extramural Funding, ORSP, UTEP, 2016;
Outstanding Performance in Securing Extramural Funding, ORSP, UTEP, 2014;
John Dorr Graduate Academic Achievement Award
Department of Geological Sciences, University of Michigan, 2008;
Best Graduate Teaching Award,
Department of Geological Sciences, University of Michigan, 2008;

MEMBERSHIPS

Geological Society of America, American Geophysical Union, Geochemical Society, European Geoscience Union, Sigma Xi.

RESEARCH INTERESTS

My primary research focuses on understanding critical processes at our Earth's surface, more specifically in natural waters and soils that are integral parts of the Earth's near-surface layer, or the Critical Zone. My research approach is developing and using a variety of novel isotope tools to study the Critical Zone: to quantify soil formation rates, to trace water flow paths and solute sources, and to study cycles and pathways of various critical elements in the environments. The overarching goal of my research has been conducting cutting-edge research in the Critical Zone: examining linkages and mechanisms between climate change, soil formation and erosion, water chemistry and quality, and biogeochemical cycling for both natural and human-impacted regions.

RESEARCH GRANTS

NSF EAR 2306827: Investigating the nature and timing of development of the Eastern California shear zone (ECSZ) in southeastern California, NSF, 09/01/2023-08/31/2026, **\$244,152**. Role: **Co-PI Ma**, Lead PI Ricketts.

NSF EAR 2228180: Implementation Grant: Community-driven Inclusive Excellence and Leadership Opportunities in the Geosciences (CIELO-G), NSF, 09/01/2022-08/31/2027, **\$7,244,556**. Role: **Co-PI Ma**, Lead PI Velasco. Ma is one of the five co-PIs on this multi-year NSF Geo-pathway and Leaders project and in charge of the hydro-geophysics research theme and contributed to proposal development.

NSF EAR 1933259: Collaborative Research: Parsing out the controls of climate, geology, and land use on riverine (234U/238U) ratios in Texas river basins. **Role: Lead PI Ma**, Co-PIs: Ricketts and Rohrbaugh (EPCC) and Sullivan (Oregon State University), **\$750,000**, 08/01/2020 to 07/31/2025.

NSF EAR 2012475: Network Cluster: Patterns and controls of ecohydrology, CO₂ fluxes, and nutrient availability in pedogenic carbonate-dominated dryland critical zones. Lead PI Jin, **Co-PIs: Ma**, Lougheed, Darrouzet, McLaren, SP: Gutierrez, Engle, Karplus, Tweedie, Gill, Xu, Mauritz-Tozer, Warak. Pierce (Boise State U.), Pietrasiak (New Mexico State U.), Zhu (U. of Wyoming), Curry (Insight Museum). **\$5,250,000**, 09/01/2020 to 08/31/2025. **Ma is one of the five PIs** on this multi-year NSF Critical Zone network project and in charge of the hydro-geophysics research theme and contributed to proposal development.

PXD/Subsurface Technology (industrial contract): Method development for preconcentration and quantification of critical and valuable elements (CVE) in Permian Basin Produced Waters (lead PI Engle; **Co-PI Ma**). **\$178,449**, 01/01/2021-12/31/2022. Ma is co-PI and in charge of trace element analysis on this project.

NSF EAR 2018201: MRI: Acquisition of inductively coupled plasma-optical emission spectrometer for research and education uses in water, energy, and environmental sciences. **Role: Co-PI Ma**, Lead PI Engle, Co-PIs: Jin, Walker, **\$119,365**, 09/01/2020 to 08/31/2022. Ma is co-PI and in charge of elemental analysis in environmental water samples and contributed to proposal development

NSF EAR: Ma, Lin (Co-Principal, UTEP), Reiners, Peter (Lead-PI, University of Arizona) and others, "MRI: Acquisition of a noble gas multi-collector mass spectrometer for geochronology and geochemistry research", Sponsored by NSF, Federal, (09/01/2018 – 08/31/2021). **\$1,000,000**; Location of Project: U. of Arizona. Ma is a co-PI on the NSF MRI grant and contributed to noble gas analysis in water samples and proposal development.

Ma, Lin (Principal), Engle, Mark (Co-Principal - USGS), "Using Cadmium and Zinc Isotope Tools to Understand Environmental Pathways of Heavy Metals Related to Disposal of Coal Combustion Products: A Continuing Research Collaboration", Sponsored by USGS – United States Geological Survey, Federal, \$20,000.00 (May 2016– April 2017).

Ma, Lin (Co-Principal), Velasco, Aaron (Principal – UTEP), Jin, Lixin (Co-Principal – UTEP), Carrick, Tina (Co-Principal – UTEP), Taber, John (Co-Principal – IRIS), "GP_EXTRA: Academic Year Pathways Research Experience Program (AY-PREP)", Sponsored by NSF – National Science Foundation, Federal, \$498,082.00 (September 2015– August 2018).

Ma, Lin (Principal), "Collaborative research: a multi-tracer (U, S, B, and Sr) approach to fingerprint and quantify anthropogenic salinity sources in the semi-arid Rio Grande watershed", Sponsored by NSF – National Science Foundation, Federal, \$239,034.00 (funding to UTEP, May 2014– April 2017). *Above is a UTEP-lead multi-institution NSF collaborative research project (totaling: \$300,336.00) with additional NSF funding to McIntosh, Jennifer (Co-Principal – University of Arizona, \$38,154.00) and Szyrkiewicz, Anna (Co-Principal – University of Tennessee, \$23,148.00).*

Ma, Lin (Principal), "Collaborative research: Quantifying weathering rind formation rates using U-series isotopes along steep gradients of precipitation, bedrock ages and topography in Guadeloupe", Sponsored by NSF – National Science Foundation, Federal, \$249,442.00 (funding to UTEP, September 2013– August 2017). *Above is a UTEP-lead multi-institution NSF collaborative research project (totaling: \$388,579.00) with additional NSF funding to Sak, Peter (Co-Principal – Dickinson College, \$86,927.00) and Brantley, Susan (Co-Principal – Pennsylvania State University, \$52,210.00).*

Ma, Lin (Principal), "Quantifying regolith formation rates with U-series isotopes along the shale weathering transect within the Susquehanna Shale Hills Critical Zone Observatory", Sponsored by NSF SSHO CZO program, Federal, \$9,587.00 (September 2013– August 2017).

Ma, Lin (Principal), "Using U-series disequilibrium isotopes to study rates and time scales of granite chemical weathering and saprolite material transport", Sponsored by State Key Laboratory of Environmental Geochemistry (SKLEG), China, International travel support, \$7,751.00 (January 2013– December 2013).

Ma, Lin (Principal), Konter, Jasper (Co-Principal - UTEP), Borrok, David (Co-Principal - UTEP) "Iron, copper, and Zin concentration and isotope analyses", Sponsored by USGS – United States Geological Survey, Federal, \$6,454.00 (September 2012– October 2012).

Ma, Lin (Principal), Jin, Lixin (Co-Principal - UTEP), "Systematic investigation of REE mobility and fractionation during continental shale weathering", Sponsored by USGS – United States Geological Survey, Federal, \$50,000.00 (March 2012– August 2013).

Ma, Lin (Co-Principal), Jin, Lixin (Principal - UTEP), Borrok, David (Co-Principal - UTEP) , Loughheed, Vanessa (Co-Principal – UTEP), "Natural and human impacts on the sustainability soil resources in the Rio Grande Valley along the US-Mexico border", Sponsored by U.S. EPA SCERP program, Federal, \$60,694.00 (May 2011– July 2013).

PUBLICATIONS

Journal articles published or accepted (Article with student authors *)

- 52) Goldrich-Middaugh, G.M.*, Ma, L., Soto-Montero, P.*, Engle, M., Ricketts, J., Sullivan, P. (2024), Regional Drivers of Stream Chemical Behavior: Leveraging Lithology, Land Use, and Climate Gradients across the Colorado River, Texas USA, Water Resources Research, revision submitted. LM contribution include designed the critical zone and river chemistry part of the research, analyzed data, and edited the paper. Goldrich-Middaugh was a student at Oregon State U.
- 51) Pasquet, S., Marcais, J., Hayes, J., Sak, P., Ma, L., Gaillardet, J. (2024), Catchment-scale architecture of the deep critical zone revealed by seismic imaging. Geophysical Research Letters, **in press**. LM contribution include designed the deep critical zone part of the research, analyzed data, and edited the paper.
- 50) Singha, K., Sullivan, S., Ma, L. (2023). Expanding the spatial and human reaches of the critical zone. CZ Special Issue in Earth's Future.
- 49) Marza, M., Ferguson, G., Ma, L., McIntosh, J. (2023). Lithological Controls on Lithium Production from Basinal Brines across North America. Journal of Geochemical Exploration.
- 48) Ma, L. (in press). Trace elements and their isotopes in streams and rivers. Treatise in Geochemistry. Treatise in Geochemistry.
- 47) Nyachoti, S. K.*, Garcia, V. H.*, Monger, C. H., Tweedie, C. E., Gill, T. E., Jin, L., Ma, L. (2024), Uranium-series and strontium isotope systematics in soil carbonates from dryland Critical Zones: Implications for soil inorganic carbon storage and transformation in natural and managed drylands. Geochimica et Cosmochimica Acta.
- 46) Ortiz, A.*@, Jin, L., Ogrinc, N., Kaye, J., Krajnc, B. and Ma, L. (2022) Dryland irrigation increases accumulation rates of pedogenic carbonate and releases soil abiotic CO₂. Scientific Reports, 12: 464. DOI: 10.1038/s41598-021-04226-3.
- 45) Kim, J.-H.*, Bailey, L., Noyes, C., Tyne, R.L., Ballentine, C.J., Person, M., Ma, L., Barton, M., Barton, I., Reiners, P.W., Ferguson, G., McIntosh, J. (2022), Hydrogeochemical evolution of formation waters responsible for sandstone bleaching and ore mineralization in the Paradox Basin, Colorado Plateau, USA. GSA Bulletin, doi: 10.1130/B36078.1. LM contribution include designed the Sr isotope part of the research, contributed analytical tools, analyzed data, and edited the paper. J.-H. Kim was a U of Arizona student.
- 44) Noyes, C.*, Kim, J.-H., Person, M., Ma, L., Ferguson, G., McIntosh, J. (2021), A geochemical and isotopic assessment of hydraulic connectivity of a stacked aquifer system in the Lisbon Valley, Utah (USA), and critical evaluation of environmental tracers. Hydrogeological Journal. Doi: 10.1007/s10040-021-02361-9. LM contribution include designed the Sr isotope part of the research, contributed analytical tools, analyzed data, and edited the paper. C. Noyes was a U of Arizona student.
- 43) White, A.*, Ma, L., Moravec, B., Chorover, J., and McIntosh, J. (2021), U-series and Sr isotopes as tracers of mineral weathering and water routing from the deep Critical Zone to streamflow in a high elevation volcanic catchment. Chemical Geology, volume 570, 5 June 2021, 120156. LM contribution include designed the U-series and Sr isotope part of the research, contributed analytical tools, analyzed data, and edited the paper. A. White was a U of Arizona student.

- 42) Garcia, V.*@, Ma, L., Ricketts, J., and Dosseto, A. (2021), Record of Neotectonics and Deep Crustal Fluid Circulation Along the Santa Fe Fault Zone in Travertine Deposits of the Lucero Uplift, New Mexico, USA. *Geochemistry, Geophysics, Geosystems*. 11 March 2021. Doi: 10.1029/2020GC009454.
- 41) Garcia S*@, Louvat P, Gaillardet J, Nyachoti S*, and Ma, L. (2021), Combining Uranium, Boron, and Strontium Isotope Ratios ($^{234}\text{U}/^{238}\text{U}$, $\delta^{11}\text{B}$, $^{87}\text{Sr}/^{86}\text{Sr}$) to Trace and Quantify Salinity Contributions to Rio Grande River in Southwestern United States. *Front. Water* 2:575216. doi: 10.3389/frwa.2020.575216.
- 40) Rea*@, P., Ma, L., Gill, T.E., Gardea-Torresdey, J., Tamez, C., Jin, L. (2020), Tracing gypsiferous White Sands aerosols in the shallow critical zone in the northern Sacramento Mountains, New Mexico using Sr/Ca and $^{87}\text{Sr}/^{86}\text{Sr}$ ratios, *Geoderma*, 372, 114387.
- 39) Guo*@, J., Ma, L., Gaillardet, J., Sak, P., Pereyra*, Y., Engel*, J. (2020), Reconciling chemical weathering rates across scales: Application of Uranium-series isotope systematics in volcanic weathering clasts from Basse-Terre Island (French Guadeloupe), *Earth and Planetary Science Letters*, 530, 115874.
- 38) Voll*, K., Davidson, G., Borrok, D., Corcoran, M., Kelley, J., Ma, L. (2019), Variable pathways, residence time, and geochemical evolution of seepage beneath the Mississippi River levee during the 2011, 2015, and 2016 floods. *Applied Geochemistry*, 108, 104367.
LM contribution include designed the U-series isotope part of the research, contributed analytical tools, analyzed data, and edited the paper. K. Voll was a Mississippi State U. student.
- 37) Ricketts, J.W., Ma, L., Wagler, A., and Garcia*, V. (2019), Global travertine deposition modulated by changes in global climate. *Journal of Quaternary Science*, 03 September 2019, doi:10.1002/jqs.3144.
LM contribution include designed the U-series isotope part of the research, analyzed data, and edited the paper.
- 36) Ma, L., Dosseto, A., Gaillardet, J., Sak, P., and Brantley, S.L. (2019), Quantifying weathering rind formation rates by in situ measurements of U-series disequilibria with laser ablation (LA) MC-ICPMS. *Geochimica et Cosmochimica Acta*, 247, 1-26.
- 35) Sak, P., Murphy, M.*, Ma, L., Gaillardet, J., Herndon, E.M., Brantley,, S.L., and Daniel, C. (2018), From unweathered core to regolith in a single weathering andesitic clast: rates and trends of in situ chemical weathering on a tropical volcanic island (Basse Terre Island, French Guadeloupe). *Chemical Geology*, 498, 17-30.
LM contribution include designed the U-series isotope part of the research, contributed analytical tools, analyzed data, and edited the paper.
- 34) Coyte, RM*, Jain, RC, Srivastava, SK, Sharma, KC, Khalil, A, Ma, L., Vengosh, A (2018). Large-Scale Uranium Contamination of Groundwater Resources in India. *Environmental Science&Technology Letters*. Doi: 10.1021/acs.estlett.8b00215.
LM contribution include designed the U-series isotope part of the research, contributed analytical tools, analyzed data, and edited the paper. RM Coyte was a Duke U. student.

- 33) Fouskas, F.*@, Ma, L., Engle, M., Ruppert, L., Geboy, N., Costa, M.* (2018), Cadmium isotope fractionation during coal combustion: insights from two coal-fired power plants in the United States. *Applied Geochemistry* 96, 100-112.
 - 32) Hiebing, M.*@, Doser, D. I., Avila, V.*, Ma, L. (2018), Geophysical studies of fault and bedrock control on groundwater geochemistry within the southern Mesilla Basin, west Texas and southern New Mexico. *Geosphere*, Doi:10.1130/GES01567.1.
 - 31) Cox, C.*@, Jin, L., Ganjegunte, G., Borrok, D., Lougheed, V. L., Ma, L., (2018). Changes of soil quality due to flood irrigation in agricultural fields along the Rio Grande in western Texas. *Applied Geochemistry* 90, 87-100.
 - 30) Nyachoti, S. *@, Jin, L., Tweedie, C., and Ma, L. (2017), Insight into factors controlling formation rates of pedogenic carbonates: a combined geochemical and isotopic approach in dryland soils of the US southwest. *Chemical Geology*, doi:10.1016/j.chemgeo.2017.10.014.
 - 29) Jin, L., Ma, L., Dere, A., White, T., Mathur, M., and Brantely, S. (2017), REE mobility and fractionation during shale weathering along a climate gradient. *Chemical Geology* 466, 352-379.
- LM contribution include designed the REE part of the research, contributed analytical tools, analyzed data, and edited the paper.
- 28) Wymore, A., West, N., Maher, K., Sullivan, P., Harpold, A., Karwan, D., Marshall, J., Perdrial, J., Rempe, D., Ma, L., (2017), Growing new generations of critical zone scientists. *ESEX Commentary. Earth Surface Process and Landforms*, doi:10.1002/esp.4196.
- LM contribution include designed the paper concept and edited the paper.
- 27) Engel, J.*, Ma, L., P. Sak, J. Gaillardet, M. Ren, M. Engle, S. Brantley (2016), Quantifying chemical weathering rates along a precipitation gradient on Basse-Terre Island, French Guadeloupe: new insights from U-series isotopes in weathering rinds, *Geochimica Cosmochimica Acta*, in press, accepted on August 27th, 2016.
 - 26) Yamaokaa, K., Ma, L., Hishikawac, K., Usuia, A. (2016), Geochemistry and U-series dating of Holocene and fossil marine hydrothermal manganese deposits from the Izu-Ogasawara arc. *Ore Geology Reviews*, in press, accepted on July 29th, 2016.
<http://dx.doi.org/10.1016/j.oregeorev.2016.07.025>
 - 25) Sullivan, P., Ma, L., West, N., Jin, L., Karwan, D., Steinhoefel, G., Brantley, S. (2016). CZ-tope at Susquehanna Shale Hills CZO: Testing multiple isotope proxies to elucidate Critical Zone processes. *Chemical Geology*, in press, accepted on May 15th, 2016.
 - 24) Huckle, D*., Ma, L., McIntosh, J., Vazques-Ortega, A., Rasmussen, C., Chorover, J. (2016), Characterizing U-series isotope signatures in soils and headwater streams in a complex volcanic terrain. *Chemical Geology*, in press, accepted on April 5th, 2016.
 - 23) Engle, M., Reyes, F.*, Varonka, M., Orem, W., Ma, L., Ianno, A., Schell, T., Xu, P., Carroll, K., (2016). Geochemistry of formation waters from the Wolfcamp and “Cline” shales: Insights into brine origin, reservoir connectivity, and fluid flow in the Permian Basin, USA. *Chemical Geology* 425, 76-92.

- 22) Ma, L., Teng, F.-Z., Ke, S., Yang, W., Jin, L., Brantley, S., (2015). Mg isotope fractionation during shale weathering in the Shale Hills Critical Zone Observatory: accumulation of light Mg isotopes in soils by clay mineral transformation. *Chemical Geology*, 397, 37-50.
- 21) Lebedeva, M., Sak, P., Ma, L., Brantley, S., (2015). Using a mathematical model of a weathering clast to explore the effects of curvature on weathering. *Chemical Geology*, 404, 88-99.
- 20) Finlayson, V. *, Konter, J., Ma, L., (2015). The importance of a Ni correction with ion counter in the AQ8 double spike analysis of Fe isotope compositions using a $^{57}\text{Fe}/^{58}\text{Fe}$ double spike. *Geochim. Geophys. Geosyst.* 16, 4209–4222, DOI:10.1002/2015GC006012.
- 19) Szyrkiewicz, A., Borrok, D., Ganjegunte, G., Skrzypek, G., Ma, L., Rearick, M., Perkins, G., (2015). Isotopic studies of the Upper and Middle Rio Grande. Part 2 – Salt loads and human impacts in south New Mexico and west Texas. *Chemical Geology* 411, 336-350.
- 18) Ma, L., Konter, J., Sanchez, D. *, Herndon, E., Jin, L., Brantley, S. (2014), Quantifying the signature of the industrial revolution from Pb concentrations and isotopes in Pennsylvania soils. *Anthropocene* 7, 16-29.
- 17) Rocha, C. *, Peterson, J., Jalandoni, A., Chianelli, R. R., Ma, L., (2014). Paleoenvironmental investigations, chemical analysis and characterization of underwater strata of Marigondon Cave. *Quaternary International*. dx.doi.org/10.1016/j.quaint.2014.04.005.
- 16) Jin, L., Ogrinc, N., Yesavage, T., Hasenmueller, E. A., Ma, L., Sullivan, P. L., Kaye, J., Duffy, C., Brantley, S. L., (2014). The CO_2 consumption potential during gray shale weathering: Insights from the evolution of carbon isotopes in the Susquehanna Shale Hills critical zone observatory. *Geochimica et Cosmochimica Acta*, 142, 260–280.
- 15) Ma, L., Chabaux, F., West, N., Kirby, E., Jin, L., Brantley, S., (2013). Regolith production and transport in the Susquehanna Shale Hills Critical Zone Observatory, Part 1: Insights from U-series isotopes. *Journal of Geophysical Research: Earth Surface*, 118, 722-740.
- 14) West, N., Kirby, E., Bierman, P., Slingerland, R., Ma, L., Rood, D., Brantley, S., (2013). Regolith production and transport at the Susquehanna Shale Hills Critical Zone Observatory, Part 2: Insights from meteoric ^{10}Be . *Journal of Geophysical Research: Earth Surface*, 118, 1-20.
- 13) Chabaux, F., Blaes, E., Stille, P., Roupert, R.D. Pelt, E., Dosseto, A., Ma, L., Buss, H.L., Brantley, S.L. (2013), Regolith formation rate from U-series nuclides: Implications from the study of a spheroidal weathering profile in the Rio Icacos watershed (Puerto Rico), *Geochimica et Cosmochimica Acta* 100, 73-95.
- 12) Ma, L., Chabaux, F., Pelt, E., Granet, M., Sak, P.B., Gaillardet, J., Lebedeva, M., and Brantley, S.L. (2012), The effect of curvature on weathering rind formation: evidence from Uranium-series isotopes in basaltic andesite weathering clasts in Guadeloupe. *Geochimica et Cosmochimica Acta* 80, 92-107.
- 11) Ma, L., Jin, L., and Brantely, S.L. (2011), How mineralogy and slope aspect affect REE release and fractionation during shale weathering in the Susquehanna/Shale Hills Critical Zone Observatory. *Chemical Geology* 290, 31-49.

- 10) Chabaux, F., Ma, L., Stille, P., Pelt, E., Granet, M., Lemarchand, D., Chiara Roupert, R., Brantley, S.L. (2011), Determination of chemical weathering rates from U series nuclides in soils and weathering profiles: principles, applications and limitations. *Applied Geochemistry* 26, 20-23.
- 9) Ma, L., Jin, L., and Brantley, S.L. (2011), Geochemical behaviors of different element groups during shale weathering at the Susquehanna/Shale Hills Critical Zone Observatory. *Applied Geochemistry* 26, 89-93.
- 8) Brantley, S.L., Buss, H., Lebedeva, M., Fletcher, R.C., Ma, L. (2011), Investigating the complex interface where bedrock transforms to regolith, *Applied Geochemistry* 26, 12-15.
- 7) Ma, L., Chabaux, F., Pelt, E., Blaes, E., Jin, L., and Brantley, S.L. (2010), Regolith production rates calculated with Uranium-series isotopes at Susquehanna/Shale Hills Critical Zone Observatory. *Earth and Planetary Science Letters* 297, 211-225.
- 6) Ma, L., Castro, M.C., and Hall, C.M. (2009). Atmospheric noble gas signatures in deep Michigan Basin brines as indicators of a past thermal event, *Earth and Planetary Science Letters* 277, 137-147.
- 5) Ma, L., Castro, M.C., and Hall, C.M. (2009). Crustal noble gases in deep brines as natural tracers of vertical transport processes in the Michigan Basin, *Geochemistry Geophysics Geosystems* 10(6), Q06001, doi:10.1029/2009GC002475.
- 4) Castro, M.C., Ma, L., and Hall, C.M. (2009). A primordial, solar He-Ne signature in crustal fluids of a stable continental region, *Earth and Planetary Science Letters* 279, 174-184.
- 3) Ma, L., Castro, M.C., Hall, C.M., and Walter, L.M. (2005). Cross-formational flow and salinity sources inferred from a combined study of helium concentrations, isotopic ratios and major elements in the Marshall aquifer, southern Michigan, *Geochemistry Geophysics Geosystems* 6(10), Q10004, doi:10.1029/2005GC001010.
- 2) Hall, C.M., Castro, M.C., Lohmann, K.C., and Ma, L. (2005). Noble gases and stable isotopes in a shallow aquifer in southern Michigan, *Geophysical Research Letters* 32, L18404, doi:10.1029/2005GL023582.
- 1) Ma, L., Castro, M.C., and Hall, C.M. (2004). A late Pleistocene-Holocene noble gas paleotemperature record in southern Michigan, *Geophysical Research Letters* 31, L23204, doi:10.1029/2004GL021766.

Journal articles submitted or to be submitted

- 2) Sosa, S*[@], Ma, L., Engle, M., and Jin, L. (2022) Mobility of trace elements underneath irrigated agricultural fields: implication of dryland soil and water quality along the Rio Grande Valley. Submitted to *Agricultural Water Management* on 4/21/2022.
- LM contribution include designed the trace metal part of the research, analyzed data, and edited the paper.

Conference abstracts

A total of 126 abstracts and presentations at national and international meetings since 2011.

KEYNOTE AND INVITED TALKS

- Ma, L., New Mexico State University, "Dryland Critical Zone Research: potential for collaboration" (February, 2022).
- Ma, L., UT San Antonio, "Combining uranium, boron, and strontium isotope ratios ($^{234}\text{U}/^{238}\text{U}$, $\delta^{11}\text{B}$, $^{87}\text{Sr}/^{86}\text{Sr}$) to trace and quantify salinity contributions to Rio Grande river in Southwestern United States. (April, 2021).
- Ma, L., NMSU Water Science Center, "Using Uranium isotope ratios ($^{234}\text{U}/^{238}\text{U}$) to study water-rock interaction and solute sources: case studies from Rio Grande and more...", NMSU, Las Cruces, NM. (October 23, 2018).
- Ma, L., IUPUI Department Seminar, "Quantifying weathering rind formation rates using U-series isotopes along steep gradients of precipitation, bedrock ages and topography in French Guadeloupe," IUPUI, Indianapolis, IN. (April 30, 2018).
- Jin, L., Ortiz, A.*, Ogrinc, N., Kaye, J., Ma, L., Hasenmueller, E., Sullivan, P., Brantley, S., American Chemical Society Annual Meeting, "Understanding inorganic carbon dynamics in natural and human-impacted critical zones," San Francisco, California. (April 2017).
- Ma, L., American Chemical Society Annual Spring meeting 2017, "Using U-series isotopes to quantify chemical weathering rates along a precipitation gradient on Basse-Terre Island, French Guadeloupe," American Chemical Society, San Francisco. (April 3, 2017).
- Ma, L., Institute of Soil Science, Chinese Academy of Science, Applications of U-series isotopes in low temperature geochemistry: recent advances in Critical Zone Science and tropical volcanic weathering, Nanjing, China (March 3rd, 2016).
- Ma, L., School of Earth Sciences and Engineering, Nanjing University, Applications of U-series isotopes in low temperature geochemistry and Critical Zone Science, Nanjing, China (March 3rd, 2016).
- Ma, L., Department of Geological Sciences, New Mexico State University, Fingerprinting and quantifying salinity sources in the semi-arid Rio Grande watershed: a multi-tracer (U, S, B, and Sr) approach. Las Cruces, NM (February 24th, 2016).
- Ma, L., GSA 2015 Pardee Keynote symposium, Regolith production and transport in the Susquehanna Shale Hills Critical Zone Observatory: Insights from U-series isotopes, Baltimore, MD (Nov. 4th, 2015)
- Ma, L., Sino-US NSF CZO workshop, What makes a CZO a CZO, NSF USA and NSF China, Guiyang, China. (October 15, 2015).
- Ma, L., European Geosciences Union General Assembly 2015, Using Uranium-series isotopes to understand processes of rapid soil formation in tropical volcanic settings: an example from Basse-Terre, French Guadeloupe, European Geosciences Union, Vienna, Austria. (April 1, 2015).

- Ma, L., University of Arizona Department Seminar, Half-soil and half-rock: What weathering rinds tell us about chemical weathering on a tropical island, University of Arizona, Tucson, AZ. (March 15, 2015).
- Ma, L., Guangzhou Institute of Geochemistry, Chinese Academy of Science, Applications of U-series isotopes in low temperature geochemistry: recent advances in Critical Zone Science, Guangzhou, China (July 27th, 2014).
- Ma, L., P. Sak, J. Gaillardet, H. Buss, F. Chabaux, S. Brantley, Uranium-series Symposium 2014: The Frontiers of U-series Research, Application of U-series isotopes to quantify weathering rind formation rates along steep gradients of precipitation, bedrock ages, and topography in Guadeloupe Island. Sydney, Australia (February 12-14th, 2014).
- Ma, L., Engle, M., Ruppert, L., Geboy, N., Geological Society of America Annual Meeting, Using a novel cadmium isotope tool to understand the behavior of trace elements during coal combustion in two coal-burning power plants in the United States, Geological Society of America, Denver, CO (October 31, 2013).
- Ma, L., Chabaux, F., Dere, A., White, T., Jin, L., Brantley, S., AGU annual meeting (San Francisco, CA, 2012), Using U-series isotopes to quantify regolith formation rates and chemical weathering timescales along a shale transect within the Susquehanna Shale Hills Critical Zone Observatory, AGU, San Francisco, CA (December 6, 2012).
- Ma, L., The 2nd International conference of geobiology – NSF Critical Zone Observatories for sustainable soil development and beyond, Using Uranium-series isotopes to quantify regolith formation rates at Shale Hills Critical Zone Observatory: relationships between hill-slope aspect and soil development, NSF, NSF China, European Commission, Wuhan China (September 3, 2012).
- Ma, L., American Geophysical Union Annual Fall Meeting, Quantifying rind formation and chemical weathering rates in basaltic/andesitic weathering clasts with uranium-series isotopes: a case study from Basse-Terre Island, Guadeloupe, American Geophysical Union, San Francisco, CA (December 10, 2011).

SERVICE

Professional service:

Associate Editor: *Frontiers in Water Science*, 2022- present

Editorial Board Member, *Chemical Geology*, 2016 – 2022

Guest Editor, *Chemical Geology*, 2015 – 2016

Reviewers for: *Earth and Planetary Science Letters*, *Geochimica Cosmochimica Acta*, *Chemical Geology*, *Environmental Science & Technology*, *Nature*, *Vadose Zone Journal*, *Quaternary Geochronology*, *Journal of Hydrology*, *Water Resources Research*, *Applied Geochemistry*, *Geophysical Research Letters* etc.

Conference chairs and conveners for: Goldschmidt Conference, American Geophysical Union meetings, Geochemistry of Earth Surface Meetings etc;

Grant Proposal reviewers and panelists for: National Science Foundation (Geobiology and Low Temperature Geochemistry; Hydrological Sciences, Major Research Instrumentation), Israel Science Foundation, and American Chemistry Society/PRF.

Department and UTEP service:

Member, Natalicio Dissertation Fellowship Review Committee, UTEP Graduate School, 2016

Member, Graduate admission committee, UTEP Geological Sciences, 2014-2016
Member, Graduate admission committee, UTEP Environmental Sciences, 2012-2016
Member, Faculty Search Committee, UTEP Geological Sciences, 2015-2016
Chair, Graduate Curriculum Review Committee, UTEP Geological Sciences, 2014-2015
Chair, Research Faculty Search Committee, UTEP Geological Sciences, 2014-2015
Member, Outstanding Dissertation Review Committee, UTEP Graduate School, 2014
Member, Provost Office Summer UG Research Review Committee, UTEP Provost Office, 2014
Member, Department Chair Search Committee, UTEP Geological Sciences, 2014
Faculty advisor, UTEP Campus Office for Undergraduate Research Initiative, 2013
Member, Faculty Search Committee, UTEP Geological Sciences, 2012-2013

STUDENT SUPERVISION

PhD students: Jiye Guo (2014 – 2021), Victor Garcia (2016 – 2021), Syprose Nyachoti (PhD completed 2016); **MS students:** Matthew Costa (2016 – present), Sandra Garcia (2015 – present), Yvette Pereyra (MS completed 2016), Matthew Hiebing (MS completed 2016), Jacqueline Engel (MS completed 2015), Fotios Fouskas (MS completed 2015), David Huckle (MS 2014, U of Arizona); **Undergraduate students:** Mercedes Navarro-O'Hara (2016 – present); Carlos Reyes (2015 – present); Sandra Garcia (2013 – 2015); Diego Sanchez (2012 – 2013).