

CURRICULUM VITAE

Michael Ray Shields
Geochemical and Environmental Research Group
Texas A&M University
College Station, TX 77843

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EDUCATIONAL EXPERIENCE

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| 2011 | B.S. (Biochemistry) Dept. of Biochemistry, Texas A&M University, College Station, TX |
| 2016 | Ph.D. (Geological Sciences) Dept. of Geological Sciences, University of Florida, Gainesville, FL |

PROFESSIONAL EXPERIENCE

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| 2010-2011 | Laboratory Assistant , Chemical Oceanography, Texas A&M University, College Station, Texas |
| 2011-2013 | Graduate Research Assistant , Chemical Oceanography, Texas A&M University, College Station, Texas |
| 2013 | Graduate Assistant Non-Teaching , Oceanography, Texas A&M University, College Station, Texas |
| 2015 | Graduate Teaching Assistant , Florida Geology Lab, University of Florida, Gainesville, Florida |
| 2013-2016 | Graduate Research Assistant , Organic Geochemistry Lab, University of Florida, Gainesville, Florida |
| 2017-2019 | Post-doctoral Associate , Organic Geochemistry Lab, University of Florida, Gainesville, Florida |
| 2019-2023 | Assistant Research Scientist , Geochemical and Environmental Research Group, Texas A&M University, College Station, Texas |
| 2023-Present | Associate Research Scientist , Geochemical and Environmental Research Group, Texas A&M University, College Station, Texas |

RESEARCH INTERESTS

Carbon cycling in riverine and coastal ecosystems.
Biochemical markers of dissolved and particulate organic carbon.
Mechanisms controlling carbon sequestration in natural environments.

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Biomarker method development.
Method quality assurance and method optimization.
Ultrahigh resolution mass spectrometry for DOM diversity and compound discovery

PROFESSIONAL AFFILIATIONS

American Geophysical Union
American Society of Mass Spectrometry
American Chemical Society

LABORATORY EXPERIENCE

Analytes

Amino acids
Amino sugars
Artificial Sweeteners
Chlorinated dibenzo-p-dioxins (PCDDs) and chlorinated dibenzofurans (PCDFs)
Compound-specific radiocarbon prep for long-chain fatty acid methyl esters
Compound-specific stable isotope analysis of fatty acid methyl esters and alkanes
Lignin oxidation products
Lipids (fatty acid methyl esters, alkanes, sterols, glycerol dialkyl glycerol tetraethers (GDGTs))
Per- and Polyfluoroalkyl Substances
Photosynthetic pigments and carotenoids
Polycyclic aromatic hydrocarbons
Pharmaceuticals and Personal Care Products (PPCPs)
Stable isotopes of carbon, organic carbon, and nitrogen
Sterane and Triterpane Biomarkers
Sunscreen compounds (ex: oxybenzone)
Total carbon and nitrogen

Instrumentation

2D gas chromatography time-of-flight mass spectrometry (LECO GCxGC TOF-MS)
Gas chromatography tandem mass spectrometry (Thermo Scientific TRACE 1310 – TSQ 8000;
Agilent 7890B – 7010B)
Gas chromatography mass spectrometry (Agilent 5890 – 5973MSD; Agilent 6890 – 5975;
Agilent 7890 – 5977; Shimadzu GCMS-QP2010)
Gas chromatography combustion coupled to a Finnigan-MAT Delta Plus IRMS
Gas chromatography flame ionization detection (Agilent 7890B; Shimadzu GC2010)
Preparative capillary gas chromatography (Agilent 7890B with Gerstel cooled injection system
and preparative fraction collector)
Preparative liquid chromatography with fraction collection (Agilent 1290 Infinity II Preparative
Open-Bed Sampler/Collector)
Liquid chromatography tandem mass spectrometry (Dionex Ultimate 3000 – Thermo Scientific
TSQ Endura; Agilent 1290 – 6470)

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Liquid chromatography quadrupole time-of-flight mass spectrometry (Agilent 1290 – 6546)

Liquid chromatography mass spectrometry (Shimadzu 2010A LCMS)

Liquid chromatography diode array detection and fluorescence detection (Dionex Ultimate 3000 – DAD3000 – RF3000)

Dissolved organic carbon and total dissolved nitrogen (Shimadzu TOCV-CSN)

FIELD EXPERIENCE

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| 2010 | Research Assistant, 6 day cruise (August) aboard R/V Pelican, Gulf of Mexico |
| 2011 | Research Assistant, 6 day cruise (June) aboard Blazing Seven, Gulf of Mexico |
| 2011 | Research Assistant, 6 day cruise (August) aboard R/V Pelican, Gulf of Mexico |
| 2012 | Research Assistant, 6 day cruise (April) aboard R/V Pelican, Gulf of Mexico |
| 2012 | Research Assistant, 6 day cruise (August) aboard R/V Pelican, Gulf of Mexico |
| 2012 | Lead Researcher, 3 day sampling trip (October) Brazos River, Texas |
| 2013 | Research Assistant, Core sampling in the Wax Lake Delta, Louisiana |
| 2015 | Lead Researcher, 3 day vibracore sampling trip in Wax Lake Delta, Louisiana |
| 2017 | Research Assistant, 1 day vibracore sampling trip near St. Augustine, Florida |
| 2018 | Research Assistant, 2 day water and sediment sampling trip in the Everglades Stormwater Treatment Areas |
| 2019 | Lead Researcher, 1 day water sampling trip near St. Augustine, Florida |
| 2019 | Research Assistant, 1 day water and sediment sampling in Galveston Bay aboard R/V Trident |
| 2021 | Research Assistant, Multiple 1 day water and sediment sampling in Galveston Bay aboard R/V Trident |
| 2022 | Research Assistant, Multiple 1 day water and sediment sampling in Galveston Bay aboard R/V Trident |

2023 Research Assistant, Multiple 1 day water and sediment sampling in Galveston Bay aboard R/V Trident

PRESENTATIONS AT PROFESSIONAL MEETINGS

Contributed Papers

2012 American Society of Limnology and Oceanography, Salt Lake City, UT (Poster)

2012 Gordon Research Conference in Organic Geochemistry, Holderness, NH (Poster)

2012 American Geophysical Union, San Francisco, CA (Poster)

2013 American Society of Limnology and Oceanography, New Orleans, LA (Poster Presentation)

2013 International Conference on Paleoceanography, Barcelona, Spain (Poster)

2013 American Geophysical Union, San Francisco, CA (Poster)

2014 Gulf of Mexico Oil Spill and Ecosystem Science, Mobile, AL (Poster Presentaton)

2014 Ocean Science Meeting, Honolulu, HI (Poster Presentation)

2014 Southeastern Biogeochemistry Symposium, Atlanta, GA (Poster Presentation)

2014 Gordon Research Conference: Organic Geochemistry, Holderness, NH (Poster)

2015 Southeastern Biogeochemistry Symposium, Atlanta, GA (Poster Presentation)

2016 University of Florida: Marine Science Symposium, Cedar Key, FL (Poster Presentation)

2016 Ocean Science Meeting, New Orleans, LA (Oral Presentation)

2017 American Geophysical Union, New Orleans, LA (Poster Presentation)

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- 2018 University of Florida: Marine Science Symposium, St. Augustine, FL (Poster Presentation)
- 2018 Ocean Science Meeting, Portland, OR (Poster Presentation)
- 2019 Department of Energy ESS PI Meeting, Bethesda, Maryland (Poster)
- 2019 International Estuarine Biogeochemistry Symposium, Vigo, Spain (Oral Presentation)
- 2020 Department of Energy Virtual ESS PI Meeting, Bethesda, Maryland (Poster)
- 2020 Global Oceans 2020: Singapore – U.S. Gulf Coast, Virtual (Oral Presentation)
- 2021 American Chemical Society Meeting, Virtual (Poster)
- 2021 American Society of Mass Spectrometry, Philadelphia, PA (Poster)
- 2021 American Geochemical Union, New Orleans, LA (Oral Presentation)
- 2021 Society of Environmental Toxicology and Chemistry, Virtual (Poster)
- 2022 SoCal Society of Environmental Toxicology and Chemistry, Ventura, CA (Poster)
- 2022 Society of Environmental Toxicology and Chemistry, Pittsburg, PA (Poster)
- 2023 International Estuarine Biogeochemistry Symposium, Sibenik, Croatia (Oral Presentation and Poster)
- 2023 American Society of Mass Spectrometry, Houston, TX (Poster)
- 2024 American Chemical Society, New Orleans, LA (Poster)
- 2024 Society of Environmental Toxicology and Chemistry, Fort Worth, TX (Oral Presentation)
- 2024 American Geophysical Union, Washington D.C (Oral Presentation and Poster)

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Invited Papers

- 2018 American Geophysical Union, Washington D.C. (Invited paper)
- 2019 Blue Carbon, Royal Society of Edinburgh, Edinburgh, Scotland (Invited Paper)
- 2020 Ions at Work, Texas A&M University, College Station, TX (Invited Paper)

GRANTS RECEIVED

Graduate Student Council Travel Grant, University of Florida, 2014

Graduate Student Council Travel Grant, University of Florida, 2015

Dissertation Research Grant, The Organic Carbon Burial Potential of Young Mississippi River Subdeltas, Gulf Coast Association of Geological Societies, 2015

Thomas S. Bianchi (PI), Elise Morrison (Co-PI, and Michael Shields (Co-PI). Linking Sources of Particulate Organic Matter and P in Stormwater Treatment Areas: Applications of Chemical Biomarkers. South Florida Water Management District. \$100,000. 8/1/17-9/1/18.

Michael Shields (PI), Yina Liu (Co-PI). The Distribution and Fate of Highly Toxic Tire Rubber-Derived Chemicals in Galveston Bay. Galveston Bay Estuary Program. \$98,312, 8/01/2023-12/31/2025.

PROFESSIONAL ACTIVITIES

Invited Seminars:

Ocean University of China, Qingdao, China (2014)

Texas A&M University, College Station, TX (2021)

Workshops and Special Sessions:

Partnerships for International Research and Education (PIRE) Meeting - Invited Participant - Texas A&M University, College Station, TX - October, 2011

Mechanisms Controlling Hypoxia (MCH) All Hands Meeting - Invited Participant - Texas A&M University, College Station, TX - January, 2012

Texas Water Forum - Invited Participant – The University of Texas at Austin - Austin, TX - February, 2012

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Mechanisms Controlling Hypoxia (MCH) Process Cruise Meeting - Invited Participant -
Texas A&M University, College Station, TX - May, 2013

Gulf Integrated Spill Research (GISR) Meeting - Invited Participant - Gulf of Mexico Oil Spill
and Ecosystem Science - Mobile, AL - February, 2014

Sediment Dynamics and Biogeochemical Cycling - Ocean University of China - Qingdao, China
- October, 2014

Center for Chemical Currencies on a Microbial Planet (Labile DOM) – University of Georgia –
Athens, GA – September, 2022

Activity at Visited Laboratories:

Organic Geochemistry Lab of Yves Gelinat at Concordia University - Montreal, Canada -
May, 2014

National High Magnetic Field Laboratory at Florida State University – Tallahassee, Florida –
August, 2015

Manuscript Reviewer for:

Marine Chemistry, Geochimica et Cosmochimica Acta, Global Biogeochemical Cycles,
Environmental Science and Technology, Limnology and Oceanography, Journal of Geophysical
Research, Science of the Total Environment, Geology, Nature Communications, Water, Journal
of Marine Systems, Nature Geosciences, Organic Geochemistry

Proposal Reviewer for:

NOAA Northwest Fisheries Science Center

PROFESSIONAL POSTS

Member of Scientific Committee, International Estuarine Biogeochemistry Symposium – 2019 –
Present

PEER-REVIEWED PUBLICATIONS

2013

1. Bianchi T. S., F. Garcia-Tigreros, S. A. Yvon-Lewis, **M.R. Shields**, H. J. Mills, D. Butman, C. Osburn, P. Raymond, G. C. Shank, and S. F. DiMarco. 2013. Enhanced transfer of terrestrially derived carbon to the atmosphere in a flooding event. *Geophys. Res. Lett.* 40: 116–122. doi:10.1029/2012GL054145

2014

2. Bianchi, T. S., C. Osburn, **M. R. Shields**, S. Yvon-Lewis, J. Young, L. Guo, and Z. Zhou. 2014. Deepwater Horizon Oil in Gulf of Mexico Waters after 2 Years: Transformation into the Dissolved Organic Matter Pool. *Environ. Sci. Technol.* 48: 9288–9297. doi:10.1021/es501547b

2015

3. Liu, Y., D. C. O. Thornton, T. S. Bianchi, W. A. Arnold, **M. R. Shields**, J. Chen, and S. A. Yvon-Lewis. 2015. Dissolved Organic Matter Composition Drives the Marine Production of Brominated Very Short-Lived Substances. *Environ. Sci. Technol.* 49: 3366–3374. doi:10.1021/es505464k
4. Bianchi, T. S., D. C. O. Thornton, S. A. Yvon-Lewis, G. M. King, T. I. Eglinton, **M. R. Shields**, N. D. Ward, and J. Curtis. 2015. Positive priming of terrestrially derived dissolved organic matter in a freshwater microcosm system. *Geophys. Res. Lett.* 42: 5460–5467. doi:10.1002/2015GL064765
5. Bianchi, T. S., V. Galy, B. E. Rosenheim, **M. R. Shields**, X. Cui, P. Van Metre, and P. Van Metre. 2015. Paleoreconstruction of organic carbon inputs to an oxbow lake in the Mississippi River watershed: Effects of dam construction and land use change on regional inputs. *Geophys. Res. Lett.* 42: 7983–7991. doi:10.1002/2015GL065595

2016

6. Hertzberg, J. E., M. W. Schmidt, T. S. Bianchi, R. K. Smith, **M. R. Shields**, and F. Marcantonio. 2016. Comparison of eastern tropical Pacific TEX86 and Globigerinoides ruber Mg/Ca derived sea surface temperatures: Insights from the Holocene and Last Glacial Maximum. *Earth Planet. Sci. Lett.* 434: 320–332. doi:10.1016/j.epsl.2015.11.050
7. **Shields, M. R.**, T. S. Bianchi, Y. Gélinas, M. A. Allison, and R. R. Twilley. 2016. Enhanced Terrestrial Carbon Preservation Promoted by Reactive Iron in Deltaic Sediments. *Geophysical Research Letters*. 1–25. doi:10.1002/2015GL067388

2017

8. **Shields, M. R.**, T. S. Bianchi, D. Mohrig, J. A. Hutchings, W. F. Kenney, A. S. Kolker, and J. H. Curtis. 2017. Carbon storage in the Mississippi River delta enhanced by environmental engineering. *Nat. Geosci.* doi:10.1038/ngeo3044
9. Arellano, A. R., T. S. Bianchi, J. A. Hutchings, X. Cui, and **M. R. Shields**. 2017.

Differential effects of solid-phase extraction resins on the measurement of dissolved lignin-phenols and organic matter composition in natural waters. *Limnol. Oceanogr. Methods*. doi:10.1002/lom3.10224

2018

10. Hutchings, J. A., **M.R. Shields**, T. S. Bianchi, and E. A. G. Schuur. 2018. A rapid and precise method for the analysis of underivatized amino acids in natural samples using volatile-ion-pairing reverse-phase liquid chromatography–electrospray ionization tandem mass spectrometry. *Org. Geochem.* 115: 46–56. doi:10.1016/j.orggeochem.2017.10.007
11. Barry, S.C., T.S. Bianchi, **M.R. Shields**, J.A. Hutchings, C.A. Jacoby, and T.K. Frazer, 2018. Characterizing blue carbon stocks in *Thalassia testudinum* meadows subjected to different phosphorus supplies: A lignin biomarker approach. *Limnol. Oceanogr.* 63, 2630–2646. <https://doi.org/10.1002/lno.10965>
12. Li, L., Z. He, **M.R. Shields**, T.S. Bianchi, A. Pain, P.J. Stoffella, 2018. Partial least squares analysis to describe the interactions between sediment properties and water quality in an agricultural watershed. *J. Hydrol.* 566, 386–395. <https://doi.org/10.1016/j.jhydrol.2018.09.009>
13. Osburn, C.L., J.D. Kinsey, T.S. Bianchi, and **M.R. Shields**, 2018. Formation of planktonic chromophoric dissolved organic matter in the ocean. *Mar. Chem.* <https://doi.org/10.1016/j.marchem.2018.11.010>
14. Zhao, B., P. Yao, T.S. Bianchi, **M.R. Shields**, X.Q. Cui, X.W. Zhang, X.Y. Huang, C. Schröder, J. Zhao, and Z.G. Yu, 2018. The Role of Reactive Iron in the Preservation of Terrestrial Organic Carbon in Estuarine Sediments. *J. Geophys. Res. Biogeosciences*. <https://doi.org/10.1029/2018JG004649>

2019

15. Zhang, X., Bianchi, T.S., Cohen, M.J., Martin, J.B., Quintero, C.J., Brown, A.L., Ares, A.M., Heffernan, J.B., Ward, N., Osborne, T.Z., **Shields, M.R.**, Kenney, W.F., 2019. Initiation and development of wetlands in southern Florida karst landscape associated with accumulation of organic matter and vegetation evolution. *J. Geophys. Res. Biogeosciences* 2018JG004921. <https://doi.org/10.1029/2018JG004921>
16. **Shields, M.R.**, Bianchi, T.S., Kolker, A.S., Kenney, W.F., Mohrig, D., Osborne, T.Z., Curtis, J.H., 2019. Factors controlling storage, sources, and diagenetic state of organic carbon in a prograding subaerial delta: Wax Lake Delta, Louisiana. *J. Geophys. Res. Biogeosciences* 2018JG004683. <https://doi.org/10.1029/2018JG004683>

17. **Shields, M.R.**, Bianchi, T.S., Osburn, C.L., Kinsey, J.D., Ziervogel, K., Schnetzer, A., Corradino, G., 2019. Linking chromophoric organic matter transformation with biomarker indices in a marine phytoplankton growth and degradation experiment. *Mar. Chem.* 214, 103665. <https://doi.org/10.1016/j.marchem.2019.103665>
18. Morrison, E.S., **M.R. Shields**, T.S. Bianchi, Y. Liu, S. Newman, N. Tolic, and R.K. Chu. Multiple biomarkers highlight the importance of water column processes in treatment wetland organic matter cycling. *Water Research.* 115153.
19. Arellano, A. R., T.S. Bianchi, C. Osburn, E J. D'Sa, N.D. Ward, D. Oviedo-Vargas, I. Joshi, D. Ko, **M.R. Shields**, G. Kurian, and J. Green. (2019). Mechanisms of Organic Matter Export in Estuaries with Contrasting Carbon Sources. *Journal of Geophysical Research: Biogeosciences*, 124(10), 3168–3188. <https://doi.org/10.1029/2018JG004868>

2020

20. Yao, P., X. Wang, T.S. Bianchi, Z. Yang, L. Fu, Z. Yu, X. Zhang, L. Chen, E. Morrison, **M.R. Shields**, Y. Liu, N. Bi, Y. Qi, S. Zhou, J. Liu, Y. Tian, X. Huang, J. Wang, D. Wu, H. Zhang, C. Zhu, C. Deng, and Z. Yu. Carbon cycling in the ocean's deepest blue hole. *J. Geophys. Res. – Biogeosci.*, 125(2): e2019JG00530. (Featured in *Nature Research Highlights, Ocean Sciences, February 28, 2020, Earth's deepest 'blue hole' holds a cache of ancient carbon*; <https://www.nature.com/articles/d41586-020-00495-6>. Featured in *EOS Research Spotlight, Ocean Sciences, April 10, 2020, Carbon Cycling in the World's Deepest Blue Hole*; <https://eos.org/research-spotlights/carbon-cycling-in-the-worlds-deepest-blue-hole>.)
21. Paerl, R.W., I.M. Claudio, **M.R. Shields**, T.S. Bianchi, and C.L. Osburn, 2020. Dityrosine formation via reactive oxygen consumption yields increasingly recalcitrant humic-like fluorescent organic matter in the ocean. *Limnol. Oceanogr. Lett.* <https://doi.org/10.1002/lol2.10154>
22. Vaughn, D.R., T.S. Bianchi., **M.R. Shields**, W.F. Kenney, and T.Z. Osborne, 2020. Increased Organic Carbon Burial in Northern Florida Mangrove-Salt Marsh Transition Zones. *Global Biogeochem. Cycles* 34, 1–21. <https://doi.org/10.1029/2019GB006334>
23. Fortney N. W., Beard B. L., Hutchings J. A., **Shields M. R.**, Bianchi T. S., Boyd E. S., Johnson C. M. and Roden E. E. (2021) Geochemical and Stable Fe Isotopic Analysis of Dissimilatory Microbial Iron Reduction in Chocolate Pots Hot Spring, Yellowstone National Park. *Astrobiology* 21, 83–102.

2021

24. Vaughn, D.R., Bianchi, T.S., **Shields, M.R.**, Kenney, W.F., Osborne, T.Z., Daniel, G., Carter, O., Sanders, C.J., 2021. Blue Carbon Soil Stock Development and Estimates Within Northern Florida Wetlands 9, 1–16.
<https://doi.org/10.3389/feart.2021.552721>
25. Zhang, X., Bianchi, T. S., Hanna, A. J. M., **Shields, M. R.**, Izon, G., Hutchings, J. A., Ping, C.-L., Kanevskiy, M., Haghypour, N., & Eglinton, T. I. (2021). Recent Warming Fuels Increased Organic Carbon Export From Arctic Permafrost. *AGU Advances*, 2(2), e2021AV000396. <https://doi.org/10.1029/2021AV000396>
26. Bianchi, T. S., Aller, R. C., Atwood, T. B., Brown, C. J., Buatois, L. A., Levin, L. A., Levinton, J. S., Middelburg, J. J., Morrison, E. S., Regnier, P., **Shields, M. R.**, Snelgrove, P. V. R., Sotka, E. E., & Stanley, R. R. E. (2021). What global biogeochemical consequences will marine animal–sediment interactions have during climate change? *Elementa: Science of the Anthropocene*, 9(1).
<https://doi.org/10.1525/elementa.2020.00180>

2022

27. Kenney W. F., **Shields M. R.**, Bianchi T. S., Kolker A. S. and Mohrig D. (2022) Excess ²¹⁰Pb as an indicator of flood-stage sediments in prograding, Wax Lake Delta, USA. *Marine Geology* 453, 106914.

2023

28. Hayman, N.T., Carilli, J.E., Liu, Y., **Shields, M.R.**, Hsu, L., George, R., 2023. Water quality impacts on sorbent efficacy for per- and polyfluoroalkyl substances treatment of groundwater. *Remediation Journal* 33, 89–100.
<https://doi.org/10.1002/rem.21747>
29. Zhao, B., Yao, P., Bianchi, T.S., Wang, X., **Shields, M.R.**, Schröder, C., Yu, Z., 2023. Preferential preservation of pre-aged terrestrial organic carbon by reactive iron in estuarine particles and coastal sediments of a large river-dominated estuary. *Geochimica et Cosmochimica Acta* 345, 34–49.
<https://doi.org/10.1016/j.gca.2023.01.023>
30. Lee, H.-J., **Shields, M.R.**, Landeta, A., Saldaña, M.A., Fredregill, C.L., Pietrantonio, P.V., 2023. Evaluation of field resistance in field-collected mosquito *Culex quinquefasciatus* Say through quantification of ULV permethrin/PBO formulation in field bioassays. *Pest Management Science* n/a. <https://doi.org/10.1002/ps.7587>
31. Morrison, E.S., Liu, Y., Rivas-Ubach, A., Amaral, J.H.F., **Shields, M.**, Osborne, T.Z., Chu, R., Ward, N., Bianchi, T.S., 2023. Mangrove peat and algae leachates elicit rapid and contrasting molecular and microbial responses in coastal waters. *Commun Earth Environ* 4, 1–13. <https://doi.org/10.1038/s43247-023-00975-3>

2024

32. Shore, R., Behlen, J., McBee, D., Prayaga, K., Haugen, F., Craig, L., **Shields, M.**, Mustapha, T., Harvey, N., Johnson, N., 2024. Lactational transfer of sulforaphane-N-acetylcysteine in vivo and in human breast milk. *Toxicology and Applied Pharmacology* 482, 116796. <https://doi.org/10.1016/j.taap.2023.116796>
33. Liu, Y., **Shields, M. R.**, Puthigai, S., Gregory, L. F., & Berthold, A. A. (2024). Distribution of Per- and Polyfluoroalkyl Substances in the Rapidly Urbanizing Arroyo Colorado Watershed, Texas. *Journal of Contemporary Water Research & Education*, 180(1), 23–36. <https://doi.org/10.1111/j.1936-704X.2024.3405.x>
34. Uwak, I., **Shields, M.**, Vallamsundar, S., Ramani, T., Aguilera, J., Wen-Whai Li, et al. (2024). Personal Exposure to Polycyclic Aromatic Hydrocarbons: A Pilot Study of Teachers in El Paso, Texas. *Texas Public Health Journal*, 76(3), 21–25.