

**PRESTON COSSLETT KEMENY**  
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The University of Chicago  
5734 South Ellis Avenue  
Chicago, IL, 60637

## PROFESSIONAL APPOINTMENTS

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**The University of Chicago** 2022 – present  
T.C. Chamberlin and NSF EAR Postdoctoral Fellow, Department of the Geophysical Sciences

## EDUCATION

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**California Institute of Technology** 2016 – 2022  
Ph.D. in Geochemistry, Division of Geological and Planetary Sciences  
Defense May 10<sup>th</sup>, 2022; PhD awarded June 10<sup>th</sup>, 2022. Cumulative GPA: 4.1  
Thesis title: *A fluvial perspective on the role of sulfide oxidation in the global carbon cycle*  
Advisors: Jess Adkins, Woodward Fischer

**California Institute of Technology** 2018  
M.S. in Geochemistry, Division of Geological and Planetary Sciences

**Princeton University** 2011 – 2015  
A.B. in Geoscience, *summa cum laude*. Certificates in Environmental Studies, Planets & Life  
Cumulative GPA: 3.8, GPA in geology courses: 4.0  
Thesis title: *Seasonality in the Antarctic Ocean: Late Summer Nitrate Isotope Measurements from the Pacific Sector and a Seasonal Model of the Upper Water Column*  
Advisors: Daniel Sigman, John Higgins

## FELLOWSHIPS AND AWARDS

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- T.C. Chamberlin Postdoctoral Fellowship (The University of Chicago) 2022 – present
- NSF Division of Earth Sciences Postdoctoral Fellowship 2022 – present
- Stein-Cohen/Jacobs Hertz Fellowship, Fannie and John Hertz Foundation 2017 – 2022
- National Defense Science and Engineering Graduate Fellowship 2016 – 2019
- Honorable mention, National Science Foundation Graduate Fellowship 2016
- Peirce fellowship (awarded as a prospective Harvard graduate student, declined) 2016
- Edward Sampson, Class of 1914, Prize in Environmental Geosciences (Princeton) 2015
- Sigma Xi Book Award (Princeton, awarded for excellence in research) 2015

## INVITED SEMINARS

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- [18] Texas A&M, department seminar March 2024
- [17] Stanford University, department seminar January 2024
- [16] University of Illinois Urbana-Champaign, department seminar November 2023
- [15] UC Santa Barbara, department seminar September 2023
- [14] University of Victoria, department seminar September 2023
- [13] UC San Diego, Geoscience/Marine Chemistry and Geochemistry seminar September 2023
- [12] University of Calgary, department seminar April 2023
- [11] Dartmouth College, department seminar March 2023
- [10] Rice University, graduate interdisciplinary Earth science seminar March 2023
- [9] Duke University, department seminar February 2023
- [8] Harvard University, seminar for geochemistry/geobiology groups December 2022

[7] Boston College, department seminar	December 2022
[6] Colorado State University, department seminar	October 2022
[5] Carleton University, department seminar	March 2022
[4] University of Texas at Dallas, department seminar	March 2022
[3] University of Southern California, paleo/environmental seminar series	February 2022
[2] University of Chicago, department seminar (+3 subsequent internal talks)	December 2021
[1] University of Nebraska at Omaha, department seminar	November 2021

#### MANUSCRIPTS, IN REVIEW

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- [6] **Kemeny, P. C.**, Krause, A., and Kump, L. Historical and hydrothermal perspectives on long-term global biogeochemical box models.
- [5] **Kemeny, P. C.**, Phillips, A. A., and Johnson, D.L. Replaying the tape of academia: Fourteen alternative practices.
- [4] Zhong, J., Galy, A., **Kemeny, P. C.**, Zhu, X., Antler, G., Liu, C., and Li, S. Evidences for cryptic sulfur cycling and implications on the budget of sulfide weathering in the rapidly eroding Eastern Tibetan Plateau.
- [3] Hou, Y., Baronas, J. J., **Kemeny, P. C.**, Bouchez, J., Geirsdóttir, Á., Miller, G. H., and Torres, M. A. Glacially enhanced silicate weathering revealed by Holocene lake records.
- [2] Douglas, M. M., Li, G. K., West, A. J., Ke, Y., Rowland, J. C., Brown, N., Schwenk, J., **Kemeny, P. C.**, Piliouras, A., Fischer, W. W., and Lamb, M. P. Slow permafrost formation in a meandering river floodplain.
- [1] Prow, A., Lu, Z., Blättler, C., He, T., Yang, Z., Singh, P., **Kemeny, P. C.**, Todes, J., Pohl, A., Bhattacharya, T., Schootbrugge, B., Wignall, P.B., and Payne, J. Temporal and spatial dynamics of paleo-redox conditions across the Triassic-Jurassic boundary.

#### MANUSCRIPTS, PUBLISHED

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- [20] Erlanger, E., Bufe, A., Paris, G., D'Angeli, I., Pisani, L., **Kemeny, P. C.**, Stammeier, J., Haghypour, and N., Hovius, N. Deep CO<sub>2</sub> release and the carbon budget of the central Apennines modulated by geodynamics. *Nature Geosciences*. <https://doi.org/10.1038/s41561-024-01396-3>.
- [19] **Kemeny, P. C.**, Torres, M. A., Fischer, W. W., and Blättler, C. L. Balance and imbalance in biogeochemical cycles reflect the operation of closed, exchange, and open sets. *Proceedings of the National Academy of Sciences*. <https://doi.org/10.1073/pnas.2316535121>.
- [18] Ramos, E. J., Larsen, W. J., Hou, Y., Munoz, S., **Kemeny, P. C.**, Scheingross, J. S., Repasch, M., Ibarra, D. E., and Torres, M. (2024). Competition or collaboration: Clay formation sets the relationship between silicate weathering and organic carbon burial in soil. *Earth and Planetary Science Letters*. <https://doi.org/10.1016/j.epsl.2024.118584>.
- [17] **Kemeny, P. C.**, Li, G. K., Douglas, M., Berelson, W., Chadwick, A. J., Dalleska, N. F., Lamb, M. P., Larsen, W., Magyar, J. S., Rollins, N.E., Rowland, J., Smith, I., Torres, M. A., Webb, S. M., Fischer, W. W., and West, A. J. (2023). Arctic permafrost thawing enhances sulfide oxidation. *Global Biogeochemical Cycles*. p.e2022GB007644. <https://doi.org/10.1029/2022GB007644>

- [16] Rowland, J. C., Schwenk, J. P., Shelef, E., Muss, J., Ahrens, D., Stauffer, S., Piliouras, A., Crosby, B., Chadwick, A., Douglas, M., **Kemeny, P. C.**, Lamb, M. P., Li, G., and Vulis, L., (2023). Scale-dependent influence of permafrost on riverbank erosion rates. *Journal of Geophysical Research: Earth Surface*, p.e2023JF007101. <https://doi.org/10.1029/2023JF007101>.
- [15] Phillips, A. A., White, M. E., Seidel, M., Wu, F., Pavia, F. F., **Kemeny, P. C.**, Ma, A. C., Aluwihare, L. I., Dittmar, T. and Sessions, A.L. (2022). Novel sulfur isotope analyses constrain sulfurized porewater fluxes as a minor component of marine dissolved organic matter. *Proceedings of the National Academy of Sciences*, 119(41), p.e2209152119. <https://doi.org/10.1073/pnas.220915211>.
- [14] Cole, T., Torres, M. A., and **Kemeny, P. C.** (2022). The Hydrochemical Signature of Incongruent Weathering in Iceland. *Journal of Geophysical Research: Earth Surface*. <https://doi.org/10.1029/2021JF006450>.
- [13] Douglas, M.M., Li, G.K., Fischer, W.W., Rowland, J.C., **Kemeny, P.C.**, West, A.J., Schwenk, J., Piliouras, A.P., Chadwick, A.J. and Lamb, M.P. (2022). Organic carbon burial by river meandering partially offsets bank erosion carbon fluxes in a discontinuous permafrost floodplain. *Earth Surface Dynamics*, 10(3), pp.421-435. <https://doi.org/10.5194/esurf-10-421-2022>.
- [12] Douglas, M. M., Lingappa, U. F., Lamb, M. P., Rowland, J. C., West, A. J., Li, G., **Kemeny, P. C.**, Chadwick, A. J., Piliouras, A., Schwenk, J., and Fischer, W. W. (2021). Impact of river channel lateral migration on the microbial ecology of a discontinuous permafrost floodplain. *Applied and Environmental Microbiology*, AEM-01339. [doi.org/10.1128/AEM.01339-21](https://doi.org/10.1128/AEM.01339-21).
- [11] **Kemeny, P. C.** and Torres, M. A. (2021). Presentation and applications of Modeling Elements ANd Dissolved Isotopes in Rivers (MEANDIR), a customizable MATLAB model for Monte Carlo inversion of dissolved river chemistry. *American Journal of Science*, May 2021, 321 (5) 579-642. [doi.org/10.2475/05.2021.03](https://doi.org/10.2475/05.2021.03).
- [10] **Kemeny, P. C.**, Torres, M. A., Lamb, M. P., Webb, S., Dalleska, N., Cole, T., Hou, Y., Marske, J., Adkins, J. F., and Fischer, W. W. (2021). Organic sulfur fluxes and geomorphic control of sulfur isotope ratios in rivers. *Earth and Planetary Science Letters*, 562, 116838. [doi.org/10.1016/j.epsl.2021.116838](https://doi.org/10.1016/j.epsl.2021.116838).
- [9] **Kemeny, P. C.**, Lopez, G. I., Dalleska, N. F., Torres, M., Burke, A., Bhatt, M. P., West, A. J., Hartmann, J., and Adkins, J. F. (2021). Sulfate sulfur isotopes and major ion chemistry reveal that pyrite oxidation counteracts CO<sub>2</sub> drawdown from silicate weathering in the Langtang-Trisuli-Narayani River system, Nepal Himalaya. *Geochimica et Cosmochimica Acta*, 294, 43-69. [doi.org/10.1016/j.gca.2020.11.009](https://doi.org/10.1016/j.gca.2020.11.009).
- [8] Sigman, D. M., Fripiat, F., Studer, A. S., **Kemeny, P. C.**, Martínez-García, A., Hain, M. P., Ai, X., Wang, X., Ren, H., and Haug, G. H. (2020). The Southern Ocean during the ice ages: A review of the Antarctic surface isolation hypothesis, with comparison to the North Pacific. *Quaternary Science Reviews*, 106732. [doi.org/10.1016/j.quascirev.2020.106732](https://doi.org/10.1016/j.quascirev.2020.106732).

- [7] Torres, M. A., **Kemeny, P. C.**, Lamb, M. P., Cole, T. L., and Fischer, W. W. (2020). Long-term storage and age-biased export of fluvial organic carbon: field evidence from West Iceland. *Geochemistry, Geophysics, Geosystems*, 21(4), e2019GC008632. doi.org/10.1029/2019GC008632.
- [6] Yan, Y., Bender, M. L., Brook, E. J., Clifford, H. M., **Kemeny, P. C.**, Kurbatov, A. V., Mackay, S., Mayewski, P. A., Ng, J., Severinghaus, J. P., and Higgins, J. A. (2019). Two-million-year-old snapshots of atmospheric gases from Antarctic ice. *Nature*, 574(7780), 663-666. doi.org/10.1038/s41586-019-1692-3.
- [5] Fripiat, F., Martínez-García, A., Fawcett, S. E., **Kemeny, P. C.**, Studer, A. S., Smart, S. M., Rubach, F., Oleynik, S., Sigman, D. M., and Haug, G. H. (2019). The isotope effect of nitrate assimilation in the Antarctic Zone: Improved estimates and paleoceanographic implications. *Geochimica et Cosmochimica Acta*, 247, 261-279. doi.org/10.1016/j.gca.2018.12.003.
- [4] **Kemeny, P. C.**, Kast, E. R., Hain, M. P., Fawcett, S. E., Fripiat, F., Studer, A. S., Martínez-García, A., Haug, G. H., and Sigman, D. M. (2018). A seasonal model of nitrogen isotopes in the ice age Antarctic Zone: Support for weakening of the Southern Ocean upper overturning cell. *Paleoceanography and Paleoclimatology*, 33(12), 1453-1471. doi.org/10.1029/2018PA003478.
- [3] **Kemeny, P. C.**, Weigand, M. A., Zhang, R., Carter, B. R., Karsh, K. L., Fawcett, S. E., and Sigman, D. M. (2016). Enzyme-level interconversion of nitrate and nitrite in the fall mixed layer of the Antarctic Ocean. *Global Biogeochemical Cycles*, 30(7), 1069-1085. doi.org/10.1002/2015GB005350.
- [2] Munro, P., van der Horst, G., Willans, S., **Kemeny, P. C.**, Christiansen, A., and Schiavone, N. (2016). Social enterprise development and renewable energy dissemination in Africa: The experience of the community charging station model in Sierra Leone. *Progress in Development Studies*, 16(1), 24-38. doi.org/10.1177/1464993415608080.
- [1] **Kemeny, P. C.**, Munro, P. G., Schiavone, N., van der Horst, G., and Willans, S. (2014). Community Charging Stations in rural sub-Saharan Africa: Commercial success, positive externalities, and growing supply chains. *Energy for Sustainable Development*, 23, 228-236. doi.org/10.1016/j.esd.2014.09.005.

#### CONFERENCE ABSTRACTS, ORAL

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- [30] Bernstein-Schalet, J., Munoz, S., Ramos, E. J., Suquino, K. D., Gammerman, M., Larsen, W., Hou, Y., **Kemeny, P. C.**, Torres, M., and Ibarra, D. (2024). Wildfire impacts on soil chemistry and the role of pyrogenic carbon in soil mineral transformation. Scheduled for NE GSA.
- [29] Prow, A., Lu, Z., Blättler, C. L., He, T., Singh, P., Yang, Z., **Kemeny, P. C.**, Todes, J., Pohl, A., Bhattacharya, T., Schootbrugge, B., and Payne, J. (2023). Calcium isotopes validate spatial redox gradients on the Tethys European margin across the Triassic-Jurassic boundary. AGU Fall Meeting.
- [28] Zhong, J., Galy, A., **Kemeny, P. C.**, Antler, G., Zolkos, S., Liu, C., and Li, S. (2023). Isotopic Evidence for Cryptic Sulfur Cycling in Rivers of the Tibetan Plateau. AGU Fall Meeting.

- [27] Larsen, W., Ramos, E. J., Bernstein-Schalet, J., Gammerman, M., Hou, Y., Ibarra, D. E., **Kemeny, P. C.**, Muñoz, S., Sun, T., Suquino, K. D., and Torres, M. (2023). Assimilating radon and stable carbon isotopes into a network model of aquatic carbon dioxide fluxes. AGU Fall Meeting.
- [26] Hou, Y., Baronas, J. J., **Kemeny, P. C.**, Bouchez, J., Miller, G. H., Geirsdóttir, Á., and Torres, M. A. (2023). Reconstructing Changes in Catchment-scale Chemical Weathering in Response to Climatic and Geomorphic Controls from Sedimentary Records of Glacial and Non-Glacial Lakes in Iceland. Goldschmidt Conference.
- [25] Erlanger, E., Bufe, A., Paris, G., D'Angeli, I., Pisani, L., **Kemeny, P. C.**, Stammeier, J., Haghypour, N., and Hovius, N. (2023). Beyond uplift-weathering: metamorphic decarbonation dominates the carbon budget of the central Apennines. Goldschmidt Conference.
- [24] **Kemeny, P. C.**, Torres, M. A., Blättler, C., and Fischer, W. (2023). Balance and imbalance in major element cycles. Chapman Conference, Hydrothermal Circulation and Seawater Chemistry: What's the chicken and what's the egg?
- [23] Douglas, M. M., Li, G. K., West, A. J., Ke, Y., Rowland, J. C., Schwenk, J., **Kemeny, P. C.**, Piliouras, A., Fischer, W. W., and Lamb, M. P. (2023) Discontinuous permafrost degradation following meandering of the Koyukuk River, Alaska. SoCal Geobiomorph 2023
- [22] Erlanger, E., Bufe, A., Paris, G., D'Angeli, I., Pisani, L., **Kemeny, P. C.**, Stammeier, J., Haghypour, N., and Hovius, N. (2023). Building the inorganic carbon budget of a young, actively extending carbonate-rich mountain range: the interplay between chemical weathering and tectonics. EGU23-5452.
- [21] **Kemeny, P. C.**, Torres, M., Adkins, J., and Fischer, W. (2022). Balance and imbalance in major element cycles. Keynote presentation at Geological Society of America, session 227: T104.
- [20] Ramos, E. J., Capaldi, T., and **Kemeny, P. C.** (2022). How do river water Li isotope ratios relate to carbon transfer during weathering? Geological Society of America, session 227: T104.
- [19] Fripiat, F., Sigman, D., Ai, X., Studer, A., **Kemeny, P. C.**, Hain, M., Wang, X., Ren, H., Haug, G., and Martinez-Garcia, A. (2022). The Southern Ocean during the ice ages: A slumped pycnocline from reduced wind-driven upwelling? EGU22-2047 OS1.10.
- [18] Hou, Y., Torres, M., and **Kemeny, P. C.** (2021). Constraining Secondary Clay Formation with Ge/Si Ratios and Water Isotopes at Efri Haukadalsa River and Adjacent Catchments in Western Iceland. 2021 AGU Fall Meeting, EP11B-02.
- [17] Douglas, M., Lamb, M. P., Li, G., Rowland, J. C., West, A. J., **Kemeny, P. C.**, Schwenk, J. P., Piliouras, A., Chadwick, A. J., and Fischer, W. W. (2021). Organic carbon burial by river meandering offsets bank-erosion carbon fluxes in discontinuous permafrost. AGU Fall Meeting, EP35A-07.
- [16] Torres, M., Chapela Lara, M., Clark, K., Collin, R., Hou, Y., **Kemeny, P. C.**, Larsen, W., López-Lloreda, C., H. McDowell, W., and Russo, K. (2021). The evolution of Earth's surface from the perspective of modern rivers. Geological Society of America.

- [15] **Kemeny, P. C.**, Lopez, G. I., Dalleska, N. F., Torres, M. A., Burke, A., Bhatt, M. P., West, A. J., Hartmann, J., and Adkins, J. F. (2021). Sulfate sulfur isotopes and major ion chemistry reveal that pyrite oxidation counteracts CO<sub>2</sub> drawdown from silicate weathering in the Langtang-Trisuli-Narayani River system, Nepal Himalaya. Goldschmidt Conference.
- [14] Torres, M., **Kemeny, P. C.**, and Johnson, D. (2021). The role of biogeochemical transients in Earth's habitability - F.W. Clarke Medal Lecture. Goldschmidt Conference.
- [13] Sigman, D., Fripiat, F., Studer, A. S., **Kemeny, P. C.**, Martínez-García, A., Hain, M., Ai, X., Wang, X., and Haug, G. H. (2021). Status of the Antarctic Ocean “surface isolation” hypothesis for glacial/interglacial carbon dioxide change. Goldschmidt Conference.
- [12] **Kemeny, P. C.**, Torres, M. A., Lamb, M. P., Webb, S. M., Dalleska, N., Cole, T., Hou, Y., Marske, J., Adkins, J. F., and Fischer, W. W. (2021). Organic sulfur fluxes and geomorphic control of sulfur isotope ratios in rivers. Southern California Geobiology Symposium.
- [11] Douglas, M., Lamb, M. P., Li, G., Rowland, J. C., West, A. J., **Kemeny, P. C.**, Schwenk, J., Piliouras, A., Chadwick, A. J., and Fischer, W. W. (2020). Floodplain architecture and organic carbon storage in discontinuous permafrost. AGU Fall Meeting, U016-09.
- [10] **Kemeny, P. C.**, Torres, M. A., Lamb, M. P., Webb, S. M., Dalleska, N., Cole, T., Hou, Y., Marske, J., Adkins, J. F., and Fischer, W. W. (2020). Organic sulfur fluxes and geomorphic control of sulfur isotope ratios in rivers. Sulfur in the Earth system: From microbes to global cycles through Earth history.
- [9] Yan, Y., Bender, M., Brook, E., Clifford, H., **Kemeny, P. C.**, Kurbatov, A., Mackay, S., Mayewski, P., Ng, J., Severinghaus, J., and Higgins, J. (2020). Oxygen-to-nitrogen ratios in 1.5-million-year-old ice cores from Allan Hills Blue Ice Areas: implications for the long-term atmospheric oxygen concentrations. EGU General Assembly Conference Abstracts (p. 12753).
- [8] Douglas, M., Lamb, M. P., Rowland, J. C., Li, G., **Kemeny, P. C.**, West, A. J., Piliouras, A., Schwenk, J., Chadwick, A. J., and Fischer, W. W. (2019). Quantifying organic carbon mobilization and storage due to bank erosion in permafrost-dominated river floodplains. AGU Fall Meeting, EP42A-04.
- [7] Cole, T., **Kemeny, P. C.**, Fischer, W. W., Lamb, M. P., and Torres, M. (2018). Evaluating the Environmental and Lithological Controls on Silicate Weathering in Iceland. AGU Fall Meeting, EP51B-32.
- [6] Douglas, M., Rowland, J. C., Li, G., **Kemeny, P. C.**, West, A. J., Piliouras, A., Schwenk, J., Chadwick, A. J., Lamb, M. P., and Fischer, W. W. (2018). Quantifying organic carbon mobilization and storage in permafrost river floodplains. AGU Fall Meeting, C53A-06.
- [5] Torres, M. A., **Kemeny, P. C.**, Fischer, W. W., and Lamb, M. P. (2017). Radiocarbon constraints on the coupled growth of sediment and organic carbon reservoirs in fluvial systems. AGU Fall Meeting, PP13F-07.
- [4] **Kemeny, P. C.**, Torres, M. A., Webb, S. M., Lamb, M. P., Adkins, J. F., and Fischer, W. W. (2017). Organic Sulfur Fluxes and Isotope Mass Balance in Rivers. Goldschmidt Conference.

- [3] Fawcett, S. E. Smart, S. M., Mduyana, M., Forrer, H., Philibert, R., Thomalla, S. J., **Kemeny, P. C.**, Ward, B. B., and Sigman, D. M. (2017). The upper ocean nitrogen cycle in the Atlantic Southern Ocean. Goldschmidt Conference.
- [2] **Kemeny, P. C.**, Weigand, M. A., Zhang, R., Carter, B. R., Karsh, K. L., Fawcett, S. E., and Sigman, D. M. (2016). Nitrogen Isotope Exchange between Nitrate and Nitrite in the Fall Mixed Layer of the Antarctic Ocean. Goldschmidt Conference.
- [1] Gerlein, C., Soderberg, K., **Kemeny, P. C.**, and Caylor, K. K. (2013). Rain-vapor isotopic equilibration in central Kenya. First International Workshop on Advances in Observations, Models and Measurements Techniques of Atmospheric Water Vapor Isotopes.

#### CONFERENCE ABSTRACTS, POSTERS

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- [19] **Kemeny, P. C.**, Li, G., Douglas, M., Berelson, W., Chadwick, A. J., Dalleska, N. F., Lamb, M. P., Larsen, W., Magyar, J. S., Rollins, N., Rowland, J. C., Smith, I., Torres, M., Webb, S., Fischer, W. W., and West, A. J. (2023). Arctic permafrost thawing enhances sulfide oxidation. AGU Fall Meeting.
- [18] **Kemeny, P. C.**, Phillips, A. A., and Johnson, D. (2023). Replaying the tape of academia - Fifteen alternative practices. AGU Fall Meeting.
- [17] Hou, Y., **Kemeny, P. C.**, Baronas, J. J., Bouchez, J., Gelin, M., Tharaud, M., Benedetti, M. F., and Torres, M. (2023). Secondary clay formation in glaciated and deglaciated landscapes: insights from river chemistry, nanoparticle analyses, and end-member mixing models. AGU Fall Meeting.
- [16] Suquino, K. D., **Kemeny, P. C.**, Bernstein-Schalet, J., Gammerman, M., Hou, Y., Larsen, W., Muñoz, S., Ramos, E. J., Ibarra, D. E., Torres, M., and Blättler, C. L. (2023). Calcium Isotope Ratios Constrain Chemical Weathering Dynamics in the Little Deschutes River, Oregon, USA. AGU Fall Meeting.
- [15] Gammerman, M., Hou, Y., Ibarra, D. E., **Kemeny, P. C.**, Larsen, W., Muñoz, S., Ramos, E. J., Bernstein-Schalet, J., Suquino, K. D., Ghosh, P., Breecker, D., and Torres, M. (2023). Investigating Mechanisms of Pedogenic Carbonate Formation in Soil Incubation Experiments. AGU Fall Meeting.
- [14] Bernstein-Schalet, J., Muñoz, S., Ramos, E. J., Suquino, K. D., Gammerman, M., Larsen, W., Hou, Y., **Kemeny, P. C.**, and Ibarra, D. E. (2023). Linking Post-Wildfire Soil Geochemistry to Soil Organic Carbon Accumulation and Chemical Weathering. AGU Fall Meeting.
- [13] Muñoz, S., Ramos, E. J., Bernstein-Schalet, J., Suquino, K. D., Hou, Y., Larsen, W., Gammerman, M., Miller, J. S., **Kemeny, P. C.**, Torres, M., and Ibarra, D. E. (2023). Landscape and Climate Control Poorly Crystalline Mineral Stability and Organic Carbon Storage in the Columbia River Basin, USA. AGU Fall Meeting.
- [12] **Kemeny, P. C.**, Li, G., Douglas, M., Adkins, J. F., Berelson, W., Dalleska, N. F., Lamb, M. P., Larsen, W., Magyar, J., Rowland, J., Smith, I., Torres, M. A., Webb, S. M., West, A. J., and Fischer, W. W. (2022). Permafrost Degradation in the Koyukuk River System and the Timescale Dependence of Sulfur-Carbon-Climate Feedbacks. AGU Fall Meeting.

- [11] **Kemeny, P. C.**, Johnson, D., Lingappa, U. F., and Phillips, A. A. (2022). Replaying the Tape of Academia: Alternative Systems for Earth Science. AGU Fall Meeting.
- [10] **Kemeny, P. C.**, and Torres, M. A. (2021). Presentation and Applications of Mixing Elements AND Dissolved Isotopes in Rivers (MEANDIR), a Customizable Model for Monte Carlo Inversion of Dissolved River Chemistry. 2021 AGU Fall Meeting, EP45H-1594.
- [9] Singer, C. E., Dove, L., Eitel, E. M., Flexas, M., Inglis, J., Kalucha, H., **Kemeny, P. C.**, Koehne, T., Mueller, E., Present, T., Reahl, J. N., Thompson, A. F., and Wilner, M. J. (2021). Successes, Challenges, and Lessons Learned by the Caltech URGE Pod. 2021 AGU Fall Meeting, U35A-2253.
- [8] Douglas, M., Lamb, M. P., Li, G., Rowland, J. C., West, A. J., Schwenk, J., Piliouras, A., **Kemeny, P. C.**, Chadwick, A. J., and Fischer, W. W. (2020). Floodplain architecture governs organic carbon storage for a meandering river in discontinuous permafrost. AGU Fall Meeting, EP020-0003.
- [7] Li, G., Lamb, M. P., Douglas, M., West, A. J., Rowland, J. C., **Kemeny, P. C.**, Piliouras, A., Schwenk, J., Chadwick, A. J., and Fischer, W. W. (2020). Riverine transport of terrestrial organic carbon in permafrost-dominated floodplains. AGU Fall Meeting, EP002-0013.
- [6] **Kemeny, P. C.**, Lopez, G. I., Dalleska, N. F., Torres, M., Burke, A., Bhatt, M. P., West, A. J., Hartmann, J., and Adkins, J. F. (2020). Sulfur isotope evidence that pyrite oxidation counteracts CO<sub>2</sub> drawdown from silicate weathering in the Langtang-Narayani, Nepal Himalaya, Weizmann-Caltech symposium on the Carbon Cycle.
- [5] Cole, T., **Kemeny, P. C.**, Nittrouer, J. A., and Torres, M. (2019). Elucidating Terrestrial Organic Carbon Burial Mechanisms-Insights from the Western Irish Namurian Basin, County Clare, Ireland. AGU Fall Meeting, EP33C-2367.
- [4] **Kemeny, P. C.**, Kast, E. R., Hain, M. P., Fawcett, S. E., Fripiat, F., Studer, A. S., Martínez-García, A., Haug, G. H., and Sigman, D. M. (2019). A seasonal model of nitrogen isotopes in the ice age Antarctic Zone: Support for weakening of the Southern Ocean upper overturning cell, Southern California Geobiology Symposium.
- [3] Fripiat, F., Martínez-García, A., Fawcett, S., Studer, A. S., Smart, S., Rubach, F., **Kemeny, P. C.**, Oleynik, S., Sigman, D. M., and Haug, G. H. (2018). Revisiting the isotope effect of nitrate assimilation in the Antarctic Zone: Insights into glacial-interglacial variations in surface nitrate concentration. AGU Ocean Sciences, PC34C-0653.
- [2] **Kemeny, P. C.**, Kast, E., Fawcett, S. E., Hain, M., and Sigman, D. M. (2016). Beyond Rayleigh Distillation: Reconstructing Glacial Nutrient Cycles using a Seasonal Model of the Southern Ocean. AGU Fall Meeting, PP23B-2326.
- [1] Soderberg, K., Gerlein, C., **Kemeny, P. C.**, and Caylor, K. K. (2013). Isotopic equilibrium between precipitation and water vapor: evidence from continental rains in central Kenya. AGU Fall Meeting, GC13A-1057.



## SKILLS

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- Extensive experience with multicollector inductively coupled plasma mass spectrometry (Neptune Plus), with specific expertise in measuring sulfur and calcium isotope ratios. Updated programs used for data reduction and quality control of sulfur isotope ratio determinations.
- Significant experience with electrospray orbitrap mass spectrometry. Prior work focused on development of methods to simultaneously measure sulfate  $^{34}\text{S}/^{32}\text{S}$  and  $^{18}\text{O}/^{16}\text{O}$  isotope ratios.
- Significant experience with gas-source isotope ratio mass spectrometry (MAT-253, Delta V). Developed a data reduction pipeline for IRMS sulfur isotope measurements.
- Significant experience with synchrotron spectroscopy. Specific expertise working at the sulfur K-edge of beamline 14-3 of the Standard Synchrotron Radiation Lightsource.
- Extensive MATLAB experience with expertise in modeling and data processing. Constructed parallelized box models with isotopic fractionation and flexible river chemistry inversion tools.

## TEACHING AND MENTORING

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- Undergraduate research mentor, project on river calcium isotope ratios. 2022 – present
- Earned Caltech *Certificate of Interest in University Teaching* by completing formal coursework and participating in workshops focused on evidence-based and inclusive teaching practices. 2020 – 2022
- Teaching assistant for *Paleoceanography*, a mixed undergraduate/graduate course at Caltech taught by Jess Adkins. 2020 – 2021
- Teaching assistant for *Marine Geochemistry*, a mixed undergraduate/graduate course at Caltech taught by Jess Adkins. 2019 – 2020
- Summer student research mentor, project on plant sulfur isotope systematics. 2018

## PROFESSIONAL ACTIVITIES

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- Primary and/or co-convenor of AGU session, *Earth Surface Processes and the Global Carbon Cycle*. 2020 – 2023
- Primary convenor of AGU session, *Understanding the Influences of Sedimentary and Oceanographic Processes on Geochemical Archives*. 2021 – 2023
- Co-convenor of AGU pre-conference workshop *End Member Mixing Analysis in Hydrogeochemistry with Case Studies*. 2023
- Co-convenor of Goldschmidt session, *Ocean circulation, carbon and climate: Perspectives from proxies and models*. 2023
- Primary convenor of Goldschmidt session, *Cenozoic and Mesozoic climate change: synthesizing carbon cycle perturbation, surface processes, ecology, atmospheric composition, and seawater chemistry*. 2022
- Peer reviewer: *Science Advances*, *American Journal of Science*, *Earth and Planetary Science Letters*, *Geochimica et Cosmochimica Acta*, *JGR: Earth Surface*, *JGR: Biogeosciences*, *Chemical Geology*, *Nature Communications Earth & Environment*, *Applied Geochemistry*, *ISME*. 2020 – present

## UNIVERSITY AND DEPARTMENT SERVICE

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- Restarted and organized weekly UChicago Earth History Journal Club. 2022 – present
- Founded Caltech Earth History Journal Club, led >100 meetings, \$250 budget. 2018 – 2022
- Organized a weekly seminar series at Caltech. Sought diverse participants and >96% of speakers were female (27/28 speakers). Managed speaker invitations, travel, and meeting schedules, oversaw a \$5,000 budget. 2018 – 2019
- Member of search committee for director of Caltech’s Center for Teaching, Learning, and Outreach. 2022
- Speaker on Caltech graduate fellowships panel for four years and at “FUTURE Ignited”, a graduate recruitment event for URM students. 2017 – 2020

## COMMUNITY SERVICE AND OUTREACH

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- Co-taught a six-week summer geoscience course for underserved Chicago high school students through UChicago’s Office of Special Programs. This effort grew out of prior work facilitating Saturday morning geoscience classes. 2022 – 2023
- Organized two distinct four-lecture seminar series for LA schools. Participated as a speaker in each program and recruited other speakers, resulting in >40 hour-long lectures given to middle and high school students. 2017 – 2022
- Volunteer at the Los Angeles March for Science and Caltech companion event Science for March, as well as the UChicago South Side Science Festival, and presenter in LA for the Long Beach Urban Math Collaborative. 2016 – 2023
- Participated in ~10 “Science nights” at LA elementary/middle schools. 2016 – 2017