

Francis A. Macdonald

Professor

Department of Earth and Planetary Science

University of California–Berkeley

Education

Ph.D. Earth and Planetary Sciences, Harvard University, Cambridge, MA, 2009

B.S. Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA, 2001

Professional Experience

- Professor, University of California–Berkeley, 2024-present
- Visiting Professor, Massachusetts Institute of Technology, 2023-2024
- Professor, University of California–Santa Barbara, 2018-2024
- Professor, Harvard University, 2017-2018
- John L. Loeb Associate Professor of the Natural Sciences, Harvard University, 2014-2017
- Associate Professor, Harvard University, 2013-2014
- Assistant Professor, Harvard University, 2009-2013

Honors and Awards

- Macelwene Medal, American Geophysical Union, 2019
- American Geophysical Union, Fellow, 2019
- Excellent Reviewer Award, Geology, 2015
- Donath Medal, Geological Society of America, 2014
- Geological Society of America, Fellow, 2014
- Star Family Prize for Excellence in Advising Award, Harvard College, 2012
- Ian Hamilton Golden Brunton Award, *for excellence in field mapping*, Caltech, 2001

Publications

[*author is or was a student or postdoc working with Macdonald]

Submitted

Durbin, O.L., *Anttila, E.A., Briggs, D. Macdonald, F.A., Anderson, R.P., submitted. Mongolian microfossils constrain the timing of the origin of animals, *Geology*.

Minsky, C., Wordsworth, R., Macdonald, F., and Knoll, A., in revision, Initiation of Snowball Earth from silicate weathering of a large igneous province, *JGR: Solid Earth*.

*Tasistro-Hart, A., Schmitz, M.D., Crowley, J.C., and Macdonald, F.A., in revision. A four million year Marinoan Snowball Earth reveals different routes to deglaciation, *Proceedings of National Academy of Sciences*.

Waldeck, A.R., Olson, H.C., Crockford, P., Couture, A.M., Cowie, B.R., *Hodgin, E.B., Bergmann, K., Dewing, K., Grasby, S.E., Clark, R., J., Macdonald, F.A., and Johnston, D.T., in

revision, Marine sulfate captures the Paleozoic rise to modern pO_2 , *Nature Communications*.

2025

Bergmann, K., Macdonald, F.A., and Swanson-Hysell, N., accepted, Causes and Consequences of Ordovician cooling, *Annual Reviews of Earth and Planetary Sciences*.

*Anttila E.A. and Macdonald, F.A., accepted, Cambrian foreland phosphogenesis in the Khuvsgul Basin of Mongolia, *American Journal of Science*.

2024

Zhang, Y., Anderson, N., Mohr, M., Schmitz, M.D., Macdonald, F.A., *Nelson, L.L., Thurston, O.G., Guenther, W.R., Karlstrom, K.E., and Swanson-Hysell, N.L., in press, Paleomagnetism of the southwest Laurentia large igneous province and Cardenas Basalt: pulsed magmatism during rapid late Mesoproterozoic plate motion, *JGR: Solid Earth*, 129(10), p.e2024JB029036.

Courtney-Davies, L., Flowers, R.M., Siddoway, C.S., *Tasistro-Hart, A., and Macdonald, F.A., 2024. Hematite U-Pb Dating of Snowball Earth Meltwater Events, *Proceedings of National Academy of Sciences*, 121(47), p.e2410759121.

*Anttila E.A., Macdonald, F.A., *Zinto, J., and *Britt, M., 2024. The Real McCoy, Great Unconformity source-to-sink on the rifted passive margin of Laurentia, *Earth and Planetary Science Letters*, 642, 118852.

Stockey et al., 2024. Sustained increases in atmospheric oxygen and marine productivity in both the Neoproterozoic and Paleozoic eras, *Nature Geoscience*, 17(7), 1-8.

Chiang, J.C.H., Maffre, P., Swanson-Hysell, N., and Macdonald, F.A., 2024. The Role of Southeast Asian Island Topography on Indo-Pacific Climate and Silicate Weathering, *Paleoceanography and Paleoclimatology*, doi.org/10.1029/2023PA004672, 1-21.

Sundell, K.E., Macdonald, F.A., and Puetz, S.J., 2024. Does zircon geochemistry record global sediment subduction? *Geology*, XX, G51817.1.

Mohr, M.T., Schmitz, M.D., Swanson-Hysell, N.L., Karlstrom, K.E., Holland, M., Zhang, Y., Anderson, N., and Macdonald, F.A., 2024. High-Precision U-Pb geochronology constraints on a mantle plume link between SW Laurentia large igneous province and the Midcontinent Rift, *Geology*, 52, 193–198.

2023

Macdonald F.A., Swanson-Hysell N.L., 2023, The Franklin Large Igneous Province and Snowball Earth initiation. *Elements*, 19(296-301), doi: 10.2138/gselements.19.5.296.

*Pu, J.P., *Smith, E.F., Ramezani, J., and Macdonald, F.A., 2023. Tonian basins record rifting of Kalahari from Laurentia and no evidence of a Kaigas glaciation, *Earth and Planetary Science Letters*, 624, 118472.

Martin, P., Macdonald, F.A., McQuarrie, N., Flowers, R.F., and Maffre, P., 2023. The Rise of New Guinea and fall of Neogene global temperatures, *Proceedings of National Academy of Science*, 120(40), p.e2306492120.

*Tasistro-Hart, A. and Macdonald, F.A., 2023, Phanerozoic flooding of North America and the Great Unconformity, *Proceedings of the National Academy of Sciences*, 120(37), p.e2309084120.

- Peak, B., Flowers, R., and Macdonald, F.A., 2023. Ediacaran-Ordovician tectonic and geodynamic drivers of Great Unconformity exhumation on the southern Canadian Shield, *Earth and Planetary Science Letters*, 619, p.118334.
- Li, M., Xu, Y., Sun, L., Chen, J., Zhang, K., Li, D., Farquhar, J., Zhang, X., Sun, R., Macdonald, F.A., Grasby, S.E., Fu, Y., and Shen, Y., 2023. Deglacial volcanism and reoxygenation in the aftermath of the Sturtian Snowball Earth, *Science Advances*, 9(36), p.eadh9502.
- *Anttila, E., Macdonald, F.A., Szymanowski, D., Schoene, B., Kylander-Clark, A. and Jones, D.S., 2023. Timing and tempo of organic carbon burial in the Monterey Formation of the Santa Barbara Basin and relationships with Miocene climate, *Earth and Planetary Science Letters*, 620, p.118343.
- Hoffman, P.F., Macdonald, F.A., Bowring, S.A., Ramezani, J., Buchwaldt, R., Hildebrand, R.S., and Whalen, J.B., 2023. Crustal exhumation and slab-failure magmatism in an Orosirian (2.05–1.80 Ga) post-collisional cratonic foredeep: geochronology of Seton volcanics and Compton laccoliths, Tu Cho (Great Slave Lake), NWT, Canada, *Canadian Journal of Earth Science*, doi.org/10.1139/cjes-2023-001.
- Macdonald, F.A., Yonkee, A., Flowers, B., and Swanson-Hysell, N., 2023, Neoproterozoic Laurentia, in Whitmeyer, S., Kellett, D., Tikoff, B., and Williams, M., eds., Laurentia: An Evolving Continent, *Geological Society of America Memoirs*, 220, 50 pgs.
- *Hodgin, E.B., Carlotto, V., Macdonald, F.A., Schmitz, M.D., and Crowley, J.L., 2023. New age constraints on the breakup of Rodinia and amalgamation of southwestern Gondwana from the Choquequirao Formation in southwestern Peru. *Geological Society of London, Special Publications*.

2022

- *Pu, J.P., Macdonald, F.A., Schmitz, M.D., Rioux, M.D., Rainbird, R.H., Peak, B.A., Flowers, R.M., Bleeker, W., and Hoffman, P.F., 2022. Emplacement of the Franklin large igneous province and initiation of Snowball Earth, *Science Advances*, 8(47), p.eadc9430.
- Jackson, M. and Macdonald, F.A., 2022. Origin of continental crust at the bottom of the southern hemisphere mantle, *AGU Advances*, 3(6), p.e2022AV000664.
- *Hodgin, E.B., Macdonald, F.A., Karabinos, P., and Crowley, J.C., 2022. A re-evaluation of the tectonic history of the Dashwoods arc terrane using in situ and ion dilution U-Pb geochronology, western Newfoundland, in New Developments in the Appalachian-Caledonian-Variscan Orogen, *Geological Society of America, Special Papers*.
- Sundell, K.E. and Macdonald, F.A., 2022. The tectonic context of hafnium isotopes in zircon. *Earth and Planetary Science Letters*, 584, 117426.
- Isakson, V. H., Schmitz, M. D., Dehler, C. M., Macdonald, F. A., & Yonkee, A.W., 2022. A robust age model for the Cryogenian Pocatello Formation of southeastern Idaho (northwestern USA) from tandem in situ and isotope dilution U-Pb dating of volcanic tuffs and epiclastic detrital zircons. *Geosphere*, 18(2), 825-849.
- Busch, J.F., *Hodgin, E.B., Ahm, A.-S., Husson, J.M., Macdonald, F.A., Bergmann, K.D., Higgins, J.A., and Strauss, J.V., 2022. Global and local drivers of the Ediacaran Shuram carbon isotope excursion, *Earth and Planetary Science Letters*, 579, 117368.

2021

- Yang, C., Rooney, A. D., Condon, D. J., Li, X. H., Grazhdankin, D. V., Bowyer, Hu, C., Macdonald, F.A. and Zhu, M., 2021. The tempo of Ediacaran evolution. *Science Advances*, 7(45), eabi9643.
- Peak, B.A., Flowers, R.M., Macdonald, F.A., and Cottle, J., 2021. (U-Th)/He thermochronology reveals pre-Great Unconformity paleotopography in the Grand Canyon region, *Geology*, 49(12), 1462-1466.
- Park, Y., Maffre, P., Godderis, Y., Macdonald, F.A., *Anttila, E.A., and Swanson-Hysell, N.L., 2021. Reply to Rugenstein et al.: Marine Sr and Os records do not preclude Neogene cooling through emergence of the Southeast Asian islands. *Proceedings of the National Academy of Sciences*, 118(30).
- Ahm, A.-S., Bjerrum, C.J., Hoffman, P.F., Macdonald, F.A., Maloof, A.C., Rose, C.V., Strauss, J.V., and Higgins, J.A., 2021. The Ca and Mg isotope record of the Cryogenian Trezona carbon isotope excursion, *Earth and Planetary Science Letters*, 568, 117002.
- *Hodgin, E.B., Macdonald F.A., Crowley, J.C., and Schmitz, M.D., 2021. Testing the large orogen-parallel displacement hypothesis along the Humber Margin of Newfoundland with tandem in situ and isotope dilution U-Pb zircon and titanite geochronology, *American Journal of Science* 321(7), 1045-1079.
- Sturrock, C.P, Flowers, R.M., and Macdonald, F.A., 2021. The Late Great Unconformity of the Central Canadian Shield, *Geochemistry, Geophysics, Geosystems*, 22(6), e2020GC009567.
- Kalderon-Asael, B., Katchinoff, J.A., Planavsky, N.J., Hood, A.V.S., Dellinger, M., Bellefroid, E.J., Jones, D.S., Hofmann, A., Ossa, F.O., Macdonald, F.A., Wang, C., Isson, T.T., Murphy, J.G., Higgins, J.A., West, A.J., Wallace, M.W., Asael, D., and von Strandmann, P.A.E.P., 2021. A lithium-isotope perspective on the evolution of carbon and silicon cycles. *Nature*, 595(7867), 394-398.
- Park, Y., Swanson-Hysell, N. L., Xian, H., Zhang, S., Condon, D. J., Fu, H., & Macdonald, F. A., 2021. A Consistently High-Latitude South China From 820 to 780 Ma: Implications for Exclusion From Rodinia and the Feasibility of Large-Scale True Polar Wander. *Journal of Geophysical Research: Solid Earth*, 126(6), e2020JB021541.
- Hoffman, P., Halverson, G.P., Schrag, D.P., Higgins, J.A., Domack, E.W., Macdonald, F.A., Pruss, S.B., Blättler, C.L., Crockford, P.W., Hodgin, E.B., Bellefroid, E.J., Johnson, B.W., Hodgskiss, M.S.W., Lamothe, K.G., *LoBianco, S.J.C., Busch, J.F., Howes, B.J., Greenman, W., *Nelson, L.L., 2021, Snowballs in Africa: sectioning a long-lived Neoproterozoic carbonate platform and its bathyal foreslope (NW Namibia), *Earth-Science Reviews*, 219, 103616.
- McClelland, W.C., *Strauss, J.V., Colpron, M., Gilloti, J.A., Faehnrich, K., Malone, S., Gehrels, G.E., Macdonald, F.A., and Oldow, J.S., 2021. ‘Taters versus Sliders: Evidence for a longlived history of strike-slip displacement along the Canadian Arctic Transform System (CATS), *GSA Today*, 31(7), 4–11.
- *Nelson, L.L., Ahm, A.-S.C., Macdonald, F.A., Higgins, J.A., *Smith, E.F., 2021. Fingerprinting global and local controls on the Cryogenian carbon cycle with Mg and Ca isotopes in carbonates, *Earth and Planetary Science Letters*, 566, 116956.
- *Hodgin, E.B., Gutiérrez-Marco, J.C., Colmenar, J., Macdonald, F.A., Carlotto, V., Crowley, J.C., Newmann, J.R., 2021. Cannibalization of a late Cambrian backarc in southern Peru: new insights into the assembly of southwestern Gondwana, *Gondwana Research*, 92, 202-227.

2020

- Park, Y., Maffre, P., Godderis, Y., Macdonald, F.A., *Anttila, E.A., and Swanson-Hysell, N.L., 2020. Emergence of the Southeast Asian islands as a driver for Neogene cooling, *Proceedings of National Academy of Science*, 117(41), 25319-25326.
- Macdonald, F.A., 2020. Deep-time paleoclimate proxies, *AGU Advances*, 1(3), e2020AV000244.
- *Bold, U., Ahm, A-S.C., Schrag, D.P., Higgins, J.A., Jamsrand, E., and Macdonald, F.A., 2020. Effect of dolomitization on isotopic records from Neoproterozoic carbonates in southwestern Mongolia, *Precambrian Research*, 350, 105902.
- Laakso, T.A., Waldeck, A., Johnston, D.T., Macdonald, F.A., 2020. Volcanic controls on seawater sulfate over the last 100 Ma, *Proceedings of National Academy of Science.*, 117(35), 21118-21124.
- Liljestrand, F.L., Macdonald, F.A., Schrag, D.P., Laakso, T.A., and Johnston, D.T., 2020. Isotopically anomalous carbon cycling in the aftermath of the Marinoan Snowball Earth, *Geobiology*, 18(4), 476-485.
- *Nelson, L.L., *Smith, E.F., *Hodgin, E.B., Crowley, J., Schmitz, M., and Macdonald, F.A., 2020. Precise geochronological constraints on Neoproterozoic rifting and onset of the Marinoan glaciation from the Kingston Peak Formation in Death Valley, California, *Geology*, doi: 9443/10.1130/G47668.1
- Liljestrand, F.L., Knoll, A.H., Tosca, N.J., Cohen, P.A., Macdonald, F.A., Peng, Y., Johnston, D.J., 2020. The triple oxygen isotope composition of Precambrian chert, *Earth and Planetary Science Letters*, 537, 116167.
- *Rooney, A.D., Condon, D.J., Zhu, M., and Macdonald, F.A., 2020. U-Pb and Re-Os geochronology tracks stratigraphic condensation in the Sturtian Snowball aftermath, *Geology*, 48(6), 625-629.
- Flowers, R.M., Macdonald, F.A., Siddoway, C.S., and Havranek, R., 2020. Diachronous development of Great Unconformities before Neoproterozoic Snowball Earth, *Proceedings of National Academy of Science*, 117 (19), 10172-10180.
- Park, Y., Swanson-Hysell, N.L., and Macdonald, F.A., 2021. Evaluating the connections between large igneous province paleogeography and climate from the Cryogenian to present, in: Ernst, R.E., Dickson, A.J., Bekker, A. (eds). Large Igneous Provinces: A Driver of Global Environmental and Biotic Changes. AGU Geophysical Monograph 255 (7), 149-164.
- *Eyster, A.E., Weiss, B.P., Karlstrom, K., Kremers, J., and Macdonald, F.A., 2020. Paleomagnetism of the Chuar Group and evaluation of the 780-720 Ma apparent polar wander path of Laurentia with implications for the makeup and breakup of Rodinia, *Geological Society of America Bulletin*, 132 (3-4), 710-738.

2019

- Galili, N., Shemesh, A., Yam, R., Brailovsky, I., Sela-Adler, M., Schuster, E.M., Collom, C., Bekker, A., Pr at, A., Rudmin, M., Trela, W., Planavsky, N., Macdonald, F.A., Stuesson, U., Heikoop, J.M, Aurell, M., Ramajo, J., and Halevy, I., 2019. The geologic history of seawater oxygen isotopes from marine iron oxides, *Science*, 365 (6452), 469-473.
- Macdonald, F.A., Swanson-Hysell, N.L., Park, Y., Lisiecki, L., and Jagoutz, O., 2019. Arccontinent collision in the tropics set Earth's climate state, *Science*, 364(6436): 181-184.

- Ahm, A.-S.C., Maloof, A.C., Macdonald, F.A., Hoffman, P.F., Bjerrum, C.J., *Bold, U., Rose, C.V., *Strauss, J.V., and Higgins, J.A., 2019. An early diagenetic deglacial origin for basal Ediacaran “cap dolostones”, *Earth and Planetary Science Letters*, 506: 292-307.
- Anderson, R.P., McMahon, S., Macdonald, F.A., Jones, D.S., and Briggs, D.E.G., 2019. Paleobiology of latest Ediacaran phosphorites from the upper Khesen Formation, Khuvsgul Group, northern Mongolia, *Journal of Systematic Paleontology*.
- Pruss, S.B., Dwyer, C.H., *Smith, E.F., Macdonald, F.A., and Tosca, N.J., 2019. Phosphatized early Cambrian archaeocyaths and small shelly fossils (SSFs) of southwestern Mongolia, *Palaeogeography, Palaeoclimatology, Palaeoecology*, 513: 166-177.

2018

- Pruss, S.B., Blättler, C., Macdonald, F.A., and Higgins, J.A., 2018. Calcium isotope evidence that the earliest animal biomineralizers formed aragonite shells, *Geology*, 46(9): 763-766.
- *Strauss, J.V., Macdonald, F.A., and McClelland, W.C., 2018. Pre-Mississippian stratigraphy and provenance of the North Slope subterranean of Arctic Alaska I: Platformal rocks of the northeastern Brooks Range and their significance in circum-Arctic evolution, in: Piepjohn, K., McClelland, W.C., Reinhardt, L. and Strauss, J.V., eds., *Circum-Arctic Structural Events (CASE): Tectonic evolution of the Arctic margins and trans-Arctic links with adjacent orogens*, *Geological Society of America Special Papers*, 451.
- *Nelson L.L., *Strauss, J.V., Crockford, P.W., Cox, G.M., Johnson, B.G., Ward, W., Colpron, M., McClelland, W.C., and Macdonald, F.A., 2018. Geochemical constraints on the provenance of pre-Mississippian sedimentary rocks in the North Slope of Yukon and Alaska, in: Piepjohn, K., McClelland, W.C., Reinhardt, L. and Strauss, J.V., eds., *Circum-Arctic Structural Events (CASE): Tectonic evolution of the Arctic margins and trans-Arctic links with adjacent orogens*, *Geological Society of America Special Papers*, 451.
- Liu, C., Wang, Z., and Macdonald, F., 2018. Sr and Mg isotope geochemistry of the basal Ediacaran cap limestone sequence of Mongolia: Implications for carbonate diagenesis, mixing of glacial meltwaters, and seawater chemistry in the aftermath of Snowball Earth, *Chemical Geology*, 491: 1-13.
- *Eyster, A.E., Ferri, F., Schmitz, M. D., and Macdonald, F.A., 2018. One diamictite and two rifts: Stratigraphy and geochronology of the Gataga Volcanics of northern British Columbia, *American Journal of Science*, 318.
- *Rooney, A.D., Austermann, J., *Smith, E.F., Yang, L., Selby, D., Dehler, C.M., Schmitz, M.D., Karlstrom, K.E., and Macdonald, F.A., 2018. Coupled Re-Os and U-Pb geochronology of the Neoproterozoic Chuar Group, Grand Canyon, *Geological Society of America Bulletin*, 130(7-8): 1085-1098.
- Cox, G.M., Halverson, G.P., Denyszyn, S., Foden, J., and Macdonald, F.A., 2018. Cryogenian magmatism along the northwestern margin of Laurentia: plume or rift? *Precambrian Research*, 319: 144-157.
- Macdonald, F.A., Schmitz, M.D., *Strauss, J.V., Halverson, G.P., Gibson, T.M., *Eyster, A., Cox, G., Mamrol, P., and Crowley, J.C., 2018. Cryogenian of Yukon, *Descent into the Cryogenian Special Issue, Precambrian Research*, 266: 194-211.

2017

- Moore, K.R., Bosak, T., Macdonald, F.A., Du, K., Newman, S., and Pruss, S., 2017. Pyritized Cryogenian cyanobacterial fossils from Arctic Alaska, *Palaios*, 32: 769–778.
- Anderson, R.P., Macdonald, F.A., Jones, D.S., McMahon, S., and Briggs, D.E.G., 2017. Doushantuo-type microfossils from latest Ediacaran phosphorites of northern Mongolia, *Geology*, 45(12): 1079-1082.
- Hoffman, P.F., Abbot, D.S., Ashkenazy, Y., Benn, D.I., Cohen, P.A., Cox, G.M., Creveling, J.R., Donnadieu, Y., Erwin, D.H., Fairchild, I.J., Ferreira, D., Goodman, J.C., Halverson, G.P., Jansen, M.F., Le Hir, G., Love, G.D., Macdonald, F.A., Maloof, A.C., Ramstein, G., Rose, G.E.J., Rose, C.V., Tziperman, E., Voigt, A., and Warren, S.G., 2017. Climate dynamics of Snowball Earth and Cryogenian geology–geobiology, *Science Advances*, 3 (11): e1600983.
- Swanson-Hysell, N.L. and Macdonald, F.A., 2017. Tropical weathering of the Taconic orogeny as a driver for Ordovician cooling, *Geology*, 45(8): 719-722.
- *Smith, E.F., Macdonald, F.A., *Petach, T.A., and *Bold, U., 2017. Integrated stratigraphic, geochemical, and paleontological late Ediacaran to early Cambrian records from southwestern Mongolia: Reply, *Geological Society of America Bulletin*, B31763.1.
- Macdonald, F.A., Karabinos, P., Crowley, J.L., *Hodgin, E., Crockford, P.W., and Delano, J., 2017. Bridging the gap between the foreland and the hinterland II: Geochronology and tectonic setting of Ordovician magmatism and basin formation on the Laurentian margin of New England and Newfoundland, *American Journal of Science*, 371 (5): 555-596.
- Karabinos, P., Macdonald, F.A., and Crowley, J.L., 2017. Bridging the gap between the foreland and the hinterland I: Geochronology and plate tectonic geometry of Ordovician magmatism and terrane accretion on the Laurentian margin of New England, *American Journal of Science*, 317 (5): 515-554.
- Yang, J., Jansen, M.F., Macdonald, F.A., and Abbot, D.S., 2017. Persistence of a freshwater layer in the surface ocean after Snowball Earth, *Geology*, 45 (7): 615-618.
- Macdonald, F.A. and Wordsworth, R., 2017. Initiation of Snowball Earth with volcanic sulfur aerosol emissions, *Geophysics Research Letters*, 44 (4): 1938-1946.
- Miller, A.J., *Strauss, J.V., Halverson, G.P., Macdonald, F.A., Johnston, D.T., and Sperling, E.A., 2017. Tracking the onset of Phanerozoic-style redox-sensitive trace metal enrichment: New data from basal Ediacaran post-glacial strata in NW Canada, *Chemical Geology*, 475: 24-37.
- Moore, K.R., Bosak, T., Macdonald, F.A., Lahr, D.J.G., Newman, S., Settens, C., and Pruss, S.B., 2017. Biologically agglutinated eukaryotic microfossils from Cryogenian cap carbonates, *Geobiology*, 15 (4): 499-515.
- Lau, K.V., Macdonald, F.A., Maher, K., and Payne, J.L., 2017. Uranium isotope evidence for temporary ocean oxygenation in the aftermath of the Sturtian Snowball Earth, *Earth and Planetary Science Letters*, 458: 282-292.

2016

- Anderson, R.P., McMahon, S., *Bold, U., Macdonald, F.A., and Briggs, D.E.G., 2016. Palaeobiology of the early Ediacaran Shurgat Formation, Zavkhan Terrane, south-western Mongolia, *Journal of Systematic Paleontology*, 15 (11): 947-968.
- *Pu, J., Bowring, S.A., Ramezani, J., Myrow, P., Landing, E., Raub, T.D., Mills, A., *Hodgin, E.B., and Macdonald, F.A., 2016. Dodging Snowballs: Geochronology of the Gaskiers glaciation and the first appearance of the Ediacaran biota, *Geology*, 44 (11): 955-958.

- *Smith, E.F., *Nelson, L.L., Strange, M.A., *Eyster, A.E., Roland, S.M., Schrag, D.P., and Macdonald, F.A., 2016. The end of the Ediacaran: Two new exceptionally preserved body fossil assemblages from Mount Dunfee, Nevada, USA, *Geology*, 44 (11): 911-914.
- *Bold, U., Crowley, J.L., *Smith, E.F., Sambuu, O., and Macdonald, F.A., 2016. Neoproterozoic to early Paleozoic tectonic evolution of the Zavkhan terrane of Mongolia: Implications for continental growth in the Central Asian orogenic belt, *Lithosphere*, 8 (6): 729-750.
- Kilian, T.M., Swanson-Hysell, N.L., *Bold, U., Crowley, J.L., and Macdonald, F.A., 2016. Paleomagnetism of the Teel basalts from the Zavkhan terrane: Implications for Paleozoic paleogeography in Mongolia and growth of continental crust, *Lithosphere*, 8 (6): 699-715.
- *Eyster, A.E., Fu, R., *Strauss, J.V., Weiss, B.P., Roots, C.F., Halverson, G.P., Evans, D.A.D., and Macdonald, F.A., 2016. Paleomagnetic evidence for a large rotation of the Yukon block relative to Laurentia: Implications for a low-latitude Sturtian glaciation and the breakup of Rodinia, *Geological Society of America Bulletin*, 129 (1-2): 38-58.
- Cox, G. M., Halverson, G. P., Stevenson, R.S., Théou-Hubert, L., Vokaty, M., Poirier, A., Kunzmann, M., Li, Z-X, *Strauss, J.V., and Macdonald, F.A., 2016. Conginental flood basalt weathering as a trigger for Neoproterozoic Snowball Earth, *Earth and Planetary Science Letters*, 446: 89-99.
- Jagoutz, O., Macdonald, F.A., and Royden, L., 2016. Low-latitude arc-continent collision as a driver for global cooling, *Proceedings of the National Academy of Sciences*, 113 (18): 4935-4940.
- *Bold, U., *Smith, E.F., *Rooney, A.D., Bowring, S.A., Dudás, F.Ö., Ramezani, J., Buchwaldt, R., Crowley, J.C., Schrag, D.P., and Macdonald, F.A., 2016. Neoproterozoic stratigraphy of the Zavkhan terrane of Mongolia: The backbone for Cryogenian and early Ediacaran chemostratigraphic records, *American Journal of Science*, 316: 1-63.
- Crockford, P.W., Cowie, B.R., Johnston, D.T., Hoffman, P.F., Sugiyama, I., Pellerin, A., Bui, T.H., Hayles, J., Halverson, G.P., Macdonald, F.A., and Wing, B.A., 2016. Triple oxygen and multiple sulfur isotope constraints on the evolution of the post-Marinoan sulfur cycle, *Earth and Planetary Science Letters*, 435: 74-83.

2015

- Sperling, E.A., Carbonne, C., *Strauss, J.V., Johnston, D.T., Narbonne, G.M., and Macdonald, F.A., 2016. Oxygen, facies, and secular controls on the appearance of Cryogenian and Ediacaran body and trace fossils in the Mackenzie Mountains of northwestern Canada, *Geological Society of America Bulletin*, 128 (3-4): 558-575.
- *Smith, E.F., *Petach, T.A., *Bold, U., Schrag, D.P., and Macdonald, F.A., 2015. Integrated stratigraphic, geochemical, and paleontological late Ediacaran to early Cambrian records from southwestern Mongolia, *Geological Society of America Bulletin*, 128 (3-4): 442-468.
- *Strauss, J.V., Macdonald, F.A., Halverson, G.P., Tosca, N.J., Schrag, D.P., and Knoll, A.H., 2015. Stratigraphic evolution of the Neoproterozoic Callison Lake Formation: Linking the breakup of Rodinia to the Islay carbon isotope excursion, *American Journal of Science*, 315: 881-944.
- Cohen, P.A., and Macdonald, F.A., 2015. The Proterozoic record of eukaryotes, *Paleobiology*, 41 (4): 610-632.

- Sperling, E.A., Wolock, C., Morgan, A.S., Gill, B.C., Halverson, G.P., Macdonald, F.A., Knoll, A.H., and Johnston, D.T., 2015. Statistical analysis of iron geochemical data suggests limited late Proterozoic oxygenation, *Nature*, 523 (7561): 451-454.
- *Rooney, A.D., *Strauss, J.V., Brandon, A.D., and Macdonald, F.A., 2015. A Cryogenian chronology: Two long-lasting, synchronous Neoproterozoic glaciations, *Geology*, 43 (5): 459-462.
- Cox, G.M., *Strauss, J.V., Halverson, G.P., Stevenson, R.S., Schmitz, M.D., McClelland, W.C., and Macdonald, F.A., 2015. Kikiktat Volcanics of Arctic Alaska – Melting of harzburgitic sub-continental lithospheric mantle associated with the Franklin Large Igneous Province, *Lithosphere*, 7 (3): 275-95.
- Carbone, C., Narbonne, G.M., Macdonald, F.A., and Boag, T., 2015. New Ediacaran fossils from the uppermost Blueflower Formation, northwest Canada: Disentangling biostratigraphy and paleoecology, *Journal of Paleontology*, 89 (02): 281-291.
- *Smith, E.F., Macdonald, F.A., Crowley, J.C., and *Hodgin, E.B., 2015. Tectonostratigraphic evolution of the c. 780-730 Ma Beck Spring Dolomite: Basin Formation in the core of Rodinia, in: Li, Z. X., Evans, D.A.D. & Murphy, J. B. (eds) *Supercontinent Cycles Through Earth History*, v. 424 (1). Geological Society, London, Special Publications, p. 213-239.
- Cohen, P.A., Macdonald, F.A., Pruss, S.B., Matys, E., and Bosak, T., 2015. Fossils of putative marine algae from the Cryogenian glacial interlude of Mongolia, *Palaios*, 30 (3): 238-247.

2014

- Liu, C., Wang, Z., Raub, T., Macdonald, F.A., and Evans, D.A.D., 2014. Neoproterozoic cap dolostone deposition in a stratified glacial meltwater plume, *Earth & Planetary Science Letters*, 404: 22-32.
- *Strauss, J.V., *Rooney, A.D., Macdonald, F.A., Brandon, A.D., and Knoll, A.H., 2014. 740 Ma vase-shaped microfossils from Yukon, Canada: Implications for Neoproterozoic chronology and biostratigraphy, *Geology*, 42 (8): 659-662.
- Macdonald, F.A., Ryan-Davis, J., Coish, R.A., Crowley, J.C., and Karabinos, P., 2014. A newly identified Gondwanan terrane in the Northern Appalachian Mountains: Implications for the Taconic orogeny and closure of the Iapetus Ocean, *Geology*, 42 (6): 539-542.
- Macdonald, F.A., Pruss, S.B., and *Strauss, J.V., 2014. Trace fossils with spreite from the late Ediacaran Nama Group, Namibia: Complex feeding patterns five million years before the Ediacaran-Cambrian boundary, *Journal of Paleontology*, 88 (2): 299-308.
- *Rooney, A.D., Macdonald, F.A., Dudás, F.Ö., Hallmann, C., *Strauss, J.V., and Selby, D., 2014. Re-Os geochronology and coupled Os-Sr isotope constraints on the Sturtian Snowball Earth, *Proceedings of the National Academy of Sciences*, 111 (1): 51-56.

2013

- Cox, G. M., Halverson, G. P., Minarik, W. G., Le Heron, D. P., Macdonald, F. A., Bellefroid, E. J., and *Strauss, J. V., 2013. Neoproterozoic Iron Formation: An evaluation of its temporal, environmental and tectonic significance, *Chemical Geology*, 362: 232-249.
- Bosak, T., Mariotti, G., Macdonald, F.A., Perron, J.T., and Pruss, S.B., 2013. Microbial sedimentology of stromatolites in Neoproterozoic cap carbonates, in: *Ecosystems Paleobiology and Geobiology, Paleontological Special Papers*, v. 19, Bush, A.M, Pruss, S.B., Payne, J.L., Editors, The Paleontological Society, p. 1-25.

- *Strauss, J.V., Macdonald, F.A., Taylor, J.F., Repetski, J.E., and McClelland, W.C., 2013. Laurentian origin for the North Slope of Alaska: Implications for the tectonic evolution of the Arctic, *Lithosphere*, 5 (5): 477-482.
- Johnston, D.T., Poulton, S.W., Tosca, N.J., O'Brien, T.O., Halverson, G.P., Schrag, D.P., and Macdonald, F.A., 2013. Searching for an oxygenation event in the fossiliferous Ediacaran of northwestern Canada, *Chemical Geology*, 362: 273-286.
- Macdonald, F.A., *Strauss, J.V., Sperling, E., Halverson, G.P., Narbonne, G.M., Johnston, D.T., Kunzmann, M., Schrag, D.P., and Higgins, J.A., 2013. The stratigraphic relationship between the Shuram carbon isotope excursion, the oxygenation of Neoproterozoic oceans, and the first appearance of the Ediacara biota and bilaterian trace fossils in northwestern Canada, *Chemical Geology*, 362: 250-272.
- Macdonald, F.A., Prave, A.R., *Pettersen, R., *Smith, E.F., Pruss, S.B., Oates, K., *Waechter, F., *Trotzok, D., and Fallick, A.E., 2013. The Laurentian record of Neoproterozoic glaciation, tectonism, and eukaryotic evolution in Death Valley, California, *Geological Society of America Bulletin*, 125 (7-8): 1203-1223.
- Sperling, E.A., Knoll, A.H., Halverson, G.P., Macdonald, F.A., and Johnston, D.T., 2013. A basin redox transect at the dawn of animal life, *Earth and Planetary Science Letters*, 371-372: 143-155.
- Gibson, T.M., Myrow, P., Macdonald, F.A., and Minjin, C., 2013. Depositional history, tectonics, and detrital zircon geochronology of Ordovician and Devonian strata in southwestern Mongolia, *Geological Society of America Bulletin*, 125: 877-893.
- Ashkenazy, Y., Gildor, H., Losch, M., Macdonald, F. A., Schrag, D. P., and Tziperman, E., 2013. Dynamics of a snowball ocean, *Nature*, 495: 90-93.
- Dalton, L.A., Bosak, T., Macdonald, F.A., Lahr, D.J.G., and Pruss, S.B., 2013. Preservational and morphological variability of assemblages of agglutinated eukaryotes in Cryogenian cap carbonates of northern Namibia. *Palaios*, 28: 67-79.
- Schrag, D.P., Higgins, J.A., Macdonald, F.A., and Johnston, D.T., 2013. Authigenic carbonate and the history of the global carbon cycle, *Science*, 239: 540-543.

2012

- Macdonald, F.A., Halverson, G.P., *Strauss, J.V., *Smith, E.F., Cox, G.M., Sperling, E.A., and Roots, C.F., 2012. Early Neoproterozoic basin formation in the Yukon, Canada: Implications for the make-up and break-up of Rodinia. *Paul F. Hoffman Series, Geoscience Canada*, 39: 77-99.
- Johnston, D.T., Macdonald, F.A., Gill, B.C., Hoffman, P.F., and Schrag, D.P., 2012. Uncovering the Neoproterozoic carbon cycle, *Nature*, 483 (7389): 320-323.
- Bosak, T., Lahr, D.J.G., Pruss, S.B., Macdonald, F.A., Gooday, A.J., Dalton, L., and Matys, E., 2012. Possible early foraminiferans in post-Sturtian (716-635 Ma) cap carbonates, *Geology*, 40 (1): 67-70.

2011

- Bosak, T., Macdonald, F.A., Lahr, D.J.G., and Matys, E., 2011. Putative Cryogenian ciliates from Mongolia, *Geology*, 39 (12): 1123-1126.

- Bosak, T., Lahr, D.J.G., Pruss, S.B., Macdonald, F.A., Dalton, L., and Matys, E., 2011. Agglutinated tests in post-Sturtian cap carbonates of Namibia and Mongolia, *Earth and Planetary Science Letters*, 308: 29-40.
- Cohen, P.A., Schopf, J.W., Butterfield, N.J., Kudryavtsev, A., and Macdonald, F.A., 2011. Phosphate biomineralization in mid-Neoproterozoic protists, *Geology*, 39 (6): 539-542.
- Tosca, N.J., Macdonald, F.A., *Strauss, J.V., Johnston, D.T., and Knoll, A.H., 2011. Sedimentary talc in Neoproterozoic carbonate successions. *Earth and Planetary Science Letters*, 306: 11-22.
- Hoffman, P.F., Macdonald, F.A., and Halverson, G.P., 2011. Chemical sediments associated with Neoproterozoic glaciation: iron formation, cap carbonate, barite and phosphorite, Ch. 5, in *The Geologic Record of Neoproterozoic Glaciations*, v. 36 (1), Arnaud, E., Halverson, G.P. and Shields-Zhou, G., Editors, Geological Society, London, Memoirs, p. 67-80.
- Macdonald, F.A., 2011. The Tsagaan Oloom Formation, southwestern Mongolia, Ch. 29, in: *The Geological Record of Neoproterozoic Glaciations*, v. 36 (1), Arnaud, E., Halverson, G.P. and Shields-Zhou, G., Editors, Geological Society, London, Memoirs, p. 331-337.
- Macdonald, F.A. and Jones, D.S., 2011. The Khubsugul Group, northern Mongolia, Ch. 30, in: *The Geological Record of Neoproterozoic Glaciations*, v. 36 (1), Arnaud, E., Halverson, G.P. and Shields-Zhou, G., Editors, Geological Society, London, Memoirs, p. 339-345.
- Macdonald, F.A., 2011. The Hula Hula Diamictite and Katakaturuk Dolomite, Arctic Alaska, Ch. 34, in: *The Geological Record of Neoproterozoic Glaciations*, v. 36 (1), Arnaud, E., Halverson, G.P. and Shields-Zhou, G., Editors, Geological Society, London, Memoirs, p. 389-396.
- Macdonald, F.A. and Cohen, P.A., 2011. The Tatonduk inlier, Alaska-Yukon border, Ch. 35 in *The Geological Record of Neoproterozoic Glaciations*, v. 36 (1), Arnaud, E., Halverson, G.P. and Shields-Zhou, G., Editors, Geological Society, London, Memoirs, p. 389-396.

2010

- Macdonald, F.A., Schmitz, M.D., Crowley, J.L., Roots, C.F., Jones, D.S., Maloof, A.C., *Strauss, J.V., Cohen, P.A., Johnston, D.T., and Schrag, D.P., 2010. Calibrating the Cryogenian, *Science*, 327: 1241-1243.
- Macdonald, F.A., *Strauss, J.V., Rose, C.V., Dudás, F.Ö., and Schrag, D.P., 2010. Stratigraphy of the Port Nolloth Group of Namibia and South Africa and implications for the age of Neoproterozoic iron formations, *American Journal of Science*, 310: 862-888.
- Pruss, S.B., Macdonald, F.A., McLane, M., and Hoffman, P.F., 2010. Microbial facies in a Sturtian cap carbonate, the Rasthof Formation, Otavi Group, northern Namibia. *Precambrian Research*, 181: 187-198.
- Hoffman, P.F. and Macdonald, F.A., 2010. Sheet-crack cements and early regression in Marinoan (635 Ma) cap dolostones: Regional benchmarks of vanishing ice-sheets? *Earth and Planetary Science Letters*, 300: 374-384.
- Macdonald, F.A., Cohen, P.A., Dudás, F.Ö., and Schrag, D.P., 2010. Early Neoproterozoic scale microfossils in the Lower Tindir Group of Alaska and the Yukon Territory, *Geology*, 38: 43-146.

2009

- Macdonald, F.A., Jones, D.S., and Schrag, D.P., 2009. Stratigraphic and tectonic implications of a new glacial diamictite-cap carbonate couplet in southwestern Mongolia. *Geology*, 37: 123-126.
- Macdonald, F.A., Schrag, D. P., McClelland, W.C., and Macdonald, W. P., 2009. Neoproterozoic glaciation on a carbonate platform margin in Arctic Alaska and the origin of the North Slope subterrane. *Geological Society of America Bulletin*, 121: 448-473.

2000-2008

- Macdonald, F.A., Mitchell, K., and Stewart, A.J., 2005. Amelia Creek: A Proterozoic impact structure in the Davenport Ranges, Northern Territory. *Australian Journal of Earth Sciences*, 52: 631-640.
- Macdonald, F.A., Wingate, M.T.D., and Mitchell, K., 2005. Geology and age of the Glikson impact structure, Western Australia. *Australian Journal of Earth Sciences*, 52: 641-651.
- Milton, D.L. and Macdonald, F.A., 2005. Goat Paddock, Western Australia: An impact crater near the simple-complex transition. *Australian Journal of Earth Sciences*, 52: 691-698.
- Shoemaker, C.S. and Macdonald, F.A., 2005. The Shoemaker legacy to the Australian impact record, *Australian Journal of Earth Sciences*, 52: 477-479.
- Shoemaker, E.M., Macdonald, F.A., and Shoemaker, C.S., 2005. Geology of five small Australian impact craters, *Australian Journal of Earth Sciences*, 52: 529-544.
- Macdonald, F.A., Bunting, J.A., and Cina, S.E., 2003. Yarabubba – a large, deeply eroded major impact structure in the Yilgarn Craton, Western Australia, *Earth and Planetary Science Letters*, 213: 791-795.
- Weiss, B.P., Kirschvink, J.L., Baudenbacher, F.J., Vali, H., Peters, N.T., Macdonald, F.A., and Wiksw, J.P., 2000. A low temperature transfer of ALH84001 from Mars to Earth, *Science*, 290: 791-795.

Teaching & Advising

Classes taught

- UC Berkeley, EPS 115: Stratigraphy and Earth History, Spring 2025
- UC Berkeley EPS 50: Planet Earth, Fall 2024
- UCSB, EARTH 104c: Field Camp, Nevada, Summer 2021, 2023
- UCSB, EARTH 104a: Field Methods, 2019-2022
- UCSB, EARTH 109: California Geology, 2019-2023
- UCSB, EARTH 201B: Proposals and Presentations, Winter 2019-2023
- Harvard, EPS 21: Dynamic Earth—Geology and Tectonics through time, Fall 2011, 2012, 2013, 2015
- Harvard, EPS 74/174: Field Geology, January 2011, 2012, 2013, 2015, 2017
- Harvard, EPS 182: Stratigraphy and Sedimentology, Spring 2010, 2012, 2013, 2015, 2017
- Harvard, EPS 189: Analytical and Field Methods in Geobiology, Spring 2011
- Harvard, EPS 274: Advanced Field Geology, January 2013, 2015, 2017
- Harvard, EPS 282: Topics in Stratigraphy and Earth History, Fall 2010, 2014, 2016, 2018

Post-Doctoral Fellows

- Alan Rooney: *Cryogenian Osmium Isotope Stratigraphy*, 2012-2016 (Associate Professor, Yale).
- Ryan Petterson: *Overlapping Unconformities in the Kingston Peak Formation*, 2010-2011 (Director of Field Education, Stanford).

Graduate Theses

- Adrian Tasistro-Hart: *Stratigraphy in space and time*, PhD 2024 (Postdoc, UC Berkeley)
- Eliel Anttila: *Tectonic subsidence and phosphogenesis in Miocene and Neoproterozoic basins*, PhD 2024 (Postdoc, ETH-Zurich)
- Judy Pu: *Constraining the Onset and Deglaciation Mechanisms of Cryogenian Snowball Earth Glaciations*, PhD 2023 (Research Scientist, USGS)
- Sam LoBianco: *Tectonostratigraphic reconstruction of the Neoproterozoic rift-to-drift transition in Southeast Death Valley*, MS 2023 (Geologist, Teck Resources).
- Eben Hodgin: *Neoproterozoic to Paleozoic tectonostratigraphic evolution of the Arequipa Terrane, Peru*, PhD 2019 (Assistant Professor, Brown).
- Athena Eyster: *Inertial interchange true polar wander and paleomagnetism of Rodinia*, PhD 2017 (Assistant Professor, Tufts).
- Uyanga Bold: *Neoproterozoic and Paleozoic geology of Mongolia*, PhD 2016 (Deputy Minister of Mining and Heavy Industry, Mongolian government).
- Emily Smith: *Constraints on global carbon cycling, basin formation, and early animal evolution during the Neoproterozoic and early Cambrian*, PhD 2015 (Associate Professor, Johns Hopkins University).
- Justin Strauss: *Topics in Neoproterozoic and Paleozoic stratigraphy in the Northwestern Cordillera*, PhD 2015 (Associate Professor, Dartmouth College)

Undergraduate Theses

- Ellery Renger: *Strontium isotopes of barite in cap carbonates test the Snowball Earth hypothesis*, 2024 (PhD candidate at UC Berkeley).
- Caroline Newell: *Geochemical cyclostratigraphy of the Tonian Chuar Group, Grand Canyon*, 2023 (PhD candidate at Johns Hopkins).
- Billyjack Jory: *Geochronology of the Coast Range Ophiolite at Point Sal, CA*, 2023 (MS candidate at UCLA).
- Costa Mbweti (University of Namibia): *Geochronology and isotope geochemistry of the Abenab Subgroup on the western margin of the Congo Craton, Namibia*, 2022.
- Joneel Zinto: *Detrital zircon geochronology of the McCoy Creek Group, Nevada*, 2022 (MS candidate at Kansas).
- Valerie Aguilar: *Tonian biostratigraphy of the Pahrump Group, Death Valley, CA*, 2021 (PhD candidate at Harvard).
- Brian Mo: *Carbon and oxygen isotope chemostratigraphy of the Monterey Formation*, 2021.
- Camille Preece: *Detrital zircon geochronology of Northern Mongolia*, 2021.

- Max Britt: *The Real McCoy: Correlation of Ediacaran strata in Nevada*, 2020 (PhD Arizona)
- Sam LoBianco: *Mesozoic tectonostratigraphic evolution of Peru*, 2018 (Teck Resources).
- Rachel Hampton: *Neoproterozoic tectonic evolution of Avalon*, 2017 (Lithium America).
- Emma Mackie: *Neoproterozoic rifting and glaciation in Eastern Washington*, 2017 (Assistant Professor at University of Florida).
- Judy Pu (MIT): *Geochronology of the Trinity Formation and the Gaskiers Glaciation*, 2016 (PhD UCSB).
- Dan Skarsinski: *Os isotope constraints on the Ordovician weathering and climate change*, 2016.
- Sarah Moon: *Age and setting of the Mesoproterozoic Crystal Spring Formation, Death Valley*, 2015.
- Lyle Nelson: *Epsilon Nd composition of shales in Arctic Alaska reflect the influx of Caledonian detritus*, 2015 (Awarded Hoopes Prize, Assistant Professor at MIT).
- Tanya Petach: *Sr isotope evolution of Early Cambrian seawater in Mongolia*, 2015 (Fellow at Aspen Global Change Institute).
- Joe Schaffer (co-advisee with Dave Johnston and Charlie Langmuir): *Is the Utica Shale a Valid Estimator of Global Paleoredox Conditions?* 2015.
- William Thompson-Butler: *A Geochemical Assessment of the Utica Shale in the Mohawk Valley of New York: Evidence for Diachronous Deposition and Ramifications for Potential Hydrocarbon Systems*, 2013.
- Esther Kennedy (co-advisee with Dave Johnston): *Sulfur Isotope Chemostratigraphy of the SPICE in Alaska Northwestern Canada*, 2013.
- Felix Waechter: *Chemostratigraphy of the Virgin Springs Limestone: Implications for stratigraphic correlation in Death Valley, CA*, 2012.
- Dylan Trozduk: *The tectonic and climatic context of Neoproterozoic stratiform mineralization on the western margin of Laurentia*, 2012.
- Trevor Petach: *Neoproterozoic oxygenation seen through minor element analyses*, 2010.

Professional Service

Journal Editorial Activity

- Editor, American Journal of Science, 2025-present
- Associate Editor, American Journal of Science, 2022-2024

Committees

- EPS, Undergraduate Curriculum committee, member, 2024-present
- NSF EAR panel, 2024
- Namibian Committee for Stratigraphy, 2024-present
- AGU College of Fellows Legacy Committee, 2022-present
- Earth Science, Field Studies committee, member, 2020-2024

- Earth Science, FTE committee, chair, 2021-2024
- Earth Science, Instrumentation & Machine Shop committee, member, 2021-2024
- Earth Science, Global Travel Fund, member, 2020-2024
- UCSB Faculty Senate representative on video camera committee, 2020-2024
- Earth Science, Field Studies committee, chair, 2020-2022
- Earth Science, Information Technology committee, member, 2021-2022
- UCSB University Committee for Information Technology, 2019-2022
- UCSB University Committee of Faculty Grants, 2019-2022
- GSA Donath selection committee, 2016-2019
- EPS co-head tutor for undergraduate curriculum, 2014-2018
- EPS search committees, 2013-2018
- NSF Sedimentary Geology and Paleontology panel, 2013
- EPS Undergraduate Curriculum Committee, 2010-2018
- EPS Collections Committee, 2010-2018
- EPS Colloquium Committee, 2010-2015

Field Trips Led (independent of those associated with classes)

- Fransfontein Ridge, Namibia, Colloquium of African Geology, Sept 2023
- SE Death Valley, AGU & Neoproterozoic Stratigraphic Subcommittee, Dec 2014
- SE Death Valley, NASA MIT Astrobiology Node, Jan 2014, <https://vimeo.com/98359223>
- Big Island Hawaii, Harvard undergraduate field trip, Aug 2011
- Taconic Foreland, New York, Harvard graduate students, April 2011
- Coastal Maine, Harvard undergraduate Geoclub field trip, Oct 2005
- Northwest Australia, Caltech's Mike Scott field trip, Aug 2004
- Meteor Crater, AZ, Caltech Planetary Science students, May 2004

Symposia and Sessions Organized

- Assembling Laurentia: Neoproterozoic to Cambrian Rifting and Continental Margin
- Evolution during Breakup of Rodinia and Pannotia, GSA, 2020
- Evaluating tectonic and volcanic forcing of Earth's climate, AGU, 2017
- Integrating complementary records of Paleozoic orogenies in the Appalachians: Bridging the foreland and hinterland, NEGSA, 2016
- Neoproterozoic glaciations, uniting data and models, AGU, 2014
- The Ediacaran-Cambrian Ecosphere (R)evolution: Emerging records from Central and East Asia, GSA, 2014
- Paul Hoffman: A Life in Earth History and Tectonics, GSA, 2013
- A World in Transition: Geobiology of the Precambrian-Cambrian boundary, Harvard University, April 2008

Exchanges

- Exchange for Namibian students to visit UCSB, audit classes, and gain experience working in laboratories, 2022-present.
- Exchange for Mongolian students to visit Harvard University, audit classes, and gain experience working in laboratories, 2007-2014.

Public Outreach

- Lecture at Goleta Public Library, 2022
- NOVA Climate Extremes, <https://www.pbs.org/wgbh/nova/video/polar-extremes/>
- Curation of Snowball Earth exhibit at the Harvard Museum of Natural History, 2018
- LIP of the month, February 2015, <http://www.largeigneousprovinces.org/>
- NASA MIT NAI, <https://vimeo.com/98359223>
- MIT Museum Soapbox lecture, 2014
- Harvard Museum of Natural History Lecture Series, 2013
- Curation of Arctic Geology and Walk Through Time exhibits at the Harvard Museum of Natural History, 2013, <http://vimeo.com/69910461>
- Harvard University Research Journal Lecture Series, 2010
- MIT BLOSSOMS, educational video on geologic time, 2010, <http://blossoms.mit.edu/video/geologic-time.html>

Synergistic Activities

- Co-PI of RATES, a new NSF program to support research in Geochronology.
- Co-organized GRIND: Geological Research through Integrated Neoproterozoic Drilling, 2017-present
- CIDER workshop participant (Cooperative Institute for Dynamic Earth Research): Earth's Evolution as an inhabited world, Summer 2022

Invited Talks

- 2024: Harvard, UC Berkeley, Seven Sisters Lecture, Princeton, Cambridge, Stanford
- 2023: Gordon Research Conference on Geochronology, MIT, IODP Workshop for scientific drilling in Gulf of Papua
- 2022: Coast Geological Society, Peking University
- 2019: Caltech, UC Riverside, UNLV, UC Davis, USC, Lehigh Hewitt Lecture, AGU
- 2018: UBC, UCSB
- 2017: Colorado, UCLA, Penn State, Princeton
- 2016: Harvard, Chicago, Geological Survey of Canada Logan Lecture, Iowa
- 2015: Washington, Bridgewater State, UNLV, AGU
- 2014: Wisconsin, MIT, UCSB, Stanford, GSA, AGU
- 2013: UC Berkeley

- 2012: Purdue, Proterozoic Symposium at St. Andrews, Durham, FERMOR at Geological Society of London, Boston University
- 2011: Iowa, Boston College, Chicago
- 2010: MIT, Yale, Connecticut, Rice, Vermont
- 2009: Yukon Geoscience Forum, Caltech, Boise State
- 2008: Harvard, McGill, MIT
- 2007: Yale Geobiology Symposium