**Brenda B. Bowen**

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**Professional Preparation**

2005- **Ph.D.** Geology, *University of Utah*, Salt Lake City, UT

2000- **M.S.** Earth Sciences, *University of California Santa Cruz*, Santa Cruz, CA

1998- **B.S.** Earth Sciences, *University of California Santa Cruz*, Santa Cruz, CA

**Professional Appointments**

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| 2023 – present 2021 – present | **Chair,** Atmospheric Sciences, University of Utah (UU)**Professor,** Geology and Geophysics, UU |
| 2015 – present 2014 – 20212012 – 2015 | **Director,** Global Change and Sustainability Center, UU**Associate Professor** (with tenure), Geology and Geophysics, UU **Associate Director**, Global Change and Sustainability Center, UU |
| 2012 – 2014 | **Associate Research Professor**, Geology and Geophysics, UU |
| 2007 – 2012 | **Assistant Professor**, Earth and Atmospheric Sciences, Purdue University  |
| 2005 – 2007 | **Postdoctoral Research Associate**, Geology, Central Michigan University |

**Current Research Overview**

I explore sedimentology, geochemistry, and environmental change to advance understanding of landscape evolution over geologic to human timescales. I use field observations, remote sensing, and a wide range of lab-based analytical techniques (geochemistry and microscopy) to characterize and interpret records of change. I work to facilitate interdisciplinary research and practice to address critical issues of global change and sustainable solutions for energy, resources, climate, and equity.

**Select Awards and Honors**

* Fellow, Geological Society of America (2023)
* Outstanding Faculty Research Award, Department of Geology and Geophysics, UU (2022)
* Outstanding Teaching Award, College of Mines and Earth Sciences, UU (2021)
* Outstanding Teaching Award, Department of Geology and Geophysics, UU (2021)
* Top Researcher Honoree, College of Mines and Earth Sciences, UU (2017)
* Careers Services Award, UU (2016)
* Purdue College of Science Undergraduate Advising Award (2010)
* Best Poster Award, Division of Environmental Geoscience, AAPG Eastern Section Meeting (2009)
* Outstanding paper of the year in Journal of Sedimentary Research (Benison et al., 2007)

**Grants Awarded (~$6.3 M total)**

* ADVANCE IT: University of Utah Institutional Change Studios: Systemic Institutional Change Through Problem Driven Iterative Adaptation: NSF Div. of Equity for Excellence in STEM (Co-PI), 2023-2028, $3,000,000
* Bonneville Salt Flats Sustainability: Utah Geological Survey – University of Utah – Intrepid Potash collaborative project (Sole PI), 2022-2024, $136,000
* The Salt is Breathing: Biotic or Abiotic CO2 Flux on the Bonneville Salt Flats: College of Mines and Earth Sciences VPR Seed Grant (Sole PI), 2021-2022, $27,500
* Revolving Sky: Artists and Scientists Exploring Human Experiences of Earth and Sky: 1U4U Innovation Funding, University of Utah (Co-PI), 2020-2021, $30,000
* Investigation of Jarosite and Alunite in Jurassic Sandstones as Analogs for Layered Sulfate-bearing Deposits on Mars: NASA Solar Systems Workings (Co-I), 2019-2021, $50,000 (total $640,000)
* Hydrologic Systems, Human Consumption, and Aridland Spring Sustainability: University of Utah, Society, Water, and Climate Transformative Excellence Program seed grant (Co-PI) and NEXUS seed grant (Lead PI), 2017-2020, $25,000.
* Adaptation, Mitigation, and Biophysical Feedbacks in the Changing Bonneville Salt Flats: NSF Coupled Natural Human Systems (Lead PI), 2016-2020, $1,500,000.
* 2018 Salt Crust Thickness Study of the Bonneville Salt Flats: Intrepid Potash (Sole PI), 2015-2018, $127,856.
* Geomicrobiology of the Bonneville Salt Flats: NASA EPSCoR (Co-PI), 2014-2015, $50,000.
* Friends of Red Butte Creek: Research, Outreach, and Education Grants: Salt Lake County Watershed Planning and Restoration Program (Sole PI), 2013-2014, $35,000.
* U-S2TEM Scholars- Undergraduate Sustainability Science, Technology, Engineering, and Math Scholars: National Science Foundation (Co-PI, project lead), 2013-2019, $600,000.
* Training Students to Analyze Spatial and Temporal Heterogeneities in Reservoir and Seal Petrology, Mineralogy, and Geochemistry: Implications for CO2 Sequestration Prediction, Simulation, and Monitoring: U.S. Department of Energy (Sole PI), 2010-2013, $299,920.
* Analytical-Numerical Sharp-Interface Model of CO2 Sequestration and Application to Illinois Basin: U.S. Department of Energy (Co-PI), 2009-2012, $62,462.
* Petrological and Petrophysical Characterization of the Mount Simon Sandstone and Eau Claire Formation in Support of Phase III Sequestration Evaluation: Indiana Geological Survey / U.S. Department of Energy (Sole PI), 2008-2014, $172,257.
* Depositional and Diagenetic Heterogeneities of the Mt. Simon Sandstone and Eau Claire Formation: Midwest Regional Carbon Sequestration Partnership / U.S. Department of Energy (Sole PI), 2008-2011, $112,871.
* Collaborative Research: The evolution of extremely acid lakes and groundwaters in Western Australia: National Science Foundation (Co-PI), 2008 - 2012, $114,407.
* Evaluating the History of Eolian and Interdune Fluid-Sediment Interactions and Mass Transfer in an Acid and Redox Influenced Diagenetic System: Mollies Nipple, Grand Staircase-Escalante National Monument: American Chemical Society- Petroleum Research Fund (Sole PI), 2007-2010, $40,000.

**Peer-reviewed Publications** *(student authors advised underlined)*

71. Bernau, J.A., **Bowen, B.B.,** Oviatt, C.G., Clark, D.L., Hart, I.A., in press, Lateral and temporal constraints on the depositional history of the Bonneville Salt Flats, Utah, USA: Quaternary Research

70. Bernau, J.A., **Bowen, B.B.,** Inkenbrandt, P.C., Pardyjak, E.R., Kipnis, E.L., in press, Diurnal to seasonal dynamics of saline pan evaporation and groundwater level fluctuations, Bonneville Salt Flats, Utah, USA: Hydrogeology Journal

69. Lerback, J.C., **Bowen, B.B**., Bagge, S., Heberer, M., Cocke, R., Bricker, H.L., 2023, Bonneville Basin Critical Zones: Spring Chemistry and Gastropod Ecology in Playa-margin Wetlands *in* M.D. Vanden Berg, R. Ford, C. Frantz, H. Hurlow, K. Gunderson, G. Atwood, editors 2023 Utah Geological Association Publication 51

68. Radwin, M.H. and **Bowen, B.B**., 2023, Evolution of Great Salt Lake’s Exposed Lakebed (1984-2023): Variations in Sediment Composition, Water, and Vegetation from Landsat OLI and Sentinel MSI Satellite Reflectance Data *in* M.D. Vanden Berg, R. Ford, C. Frantz, H. Hurlow, K. Gunderson, G. Atwood, editors 2023 Utah Geological Association Publication 51

67. Bernau, J.A., **Bowen, B.B**., Oviatt, C.G., Clark, D.L., 2023, Great Salt Lake Desert Landscape Change Over Multiple Temporal Scales – a Field Trip Guide Covering the Bonneville Salt Flats and Knolls Sand Dunes *in* M.D. Vanden Berg, R. Ford, C. Frantz, H. Hurlow, K. Gunderson, G. Atwood, editors 2023 Utah Geological Association Publication 51

66. Bernau, J.A., **Bowen, B.B**., Kipnis, E.L., Lerback, J.C., 2023, Observations of Decadal-Scale Brine Chemistry Change at the Bonneville Salt Flats, Utah *in* M.D. Vanden Berg, R. Ford, C. Frantz, H. Hurlow, K. Gunderson, G. Atwood, editors 2023 Utah Geological Association Publication 51

65. Zeppetello, L.R., McColl, K.A., Bernau J.A., **Bowen B.B.**, Tang L.I., Holbrook N.M., Gentine P., Huybers P., 2023, Apparent surface conductance sensitivity to vapour pressure deficit in the absence of plants. Nature Water. <https://doi.org/10.1038/s44221-023-00147-9>

64. Radwin, M., **Bowen, B.B.,** Benison, K.C., and Story, S., 2023, Southwestern Australia Acid-Saline Mineralogy: Observations from Reflectance Spectroscopy: IEEE Transactions on Geoscience and Remote Sensing, vol. 61, pp. 1-16, 2023, Art no. 4502716, doi: 10.1109/TGRS.2023.3272859.

63. Ward, D., Brunelle, A., **Bowen, B.B.,** 2023, Holocene Chemostratigraphy of Spring Sediments in Range Creek Canyon, Utah: The Holocene, <https://doi.org/10.1177/09596836231169987>

62. Kipnis, E.L., Drake, L., and **Bowen, B.B.**, 2023, Chemical Analysis of Natural Waters Using Portable X-Ray Fluorescence Spectrometry, in, *Advances in Portable X-ray Fluorescence Spectrometry: Instrumentation, Application and Interpretation*, edited by B.L. Drake and B.L. MacDonald, Royal Society of Chemistry, https://doi.org/10.1039/9781839162695.

61. Lerback, J.C., Bagge, S., **Bowen, B.B**., 2023, Evaluation of Aqueous Gastropod Shells as Groundwater Radiocarbon Proxies Across Species and Sites: Radiocarbon, https://doi.org/10.1017/RDC.2022.103 P

60. **Bowen, B.B.,** and Wischer, W., 2023, Evaporated: Explorations in Art, Science and Salt: LEONARDO (MIT Press), in press, <https://doi.org/10.1162/leon_a_02352>

59. Bernau, J., Jagniecki, E., **Bowen, B.B.**, 2023, Applications and limitations of portable density meter measurements of Na-Ca-Mg-K-Cl-SO4 brines: Chemical Geology, v. 616, 121240, ISSN 0009-2541, https://doi.org/10.1016/j.chemgeo.2022.121240

58. McGonigle, J., Bernau, J., **Bowen, B.B.** and Brazelton, W., 2022, Metabolic Potential of Microbial Communities in the Hypersaline Sediments of the Bonneville Salt Flats: mSystems (Paper #mSystems00846-22R1)

57. **Bowen, B.B.,** 2022,Re-crafting narratives to disrupt the oceanic plastic plague, in *Re-Envisioning the Anthropocene Ocean*, edited by R.K. Craig and J. M. McCarthy, University of Utah press.

56. Blacketer, M.P., Brownlee, M.T.J., and **Bowen, B.B.**, 2022, Perceptions of Social Network Influence: Key Players’ Insights into Power, Conflict, and Collaboration at the Bonneville Salt Flats: Environmental Management, v. 69(2), p. 288-304, DOI: [10.1007/s00267-021-01590-8](https://doi.org/10.1007/s00267-021-01590-8)

55. Lerback, J.C., **Bowen, B.B.**, Macfarlan, S.J., Schniter, E., Garcia, J.J., Caughman, L., 2022, Development of a resilience framework to understand a coupled human-natural system in Baja California Sur: Sustainability Science, <https://doi.org/10.1007/s11625-022-01101-6>

54. Lerback, J.C., **Bowen, B.B.**, Humphrey, C.E., Fernandez, D.P., Bernau, J.A., Macfarlan, S.J., Schniter, E., Garcia, J.J., 2022, Geochemistry and provenance of springs in a Baja California Sur mountain catchment: Groundwater, <https://doi.org/10.1111/gwat.13177>

53. Blacketer, M.P., Brownlee, M.T.J., Baldwin, E.D., and **Bowen, B.B.**, 2021, Fuzzy Cognitive Maps of Social-Ecological Complexity: Applying Mental Modeler to the Bonneville Salt Flats: Ecological Complexity, v. 47, 100950, https://doi.org/10.1016/j.ecocom.2021.100950

52. Shah, J. J. F., Bares, R., **Bowen, B.B.**, Bowen, G.J., Bowling, D.R., Eiriksson, D.P., Fasoli, B., Fiorella, R.P., Hallar, A.G., Hinners, S.J., Horel, J.D., Jacques, A.A., Jamison, L.R., Lin, JC., Mendoza, D.L., Mitchell, L.E., Pataki, D.E., Skiles, S.M., Smith, R.M., Wolf, M.A., Brooks, P.D., 2021, The Wasatch Environmental Observatory: A mountain to urban research network in the semi-arid Western US: Hydrological Processes, special issue on Research and Observatory Catchments: the Legacy and the Future, <https://doi.org/10.1002/hyp.14352>

51. Bernau, J. and **Bowen, B.B.**, 2021, Depositional and early diagenetic characteristics of modern saline pan deposits at the Bonneville Salt Flats, Utah, USA: Sedimentology, <https://doi.org/10.1111/sed.12861>.

50. Radwin, M., and **Bowen, B.B.**, 2021, Mapping mineralogy in evaporite basins through time using multispectral Landsat Data: examples from the Bonneville Basin, Utah, USA: Earth Surface Processes and Landforms, doi: 10.1002/esp.5089

49. Kipnis, E.L., **Bowen, B.B.**, Hutchings, S.J., Hynek, S.A., and Benison, K.C., 2020, Major ion geochemistry in Na-Ca-Mg-K-Cl-SO4 brines using portable X-ray fluorescence spectrometry: Chemical Geology, v. 558, 119865, https://doi.org/10.1016/j.chemgeo.2020.119865

48. Sun, Y., O'Neill, L., Liu, M., DeLuca, K., and **Bowen, B.B.**, 2021, Mobilizing the Public in Saving the Bonneville Salt Flats: Understanding Blame as a Psychological Construct: Environmental Communication, v. 15:3, 301-319, https://doi.org/10.1080/17524032.2020.1822900

47. Oviatt, C.G., Clark, D.L., Bernau, J.A., and **Bowen, B.B.**, 2020, Data on the surficial deposits of the Great Salt Lake Desert, Bonneville Salt Flats and east part of the Wendover 30' x 60' quadrangles, Tooele County, Utah: Utah Geological Survey Open-File Report 724, 70 p., <https://doi.org/10.34191/OR-724>

46. Peterson, B.A., Brownlee, T.J., Hallo, J.C., Beeco, J.A., White, D.L., Zajchowski, C.A.B., and **Bowen, B.B.**, 2020, Grid analysis of visitor travel patterns in a dispersed outdoor recreation setting. Journal of Park and Recreation Administration. doi:10.18666/JPRA-2020-10646

45. Zajchowski, C.A.B., Brownlee, M.T.J., Blacketer, M.P., Peterson, B.A., Craft, K., and **Bowen, B.B.,** 2020, Rapid Biophysical Change and Visitor Use Management: Social-ecological Connections at the Bonneville Salt Flats: Environmental Management, v. 66, p. 263-277, https://doi.org/10.1007/s00267-020-01309-1

44. **Bowen, B.B.** and Ivkovich, L., 2020, No Away: Phantom Limb Company’s Falling Out: Performance Research, in: Spalink, A., and Winn-Lenetsky, J. (Eds.), On Dark Ecologies, v. 25, n. 2, p. 102-110, doi: [10.1080/13528165.2020.1752583](https://doi.org/10.1080/13528165.2020.1752583)

43. Lerback, J. C., Hynek, S.A., **Bowen, B.B.**, Bradbury, C.D., Solomon, D.K., Fernandez, D.P., 2019, Springwater provenance and flowpath evaluation in Blue Lake, Bonneville basin, Utah: Chemical Geology, <https://doi.org/10.1016/j.chemgeo.2019.119280>

42. McGonigle, J., Bernau, J., **Bowen, B.B.**, and Brazelton, W., 2019, Robust archeal and bacterial communities inhabit shallow subsurface sediments of the Bonneville Salt Flats: mSphere, American Society of Microbiology 4 (4) e00378-19; DOI: 10.1128/mSphere.00378-19

41. Chan, M.A., **Bowen, B.B,** Corsetti, F.A., Farrand, W.H., Law, E.S., Newsom, H.E., Perl, S.M., Spear, J.R., and Thompson, D.R., 2019, Exploring, Mapping, and Data Management Integration of Habitable Environments in Astrobiology: Frontiers in Microbiology v. 10, n. 147, doi: 10.3389/fmicb.2019.00147

40. **Bowen, B.B**., Kipnis, E.L., and Pechmann, J., 2018b, Observations of salt crust thickness change at the Bonneville Salt Flats from 2003-2016, in: Emerman, S.H., Simmons, S., Bowen, B.B., Schamel, S. (Eds.), Geofluids of Utah, 2018 Utah Geological Association Guidebook 47, p. 247-285.

39. Kipnis, E.L. and **Bowen, B.B.**, 2018, Salt crust change and humans as geologic agents at the Bonneville Salt Flats, Utah, in: Emerman, S.H., Simmons, S., Bowen, B.B., Schamel, S. (Eds.), Geofluids of Utah, 2018 Utah Geological Association Guidebook 47, p. 287-303.

38. **Bowen, B.B.,** Bernau, J., Kipnis, E.L., Lerback, J., Wetterlin, L. and Kleba, B., 2018a, The Making of a Perfect Racetrack at the Bonneville Salt Flats, The Sedimentary Record, v.16, n.2, p. 4-11, doi: 10.2100/sedred.2018.2

37. **Bowen, B.B.,** Kipnis, E.L., and Raming, L.W., 2017, Temporal dynamics of flooding, evaporation, and desiccation cycles and observations of salt crust area change at the Bonneville Salt Flats, Utah: Geomorphology v. 299, p. 1-11.

36. Wang, F., **Bowen, B.B**., Seo, Ji-Hye, and Michalski, G., 2017, Laboratory and field characterization of visible to near infrared spectral reflectance of nitrate minerals from the Atacama Desert, Chile and implications for Mars: American Mineralogist: Journal of Earth and Planetary Materials, 10.2138/am-2018-6141

35. Jewell, P.W., Nelson, D.T., **Bowen, B.B.,** and L.W. Raming, 2016, Insights into Lake Bonneville Using Remote Sensing and Digital Terrain Tools, in Lake Bonneville: A Scientific Update, edited by C.G. Oviatt and J.R. Shroder Jr., Development in Earth Surface Processes, v. 20, p. 598-614.

34. Ward, M., **Bowen, B.**, Burian, S., Cachelin, A., and McCool, D., 2015, Institutionalizing interdisciplinary sustainability curriculum at a large, research-intensive university: Challenges and opportunities Environmental Studies and Sciences: Environmental Studies and Science special issue on Interdisciplinary Environmental Studies Leadership, 1-7.

33. Benison, K.C. and **Bowen, B.B.**, 2015, The evolution of end-member continental waters: the origin of acidity in Southern Western Australia: Geological Society of America Today, v. 25, no 6.

32. Walsh, T.C., Miller, O.L., **Bowen, B.B.**, Levine, Z.A., and Ehleringer, J.E., 2015, The sphere of sustainability: Lessons from the University of Utah’s Global Change and Society course: Journal of Water Resources Planning and Management, v. 141, no. 12.

31. Nielson, G.B., Chan, M.A., and **Bowen, B.**, 2014, Iron-rich horizons in the Jurassic Navajo Sandstone, southwestern Utah progressive cementation and permeability inversion, in MacLean, J.S., Biek, R.F., and Huntoon, J.E., editors, Geology of Utah’s Far South: Utah Geological Association Publication 43.

30. Bell, J. and **Bowen, B.B.**, 2014, Fault-focused fluid flow in an acid and redox influenced system: Diagenetic controls on cement mineralogy and geomorphology in the Navajo Sandstone: Geofluids, v. 14, p. 251-265.

29. **Bowen, B.B.**, Story, S., Oboh-Ikuenobe, F., Benison, K.C., 2013, Differences in regolith weathering history at an acid and neutral saline lake on the Archean Yilgarn Craton and implications for acid brine evolution: Chemical Geology, v. 356, p. 126-167.

28. Zhang, Y., Person, M., Rupp, J., Ellett, K., Celia, M., Gable, C.W., **Bowen, B.B.**, Evans, J., Bandilla, K., Mozley, P., Dewers, T., and Elliot, T., 2013, Hydrogeologic controls on induced seismicity in crystalline basement rocks due to fluid injection into basal reservoirs: Groundwater, doi: 10.1111/gwat.12071

27. Benison, K.C. and **Bowen, B.B.**, 2013, Extreme sulfur-cycling in acid brine lake environments of Western Australia: Chemical Geology, v. 351, p. 154-167.

26. VanDeVelde, J.H., Bowen, G.J., Passey, B.H., and **Bowen, B.B.**, 2013, Climatic and diagenetic signals in the stable isotope geochemistry of dolomitic paleosols spanning the Paleocene-Eocene boundary: Geochimica et Cosmochimica Acta, v. 109, p. 254-267.

25. Lovell, T.R., and **Bowen, B.B.**, 2013, Fluctuations in sedimentary provenance of the Upper Cambrian Mount Simon Sandstone, Illinois Basin, United States: Journal of Geology, v. 121, p. 129-154.

24. Neufelder, R.J., **Bowen, B.B.**, Lahann, R.W., and Rupp, J.A., 2012, Lithologic, mineralogical, and petrophysical characteristics of the Eau Claire Formation: Complexities of a carbon storage system seal: Environmental Geosciences, v. 19, p. 81-104.

23. **Bowen, B.B.,** Bell, J., and Story, S., 2012b, Remote and field-based imaging spectroscopy for the diagenetic mineralogy of sedimentary rocks. In Quantitative Mineralogy and Microanalysis of Sediments and Sedimentary Rocks (P. Sylvester, ed.). Mineralogical Association of Canada Short Course Series Volume 42, St. John’s NL, May 2012, p. 115-132.

22. **Bowen, B.B.**, Benison, K.C., and Story S., 2012a, Early diagenesis by modern acid brines in Western Australia and implications for the history of sedimentary modification on Mars: Society for Sedimentary Geology Special Publication, Mars Sedimentology, eds., Grotzinger, J. and Milliken R., SEPM Special Publication No. 102, p. 229-252.

21. Chan, M.A., Potter, S., **Bowen, B.B.,** Parry, W.T. Barge, L., Seiler, W., Peterson, E., and Bowman, J., 2012, Characteristics of ferric oxide concretions on Earth and Mars: Society for Sedimentary Geology Special Publication, Mars Sedimentology, eds., Grotzinger, J. and Milliken, R, SEPM Special Publication No. 102, p. 253-270.

20. **Bowen, B.B.**, Ochoa, R., Wilkens, N.D., Brophy, J., Lovell, T.R., Fischietto, N., Medina, C., and Rupp, J., 2011, Depositional and diagenetic variability within the Cambrian Mount Simon Sandstone: Implications for carbon dioxide sequestration: Environmental Geosciences, v.18, p. 69-89.

19. Story, S., **Bowen, B.B.**, Bension, K.C., and Schulze, D., 2010, Authigenic phyllosilicates in modern acid saline lake sediments and implications for Mars: Journal of Geophysical Research – Planets, v. 115, E12012.

18. Bell, J.H., **Bowen, B.B.**, and Martini, B., 2010, Imaging spectroscopy of jarosite cement in the Jurassic Navajo Sandstone: Remote Sensing of Environment, v. 114, p. 2259-2270.

17. **Bowen, B.B.** and Benison, K.C., 2009, Geochemical characteristics of naturally acid and alkaline saline lakes in southern Western Australia: Applied Geochemistry, v. 24, p. 268-284.

16. Schreiner, K.M., Filley, T.R., Blanchette, R.A., **Bowen, B.B.**, Bolskar, R.D., Hockaday, W.C., Masiello, C.A., and Raebiger, J.W., 2009, White-rot basidiomycete-mediated decomposition of C60 fullerol: Environmental Science and Technology, v. 49, p. 3162-3168.

15. Bowen, G.J. and **Bowen, B.B.**, 2008, Mechanisms of PETM global change constrained by a new record from central Utah: Geology, v. 36, p. 379-382.

14. **Bowen, B.B.**, Benison, K.C., Oboh-Ikuenobe, F., Story, S., and Mormile, M., 2008, Active hematite concretion formation in modern acid saline lake sediments, Lake Brown, Western Australia: Earth and Planetary Science Letters, v. 268, p. 52-63.

13. Bowen, G.J., Andrews, D., and **Bowen, B.B.**, 2008, Paleoenvironmental isotope geochemistry and paragenesis of lacustrine and palustrine carbonates, Flagstaff Formation, Central Utah, USA: Journal of Sedimentary Research, v. 78, p. 162-174.

12. Benison, K.C., **Bowen, B.B.**, Oboh-Ikuenobe, F.E., LaClair, D.A., Jagniecki, E.A., Story, S.L., Mormile, M.R., and Hong, B.Y., 2007, Sedimentology of acid saline lakes in southern Western Australia: Newly described processes and products of an extreme environment: Journal of Sedimentary Research, v. 77, p. 366-388.

11. **Bowen, B.B.**, Martini, B.A., Chan, M.A., and Parry, W.T., 2007, Reflectance spectroscopic mapping of diagenetic heterogeneities and fluid flow pathways in the Jurassic Navajo Sandstone: American Association of Petroleum Geologists Bulletin, v. 91, p. 173-190.

10. Parry, W.T., Forster, C.B., Evans, J.P., **Bowen, B.B.**, and Chan, M.A., 2007, Geochemistry of CO2 sequestration in the Jurassic Navajo Sandstone, Colorado Plateau, Utah: Environment Geosciences, v. 14, p. 91-109.

9. Benison, K.C. and **Bowen, B.B.**, 2006, Acid saline lake systems give clues about past environments and the search for life on Mars: Icarus, v. 183, p. 225-229.

8. Souza-Egipsy, V., Ormö, J., **Bowen, B.B.,** Chan, M.A. and Komatsu, G., 2006, Ultrastructural study of iron oxide precipitates: Implications for the search for biosignatures in the Meridiani hematite concretions, Mars: Astrobiology, v. 6, no. 4, p. 527-545.

7. **Beitler, B.**, Parry, W.T., and Chan, M.A., 2005, Fingerprints of fluid flow: Chemical diagenetic history of the Jurassic Navajo Sandstone, southern Utah: Journal of Sedimentary Research, v. 75, p. 545-559.

6. Chan, M.A., **Bowen, B.B.**, Parry, W.T., Ormo, J. and Komatsu, G., 2005, Red Rock and Red Planet Diagenesis: Comparisons of Earth and Mars concretions: Geological Society of America Today, v. 15, p. 4-10.

5. Coe, R.S., Stock, G.M., Lyons, J.J., **Beitler, B**., and Bowen, G.J., 2005, Yellowstone hotspot volcanism in California? A paleomagnetic test of the Lovejoy flood basalt hypothesis: Geology, v. 33, p. 697-700.

4. Chan, M.A., **Beitler, B.**, Parry, W.T, Ormö, J. and Komatsu, G., 2004, A possible terrestrial analogue for hematite concretions on Mars: Nature, v. 429, p. 731-734.

3. Ormö, J., Komatsu, G., Chan, M.A., **Beitler, B.**, and Parry, W.T., 2004, Geological features indicative of processes related to the hematite formation in Meridiani Planum and Aram Chaos, Mars: A comparison with diagenetic hematite deposits in southern Utah, USA: Icarus, v. 171, p. 295-316.

2. Parry, W.T., Chan M.A. and **Beitler, B.**, 2004, Chemical Bleaching Indicates Episodes of Fluid Flow in Deformation Bands in Sandstone: American Association of Petroleum Geologists Bulletin, v. 88, p. 175-191.

1. **Beitler, B.**, Chan, M.A., and Parry, W.T., 2003, Bleaching of Jurassic Navajo Sandstone on Colorado Plateau Laramide Highs: Evidence of Exhumed Hydrocarbon Supergiants?: Geology, v. 31, p. 1041-1044.

**Other Publications**

Schniter, E., Macfarlan, S.J., Garcia, J.J., Ruiz-Campos, G., Beltran D.G., **Bowen, B.B.**, and Lerback, J.C., 2020, Age Appropriate Wisdom? Ethnobiological Knowledge Ontogeny in Pastoralist Mexican Choyeros: ESI Working Paper 20-31.

Ehleringer, J., Daniel, S., Torti, S., **Bowen, B.B.** and Parks, T, 2016, Embedded in Nature: The University of Utah Field Stations, ISBN 978-0-692-81221-1.

Bell, J., **Bowen, B.B**., and Martini, B., 2010, Spectroscopy of sulfates, clays, and iron oxides in the Jurassic Navajo Sandstone: Proceedings of the 2010 IEEE International Geoscience and Remote Sensing Symposium, July 25, 2010, p. 227-229.

Ogg, J. and **Bowen, B.B.**, 2009, The Oceans: EAS 104, Kendall Hunt Publishing Company, 164p.

Chan, M.A., Parry, W.T., **Bowen, B.B.,** 2006, Red Rock Sandstone Color and Concretions of Grand Staircase-Escalante National Monument: Jurassic Navajo Sandstone Examples of Groundwater Flow, Science Resources, and Analogs to Mars. Proceedings of the Learning from the Land: Grand Staircase-Escalante National Monument Science Symposium, September 12-14, 2006, Cedar City, Utah.

Chan, M.A., **Beitler, B.**, and Parry, W.T., 2005, The Navajo Sandstone color palette and marvelous marbles: Canyon Legacy, Moab Museum publication, v. 54, p. 13-16.

**Beitler, B.**, Chan, M.A., Parry, W.T., Ormo, J. and Komatsu, G., 2004, Diagenetic analogs to hematite regions on Mars: examples from Jurassic sandstones of Southern Utah, USA: in Proceedings of SPIE Volume 5555, Instruments, Methods, and Missions for Astrobiology VIII, eds., Hoover, R.B., Levin, G.V., and Rozanov, A.Y., SPIE, Bellingham, WA, p. 162-169.

**First Author Meeting Presentations with Published Abstracts** *(student authors underlined)*

**Bowen, B.B.** 2023, Geomorphic and sedimentologic expressions of exposed Lake Powell sediment in the reservoir-affected zones of the Colorado River and San Juan River Corridors: in T104. Sources, Sinks, Transport, and Storage of Sediment in Fluvial Systems, Geological Society of America National Meeting.

**Bowen, B.B.,** 2018, Adaptation, Mitigation, and Biophysical Feedbacks in the Changing Bonneville Salt Flats Lake Bonneville Geologic Conference, Utah Geological Society, Salt Lake City Utah, October 2018.

**Bowen, B.B.,** Harman, C.J., Kipnis, E.L., Liu, T., Bernau, J.A. Horel, J., 2017, Hydrologic connections between environmental and societal change at the Bonneville Salt Flats, Utah, in Hydrology, Society, and Environmental Change: Coupled Human-Water Dynamics Across Scales, American Geophysical Union National Meeting.

**Bowen, B.B.,** Pechmann, J., Kipnis, E., Lerback, J.C., Stinson, H., Wetterlin, L., Bernau, J.A., 2017, Evaluating Change at the Bonneville Salt Flats, Geological Society of America National Meeting.

**Bowen, B.B.**, 2016, Timescales and drivers of change at the Bonneville Salt Flats: Geological Society of America National Meeting.

**Bowen, B.B.,** 2015,Impacts of pore to regional scale variations in authigenic composition and texture on anthropogenically influenced fluid-rock interactions: American Geophysical Union Annual Meeting.

**Bowen, B.B.,** 2014, Sedimentology, mineralogy, geochemistry, and geomicrobiology of the Bonneville Salt Flats: Geologic Society of America National Meeting.

**Bowen, B.B.,** 2013, Interdisciplinary global change and sustainability education integrating earth and human systems: Geologic Society of America National Meeting.

**Bowen, B.B.,** Story, S., Benison, K.C., Oboh-Ikuenobe, 2012, Intense weathering of Archean basement associated with acid saline lakes in Western Australia: American Geophysical Union National Meeting.

**Bowen, B.B.,** Lovell, T., Neufelder, R., Rupp, J., Brophy, J., Lahann, R., 2011, Mineralogy and geochemistry of a potential CO2 sequestration reservoir and seal system, Illinois Basin, USA: Goldschmidt Conference abstract, Mineralogical Magazine, v. 75, p. 566.

**Bowen, B.B.,** Ochoa, R., Wilkens, N.P, Neufelder, R., Lahann, R., Brophy, J., Medina, C., and Rupp, J., 2010, Distribution and abundance of potentially reactive minerals with geologic CO2 sequestration in the Mount Simon - Eau Claire sedimentary system: AAPG Eastern Section Meeting, Kalamazoo, MI, September 25-29, 2010.

**Bowen, B.B.,** Benison, K.C., Oboh-Ikuenobe, F., Sanchez Botero, C.A., and Story, S., 2009, Preliminary analyses of ten new acid saline lake cores in Western Australia: Sedimentological, palynological, mineralogical, and geochemical analysis of spatial and temporal environmental changes in extreme environments: GSA Abstracts with Programs.

**Bowen, B.B.,** Rupp, J., Ochoa, R. and Fischietto, N., 2009, Depositional and Diagenetic Variability within the Cambrian Mount Simon Sandstone in the Illinois Basin: Implications for Carbon Dioxide Sequestration: AAPG Eastern Section Meeting, Evansville, Indiana, September 20-22, #90095.

**Bowen, B.B.**, Bell, J.H., Story, S., and Benison, K.C., 2008, Spectral properties of chemical sediments in modern acid saline lakes and implications for Mars: GSA Abstracts with Programs Vol. 40, Abstract 148321.

**Bowen, B.B.**, Benison, K.C., 2008, Sulfate mineral assemblages from Mars-analog environments I: Indicators of general environmental conditions: Goldschmidt meeting, Geochim. Cosmochim. Acta, v. 72, 12S, A106.

**Bowen, B.B**., Benison, K.C., and Chan, M.A., 2007, How to make a martian sedimentary rock: Diversity in terrestrial processes leading to Mars analog features: GSA Abstracts with Programs Vol. 39, No. 6, Abstract No. 131678.

**Bowen, B.B.**, Benison, K.C., Oboh-Ikuenobe, F., and Mormile, M., 2007, Hematite concretions from modern acid saline lake sediments as geochemical and astrobiological tombs: 7th International Conference on Mars, Lunar and Planetary Institute, Pasadena, CA.; LPI Contributions, Report 1353, Abstract 3175.

**Bowen, B.B.**, & Benison, K.C., 2006, Chemical diversity of natural waters in the acid saline systems of south Western Australia: Geological Society of America Annual Meeting, Philadelphia, PA., GSA Abstracts with Programs vol. 38, no.7, p. 103.

**Bowen, B.B.**, Benison, K., Oboh-Ikuenobe, F., & Mormile, M., 2005, Hypersaline acid lakes in southwestern Australia as depositional and early diagenetic analogs for the Burns Formation on Mars: Geological Society of America Annual Meeting, Salt Lake City, UT.

**Bowen, B.B.,** Benison, K.C., Mormile, M.R., & Oboh-Ikuenobe, F.E., 2005, Preliminary geology, geochemistry, and biology of acid saline lakes in Western Australia and Victoria:  9th Conference, International Society for Salt Lake Research, Perth, Australia, p. 59-60.

**Beitler, B**., Chan, M.A., & Parry, W.T., 2004, Geochemical and hyperspectral analysis of diagenetic alteration in the Jurassic Navajo Sandstone, southern Utah: Geological Society of America Annual Meeting, Denver, CO.

**Beitler, B.**, Chan, M.A., Parry, W.T., Ormö, J. & Komatsu, G., 2004, Spectral analysis of Chemical diagenesis related to concretionary iron oxide deposits in the Jurassic Navajo Sandstone: Implications for paleo-groundwater geochemistry on Mars: Geologic, hydrologic, and climatic evolution and the implications for life: Lunar and Planetary Institute conference, Jackson Hole, WY.

**Beitler, B.**, Ormö, J., Komatsu, G., Chan, M.A., & Parry, W.T., 2004, Geomorphic and Diagenetic Analogs to Martian Knobs, Bleaching, and Hematite Deposits in Jurassic Sandstones of Southern Utah, USA: Lunar and Planetary Science XXXV, Abstract 1289.

**Beitler, B.**, Chan, M.A., & Parry, W.T., 2003, Paleo-reservoir characteristics and diagenetic bleaching in the Jurassic Navajo Sandstone, Southern Utah: American Association of Petroleum Geologist Annual Meeting, Salt Lake City, UT.

**Beitler, B.**, Chan, M.A., & Parry, W.T**.**, 2002, Field mapping and multispectral analysis of Jurassic Navajo Sandstone color and iron mineralization, Grand Staircase –Escalante National Monument, Utah: Geological Society of America Annual Meeting, Denver, CO.

**Exhibition**

2021, Wendy Wischer and Brenda Bowen, Evaporated: Explorations in Art, Science and Salt (art and science exhibit with artist Wendy Wischer), May 19- Sept 17, Granary Arts, Ephraim, UT

https://www.granaryarts.org/wendy-wischer-brenda-bowen-evaporated-explorations-in-art-science-and-salt

**Invited Presentations**

2022, University of Utah, National Advisory Council

2022, Utah Women in Higher Education faculty summit, Utah Valley University

2022, University of California, Santa Cruz department of Earth and Planetary Sciences seminar

2021, Utah Valley University department of Earth Sciences seminar

2019, OSHER (audience of 550 participants)

2018, Historical Society of Utah

2018, UU Geology and Geophysics department open house (audience of ~400 public)

2017, Steger Center Green Bag, School of Law, UU, Dynamics of the Changing Bonneville Salt Flats

2017, Entrepreneurial Faculty, UU, displacement of valued landscapes

2017, American Association of University Women, Utah Convention, Overcoming Barriers to Workplace Success

2017, Hinckley Policy Institute, Campus Community Dialogue, The Economy and the Environment

2015, Alta Club and Friends of Alta, Geology and Mining History of the Wasatch Mountains

**University Teaching Experience**

***At the University of Utah (2012-current):***

* Geology Field Camp Capstone (GEO 4510: 2023)
* Field Methods (GEO 4500: 2021, 2022)
* The Oceans (GEO 3800: 2014-2020, 2022, 2024)
* Global Changes and Society (SUST 6000: 2013-2017)
* Global Change and Sustainability Seminar (SUST 6800: 2012-2024)
* Sustainability STEM Undergraduate Seminar (UGS 1800, 2014-2018)
* Energy and the Environment Praxis Lab (HONOR 3700-002: 2015-2016)

***At Purdue University (2007-2012):***

* Introduction to Earth Science + lab (EAS 118: 2012)
* Oceanography (EAS 104: 2008- 2011)
* Topics in Geologic Remote Sensing (EAS 591B: 2008, 2011)
* Sedimentation and Stratigraphy + lab (EAS 474: 2009)
* Topics in CO2 Sequestration (EAS 591: 2009)
* Diagenesis (EAS 591: 2009)
* College of Science Dean’s Honors Seminar (SCI 100: 2009)

**Graduate Students and Postdocs Advised**

* Christine Rumsey, current, Ph.D. (Universty of Utah), Biogeochemical cycling in saline ecosystems
* Sam Bagge, current, M.S. (University of Utah), Lake Powell sediments
* Mark Radwin, current, Ph.D. (University of Utah), M.S. 2023, Remote sensing and spectroscopy of saline playas
* Jeremiah Bernau, Ph.D. 2022 (University of Utah), Sedimentology, diagenesis, and geomicrobiology of Bonneville Salt Flats
* Evan Kipnis, Ph.D. 2021 (University of Utah), Hydrogeology of the Bonneville Salt Flats
* Jory Lerback, Ph.D. 2021 (University of Utah), Geochemistry of Springs in the West Desert
* Thomas Lovell, Ph.D. 2015 (Purdue University), Detrital records of North American tectonism
* Alexander Gonzalez, M.S. 2013 (University of Utah), Geochemical and mineralogical evaluation of CO2-brine-rock experiments: Characterizing porosity and permeability in the Cambrian Mount Simon Sandstone
* Stacy Story, Ph.D. 2012, (Purdue University), Mineralogy of acid saline lake systems in Western Australia
* Julianne Bell, 2011, Ph.D. (Purdue University), Spectroscopy, mineralogy, and morphology of a jarosite-bearing landmark butte within the Jurassic Navajo Sandstone
* Nathan Wilkens, Postdoctoral Researcher 2010-2011, Sedimentology of the Mount Simon Sandstone
* Ryan Neufelder, M.S. 2011 (Purdue University), Petrographic, mineralogical, and geochemical evidence of diagenesis in the Eau Claire Formation, Illinois Basin: Implications for sealing capability in a CO2 sequestration system
* Raul Ochoa, M.S. 2010 (Purdue University), Porosity Characterization and Diagenetic Facies Analysis of the Cambrian Mount Simon Sandstone: Implications for a Regional CO2 Sequestration Reservoir
* Nicholas Fischietto, M.S. 2009 (Purdue University), Lithofacies and Depositional Environments of the Cambrian Mount Simon Sandstone in the Northern Illinois Basin: Implications for CO2 Sequestration

**Graduate Students – Advisory Committee Member**

* Mikelia Heber, MS 2023, University of Utah, Geology and Geophysics (advisor: Kathleen Ritterbush)
* Eric Humphrey, PhD 2023, University of Utah, Geology and Geophysics (advisor: Kip Solomon)
* Hannah Hartley, MS 2022, University of Utah, Geology and Geophysics (advisor: Cari Johnson)
* Raul Ochoa, PhD 2023, University of Utah, Geology and Geophysics (advisor: Lauren Birgenheier)
* Brenden Femal, PhD 2022, University of Utah, Geology and Geophysics (advisor: Gabe Bowen)
* Robin Fults, MS 2020, University of Utah, Geology and Geophysics (advisor: Lauren Birgenheier)
* Nicole Rinaldi, MS 2020, University of Utah, Geology and Geophysics (advisor: Diego Fernandez)
* Michael Blacketer, PhD 2020, Clemson University, Department of Parks, Recreation, and Tourism Management; Department of Forestry and Environmental Conservation (advisor: Matthew Brownlee)
* Annie Putnam, PhD 2019, University of Utah, Geology and Geophysics (advisor: Gabe Bowen)
* Courtney Wagner, PhD current, University of Utah, Geology and Geophysics (advisor: Pete Lippert)
* Casey Duncan, PhD current, University of Utah, Geology and Geophysics (advisor: Margie Chan)
* Crystal Tulley-Cordova, PhD 2018, University of Utah, Geology and Geophysics (advisor: Gabe Bowen)
* Logan Frederick, PhD 2018, University of Utah, Geology and Geophysics (advisor: Bill Johnson)
* Danielle Ward, MS 2017, University of Utah, Geography (advisor: Andrea Brunelle)
* Olivia Miller, PhD 2017, University of Utah, Geology and Geophysics (advisor: Kip Solomon)
* David Wheatley, PhD 2017, University of Utah, Geology and Geophysics (advisor: Margie Chan)
* Cory Johnson, MS 2016, University of Utah, Geology and Geophysics (advisor: Lisa Stright)
* Brennan Young, MS 2016, University of Utah, Geology and Geophysics (advisor: Margie Chan)
* David Blaire, PhD 2015, Purdue University, Planetary Science (advisors: Jay Melosh)
* Zachary Magdol, MS 2014, University of Utah, Civil & Environmental Engineering (advisor: Christine Pomeroy)
* Carlos Botero, PhD 2013, Missouri University of Science and Technology, palynology of acid saline lakes (advisor: Francesca Oboh-Ikuenobe)
* Justin VandeVelde, PhD 2012, Purdue University, isotope geochemistry (advisor: Gabe Bowen)
* Fan Wang, PhD 2012, Purdue University, atmospheric science and geochemistry (advisor: Greg Michalski)
* Heather Houton, MS 2010, Purdue University, geoscience education (advisor: Eric Riggs)
* Greg Nielsen, PhD 2010, University of Utah, geology (advisor: Margie Chan)

**Students Advised for Research Experiences within Interdisciplinary Graduate Programs**

* S. Hoops, 2023, Master of Science for Secondary School Teachers, Weather events at BSF
* H. Baggs, 2023, Master of Science for Secondary School Teachers, Sediment change in Lake Powell
* K. Wilson, 2023, Master of Science for Secondary School Teachers, Sediment change in Lake Powell
* J. Pechmann, 2017, Professional Masters of Science and Technology, 3D GIS mapping of BSF
* S. Combs, 2017, Professional Masters of Science and Technology, Solar energy elementary education
* C. Penrod, 2016, Master of Science for Secondary School Teachers, Isotope geochemistry of BSF
* T. Edwards, 2015, Professional Masters of Science and Technology, Sustainable aquaponics
* J.M. Hansen, 2013, Professional Masters of Science and Technology, Red Butte Creek

**Undergraduate Students supervised on Research Projects**

University of Utah (2013-current) - Jillian Turner (funding through Undergraduate Research Opportunity Program, UROP), Wren Raming (UROP, thesis), Savannah Cunningham, Olivia Watkins (UROP), Bradley Munk, Brad Kirk, Nathan Anderson (RBC), Greg Gavin (RBC), Memory Ware, Hannah Stinson (UROP), Lily Wetterlin (UROP, SCIF), Tyler Young (Honors thesis), Amanda Jayo, Emily Kam (UROP), Gabrielle Regenhardt (iUTAH iFellow), Sean Hutchings (UROP), Mark Radwin, Samantha Bagge (UROP), Michelle Williams (Capstone project), Annie Matzke, Nick Bailey, Ryan Cocke

**Peer Review Activities**

## 2005 - present: Reviewer for journals - Science, Geology, Geophysical Research Letters, Geochimica et Cosmochimica Acta, Earth and Planetary Science Letters, Geological Society of America Bulletin, Journal of Sedimentary Research,Sedimentology, Geofluids, Remote Sensing, Palios, Mathmatical Geoscience, Sensors, Rocky Mountain Geology, Applied Geochemistry

## 2009 – present: Reviewer for federal funding programs – NSF Low Temperature Geochemistry, NSF Sedimentary Geology and Paleobiology, NSF Coupled Natural Human Systems, NSF DISES

## NSF Frontiers in Research in Earth Science, The International Science and Technology Center (U.S. Civilian Research and Development Foundation), NASA Astrobiology Institute, NASA Education and Outreach, NASA Mars Data Analysis Program, NASA Mars Fundamental Research, NASA Postdoctoral Program, American Chemical Society

**Service and Synergistic Activities**

* Associate Chair of Geology and Geophysics, University of Utah (2020-2022)
* Co-Chair of University of Presidential Utah Climate Commitment Task Force (2019-2023)
* External reviewer for University of Arkansas graduate sustainability certificate program (2019)
* Elected member of the National Academy of Science Board for Earth Science Resources (2019-2023)
* Co-chaired Fall 2021 GSA session “T69. Out of this world Lakes” on sedimentology, mineralogy, geochemistry, and/or habitability of lakes on Mars and other planets and moons in the Solar System, as well as extreme terrestrial lakes that serve as analogs for extraterrestrial lakes.
* Associate Editor of Journal of Sedimentary Research (2018-2020)
* Guest instructor for the Master Recycler Program in the Salt Lake City Corporation Waste and Recycling Division in the Department of Sustainability (annually, 2016-2019)
* Co-chaired Fall 2015 AGU session “Secondary Mineralization in Bedrock: Diagenesis, Cementation, Hydrothermal Precipitation, and the Interpretation of Paleofluid Flow”
* Serve on the University of Utah Sustainability Leadership Team, President’s Sustainability Advisory Board, and Environmental and Sustainability Studies Program Executive Committee
* Led development of new Interdisciplinary Graduate Certificate in Sustainability; collaboration between GCSC, Sustainability Office, and the Graduate School
* Leader in cross-campus efforts related to recognition of Red Butte Creek in Campus Master Plan, and integration of creek into academic mission of the U (included leadership of “Riparian Corridor Steering Committee”, presentations to President’s Cabinet and the Board of Trustees, faculty advisor for ASUU Friends of Red Butte Creek student group, etc.)
* Volunteer guest teacher K-12 science enrichment
* Helped to coordinate SLC elementary school science fair judging

## Geological Society of America Sedimentary Geology Division Representative, Annual National Meeting Joint Technical Program Committee (2010-2011)

## Member of SEPM Award Nominating Committee (2010)

**Professional Affiliations (current and previous)**

* Geological Society of America
* Society for Sedimentary Geology
* American Geophysical Union
* Geochemical Society
* Association for Women Geologists
* National Association of Geoscience Teachers

**Select Research Media Coverage**

* Rolling Stone, Feb. 18, 2024, Humans killed Cataract Canyon. It brought itself back to life, https://www.rollingstone.com/culture/culture-features/lake-powell-cataract-canyon-rapids-returning-1234959159/
* Salt Lake Tribune, Feb. 3, 2024, Decadeslong effort to regrow Utah’s vanishing salt flats may have backfired, by Leia Larsen, https://www.sltrib.com/news/environment/2024/02/05/effort-regrow-utahs-vanishing-salt/
* The New York Times, Nov. 21, 2019, Where Cars Try to Hit Mach 1, the Salt of the Earth Is Crumbling, By Paul Stenquist, <https://www.nytimes.com/2019/11/21/business/bonneville-salt-flats.html>
* CBS news, October 5, 2019, A bitter debate rages over the future of Utah's Bonneville Salt Flats, <https://www.cbsnews.com/news/utah-bonneville-salt-flats-racing-debate-rages-over-its-future-2019-10-05/>