

James J. Butler, Jr.

Senior Scientist, [Geohydrology](#), Kansas Geological Survey

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Education

- B.S. (Geology), College of William and Mary, 1978
- M.S. (Applied Hydrogeology), Stanford University, 1982
- Ph.D. (Applied Hydrogeology), Stanford University, 1987

Employment

- Geohydrology Section, Kansas Geological Survey, 1986-present
- Cox Visiting Professor, Dept. of Geophysics, Stanford University, April-June 2017.
- Visiting Researcher, Hydrogeology Group, Universitat Politècnica de València, Valencia, Spain, Sept-Dec. 2012, March-June 2022.
- Courtesy Faculty Member, Dept. of Geology, University of Kansas, 1988-present
- Visiting Scientist, Center of Applied Geoscience, University of Tuebingen, Germany, June-Aug. 2003
- Visiting Scientist, Sandia National Laboratory, Jan.-June 1995

Interests and Expertise

- [Well hydraulics](#)
- [Direct-push methods for hydrostratigraphic characterization](#)
- The future of aquifers supporting irrigated agriculture
- Ground-water flow and transport in heterogeneous formations
- [Stream-aquifer interactions](#)
- [Phreatophytes](#)

Selected Professional Activities and Awards

- M. King Hubbert Award, National Ground Water Association (2020)
- President, International Commission on Ground Water, International Association of Hydrological Sciences (IAHS), 2013-2014
- Elected Member, Board of Directors, Scientists and Engineers Division, National Ground Water Association, 2010-2013
- Pioneers in Groundwater Award, American Society of Civil Engineers--Environmental and Water Resources Institute (2009).
- 2008 Editors' Citation for Excellence in Refereeing for Water Resources Research
- 2007 Henry Darcy Distinguished Lecturer, National Ground Water Association.
- Member, Groundwater Committee, American Geophysical Union, 1994-2009 (Chair 2004-2006).
- Associate Editor, Hydrological Sciences Journal, Aug. 2011-Aug. 2012
- Associate Editor, Hydrogeology Journal, April 2006-Dec. 2009
- Associate Editor, Ground Water, Jan. 2002-Dec. 2017
- Associate Editor, Journal of Hydrology, Jan. 2000-Dec. 2005
- Associate Editor, Water Resources Research, Oct. 1995-Dec. 2001

Selected Recent Presentations

- Butler, J.J., Jr., Testimony to the Kansas House Committee on Water, Topeka, KS, Jan. 19, 2023 (video at <https://www.youtube.com/watch?v=f7m987t0ARM> beginning at 69 minutes).
- Butler, J.J., Jr., Invited panelist presentation, Groundwater Recharge and Flow Workshop, National Academies of Sciences, Engineering, and Medicine, Washington, D.C., July 27, 2019 (video at <https://youtu.be/uLs6unlxCNw>).
- Butler, J.J., Jr., The High Plains aquifer in Kansas: Current status and future prospects, Science on Screen, Salina Arts Center Cinema, Salina, KS, April 1, 2019 (video at <https://youtu.be/jVvFxiw0rFE>).

Selected Recent Publications

- **Butler, J.J., Jr.**, and C.K. Johnson, Groundwater depletion: A global challenge for intergenerational equity, *Interpretation*, v. 78, no. 1, doi: 10.1177/00209643231201998, 2024 (invited)
- **Butler, J.J., Jr.**, and D.O. Whittemore, Groundwater depletion reduces drought resiliency, *Nature Water*, v. 2, pp. 10-11, doi: 10.1038/s44221-023-00185-3, 2024 (invited).
- Whittemore, D.O., **J.J. Butler, Jr.**, G.C. Bohling, and B.B. Wilson, Are we saving water? Simple methods for assessing the effectiveness of groundwater

conservation measures, *Agricultural Water Management*, 287, 108408, doi: 10.1016/j.agwat.2023.108408, 2023 [[available online](#)].

- **Butler, J.J., Jr.**, G.C. Bohling, S.P. Perkins, D.O. Whittemore, G. Liu, and B.B. Wilson, Net inflow: An important target on the path to aquifer sustainability, *Groundwater*, v. 61, no. 1, doi: 10.1111/gwat.13233, 2023.
- Marston, L.T., S. Zipper, S.M. Smith, J.J. Allen, **J.J. Butler**, S. Gautam, and D.J. Yu, The importance of fit in groundwater self-governance, *Environ. Res. Lett.*, 17, 111001, doi: 10.1088/1748-9326/ac9a5e, 2022 [[available online](#)].
- Glose, T.J., S. Zipper, D.W. Hyndman, A.D. Kendall, J.M. Deines, and **J.J. Butler, Jr.**, Quantifying the impact of lagged hydrological responses on the effectiveness of groundwater conservation, *Water Resour. Res.*, v. 58, doi: 10.1029/2022WR032295, 2022.
- Yang, W., D. Long, B.R. Scanlon, B. Burek, C. Zhang, Z. Han, **J.J. Butler, Jr.**, Y. Pan, X. Lei, and Y. Wada, Human intervention will stabilize groundwater storage across the North China Plain, *Water Resour. Res.*, v. 58, no. 2, doi: 10.1029/2021WR030884, 2022.
- Liu, G., B.B. Wilson, G.C. Bohling, D.O. Whittemore, and **J.J. Butler, Jr.**, Estimation of specific yield for regional groundwater models: Pitfalls, ramifications, and a promising path forward, *Water Resour. Res.*, v. 58, no. 1, doi: 10.1029/2021WR030761, 2022 [[available online](#)].
- **Butler, J.J., Jr.**, J.J. Gomez-Hernandez, D. Perrone, and D. Hyndman, Introduction to special section: The quest for sustainability of heavily stressed aquifers at regional to global scales, *Water Resour. Res.*, v. 57, no. 8, doi: 10.1029/2021WR030446, 2021 [[available online](#)].
- **Butler, J.J., Jr.**, S. Knobbe, E.C. Reboulet, D.O. Whittemore, B.B. Wilson, and G.C. Bohling, Water well hydrographs: An underutilized resource for characterizing subsurface conditions, *Groundwater*, v. 59, no. 6, 808-818, doi: 10.1111/gwat.13119, 2021.
- Bohling, G.C., **J.J. Butler Jr.**, D.O. Whittemore, and B. B. Wilson, Evaluation of data needs for assessments of aquifers supporting irrigated agriculture, *Water Resour. Res.*, v. 57, no. 4, doi: 10.1029/2020WR028320, 2021 [[available online](#)].
- Deines, J.M., A.D. Kendall, **J.J. Butler, Jr.**, B. Basso, and D.W. Hyndman, Combining remote sensing and crop models to assess the sustainability of stakeholder-driven groundwater management in the US High Plains Aquifer, *Water Resour. Res.*, v. 57, no. 3, doi: 10.1029/2020WR027756, 2021 [[available online](#)].
- Majumdar, S., R. Smith, **J.J. Butler Jr.**, V. Lakshmi, Groundwater withdrawal prediction using integrated multi-temporal remote sensing datasets and machine learning, *Water Resour. Res.*, v. 56, no. 11, doi: 10.1029/2020WR028059, 2020 [[available online](#)].

- **Butler, J.J., Jr.**, G.C. Bohling, D.O. Whittemore, and B.B. Wilson, Charting pathways towards sustainability for aquifers supporting irrigated agriculture, *Water Resour. Res.*, v. 56, no. 10, doi: 10.1029/2020WR027961, 2020 [[available online](#)].
- **Butler, J.J., Jr.**, G.C. Bohling, D.O. Whittemore, and B.B. Wilson, A roadblock on the path to aquifer sustainability: Underestimating the impact of pumping reductions, *Environ. Res. Lett.*, 15, 014003, doi:10.1088/1748-9326/ab6002, 2020 [[available online](#)].
- **Butler, J.J., Jr.**, *The Design, Performance, and Analysis of Slug Tests* (2nd edition), CRC Press, Boca Raton, 266 pp., 2019 [[Front Material and Introduction](#)] [[Online Info](#)] [[Errata](#)] [[Data for all examples](#)].
- Deines, J.M., A.D. Kendall, **J.J. Butler, Jr.**, and D.W. Hyndman, Quantifying irrigation adaptation strategies in response to stakeholder-driven groundwater management in the US High Plains Aquifer, *Environ. Res. Lett.*, 14, 044014, doi:10.1088/1748-9326/aafe39, 2019 [[available online](#)].
- **Butler, J.J., Jr.**, D.O. Whittemore, B.B. Wilson, and G.C. Bohling, Sustainability of aquifers supporting irrigated agriculture: A case study of the High Plains aquifer in Kansas, *Water International*, v. 43, no. 6, pp. 815-828, doi: 10.1080/02508060.2018.1515566, 2018 (invited) [[available online](#)].
- Griggs, B.W., and **J.J. Butler, Jr.**, Groundwater in the American West: How to harness hydrogeological analysis to improve groundwater management; *in*, *The Water Problem: Climate Change and Water Policy in the United States*, edited by P. Mulroy, Brookings Institution Press, 113-144, 2017.
- Gomez-Hernandez, J.J., **J.J. Butler, Jr.**, A. Fiori, D. Bolster, V. Cvetkovic, G. Dagan, and D. Hyndman, Introduction to special section on "Modeling highly heterogeneous aquifers: Lessons learned in the last 30 years from the MADE experiments and others", *Water Resour. Res.*, v. 53, 2581-2584, doi: 10.1002/2017WR020774, 2017.
- Bohling, G.C., G. Liu, P. Dietrich, and **J.J. Butler, Jr.**, Reassessing the MADE direct-push hydraulic conductivity data using a revised calibration procedure, *Water Resour. Res.*, v. 52, no. 11, pp. 8790-8985, doi: 10.1002/2016WR019008, 2016 [[available online](#)].
- **Butler, J.J., Jr.**, D.O. Whittemore, B.B. Wilson, and G.C. Bohling, A new approach for assessing the future of aquifers supporting irrigated agriculture, *Geophys. Res. Lett.*, v. 43, no. 5, pp. 2004-2010, doi:10.1002/2016GL067879, 2016 [[available online](#)].
- Whittemore, D.O., **J.J. Butler, Jr.**, and B.B. Wilson, Assessing the major drivers of water-level declines: New insights into the future of heavily stressed aquifers, *Hydrological Sciences Journal*, v. 61, no. 1, pp. 134-145, doi:10.1080/02626667.2014.959958, 2016 [[available online](#)].

- **Butler, J.J., Jr.**, R. Stotler, D.O. Whittemore, and E. Reboulet, Interpretation of water-level changes in the High Plains aquifer in western Kansas, *Ground Water*, v. 51, no. 2, pp. 180-190, doi: 10.1111/j.1745-6584.2012.00988.x, 2013.
- Liu, G., **J.J. Butler, Jr.**, E. Reboulet, and S. Knobbe, Hydraulic conductivity profiling with direct-push methods, *Grundwasser*, v. 17, no. 1, pp. 19-29, doi:10.1007/s00767-011-0182-9, 2012 [[available online](#)].
- Bohling, G. C., G. Liu, S. Knobbe, E. Reboulet, D.W. Hyndman, P. Dietrich, and **J.J. Butler, Jr.**, Geostatistical analysis of centimeter-scale hydraulic conductivity variations at the MADE site, *Water Resour. Res.*, v. 48, W02525, doi:10.1029/2011WR010791, 2012 [[available online](#)].