

Chad Andrew Wittkop

Curriculum Vitae

Department of Biochemistry, Chemistry, and Geology
Minnesota State University – Mankato
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Research Interests

Biogeochemistry, Geochemistry, Sedimentary Geology, Geobiology, Limnology, Glacial Geology

Education

University of Minnesota – Twin Cities	2004
Ph.D., Geology (minor in Quaternary Paleoecology), October 2004	
Thomas C. Johnson and Kerry Kelts, advisors	
Winona State University	1998
Bachelor of Science, Geology (minor in Chemistry), December 1998	

Professional Experience

Professor, Minnesota State University – Mankato	2020-
Associate Professor, Minnesota State University – Mankato	2012-2020
Assistant Professor, Minnesota State University – Mankato	2007-2012
Visiting Assistant Professor, University of Wisconsin – Eau Claire	2006-2007
Geologist, New Hampshire Geological Survey	2005-2006

Submitted Grant in Review

- NSF GEOPATHS, GP-UP: Enhancing Representation through Geoscience Outdoor Education in North Minneapolis (ERGEO), co-I with Dr. Beth Fisher (lead PI), \$307,917.

Funded Grants

- National Science Foundation, funded 2017-2020, Collaborative Research: Biosignatures of coupled iron and carbon cycling in ferruginous lakes (co-I with S. Katsev; E. Swanner lead PI), \$95,165 MSU portion, \$416,005 project total.
- National Science Foundation, funded 2017-2020, MRI: Acquisition of a laser confocal microscope for a multi-user core imaging facility supporting research and training in the sciences (Senior Personnel with five others, D. Sharlin lead PI), \$575,211.
- Minnesota State University, funded 2016-2017, Application of Radiogenic Isotope Analysis to Glacial Sediment Stratigraphy in Minnesota, \$4,999.
- Huron Mountain Wildlife Foundation, funded 2016-2017, Constraining pathways of methane, nutrient, and iron cycling in ferruginous Canyon Lake (lead PI with two others), \$1,500 MSU portion.
- Huron Mountain Wildlife Foundation, funded 2015-2016, “Carbon and iron cycling in Canyon Lake, an Archean ocean analog” (lead PI with two others), \$2,800.
- Minnesota State University Faculty Research Grant, funded 2014-2016, Constraining siderite precipitation mechanisms through the study of archived lake sediments, \$4,987.
- Purdue Rare Isotope Measurement Laboratory (PRIME) Seed Grant, funded 2009, Absolute Age Dating of the Pleistocene Boulder Mountains Ice Cap, Montana USA, \$9,450.

- National Science Foundation, funded 2009-2012, MRI: Acquisition of an X-ray Diffractometer for Research and Training Applications in a Multidisciplinary Setting (co-I with two others, S. Losh lead PI), \$226,290.
- Minnesota State University Faculty Research Grant, funded 2008, Geologic Mapping and Terrain Analysis in Western Montana, \$4,990.
- U.S. Geological Survey Cooperative Geologic Mapping Program, funded 2005, Geologic Mapping in New Hampshire (co-I with Dr. David Wunsch), \$52,400.

External Grant Writing Experience (since 2008)

Grant applications to the following organizations were submitted but not funded. Additional details available upon request.

- Legislative-Citizen Commission on Minnesota Resources
- National Science Foundation (multiple proposals as lead PI and co-I)
- University of Minnesota Water Resources Center (joint program with US Geological Survey)
- American Chemical Society Petroleum Research Fund (two projects, 3 proposals)
- NASA Astrobiology Institute (co-I on pre-proposal)

Professional Service, Outreach, and Awards

- Pod Leader, Unlearning Racism in Geoscience (URGE)
- Research and Sponsored Programs Faculty Grant Writing Consultant, 2019-2020
- Technical Program Chair, Geological Society of America, 2020 North-Central Section Meeting
- Co-recipient of 2018 Kirk Bryan Award, Geological Society of America, Quaternary Geology and Geomorphology Division (for article Gran et al. 2013, listed in publications below)
- Session co-chair, Geological Society of America North Central Section Meeting, 2018
- Minnesota State University Planning Committee, 2016-2018
 - Strategic Budget Planning, Academic Program Workgroup, 2016-2017
 - Strategic Budget Planning Sub-Committee 2017-2018
- Minnesota State University Research Committee, 2012-2013
- Personnel Committee, Department of Chemistry and Geology
 - Chair, 2012-2014; 2018-2019
 - Member, 2017-2020
- Field trip co-chair, 2011 Geological Society of America annual meeting
- Service on Minnesota State University Chemistry and Geology Department Committees (Budget, Strategic Planning, Library)
- American Geophysical Union, Outstanding Student Presenter Award Judge
- Minnesota State University Undergraduate Research Conference Judge
- MSU Geology Club Faculty Advisor
- Technical Reviewer: National Science Foundation, *Geobiology*, *Geological Society of America Bulletin*, *Marine Chemistry*, *Geomorphology*, *Journal of Paleolimnology*, *Palaeo3*, Minnesota Department of Natural Resources, New Hampshire Geological Survey
- Guest expert, *Minnesota Morning* radio show, KMSU.
- Educational presentations to numerous groups and organizations including Minnesota Minerals Education Workshop, MSU Moon Landing 50th Anniversary Event, Bold Futures STEM Camp, Mankato Middle Schools, Mankato Cub Scouts, Interstate State Park (Minnesota), Minnesota Department of Natural Resources, Friends of Minneopa State Park, and others.

Workshops and Professional Development

- Participant and Pod Leader, Unlearning Racism in Geoscience (URGE)
- Grant Training Center, NSF Grant Writing Workshop, 2013

- UCAR (Boulder, CO), New Tools for Process-Based LiDAR, 2010
- National Ground Water Association, Characterization and Remediation of Contaminated Ground Water in Fractured Rock, 2005
- UNH Extension, Introduction to ArcGIS, 2005

Publications and Products (* = supervised student author)

Wittkop, C., and Perignon, M., 2021. Decadal-scale evolution of the 2006 Suncook River avulsion, New Hampshire, USA. *Geomorphology*, v. 376, 107572.

Swanner, E.D., Lambrecht, N., Wittkop, C., Harding, C., Katsev, S., *Torgeson, J., and Poulton, S.W., 2020. The biogeochemistry of ferruginous lakes and past ferruginous oceans. *Earth-Science Reviews*, v. 211, 103430.

Cole, D.B., Planavsky, N.J., Longley, M., Boning, P., Wilkes, D., Wang, X., Swanner, E.D., Wittkop, C., Loydell, D., Busigny, V., Knudsen, A., and Sperling, E.A., 2020. Uranium isotope fractionation in non-sulfidic anoxic settings and the global uranium isotope mass balance. *Global Biogeochemical Cycles*, doi: 10.1029/2020GB006649

Wittkop, C., Swanner, E., *Grengs, A., Lambrecht, N., Fakrhaee, M., Myrbo, A., Bray, A., Poulton, S., and Katsev, S., 2020. Evaluating a primary carbonate pathway for manganese enrichments in reducing environments. *Earth and Planetary Science Letters*, v. 538, doi: 10.1016/j.epsl.2020.116201

Wittkop C., Bartley, J., Krueger, R., Bouvier, A., Georg, R.B., *Piper, C., Knaeble, A., St. Clair, K., and Breckenridge, A., 2020. Influence of provenance and transport process on the geochemistry and radiogenic (Hf, Nd, and Sr) isotopic composition of Pleistocene glacial sediments, Minnesota USA. *Chemical Geology*, v. 532, doi: 10.1016/j.chemgeo.2019.119390

Lambrecht, N., Katsev, S., Wittkop, C., Hall, S.J., Sheik, C.S., Picard, A., Fakhraee, M., and Swanner, E.D., 2020. Biogeochemical and physical controls on methane fluxes from two meromictic ferruginous lakes. *Geobiology*, v. 18, doi: 10.1111/gbi.12365

Van Dijk, J., Fernandez, A., Storck, J.C., White, T., Lever, M., Muller, I., Bishop, S., Seifert, R.F., Driese, S.G., Krylov, A., Ludvigson, G.A., Turchyn, A.V., Lin, C.Y., Wittkop, C., and Bernasconi, S.M., Experimental calibration of clumped isotopes in siderite between 8.5 and 800 °C and application as a paleo-thermometer in soils. *Geochimica et Cosmochimica Acta*, v. 254, p. 1-20.

Lambrecht, N., Wittkop, C., Katsev, S., Fakhraee, M., and Swanner, E.D., Geochemical characterization of two ferruginous meromictic lakes in the Upper Midwest, USA: *Journal of Geophysical Research – Biogeosciences*, v. 123, p. 3403-3422.

Mahoney, J.B., Pignotta, G.S., Ihinger, P.D., Wittkop, C., Balgord, E.A., Potter, J.J., and Leistikow, A., 2015. Geologic relationships in the northern Helena Salient, Montana: *Geology of the Elliston Region. Northwest Geology*, v. 44, p. 109-136.

- Wittkop, C., Teranes, J., *Lubenow, B., and Dean, W.E., 2014. C- and O-stable isotopic signatures of methanogenesis, temperature, and water column stratification in Holocene siderite varves. *Chemical Geology*, v. 389, p. 153-166.
- Gran, K.B., Finnegan, N., Johnson, A.L., Belmont, P., Wittkop, C., and Rittenour, T., 2013. Landscape evolution, valley excavation, and terrace development following abrupt postglacial base-level fall. *Geological Society of America Bulletin*, v. 125, p. 1851-1864.
- Miller, J.D., Hudak, G.J., Wittkop, C., and McLaughlin, P.I., (Eds.), 2011. Archean to Anthropocene: Field Guides to the Geology of the Mid-Continent of North America. *Geological Society of America Field Guide 24*, 544 p.
- Schirmer, R.C., and Wittkop, C., 2011. Application of LiDAR and geophysics to archaeological investigations in the upper Mississippi River valley. In: Miller, J.D., Hudak, G.J., Wittkop, C., and McLaughlin, P.I., (Eds.), *Archean to Anthropocene: Field Guides to the Geology of the Mid-Continent of North America. Geological Society of America Field Guide 24*, p. 401-410.
- Belmont, P., Gran, K., Jennings, C.E., Wittkop, C., and Day, S.S., 2011. Holocene landscape evolution and erosional processes in the Le Sueur River, central Minnesota. In: Miller, J.D., Hudak, G.J., Wittkop, C., and McLaughlin, P.I., (Eds.), *Archean to Anthropocene: Field Guides to the Geology of the Mid-Continent of North America. Geological Society of America Field Guide 24*, p. 439-455.
- Balgord, E.A., Mahoney, J.B., Pignotta, G.S., Wittkop, C., King, N.E., Ihinger, P.D., Hardel, B.G., and Kadulski, B., 2010. Geologic Map of the Esmeralda Hill 7.5' quadrangle, Lewis and Clark County and Powell County, Montana. *Montana Bureau of Mines and Geology EDMAP 8*, one sheet. Map scale 1:24,000.
- MacLaurin, C., Mahoney, J.B., Guy, A., Forgette, M., Kjos, A., Wittkop, C., Kohel, C., Balgord, E., Barber, B., and Ihinger, P.D., 2010. Geologic Map of the Dunn Creek 7.5' quadrangle west-central Montana. *Montana Bureau of Mines and Geology EDMAP 9*, one sheet. Map scale 1:24,000.
- Wittkop, C., Teranes, J., Dean, W.E., and Guilderson, T., 2009. A lacustrine carbonate record of Holocene seasonality and climate. *Geology* v. 37, p. 695-698.
- Wittkop, C., 2008. Surficial Geologic Map of the Gilmanton Ironworks Quadrangle, Belknap County, New Hampshire. *New Hampshire Department of Environmental Services Open-File Map*, one sheet. Map scale 1:24,000.
- Franzi, D., Koteff, C., and Wittkop, C., 2008. Surficial Geologic Map of the Concord Quadrangle Merrimack County, New Hampshire. *New Hampshire Department of Environmental Services Open-File Report (GIS Coverage and Color Map)*, one sheet. Map scale 1:24,000.
- Ekdahl, E.J., Teranes, J.L., Wittkop, C.A., Stoermer, E.F., Reavie, E.D., and Smol, J.P., 2007. Diatom assemblage response following Iroquoian and Euro-Canadian eutrophication of Crawford Lake, Ontario, Canada. *Journal of Paleolimnology*, v. 37, p. 233-246
- Wittkop, C., Bennett, D., Chormann, R., and Wunsch, D., 2007. Geology of the May 2006 Suncook River avulsion. *Guidebook to Field Trips in New Hampshire, Adjacent Maine, and*

Massachusetts. 42nd Annual Meeting, Northeastern Section Geological Society of America, p. 45-55.

Bennett, D., Wittkop, C., and Dicken, C., 2006. Bedrock Geologic Map of New Hampshire—A Digital Representation of the Lyons and others 1997 map and ancillary files. U.S. Geological Survey Data Series 215 (CD ROM).

Ekdahl, E.J., Teranes, J.L., Guilderson, T.P., Turton, C.F., McAndrews, J.H., Wittkop, C.A., and Stoermer, E.F., 2004. A prehistorical record of cultural eutrophication from Crawford Lake, Ontario. *Geology*, v. 32, p. 745-748.

Teaching

All courses taught as primary lecture and laboratory instructor.

Minnesota State University

- GEOL 410 Glacial Geology, with lab and field exercises
- GEOL 320 Sedimentology and Stratigraphy, with lab and field exercises
- GEOL 310 Earth and Space Systems, with lab
- GEOL 305 Earth Science for Elementary Educators, with lab
- GEOL 121 Physical Geology, with lab
- GEOL 108 Oceanography, online
- GEOL 100 Our Geologic Environment, with lab
- Curriculum and program development:
 - Developed new courses GEOL 108 (online), GEOL 320, and GEOL 410
 - Created new certificate program in Environmental Geology (2015-2016)
 - Coordinated efforts to re-structure MSU Geology Program (2016-2017)

University of Wisconsin, Eau Claire

- Field Excursion (300-level seminar and field trip to Death Valley and Eastern California)
- Earth Resources (300-level introduction to resource Geology)
- Physical Geology, with lab

Consulting Experience

Minnesota State University Mankato Archaeology Program, 2014-2015

Lithic material consultant on MNDOT database project (Dr. Ronald Schirmer, PI)

Le Sueur County Archaeological Survey, 2014

Geomorphology and geologic history consultant (Dr. Ronald Schirmer, PI)

Precision Geosolutions, 2011

Geothermal assessment in Nevada, GIS and field mapping consultant (Dr. Brian Mahoney, PI)

Professional Society Memberships

American Geophysical Union

Geological Society of America

Geochemical Society

Invited Talks (since 2010)

- “Chemical sedimentation processes in ferruginous lakes: models for primary mineralogy in Precambrian banded iron formations”, Iowa State University, November 2017
- “Geology of the Minnesota River Valley”, Friends of Minneopa Park, April 2017
- “Astrobiology in the land of lakes: how modern waters help us understand ancient life”, MSU Department of Physics and Astronomy, February 2017.
- “The ancient ecosystem of Canyon Lake”, Huron Mountain Wildlife Foundation, August 2016.
- “Exploring potential for till geochemistry as a tool for provenance and water quality studies”, Minnesota Geological Survey, March 2016.
- “Glacial Waters”, Interstate Park Minnesota, May 2016, June 2014.
- “Are siderite (FeCO₃) precipitating lakes analogs for Archean oceans and Martian craters?” University of Minnesota Quaternary Paleocology Seminar; University of Wisconsin, Eau Claire, November 2013.
- “Geology of Minneopa State Park”, Friends of Minneopa Park, April 2013.
- “The role of avulsions in long-term sediment loading and landscape evolution.” University of Minnesota, Morris, March 2010.

Abstracts (since 2001; * = supervised student author)

- *Grengs, A., Wittkop, C., Lambrecht, N., Fahkraee, M., Katsev, S., and Swanner, E., 2020. Constraining iron formation primary mineralogy using ferruginous lake sediments. Geological Society of America Abstracts with Programs, v. 52, doi: 10.1130/abs/2020NC-347988 (*Honorable Mention Undergraduate Oral Presentation*)
- Wittkop C., Bartley, J., Krueger, R., Bouvier, A., Georg, R.B., *Piper, C., Knaeble, A., St. Clair, K., and Breckenridge, A., 2020. Geochemical and isotopic tools for Pleistocene sediment provenance in the North American Midcontinent. Geological Society of America Abstracts with Programs, v. 52, doi: 10.1130/abs/2020NC-348037
- Brengman, L.A., Stewart, E.K., Stolze, D., *Faust, E., and Wittkop, C., 2020. The role of silica in iron formations: textural, mineralogical, and geochemical comparisons from low metamorphic grade Neoproterozoic and Paleoproterozoic examples. Geological Society of America Abstracts with Programs, v. 52, doi: 10.1130/abs/2020NC-346992
- Ledesma, G., Lanza, N., Wittkop, C., and Swanner, E., 2020. Classification of terrestrial manganese enrichments by laser-induced breakdown spectroscopy with relevance for Gale Crater, Mars. Geological Society of America Abstracts with Programs, v. 52, doi: 10.1130/abs/2020NC-348291
- *Niedzielski, B.J., Wittkop, C., Swanner, E., Fralick, P., and Poulton, S.W., 2020. Evaluating mechanisms for manganese enrichments in the Proterozoic Animikie Basin. Geological Society of America Abstracts with Programs, v. 52, doi: 10.1130/abs/2020NC-348062
- Wittkop, C., Swanner, E., Lambrecht, N., *Grengs, A., and Katsev, S., 2019. Could negative carbonate carbon isotope excursions be a primary signal in ferruginous environments? Goldschmidt Abstracts, 2019 3698.
- Swanner, E., Wittkop, C., Lambrecht, N., Katsev, S., and Picard, A., 2019. Records of life in a ferruginous ocean: lessons from meromictic lakes. Geological Society of America, Phoenix AZ.
- Gran, K.B., Finnegan, N.J., Johnson, A.L., Belmont, P., Wittkop, C., and Rittenour, T., 2018. GSA Quaternary Geology and Geomorphology Division Kirk Bryan Award: Landscape evolution, valley excavation, and terrace development following abrupt post-glacial base-level fall. Geological Society of America Abstracts with Programs, v. 50, no. 6.
- Swanner, E., Lambrecht, N., Wittkop, C., Katsev, S., Fahkraee, M., and Sheik, C., 2018. The biogeochemistry of ferruginous lakes, and past ferruginous oceans (Invited Presentation). Geological Society of America Abstracts with Programs, v. 50, no. 6.
- Cole, D., Longley, M., Wilkes, D., Wang, X., Swanner, E., Wittkop, C., Sperling, E., and Planavsky, N., 2018. Uranium isotope fractionation factors in ferruginous settings. Goldschmidt Conference.

- Lambrecht, N., Wittkop, C., Katsev, S., Fakraee, M., and Swanner, E., 2018. Two ferruginous Midwestern lakes exhibit vastly different fluxes of methane. Goldschmidt Conference.
- Swanner, E., Lambrecht, N., Fakraee, M., Sheik, C., Katsev, S., and Wittkop, C., 2018. Keynote: Microbes and minerals from two ferruginous lakes on a spectrum of physical and chemical characteristics. Goldschmidt Conference.
- Wittkop, C., Swanner, E., Lambrecht, N., *Grengs, A., Myrbo, A., and Katsev, S., 2018. Manganese carbonates linked to methane oxidation in ferruginous environments. Goldschmidt Conference.
- Wittkop, C., *Piper, C., Bartley, J.K., Krueger, R., Bouvier, A., Georg, R.B., and, Knaeble, A.R., 2018. Provenance, texture, and relative age controls on the chemical index of alteration (CIA) in Pleistocene tills, Minnesota USA. Geological Society of America Abstracts with Programs v. 50, no. 4.
- Lambrecht, N., Swanner, E., Wittkop, C., Sheik, C., and Katsev, S., 2018. Microbial communities of two Archean ocean analogs. Geological Society of America Abstracts with Programs v. 50, no. 4.
- Swanner, E., Harding, C., and Wittkop, C., 2018. The elemental consequences of lake stratification and implications for urban lakes in the Upper Midwest. Geological Society of America Abstracts with Programs v. 50, no. 4.
- Wittkop, C., Swanner, E., Lambrecht, N., Katsev, S., *Grengs, A., and *Widman, D., 2017. Controls on iron- and manganese-mineral solubility in ferruginous lakes. Geological Society of America Abstracts with Programs, v. 49, no. 6.
- Wittkop, C., Bartley, J.K., Krueger, R., Knaeble, A.R., Bouvier, A., Georg, R.B., St. Clair, K., and *Piper, C., 2017. Provenance controls on the geochemistry and radiogenic isotopic composition of Pleistocene tills in Minnesota, USA. Geological Society of America Abstracts with Programs, v. 49, no. 6.
- Wittkop, C., Swanner, E., Lambrecht, N., *Torgeson, J., Katsev, S., and Myrbo, A., 2016. Dissolved inorganic carbon isotope signatures in ferruginous lakes: new insights into ancient carbonate isotope excursions. Abstract B41A-0394, American Geophysical Union Fall Meeting.
- Swanner, E., Wittkop, C., Lambrecht, N., and Katsev, S., 2016. Establishment of early ocean analogs in Midwestern ferruginous lakes: keys to the evolution of biogeochemical (iron) cycling. Geological Society of America Abstracts with Programs, v. 48, no. 7.
- Wittkop, C., and *Torgeson, J.M., 2014. Are siderite varves deepwater microbialites? Geological Society of America Abstracts with Programs, v. 46, p. 683.
- *Scheeler, D.J., Wittkop, C., and *Torgeson, J.M., 2014. Application of sediment geochemistry and optically-stimulated luminescence dating to till stratigraphy in southern Minnesota. Geological Society of America Abstracts with Programs, v. 46, p. 339.
- Mahoney, J.B., Pignotta, G., Ihinger, P.D., Wittkop, C., Taylor, S.S., and Leistikow, A., 2013. Advanced undergraduate geologic mapping: The use of collaborative EDMAP projects at the University of Wisconsin-Eau Claire. Geological Society of America Abstracts with Programs, v. 45, p. 377.
- Brugger, K.A., and Wittkop, C., 2013. The last glacial maximum in the Nevada Mountains, Montana. Geological Society of America Abstracts with Programs, v. 45, p. 39.
- Wittkop, C., and *Lubenow, B., 2011. Lacustrine paleoenvironment of Holocene siderite cycles, Otter Lake, Michigan USA. Geological Society of America Abstracts with Programs, v. 43, p. 60.
- Wittkop, C., Brugger, K.A., *Boley, T.D., *Bleess, R., and *German, Q., 2011. Surface exposure dating and climatic interpretation of Pleistocene glaciation along the Continental Divide, Montana, USA. Geological Society of America Abstracts with Programs, v. 43, p. 475.
- Wittkop, C., *Boley, T.D., *Bleess, R., and *German, Q., 2011. Contrasting modes of Pleistocene glaciation along the Continental Divide, western Montana: a natural experiment in landscape response to climate change. Geological Society of America Abstracts with Programs, v. 43, p. 10.
- *Meixell, K., Wittkop, C., Rittenour, T., and *Makovsky, K., 2009. Holocene stream capture of the Le Sueur River, Minnesota: Implications for modern sediment loading. Geological Society of America Abstracts with Programs, v.41, p 648.

- Wittkop, C., 2009. Glacial sediments of the Little Blackfoot River valley, Montana: Revisiting the Pleistocene Boulder Mountains ice cap. Geological Society of America Abstracts with Programs, v. 41, p. 13.
- Wittkop, C., and *Dryer, W.P., 2007. Geomorphic response to rapid fluvial change: the 2006 Suncook River avulsion, Epsom, New Hampshire. Geological Society of America Abstracts with Programs, v. 39, p. 245 (paper 85-13).
- *Dryer, W.P., and Wittkop, C., 2007. Fluvial landforms of the 2006 Suncook River avulsion, Epsom, New Hampshire. Geological Society of America Abstracts with Programs, v. 39, p. 321 (paper 117-25).
- *Hinke, J., and Wittkop, C., 2007. Detailed Surficial Geologic Mapping and Terrain Analysis of the Blue Hills Felsenmeer Valley, Rusk County, Wisconsin. North-Central GSA, Lawrence, Kansas.
- Wittkop, C., Teranes, J., Dean, W., and Guilderson, T., 2003. Evidence for Reduction in Mid-Holocene Decadal-Scale Climatic Variability in the North-Central United States. Paper 23-3, Geological Society of America Annual Meeting, Seattle, WA.
- McAndrews, J.H., Teranes, J.L., Turton, C.E., Wittkop, C.A., and Ekdahl, E.J., 2003. Human impact at Crawford Lake, Ontario, Canada: the sediment record over the last millennium. XVI INQUA Congress, Reno, NV.
- Wittkop, C., Teranes, J., Dean, W., and Guilderson, T., 2003. A High-Resolution Holocene Paleoclimate Record from Lower Michigan, USA. International Limnogeology Congress, Tucson AZ.
- Wittkop, C., Teranes, J., and Guilderson, T., 2002. Varve Sediment Records of Holocene Climatic Variability, Lower Peninsula Michigan, USA. International Association for Great Lakes Research 45th Conference, Winnipeg, Manitoba.
- Wittkop, C., and Kelts K., 2001. Comparative Holocene Varve Lithology, Mid-Continent, USA: Implications for Paleoclimatic Study. Abstract# PP22A-0505, American Geophysical Union Fall Meeting, San Francisco, CA.
- *Remsen, K., and Wittkop, C., 2001. Varve sediment records of pre-historic human disturbance, Crawford Lake, Ontario, Canada: initial findings. Paper 133-0 Geological Society of America Annual Meeting, Boston, MA.