Martin Schmid

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Surface Waters - Research and Management
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Personal Information

born in St. Gallen, 20 May 1971
Swiss citizen
married, 2 sons (2005, 2007)

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Education

1998 – 2001	Ph. D. thesis, Swiss Federal Research Station for Agroecology and Agriculture (FAL) and University of Berne. Topic: Nitrous oxide emissions from managed grasslands – development and tests of a dynamic model
1991 – 1997	Diploma in Environmental Sciences, Swiss Federal Institute of technology (ETH), Zürich
1994 – 1997	Teaching Diploma in Physics and Environmental Education, ETH Zürich
1994	Cambridge Proficiency in English

Employment History

2010 – now	Leader of research group Applied System Analysis, Eawag, Kastanienbaum
2007 – 2010	Scientist, Eawag, Kastanienbaum
2002 – 2007	Postdoctoral researcher, Eawag, Kastanienbaum
2001	Civil service, WWF Aargau, environmental education
2000 – 2001	Scientific assistant, “Schweizer Jugend forscht”, Basel
1994 – 1995	Teaching assistant, System analysis and geobotanics, ETH Zürich

Supervision

Supervision of PhD students

- as main supervisor: Fabian Bärenbold (defended 2020), Ulrike Kobler (2019), Fabrice Muvundja (2015), KellyAnn Ross (2013), Natacha Pasche (2009)
- as co-supervisor: Elisa Calamita (2020), Thomas Steinsberger (2017), Thuy Kim Phuong Doan (2014), David Finger (2006)

Supervision of MSc students: Sheriffa Shengero (2020), Namakau Muyumbana (2019), Augustin Gafasi (2013), Stefan Hunziker (2010), Päivi Rinta (2009), Lukas Jarc (2007), Pema Dorji (2007), Sirak Robele Gari (2005), Martin Frey (2003)

Teaching

Lecture “Biogeochemical Modelling of Sediments, Lakes and Oceans, ETH Zürich, since 2014 (together with A. Brand/D. Bouffard and M. Vogt)

Organisation of Eawag PEAK Courses on small hydropower (2013) and heat usage from surface waters (2017)

Module Lake Models, PhD Summer School 2010 - Pollutant Dynamics and Biogeochemistry in Lakes

Lecture “Transport and Mixing in Natural Waters”, ETH Zürich, 2008 (together with O. Cirpka)

Approved Research Projects

Recent and ongoing research projects with principal investigator role

2021 – 2024	Schmid M, and Bouffard D, Swiss Lake temperature monitoring, FOEN (392 kCHF)
2018 – 2020	Münch-Alligné C (HES-SO) et al., SmallFlex: Demonstrator for flexible Small Hydropower Plant, SFOE (85 kCHF for Eawag sub-project)
2017 – 2020	Huwald H (EPFL), Wüest A, Bouffard D, Schmid M. Evolution of stream and lake water temperature under climate change, FOEN (134 kCHF for Eawag sub-project)
2017 – 2020	Schmid M, Weber C, Brodersen J, Robinson C. Effects of hydropower exploitation on spatio-temporal variability of temperature in downstream rivers. Eawag Discretionary Funds (478 kCHF)
2017 – 2020	Giardini D (ETHZ) et al., Swiss Competence Center for Energy Research – Supply of Electricity (SCCER-SoE), Phase II, CTI (483 kCHF for Eawag sub-project)
2015 – 2020	Schmid M. Managing Lake Kivu: moving from a steady-state to a dynamic modelling approach, SNSF (320 kCHF)
2016 – 2019	Schleiss A. (EPFL) et al., FLEXSTOR – solutions for flexible operation of storage hydropower plants in changing environment and market conditions, CTI (78 kCHF for Eawag sub-project)
2014 – 2019	Schmid M. Effects of pumped-storage operations on the connected lakes, Swiss Federal Railways (355 kCHF)
2015 – 2018	Schmid M, Wüest A. Heating and Cooling with Surface Waters, FOEN (197 kCHF)

Institutional Responsibilities

Since 2021	Member of the Eawag strategy commission
Since 2017	Member of the Eawag staff representation

Professional activities

Since 2022	Member of the Center for Climate Systems Modeling (C2SM)
Since 2021	Advisor of the Lake Kivu Advisory Group (LKAG) of ACARE
Since 2021	Member of the “Arbeitsgruppe Seesanierung“ (ASSAN), cantons Aargau and Lucerne
Since 2015	Member of the Expert Advisory Group for Lake Kivu Monitoring
Since 2014	Member of the Working Group “Dialog Wasserkraft” of Wasser-Agenda 21
2014 – 2020	Board member of the Swiss Competence Center for Energy Research – Supply of Electricity (SCCER-SoE)
Since 2010	Member of the editorial board of the journal Limnologica

Reviewer for Acta Geophysica, Ambio, Annales de Limnologie, Aquatic Geochemistry, Aquatic Sciences, British National Research Council, Climatic Change, Comptes Rendus Geoscience, Deep Sea Research, Earth and Planetary Science Letters, Ecological Modelling, Environmental Modelling and Software, Environmental Monitoring and Assessment, Environmental Research Letters, Environmental Science and Technology, Environmental Sciences Europe, Frontiers in Earth Science, Frontiers in Environmental Science, Geo-Marine Letters, Geophysical Research Letters, Geoscientific Model Development, Global Change Biology, Hydrobiologia, Hydrology and Earth System Sciences, Inland Waters, Journal of African Earth Sciences, Journal of the American Water Resources Association, Journal of Environmental Management, Journal of Geophysical Research, Journal of Great Lakes Research, Journal of Hydrology, Journal of Limnology, Limnologica, Limnology, Limnology and Oceanography, Marine and Freshwater Research, Natural Hazards and Earth System Sciences, Nordic Hydrology, Proceedings of the Belgian Royal Academy for Overseas Sciences, The Royal Society, Science of the Total Environment, USGS, Water, Water Resources Research

Memberships in Scientific Societies

Association for the Sciences of Limnology and Oceanography (ASLO)

Global Lake Ecological Observatory Network (GLEON)

Martin Schmid – Publications

Peer-reviewed articles

Antonetti M, Hoppler L, Tonolla D, Vanzo D, Schmid M, Doering M (2023). Integrating two-dimensional water temperature simulations into a fish habitat model to improve hydro- and thermopeaking impact assessment. River Research and Applications, 39:501–521, https://doi.org/10.1002/rra.4043

Smittarello D, Smets B, Barrière J, Michellier C, Oth A, Shreve T, Grandin R, Theys N, Brenot H, Cayol V, Allard P, Caudron C, Chevrel O, Darchambeau F, de Buyl P, Delhaye L, Derauw D, Ganci G, Geirsson H, Kamate Kaleghetso E, Kambale Makundi J, Kambale Nguomoja I, Kasereka Mahinda C, Kervyn M, Kimanuka Ruriho C, Le Mével H, Molendijk S, Namur O, Poppe S, Schmid M, Subira J, Wauthier C, Yalire M, d'Oreye N, Kervyn F, Syavulisembo Muhindo A. (2022). Precursor-free eruption triggered by edifice rupture at Nyiragongo volcano. Nature 609, 83-88, https://doi.org/10.1038/s41586-022-05047-8

Golub M, Thiery W, Marcé R, Pierson D, Vanderkelen I, Mercado D, Woolway RI, Grant L, Jennings E, Kraemer BM, Schewe J, Zhao F, Frieler K, Mengel M, Bogomolov VY, Bouffard D, Côté M, Couture RM, Debolskiy AV, Droppers B, Gal G, Guo M, Janssen ABG, Kirillin G, Ladwig R, Magee M, Moore T, Perroud M, Piccolroaz S, Raaman Vinnaa L, Schmid M, Shatwell T, Stepanenko VM, Tan Z, Woodward B, Yao H, Adrian R, Allan M, Anneville O, Arvola L, Atkins K, Boegman L, Carey C, Christianson K, de Eyto E, DeGasperi C, Grechushnikova M, Hejzlar J, Joehnk K, Jones ID, Laas A, Mackay EB, Mammarella I, Markensten H, McBride C, Özkundakci D, Potes M, Rinke K, Robertson D, Rusak J, Salgado R, van den Linden L, Verburg P, Wain D, Ward NK, Wollrab S, Zdorovennova G (2022) A framework for ensemble modelling of climate change impacts on lakes worldwide: the ISIMIP Lake Sector. Geoscientific Model Development 15:4597-4623. https://doi.org/10.5194/gmd-15-4597-2022

Bärenbold F, Kipfer R, Schmid M (2022). Dynamic modelling provides new insights into development and maintenance of Lake Kivu's density stratification. Environmental Modelling and Software 147: 105251. https://doi.org/10.1016/j.envsoft.2021.105251

Jane SF, Hansen GJA, Kraemer BM, Leavitt PR, North RL, Pilla RM, Williamson CE, Woolway RI, Arvola L, Chandra S, DeGaspari C, Diemer L, Dunalska J, Erina O, Flaim G, Grossart H-P, Hambright D, Hein C, Hejzlar J, Janus L, Jones J, Knoll LB, Leach T, Leoni B, MacKay E, Matsuzaki S-I, McBride C, Paterson AM, Jenny J-P, Pierson D, Rogora M, Rusak J, Sadro S, Saulnier-Talbot E, Schmid M, Sommaruga R, Thiery W, Wentzky V, Weyhenmeyer G, Winslow L, Yokota K, Rose KC (2021). Widespread deoxygenation of temperate lakes, Nature 594: 66-70. https://doi.org/10.1038/s41586-021-03550-y

Kraemer BM, Pilla RM, Woolway RI, Anneville O, Ban S, Colom-Montero W, Devlin SP, Dokulil MT, Gaiser EE, Hambright KD, Hessen DO, Higgins SN, Jöhnk KD, Keller W, Knoll LB, Leavitt PR, Lepori F, Luger MS, Maberly SC, Müller-Navarra DC, Paterson AM, Pierson DC, Richardson DC, Rogora M, Rusak JA, Sadro S, Salmaso N, Schmid M, Silow E, Sommaruga R, Stelzer JAA, Straile D, Thiery W, Verburg P, Weyhenmeyer GA, Adrian R (2021) Climate change drives widespread shifts in lake thermal habitat, Nature Climate Change 11: 521-529, https://doi.org/10.1038/s41558-021-01060-3

Calamita E, Siviglia A, Gettel G, Franac MJ, Winton RS, Teodoru CR, Schmid M, Wehrli B (2021). Unaccounted CO_2 leaks downstream of large tropical dams. Proceedings of the National Academy of Sciences 118: e2026004118. https://doi.org/10.1073/pnas.2026004118

Calamita E, Vanzo D, Wehrli B, Schmid M (2021). Lake modelling reveals management opportunities for improving water quality downstream of transboundary tropical dams. Water Resources Research 57: e2020WR027465. https://doi.org/10.1029/2020WR027465

Aksamit CK, Carolli M, Vanzo D, Weber C, Schmid M (2021). Macroinvertebrate recovery to varying hydropeaking frequency: a small hydropower plant experiment. Frontiers in Environmental Science 8: 602374. https://doi.org/10.3389/fenvs.2020.602374

Råman Vinnå L, Medhaug I, Schmid M, Bouffard D (2021) The vulnerability of lakes along an altitudinal gradient to climate change, Communications Earth & Environment 2: 35. https://doi.org/10.1038/s43247-021-00106-w

Peer-reviewed articles (continued)

Bärenbold F, Boehrer B, Grilli R, Mugisha A, von Tümpling W, Umutoni A, Schmid M (2020). No increasing risk of a limnic eruption at Lake Kivu: intercomparison study reveals gas concentrations close to steady state, PLoS ONE 15: e0237836. https://doi.org/10.1371/journal.pone.0237836

Bärenbold F, Schmid M, Brennwald MS, Kipfer F (2020). Missing atmospheric noble gases in a large tropical lake: the case of Lake Kivu, Chemical Geology 532: 119374. https://doi.org/10.1016/j.chemgeo.2019.119374

Carrea L, Woolway RI, Merchant CJ, Dokulil MT, DeGasperi CL, de Eyto E, Kelly S, La Fuente RS, Marszelewski W, May L, Paterson AM, Pulkkanen M, Rusak JA, Rusanovskaya O, Schladow SG, Schmid M, Shimaraeva SV, Silow EA, Timofeyev MA, Verburg P, Watanabe S, Weyhenmeyer GA (2020). Lake surface temperature [in “State of the Climate in 2019"]. Bulletin of the American Meteorological Society 101 (8), S26–S28. https://doi.org/10.1175/BAMS-D-20-0104.1

Pilla RM, Williamson CE, Adamovich BV, Adrian R, Anneville O, Chandra S, Colom-Montero W, Devlin SP, Dix MA, Dokulil MT, Gaiser EE, Girdner SF, Hambright KD, Hamilton DP, Havens K, Hessen DO, Higgins SN, Huttula TH, Huuskonen H, Isles PDF, Joehnk KD, Jones ID, Keller WB, Knoll LB, Korhonen J, Kraemer BM, Leavitt PR, Lepori F, Luger MS, Maberly SC, Melack JM, Melles SJ, Müller-Navarra DC, Pierson DC, Pislegina HV, Plisnier P-D, Richardson DC, Rimmer A, Rogora M, Rusak JA, Sadro S, Salmaso N, Saros JE, Saulnier-Talbot E, Schindler DE, Schmid M, Shimaraeva SV, Silow EA, Sitoki LM, Sommaruga R, Straile D, Strock KE, Thiery W, Timofeyev MA, Verburg P, Vinebrooke RD, Weyhenmeyer GA, Zadereev E (2020) Deeper waters are changing less consistently than surface waters in a global analysis of 102 lakes. Scientific Reports 10: 20514. https://doi.org/10.1038/s41598-020-76873-x

Calamita E, Schmid M, Kunz M, Nebele-Murisa MR, Magadza CHD, Nyambe I, Wehrli B (2019). Sixty years of Lake Kariba: thermal and oxygen dynamics in the riverine and lacustrine sub-basins. PLoS ONE 14(11): e0224679. https://doi.org/10.1371/journal.pone.0224679

Steinsberger T, Müller B, Gerber C, Shafei B, Schmid M (2019). Modeling sediment oxygen demand in a highly productive lake under various trophic scenarios. PLoS ONE 14(10): e0222318. https://doi.org/10.1371/journal.pone.0222318

Gaudard A, Råman Vinnå L, Bärenbold F, Schmid M, Bouffard D (2019). Toward an open-access of high-frequency lake modelling and statistics data for scientists and practitioners. The case of Swiss Lakes using Simstrat v2.1. Geoscientific Model Development 12: 3955–3974. https://doi.org/10.5194/gmd-12-3955-2019

Weyhenmeyer GA, Hartmann J, Hessen DO, Kopàček J, Hejzlar J, Jacquet S, Hamilton SK, Verburg P, Leach TH, Schmid M, Flaim G, Nõges T, Nõges P, Wentzky VC, Rogora M, Rusak JA, Kosten S, Paterson AM, Teubner K, Higgins SN, Lawrence G, Kangur K, Kokorite I, Cerasino L, Funk C, Harvey R, Moatar F, de Wit H, Zechmeister T (2019). Widespread diminishing anthropogenic effects on calcium in freshwaters. Scientific Reports 9: 10450. https://doi.org/10.1038/s41598-019-46838-w

Woolway RI, Merchant CJ, Dokulil MT, de Eyto E, DeGasperi CL, Korhonen J, Marszelewski W, May L, Paterson AM, Rusak JA, Schladow SG, Schmid M, Verburg P, Watanabe S, Weyhenmeyer GA (2019). Lake surface temperature [in "State of the Climate in 2018"]. Bulletin of the American Meteorological Society 100 (9): S13-S14. https://doi.org/10.1175/2019BAMSStateoftheClimate.1

Kobler U, Schmid M (2019). Ensemble modelling of ice cover for a reservoir affected by pumped-storage operation and climate change. Hydrological Processes 33: 2676-2690, https://doi.org/10.1002/hyp.13519

Lange K, Wehrli B, Åberg U, Bätz N, Brodersen J, Fischer M, Hermoso V, Reidy Liermann C, Schmid M, Wilmsmeier L, Weber C (2019). Small hydropower goes unchecked, Frontiers in Ecology and the Environment 17: 256-258. https://doi.org/10.1002/fee.2049

Woolway RI, Weyhenmeyer GA, Schmid M, Dokulil MT, de Eyto E, Maberly SC, May L, Merchant CJ (2019). Substantial increase in minimum lake surface temperatures under climate change. Climatic Change 155: 81–94. https://doi.org/10.1007/s10584-019-02465-y

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Gaudard A, Wüest A, Schmid M (2019). Using lakes and rivers for extraction and disposal of heat: Estimate of regional potentials. Renewable Energy 134: 330-342. https://doi.org/10.1016/j.renene.2018.10.095

Sommer T, Schmid M, Wüest A (2018). The role of double diffusion for the heat and salt balance in Lake Kivu. Limnology and Oceanography 64: 650–660. https://doi.org/:10.1002/lno.11066

Kobler U, Wüest A, Schmid M (2018). Combined effects of pumped-storage operation and climate change on thermal structure and water quality, Climatic Change 152: 413-429. https://doi.org/10.1007/s10584-018-2340-x

Kobler UG, Wüest A, Schmid M (2018). Effects of lake–reservoir pumped-storage operations on temperature and water quality. Sustainability 10: 1968. https://doi.org/10.3390/su10061968

Lange K, Meier P, Trautwein C, Schmid M, Robinson C, Weber C, Brodersen J (2018). Basin-scale effects of small hydropower on biodiversity dynamics. Frontiers in Ecology and the Environment 16: 397-404. https://doi.org/10.1002/fee.1823

Gaudard A, Weber C, Alexander TJ, Hunziker S, Schmid M (2018). Impacts of using lakes and rivers for extraction and disposal of heat. WIREs Water 2018: e1295. https://doi.org/10.1002/wat2.1295

Woolway RI, Carrea L, Merchant CJ, Dokulil MT, de Eyto E, DeGasperi CL, Korhonen J, Marszelewski W, May L, Paterson AM, Rimmer A, Rusak JA, Schladow SG, Schmid M, Shimaraeva SV, Silow EA, Timofeyev MA, Verburg P, Watanabe S, Weyhenmeyer GA (2018). Lake surface temperature [in "State of the Climate in 2017"]. Bulletin of the American Meteorological Society 99 (8): S13-S15. https://doi.org/10.1175/2018BAMSStateoftheClimate.1

Steinsberger T, Schmid M, Wüest A, Schwefel R, Wehrli B, Müller B (2017). Organic carbon mass accumulation rate regulates the flux of reduced substances from the sediments of deep lakes, Biogeosciences 14: 3275-3285. https://doi.org/10.5194/bg-14-3275-2017

Bruce LC, Frassl MA, Arhonditsis GB, Gal G, Hamilton DP, Hanson PC, Hetherington AL, Melack JM, Read JS, Rinke K, Rigosi A, Trolle D, Winslow L, Adrian R, Ayala AI, Bocaniov SA, Boehrer B, Boon C, Brookes JD, Bueche T, Busch BD, Copetti D, Cortés A, De Eyto E, Elliott JA, Gallina N, Gilboa Y, Guyennon N, Huang L, Kerimoglu O, Lenters JD, MacIntyre S, Makler-Pick V, McBride CG, Moreira S, Özkundakci D, Pilotti M, Rueda FJ, Rusak JA, Samal NR, Schmid M, Shatwell T, Snortheim C, Soulignac.F., Valerio G, van der Linden L, Vetter M, Vinçon-Leite B, Wang J, Weber M, Wickramaratne C, Woolway RI, Yao H, Hipsey MR (2018) A multi-lake comparative analysis of the General Lake Model (GLM): Stress-testing across a global observatory network. Environmental Modelling & Software 102: 274-291. https://doi.org/10.1016/j.envsoft.2017.11.016

Woolway RI, Carrea L, Merchant CJ, Dokulil MT, de Eyto E, DeGasperi CL, Korhonen J, Marszelewski W, May L, Paterson AM, Rimmer A, Rusak JA, Schladow SG, Schmid M, Shimaraeva SV, Silow E, Timofeev MA, Verburg P, Watanabe S, Weyhenmeyer GA (2017). Lake surface temperatures [in “State of the Climate in 2016”], Bulletin of the American Meteorological Society 98 (8): S13–S14.

Gaudard A, Schwefel R, Råman Vinnå L, Schmid M, Wüest A, Bouffard D (2017), Optimizing the parameterization of deep mixing and internal seiches in one-dimensional hydrodynamic models: a case study with Simstrat v1.3, Geoscientific Model Development 10: 3411–3423. https://doi.org/10.5194/gmd-10-3411-2017

Schmid M, Ostrovsky I, McGinnis DF (2017). Role of gas ebullition in the methane budget of a deep subtropical lake: what can we learn from process-based modeling? Limnology and Oceanography 62: 2674-2698. https://doi.org/10.1002/lno.10598

Woolway RI, Dokulil MT, Marszelewski W, Schmid M, Bouffard D (2016). Recent warming of Central European lakes and their response to the 1980s climate shift. Climatic Change 142: 505–520. https://doi.org/10.1007/s10584-017-1966-4

Schmid M, Köster O (2016). Excess warming of a Central European lake driven by solar brightening. Water Resources Research 52: 8103-8116. https://doi.org/10.1002/2016WR018651

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Woolway RI, Cinque K, de Eyto E, DeGasperi CL, Dokulil MT, Korhonen J, Maberly SC, Marszelewski W, May L, Merchant CJ, Paterson AM, Riffler M, Rimmer A, Rusak JA, Schladow SG, Schmid M, Teubner K, Verburg P, Vigneswaran B, Watanabe S, Weyhenmeyer GA (2016). Lake surface temperatures [in "State of the Climate in 2015"], Bulletin of the American Meteorological Society 97 (8): S17–S18.

Ross KA, Schmid M, Ogorka S, Muvundja FA, Anselmetti FS (2015). The history of subaquatic volcanism recorded in the sediments of Lake Kivu; East Africa. Journal of Paleolimnology 54: 137-152. https://doi.org/10.1007/s10933-015-9842-6

Ross KA, Gashugi E, Gafasi A, Wüest A, Schmid M (2015). Characterisation of the subaquatic groundwater discharge that maintains the permanent stratification within Lake Kivu; East Africa. PLoS ONE 10(3): e0121217. https://doi.org/10.1371/journal.pone.0121217

Janssen ABG, Arhonditsis GB, Beusen A, Bolding K, Bruce L, Bruggeman J, Couture R-M, Downing AS, Elliott JA, Frassl MA, Gal G, Gerla DJ, Hipsey MR, Hu F, Ives SC, Janse JH, Jeppesen E, Jöhnk KD, Kneis D, Kong X, Kuiper JJ, Lehmann MK, Lemmen C, Özkundakci D, Petzoldt T, Rinke K, Robson BJ, Sachse R, Schep SA, Schmid M, Scholten H, Teurlincx S, Trolle D, Troost TA, Van Dam AA, Van Gerven LPA, Weijerman M, Wells SA, Mooij WM (2015). Exploring, exploiting and evolving diversity of aquatic ecosystem models: a community perspective. Aquatic Ecology 49: 513-548. https://doi.org/10.1007/s10452-015-9544-1

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Tsimitri C, Rockel B, Wüest A, Budnev N, Sturm M, Schmid M. (2015). Drivers of deep-water renewal events observed over 13 years in the South Basin of Lake Baikal, Journal of Geophysical Research - Oceans 120: 1508–1526. https://doi.org/10.1002/2014JC010449

Doan TKP, Némery J, Schmid M, Gratiot N (2015). Eutrophication of turbid tropical reservoirs: scenarios of evolution of the reservoir of Cointzio, Mexico. Ecological Informatics 29: 192–205. https://doi.org/10.1016/j.ecoinf.2015.01.006

Toffolon M, Piccolroaz S, Majone B, Soja A-M, Peeters F, Schmid M, Wüest A (2014). Prediction of surface water temperature from air temperature in lakes with different morphology. Limnology and Oceanography 59: 2185-2202. https://doi.org/10.4319/lo.2014.59.6.2185

Fink G, Schmid M, Wüest A (2014). Large lakes as sources and sinks of anthropogenic heat – capacities and limits. Water Resources Research 50: 7285-7301. https://doi.org/10.1002/2014WR015509

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Bonalumi M, Anselmetti FS, Wüest A, Schmid M (2012). Modeling of temperature and turbidity in two water basins connected by pumped-storage operations. Water Resources Research 48: W08508. https://doi.org/10.1029/2012WR011844

Hering J, Hoffmann S, Meierhofer R, Schmid M, Peter A (2012). Assessing the societal benefits of applied research and expert consulting in water science and technology, GAIA 21: 95-101. https://doi.org/10.14512/gaia.21.2.6

Bhattarai S, Ross KA, Schmid M, Anselmetti FS, Bürgmann H (2012). Local conditions structure unique archaeal communities in the anoxic sediments of meromictic Lake Kivu, Microbial Ecology 64: 291-310. https://doi.org/10.1007/s00248-012-0034-x

Pasche N, Schmid M, Vazquez F, Schubert CJ, Wüest A, Kessler J, Pack MA, Reeburgh WS, Bürgmann H (2011). Methane sources and sinks in Lake Kivu. Journal of Geophysical Research - Biogeosciences 116: G03006. https://doi.org/10.1029/2011JG001690

Durisch-Kaiser E, Schmid M, Peeters F, Kipfer R, Dinkel C, Diem T, Schubert CJ, Wehrli B (2011). What prevents out-gassing of methane to the atmosphere in Lake Tanganyika? Journal of Geophysical Research - Biogeosciences 116: G02022. https://doi.org/10.1029/2010JG001323

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