Julie Tolu — Curriculum Vitae

Current position	**Lab Manager in (Trace) Element Analytics at Eawag**
Date of birth	April 2nd, 1985
Nationality	French
Familial status	Free union and two children born in June 2015
Languages	French (mother tongue), English (fluent), German (learning)
Contact	+41 58 765 59 03; +41 77 455 69 12; julie.tolu@eawag.ch

Professional skills

Instruments	ICP-MS(/MS) and its coupling to different LC separations and FFF, Pyrolysis-GC/MS, and high resolution MS/MS (Orbitrap)
Sample preparation	Wet extraction, digestion, and pre-concentration such as solid phase extraction, rotary evaporation, and freeze-drying
Tools	Isotopic tracing and isotope dilution
Sample type	Soil, sediment, aerosol, freshwater, seawater, wastewater, and algae
Data treatment & statistics	MassHunter (LC-ICP-MS/MS), Freestyle/Compound discoverer (Orbitrap), Origin, R (use only) IBM SPSS Statistics and Umetric SIMCA (for multivariate statistical analysis and modeling)
Soft skills	Adaptability, teamwork, communication, problem solving, and time management

Professional experience

Nov. 2021 - present	**Lab Manager in (Trace) Element Analytics, Eawag** Dpt. of Water Resources and Drinking Water, Eawag, Dübendorf, Switzerland Group off Inorganic Environmental Geochemistry (Prof. Lenny Winkel)
Oct. 2016 – Oct. 2021	**Scientist in the group of Inorganic Environmental Geochemistry** Dpt. of Water Resources and Drinking Water, Eawag, Dübendorf, Switzerland Dpt. of Environmental Systems Science (D-USYS), ETHZ, Zürich, Switzerland
May - June 2016	**Scientist in the Geochemistry group** (Dr. Stéphane Guédron) ISTerre, University of Grenoble, Grenoble, France
Nov. 2012 - Apr. 2015	**Postdoc scientist in the group of Paleolimnology** (Prof. Richard Bindler) Dpt. of Ecology and Environmental Science (EMG), Umeå University, Umeå, Sweden
Oct. 2008 - Feb. 2012	**PhD Candidate at the Laboratory of Analytical, Bio-inorganic and Environmental Chemistry** (Prof. Martine Potin-Gautier, Prof. Isabelle Le Hécho, Prof. Maïté Bueno, and Dr. Yves Thiry) Institute of Analytical and Physical Chemistry for the Environment and Materials, Pau, France
Sept. 2007 - June 2008	**MSc student at the Geology Laboratory of the Research Group on Water, Soil and Environment Sciences** (Prof. Alexandra Courtin-Nomade) University of Limoges, Limoges, France
June 2007 - Aug. 2007	**Trainee at the Research Department of Wetsus** Centre of excellence for sustainable water technology, Leeuwarden, Netherlands

Education

Oct. 2008 - Feb. 2012	**PhD in Analytical and Environmental Chemistry** University of Pau et des Pays de l'Adour, Pau, France *Evaluation by Prof. Laurent Charlet and Prof. Nicolas Marmier*
Sept. 2007 - June 2008	**MSc in Water Chemistry and Microbiology** University of Limoges, Limoges, France
Sept. 2005 - June 2008	**National Graduate Engineering School in Water Sciences & Management** ENSIL, University of Limoges, France
Sept. 2003 - May 2005	**Preparatory class to the national competitive examination for admission to the French "Grandes Ecoles"** *Intensive course in mathematics, physics, chemistry, biology and geology* Lycée Thiers, Marseille, France

Supervision and training

PhD (2)	Esther Breuninger since Nov. 2018 and Jill Bachelder since Sept. 2019
MSc (8)	Robin Kampf (June 2021-Feb. 2021), Johanne Lebrun-Thauront (Feb.-Nov. 2020), Karin MacKevett (Feb.-Aug. 2019), Sarah Chékifi (Nov. 2017-Apr. 2018), Olivia Hausheer (Oct. 2016-Apr. 2017), Sofia Ninnes Jonsson (Sept.-June 2015), Mariano Sanchez (Sept. 2010-June 2011), and Oihan Garagalza (Sept. 2009-June 2010)
Young Technicians (3)	Febin Ambalathattil (2019-2020), Cornel Niederhauser (2018-2019), and Marco Fleischmann (2018) for trace elements analysis in the group of Prof. Lenny Winkel

Training outside supervision

Postdocs / PhD	Rong Zhu (ETHZ, 2017-2018; Py-GC/MS), Lucie Sauzéat (ETHZ/Eawag, 2018-2019; LC-ICP-MS), Han Xingguo (ETHZ, 2019-2020; Py-GC/MS) and Carsten Simon (ETHZ/Eawag, 2020; LC)
Technicians	Junko Takahashi-Schmidt (2014-2015; Py-GC/MS troubleshooting and sediment analysis)
Researchers	Tony Trofymow (Canada), Mirco Wölfelschneider (Germany), Ben Fest (Australia), Johan Rydberg (Sweden), and Prof. Carsten Schubert (Eawag) (Py-GC/MS data-treatment)

Teaching and mentoring

2019	**PEAK-Eawag course**, 4th October. Basiskurs PEAK B27/19; Spurenelemente in der Umwelt. "*Speciation of trace elements using ICP-MS"*
2019	**Tutor for term paper writing class (Master program) at ETH Zürich**
2008 - 2011	**Lecturer at the University of Pau (288 h)**, France Practical works and tutorials in Analytical physico-chemistry and in Biochemistry

Professional recognition

2020	**Keynote** at the **Swiss Geoscience Meeting** (virtual), Zürich (Switzerland), 7th November. "*The influence of organic matter composition on trace elements cycling: analytics and applications*"
2020	**Invited talk** at the **Cluster Environmental Pollution Seminar Series,** Institute of Geography, Bern (Switzerland), 3rd March. "*Investigating the effect(s) of organic matter on trace elements cycle"*
2019	**Invited talk** at the **Conference on Selenium in the Environment and Human Health,** Yangling/Xi'an (China), 26-31st October. "*Selenium accumulation and speciation in soils along a climate gradient*"
2019	**Invited talk** at the **D-USYS conference**, Davos (Switzerland), 5-7th June**.** "*Speciation as key to bioavailability: methods for Se speciation in soils*"
2018	**Invited talk and interview for Agilent** at the **2nd Agilent European ICP-QQQ Forum**, Munich (Germany), 19-21st September. "*High sensitivity speciation analyses to investigate the environmental cycling of Se and its relation to other trace elements*"
2011	**Invited talk** at the **14th BIOPROTA Workshop**, Louvain-la-Neuve (Belgium), 6-8th September. "*Native and contaminated Se differential reactivity in a culture and a forest soils under accelerated ageing*"

Publication list

Peer-reviewed publications in international journal (*indicated when a corresponding author)

19 Jiskra, M., Guédron, S., **Tolu, J.**, and Sonke, J. (**2022**) Climatic Controls on a Holocene Mercury Stable Isotope Sediment Record of Lake Titicaca. *ACS Earth Space Chem*. 6(2): 346–357

18 Guédron, S., **Tolu, J.**, Delaere, C., Sabatier, P., Barre, J., Heredia, C., Brisset, E., Campillo, S., Bindler, R., Fritz, S.C., Baker, P.A., and Amouroux, D. (**2021**) Two millennia of copper and silver metallurgy in the Lake Titicaca region: historical reconstruction and ores fingerprinting using lead isotopes. *Anthropocene*. 34:100288

17 Rydberg, J., Cooke, C.A., **Tolu, J.**, Wolfe, A.P., and Vinebrook, R. (**2020**) An assessment of chlorophyll preservation in lake sediments using multiple analytical techniques applied to the annually laminated lake sediments of Nylandssjön. *J. Paleolimnol.* 64: 379-388

16 Zhu, R., **Tolu, J.**, Deng, L., Fiskal, A., Winkel, L.H.E., and Lever, M.A. (**2020**) Improving extraction efficiency of sedimentary carbohydrates by sequential hydrolysis. *Org. Geochem.* 141: 103963-103974

15 Ossola, R., **Tolu, J.**, Clerc, B., Erickson, P., Winkel, L.H.E., and McNeill, K. (**2019**) Photochemical production of sulfate and methanesulfonic acid from dissolved organic sulfur in natural waters. *Environ. Sci. Technol.* 53: 13191-13200

14 Capo, E., Rydberg, R. (co-first author), **Tolu, J. (co-first author)**, Domaizon, I., Debroas, D., Bindler, R., and Bigler, C. (**2019**) How does environmental inter-annual variability shape aquatic microbial communities? A 40-year annual record of sedimentary DNA from a boreal lake (Nylandssjön, Sweden). *Front. Ecol. Evol.* 10.3389/fevo.2019.00245

13 Segura, J.H., Nilsson, M.B., Sparrman, T., Serk, H., Schleucher, J., **Tolu, J.,** and Öquist, M.G. (**2019**) Boreal tree species affect soil organic matter composition and saprotrophic mineralization rates. *Plant Soil*, 441: 173-190

12 Guédron, S., **Tolu, J.**, Brisset, E., Sabatier, P., Perrot, V., Bouchet, S., Develle, A.L., Bindler, R., Cossa, D., Fritz, S.C., and Baker, P.A. (**2019**) Late Holocene volcanic and anthropogenic mercury deposition in the western Central Andes (Lake Chungará, Chile)**.** *Sci. Tot. Environ.* 662: 903-914

11 Garcia-Bravo, A., Peura, S., Buck, M., Ahmed, O., Mateos-Rivera, A., Herrero Ortega, S., Schaefer, J.K., Bouchet, S., **Tolu, J.**, Björn, E., and Bertilsson, S. (**2018**) Methanogens and Iron-Reducing Bacteria: the Overlooked Members of Mercury-Methylating Microbial Communities in Boreal Lakes. *Appl. Environ. Microbiol.* 84: e01774-18

10 **Tolu, J.***, Rydberg, J., Meyer-Jacob, C., Gerber, L., and Bindler, R. (**2017**) Spatial variability of organic matter molecular composition and elemental geochemistry in surface sediments of a small boreal Swedish lake. *Biogeosciences* 14: 1773-1792

9 Ninnes, S., **Tolu, J. (co-first author)***, Meyer-Jacob, C., Mighall, T.M., and Bindler, R. (**2017**) Investigating molecular changes in organic matter composition in two Holocene lake-sediment records from central Sweden using pyrolysis GC-MS. *J. Geophys. Res-Biogeo.* 122: 10.1002/2016JG003715

8 Garcia-Bravo, A., Bouchet, S., **Tolu, J.**, Björn, E., Mateos-Rivera, A., and Bertillson, S. (**2017**) Molecular composition of organic matter controls methylmercury formation in boreal lakes. *Nat. Comm.* 10.1038/ncomms14255

7 Meyer-Jacob, C., **Tolu, J.**, Bigler, C., Yang, H., and Bindler, R. (**2015**) Early land use and centennial scale changes in lake-water organic carbon prior to contemporary monitoring. *Proc. Natl. Acad. Sci.* 112: 6579-6584

6 **Tolu, J.***, Gerber, L., Boily, J.F., and Bindler, R. **(2015)** High-throughput characterization of sediment organic matter by pyrolysis–gas chromatography/mass spectrometry and multivariate curve resolution: A promising analytical tool in (paleo)limnology. *Anal. Chim. Acta* 880: 93-102

5 Hansson, S.V., **Tolu, J.**, and Bindler, R. **(2015)** Downwash of atmospherically deposited trace metals in peat and the influence of rainfall intensity: an experimental test. *Sci. Tot. Environ.* 506-507: 95-101

4 **Tolu, J.***, Di Tullo, P., Le Hécho, I., Bueno, M., Thiry, Y., Pannier, F., Potin-Gautier, M., and Bueno, M. **(2014)** A new methodology involving stable isotope tracer to compare simultaneously short- and long-term selenium mobility in soils. *Anal. Bioanal. Chem.* 406: 1221-1231

3 **Tolu, J.***, Thiry, Y., Bueno, M., Jolivet, C., Potin-Gautier, M., and Le Hécho, I. **(2014)** Distribution and speciation of ambient selenium in contrasted soils, from mineral to organic rich. *Sci. Tot. Environ.* 479-480: 93-101

2 Le Hécho, I., **Tolu, J.**, Thiry, Y., Bueno, M., and Potin-Gautier, M. **(2012)** Influence of selenium speciation and fractionation on its mobility in soils. *In: Competitive Sorption and Transport of Heavy Metals in Soils and Geological Media. Edited by: Magdi Selim, H. Taylor & Francis CRC Press*, Chapter 7: 215-232

1 **Tolu, J.***, Le Hécho, I., Bueno, M., Thiry, Y., and Potin-Gautier, M. **(2011)** Selenium speciation analysis at trace level in soils. *Anal. Chim. Acta 684:* 126-133

Peer-reviewed proceedings of international conferences

2 **Tolu, J.***, Bouchet, S., Chékifi, S.D., Hausheer, O., Helfenstein, J., Chadwick, O., Frossard, E., Tamburini, F., and Winkel, L.H.E. (**2020**). Selenium accumulation and speciation in soils along a climate gradient. In: *Selenium in the Environment and Human Health: Perspectives, Technologies and Advancements. Banuelos, Lin, Liang and Yin (eds),* p.67-68. ISBN 978-1-138-39014-0

1 **Tolu, J.***, Le Hécho, I., Bueno, M., Thiry, Y., and Potin-Gautier, M. (**2010**). Development of an analytical methodology for ultra-trace selenium speciation determination in soils. *Proceedings of the 19th World Congress of Soil Science: Soil solutions for a changing world, Brisbane, Australia. Symposium 2.2. 1 Biogeochemical interfaces in soils, p.35-38*