

## Geneviève S. Metson, PhD

**Associate Professor & Docent.** Department of Physics, Chemistry, and Biology,  
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Citizenship: Canadian and American | Languages: Fluent in English and French

### EDUCATION

#### PhD, *Natural Resource Sciences, 2015*

Department of Natural Resource Sciences, McGill University, Montreal, Qc Canada  
Dissertation: Urban phosphorus sustainability: how human diet, urban agriculture and socioecological context influence phosphorus cycling and management  
Advisor: Elena Bennett

#### MSc, *Sustainability, 2011*

School of Sustainability, Arizona State University, Tempe, AZ USA  
Thesis: Phosphorus cycling in metropolitan Phoenix  
Advisors: Daniel Childers and Rimjhim Aggarwal

#### BS, *Environmental Systems, Earth Sciences track, 2009*

University of California, San Diego, CA USA  
Primary Research: Environmental responses in paleoecology

### PROFESSIONAL EXPERIENCE

- 2020-present **Associate Professor (Senior Lecturer).** Department of Physics, Chemistry, and Biology, & Center for Climate Science and Policy Research, Linköping University, Sweden
- 2019-present **Docent.** Department of Physics, Chemistry, and Biology, Linköping University, Sweden. *This is the equivalent of putting in a tenure package in Sweden which gives you the right to be the main supervisor for PhD students.*
- 2017-2020 **Assistant Professor.** Department of Physics, Chemistry, and Biology, & Center for Climate Science and Policy Research, Linköping University, Sweden
- 2016-present **Researcher.** Nitrogen Footprint Tool Network<sup>1</sup>. *Developing a combined phosphorus nitrogen, carbon, and water footprint tool for university campuses.*
- 2015-2017 **Postdoctoral Research Associate.** National Research Council, National Academies of Science with the US Environmental Protection Agency Western Ecology Division and Visiting Scholar at School of the Environment, Washington State University, Vancouver Campus, WA. *Developed maps and statistical models of drivers of phosphorus losses to waterways and their effect on water quality from 1969 to 2012 for the Willamette Valley and 2012 for the conterminous USA.*
- 2015 **Postdoctoral Research Fellow.** Institute for Sustainable Futures, University of Technology, Sydney Australia. *Developed spatially explicit inventory of recyclable phosphorus supply and agricultural needs in the Greater Sydney Basin to identify risks and opportunities in the area through a series of stakeholder presentations and workshops (Sydney Water Corporation, New South Wales Environmental Protection*

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<sup>1</sup> <http://www.n-print.org/>

*Authority, and farmers, agronomists and organic waste managers).*

- 2014-2016 **Project Lead & Researcher.** P-FUTURES: Towards urban food & water security Integrating sustainable phosphorus management in urban decision-making and planning. *Responsible for research methodology design and work-plan the implementation, organization and facilitation/ presentation of workshops with stakeholders in Australia, Vietnam, Malawi and the US, budget management, writing reports, scientific articles, and developing a web platform.*
- 2014-2015 **Collaborator.** Sustainable Future Scenarios for long-term ecological planning, Central Arizona Phoenix –Long Term Ecological Research (CAP-LTER) at ASU lead by Dr. D. Iwaniec. *Workshop facilitator (invited)*
- 2012-2017 **Project Lead & Researcher.** Urban Fluxes and Flows Working Group and Green Infrastructure Working Group, as part of the Urban Sustainability Research Coordination Network<sup>2</sup>, funded by the US National Science Foundation at ASU. *Organized 2 interdisciplinary working groups where I coordinate workshops, lead a peer-reviewed publication and funding proposals in sustainable nutrient management and empirically assessing the benefits of green infrastructure projects in international cities with different biophysical contexts (invited)*
- 2009-2015 **Researcher,** *Urban Stoichiometry Group, Graduates in Integrative Society and Environment Research (GISER), ASU, Tempe AZ USA*
- 2008-2009 **Paleontological Lab Technician,** Richard Norris Lab, Scripps Institution of Oceanography, UCSD La Jolla CA USA
- 2008-2009 **Research intern,** Jeremy Jackson Lab, Scripps Institution of Oceanography, UCSD, La Jolla CA USA

## RESEARCH INTERESTS

Urban ecology and sustainability, waste management, biogeochemistry (focus on phosphorus and nitrogen management), food systems, agriculture, transdisciplinary and solution research, ecosystem services, climate change

**PUBLICATIONS** [30 refereed articles, 1 opinion, 3 book chapters, 4 in review, footnotes indicate media and outreach done in association with the publication, h-index 13]

31. G S Metson, J Lin, J E Compton, J A Harrison. (2020). Where have all the nutrients gone? Long-term Decoupling of Inputs and Outputs in the Willamette River Watershed, Oregon, United States. **Journal of Geophysical Research: Biogeoscience** 125, e2020JG005792
30. K Schreiber, G Hickey, G S Metson, B Robinson, G K MacDonald (2020, accepted). Quantifying the foodshed: A systematic review of urban food flow and local food self-sufficiency research. **Environmental Research Letters**
29. G Öberg, G S Metson, Y Kuwayama. S Conrad. (2020) Conventional Sewer Systems Are Too Time-Consuming, Costly and Inflexible to Meet the Challenges of the 21<sup>st</sup> Century. **Sustainability**12(16) 6518 10.3390/su12166518

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<sup>2</sup> <http://www.urban-sustainability-rcn.org/>

28. G S Metson, G K MacDonald, A Leach, J E Compton, J A Harrison., J Galloway (2020, accepted). The U.S. consumer's phosphorus footprint: where do nitrogen and phosphorus diverge? **Environmental Research Letters**
27. K J Forber, S A Rothwell, G S Metson, H P Jarvie, P JA Withers (2020). Plant-based diets add to the wastewater phosphorus burden. **Environmental Research Letters** 15 094018 doi: 10.1088/1748-9326/ab9271
26. D L Childers, P Bois, H E Hartnett, T McPhearson, G S Metson, C Sanchez (2019). Urban Ecological Infrastructure (UEI): An inclusive concept for the non-built urban environment. **Elementa** 7(1) <http://doi.org/10.1525/elementa.385>
25. G Small, R McDougal, G S Metson. (2019). Would a sustainable city be self-sufficient in food production? **International Journal of Design & Nature and Ecodynamics** 14(3) 178-194 doi 10.2495/DNE-V14-N3-178-194 (part of the WIT Transactions on Ecology and the Environment conference paper series for Sustainable Cities)
24. G Small, P Shrestha, G S Metson, K Connelly, I Jimenez, A Kay (2019). Low nutrient use efficiency may undermine desired outcomes in urban agriculture. **Environmental Research Communications** 1(9):91007 doi 10.1088/2515-7620/ab3b8c
23. U Akram, NH Quttineh, U Wennergren, K Tonderski, G S Metson (2019). Enhancing nutrient recycling from excreta to meet crop nutrient needs in Sweden – a spatial analysis. **Scientific Reports** 9:10264 <https://doi.org/10.1038/s41598-019-46706-7>
22. K Reitzel, Bennett, Berger, Brownlie, Bruun, Christensen, Cordell, van Dijk, Egemose, Eigner, Glud, Grönfors, Hermann, Houot, Hupfer, Jacobs, Korving, Kjærgaard, Liimatainen, Van Loosdrecht, Macintosh, Magid, Maia, Martin-Ortega, McGrath, Meulepas, Murray, Neset, Neumann, Nielsen, O'Flaherty, Qu, Santner, Seufert, Spears, Stringer, Stutter, Verburg, Wilfert, Williams, G S Metson (2019). New Training To Meet The Global Phosphorus Challenge. **Environmental Science & Technology** <https://doi.org/10.1021/acs.est.9b03519>
21. U Akram, NH Quttineh, U Wennergren, K Tonderski, G S Metson (2019). Optimizing nutrient recycling from excreta in Sweden and Pakistan: Higher spatial resolution makes transportation more attractive. **Frontiers in Sustainable Food Systems** 3(50), doi: 10.3389/fsufs.2019.00050
20. S M Powers, R Chowdhury, G K MacDonald, G S Metson, A Beusen, ABouwman, S E Hampton, B K Mayer, M L McCrackin, D A Vaccari (2019). Global opportunities to increase agricultural independence through phosphorus recycling. **Earth's Future** 10.1029/2018EF001097
19. M Tälle, L Wiréhn, D Ellström, M Hjerpe, M Hüge-Bordin, P Jensen, T Lindström, TS Neset, U Wennergren, G S Metson (2019). Synergies and trade-offs for sustainable food production in Sweden: an integrated approach. **Sustainability** 11(3), 601 <https://doi.org/10.3390/su11030601>
18. J A Harrison, A HW Beusen, G Fink, T Tang, M Strokal, A F Bouwman, G S Metson, L Vilmin (2019). Modeling phosphorus in rivers at the global scale: recent successes, remaining challenges, and near-term opportunities. **Current Opinion in Environmental Sustainability** 36 69-77 <https://doi.org/10.1016/j.cosust.2018.10.010>
17. U Akram, G S Metson, NH Quttineh, U Wennergren (2018). Closing Pakistan's yield gaps through nutrient recycling. **Frontiers in Sustainable Food Systems** 2(24), doi: 10.3389/fsufs.2018.00024

16. G S Metson, D Cordell, B Ridoutt, S Mohr (2018). Mapping phosphorus hotspots in Sydney's organic wastes: a spatially-explicit inventory to facilitate urban phosphorus recycling. **Journal of Urban Ecology**, 4(1), <https://doi.org/10.1093/jue/juy009><sup>3</sup>
15. T Nesme, G S Metson, E M Bennett (2018). Global phosphorus flows through agricultural trade. **Global Environmental Change**, 50 133-141, <https://doi.org/10.1016/j.gloenvcha.2018.04.004>
14. G S Metson, S M Powers, R Hale, J Sayles, G Oberg, G K MacDonald, Y Kuwayama, N Springer, A Weatherley, K Hondula, K Jones, R B Chowdhury, A H W Beusen, A F Bouwman. (2017). Socio-environmental assessment of phosphorus flows in the urban sanitation chain of diverse cities. **Regional Environmental Change**, 18(5) 1137-1401, <https://doi.org/10.1007/s10113-017-1257-7>
13. G S Metson, J Lin, J E Compton, J A Harrison. (2017) Linking 2012 terrestrial P inputs to riverine export from watersheds across the United States. **Water Research**, 124 177-191.
12. G S Metson, D Cordell, B Ridoutt. (2016). Potential impact of dietary choices on phosphorus recycling and global phosphorus footprints: the case of the average Australian city. **Frontiers in Nutrition** 3(35), doi: 10.3389/fnut.2016.00035
11. D Iwaniec\*, G S Metson\*, D Cordell (2016). P-FUTURES: Towards urban food & water security through collaborative design and impact. **Current Opinion in Environmental Sustainability**, 20 1-7. \*co-first authors
10. T Nesme, S Roques, G S Metson, E M Bennett (2016). The surprisingly small but increasing role of international agricultural trade on the European Union's dependence on mineral phosphorus fertiliser. **Environmental Research Letters** 11, 025003.
9. G S Metson, G K MacDonald, D Haberman, T Nesme, E M Bennett (2016). Feeding the Corn Belt: Opportunities for phosphorus recycling in U.S. agriculture. **Science of the Total Environment** 542 Part B, 1117-1126 doi:10.1016/j.scitotenv.2015.08.047<sup>4</sup>
8. G S Metson, E M Bennett. (2015). Facilitators and barriers to organic waste and phosphorus resource reuse in Montreal: laws are not enough. **Elementa** doi: 10.12952/journal.elementa.000070
7. G S Metson, E M Bennett. (2015). Phosphorus cycling Montreal's food and urban agriculture systems. **PLoS One** 10(3): e0120726
6. G S Metson, D M Iwaniec, L A Baker, E M Bennett, D L Childers, D Cordell, N B Grimm, J M Grove, DA Nidzgorski, S White. (2015). Urban phosphorus sustainability: Systemically incorporating social, ecological, and technological factors into phosphorus flow analysis. **Environmental Science and Policy** 47, 1-11, doi:10.1016/j.envsci.2014.10.005
5. G S Metson, V H Smith, D Cordell, D A Viccari, J J Elser, E M Bennett (2014). Phosphorus is a key component of the resource demands for meat, eggs, and dairy production in the United States. **Proceedings of the National Academies of Science** doi: 10.1073/pnas.1417759111
4. K N Liss, M GE Mitchell, G K MacDonald, S Mahajan, J Méthot, A L Jacob, D Maguire, G S Metson, C Ziter, K Dancose, K Martins, M Terrado, and E M Bennett. (2013). Variability in ecosystem service measurement: a pollination service case study. **Frontiers in Ecology and the Environment**, 11, 414-42

<sup>3</sup> 2015 – [Mapping Sydney's phosphorus supply and demand](#). Article in the Institute for Sustainable Futures Newsletter, University of Technology Sydney (March 23)

<sup>4</sup> 2016- Article in Ensia magazine "[New study finds recycled phosphorus could fertilizer 100% of US corn](#)" (Jan)

3. G S Metson, E M Bennett, J Elser. (2012). The role of diet in phosphorus demand. **Environmental Research Letters**, 7 044043 doi:10.1088/1748-9326/7/4/044043<sup>5</sup>
2. G S Metson, D L Childers, R Aggarwal. (2012). Efficiency through Proximity: Changes in P Cycling at the Urban-Agricultural Interface of a Rapidly Urbanizing Desert Region. **Journal of Industrial Ecology**, 16 (6), 914-927
1. G S Metson, R Hale, D Iwaniec, E Cook, J Corman, C Galletti, D Childers. (2012). Phosphorus in Phoenix: A Budget and Spatial Approach Representation of Phosphorus in an Urban Ecosystem. **Ecological Applications** 22 (2), 705-721

### Refereed book chapters

D Cordell, G S Metson, D Iwaniec, T T Bui, D L Childers, N Dao, H TT Dang, J Davidson, B Jacobs, S Kumwanda, T Morse, V Nguyen, B Thole, E A Tilley. Transforming Cities: Securing food and clean waterways through phosphorus governance. Transdisciplinary Research and Practice for Sustainability Outcomes, D Fam, J Palmer, C Reidy, C Mitchell (Eds.). **Routledge** (2017, **invited**)

G Metson, K Wyant, D Childers. Introduction to P sustainability. Phosphorus, Food, Our Futures. J Elser, K Wyant, J Corman (Eds.) **Oxford University Press** (2013, **invited**)

S H. Riskin, G Small, R Mikkelsen, G Metson, A Bateman, J Cooper, O S Hanserud, P Haygarth, C Laspoumaderes, M McCrackin, and S Remington. Phosphorus in Urban and Agricultural Landscapes. Phosphorus, Food, Our Futures. J Elser, K Wyant, J Corman (Eds.). **Oxford University Press** (2013, **invited**)

### Manuscripts in review

G S Metson, E T Bere, J C Bausch, H van Grinsven, H Westhoek, W J Brownlie. Chapter 6 Consumption: The Missing Link in Phosphorus Security. Our Phosphorus Futures. W J Brownlie (Eds).

R D Sabo, C M Clark, D A Gibbs, G S Metson, M J Todd, S D LeDuc, D Greiner, M M Fry, R Polinsky, Q Yang, H Tian, J E Compton. (In Review) Phosphorus Inventory for the Conterminous United States (2002-2012). **JGR Biogeosciences**

G S Metson, R Feiz, NH Quttineh, K Tonderski. (submitted) Optimizing transport to maximize nutrient recycling and green energy recovery. **Resources, Conservation, & Recycling**

R Sakrabani, W J Brownlie, G S Metson, M Blackwell. Chapter 7 Opportunities to recycle phosphorus rich organic wastes. Our Phosphorus Futures. W J Brownlie (Eds).

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<sup>5</sup> 2013 – Radio interview on Desautels show on Premiere Chaîne de Radio-Canada (piece by E. Leblanc, Feb. 8)

2013 – [Article](#) in the McGill Headway Magazine and blog on diet research (Sept)

2013 – Interview for The Western Producer newspaper for piece “[Meat consumption linked to global phosphorus use](#)”(D. Yates Feb 8)

2013 – [Feature piece](#) for environmentalresearchweb (Feb 6)

2013 – Interview for newspaper Le Soleil for piece “Les reserves de phosphore menacé par les mangeurs de viande” (C. Samson Jan 21)

2012 – [Video abstract](#) for Environmental Research Letters website

2012 – Radio interview. Ecolibrium. CKUT 90.3FM. McGill Student Radio (March 24)

**AWARDS & FELLOWSHIPS**

- 2019-2021 *Fellow*, Postdoc Academy for Transformational Leadership, Bosch Foundation Germany
- 2018-2017 *Excellence in Refereeing*, American Geological Union Editor's Citation for Earth's Future
- 2017 *Commended Referee*, Environmental Research Letters (10<sup>th</sup> anniversary highlights)
- 2015-2017 *National Research Council Research Associateship*, US National Academies of Science (50k \$/yr)
- 2015 *Endeavour Research Fellowship*, Australian Government (23k AUS\$)
- 2014 *Young Scientist Award*, 4<sup>th</sup> Sustainable Phosphorus Summit, Montpellier, France
- 2014 *Graduate Research Enhancement and Travel Award*, McGill University (2k \$)
- 2013 *Liber Ero Fellowship* in Science Communication and Policy Engagement, McGill University
- 2012 *Best poster presentation award*, 5<sup>th</sup> Global Food Security Conference, McGill University (500 \$)
- 2011-2014 *Alexander Graham Bell Canada Graduate Scholarship*, National Science and Engineering Resource Council of Canada (105k \$)
- 2011-2014 *Graduate Excellence Fellowship*, McGill University (15k \$)
- 2011 *Graduate Grant*, Central Arizona Phoenix Long-Term Ecological Research Site National Science Foundation, Arizona State University (4k \$)
- 2010 *President's Award for Sustainability*, Awarded for project: Future of Agriculture and Water in Central Arizona, Arizona State University
- 2009 *Provost Achievement Award*, Graduating senior, Warren College University of California San Diego (1k \$)
- 2009 *Phi Beta Kappa Honors Society*, University of California San Diego Chapter
- 2008 *Dean of Physical Sciences Undergraduate Award for Excellence*, Undergraduate Research, University of California San Diego (1k \$)
- 2008 *Mary Louise and Charlie Robins Endowed Scholarship Fund for Marine Sciences*, Undergraduate Research, Scripps Institution of Oceanography, University of California San Diego (3k \$)
- 2005-2009 *Provost Honors*, University of California San Diego

**GRANTS  
Awarded**

- 2020-2024 **Co-Applicant** w/ Kasper Reitzel et al. Capture, recycling, and societal management of phosphorus in the environment (RECAP). European Union Marie Curie Innovation Training Network (H2020-MSCA-ITN-2020)

- 2020-2023 **Co-Principal Investigator** w/Robin Harder et al. End-of-wastewater: Co-creation of a digital knowledge brokering and public engagement toolbox to support implementation and upscaling of sustainable nutrient and carbon recovery and reuse. The Kamprad Family Foundation for Entrepreneurship, Research & Charity Sweden. (3.5 million sek)
- 2019-2024 **Principal Investigator.** Urban agriculture as blue-green infrastructure: Can it feed bodies and minds while protecting waterways? FORMAS Sweden (8 million sek)
- 2019-2022 **Principal Investigator.** Optimally recycling organic waste to support food and energy production in Sweden. FORMAS Sweden (2 million sek)
- 2019-2020 **Co-Principal Investigator** w/Robin Harder et al. From nutrient recovery in waste management to nutrient recirculation to food systems through enhanced collaboration and co-creation between waste management and food system actors FORMAS Sweden (500,000 sek)
- 2019 **Principle investigator.** Travel grant. Wenner-Gren Foundation, Sweden (14,000 sek)
- 2019 **Principle investigator.** Storytelling the key role of consumption decisions in sustainable food systems and phosphorus cycling. Verifiering För Nyttgörande (Results valorization grant). Linköping University Sweden (50,000 Swedish crowns)
- 2018-2021 **Co-applicant** w/ Craig Sheridan, Karin Tonderski, Uwe Kappelmeyer et al. Accessible Greywater Solutions for Urban informal Townships in South Africa (URBWAT). Water Joint Proposal Initiative 2017 on Water Resource Management in support of the United Nations Sustainable Development Goals. (1.15 million € total)
- 2017-2018 **Co-Principal Investigator** w/Uno Wennergren et al. The role of collaborative efforts around resource distribution and recycling logistics in creating an effective and sustainable Swedish food system. FORMAS Sweden. (1.5 million sek)
- 2015 **Co-Principal Investigator** w/S. Powers. Closing the global phosphorus (P) cycle: a synthesis of human P transport as food and waste products. Research workshop proposal. National Socio-Environmental Synthesis Center (SESYNC)
- 2014-2015 **Co-Principal Investigator** w/D. Cordell and D. Iwaniec. P-FUTURES: Towards urban food & water security –Integrating sustainable phosphorus management in urban decision-making and planning. Phase I: Development of methodology and preliminary data collection. Seed grant awarded through the Transformations to Sustainability Program. International Social Science Council and Future Earth (30k €, also Finalists for Phase II: top 8 out of 99 applications for 900k €) <http://www.p-futurescities.net/>

## TEACHING & SUPERVISION EXPERIENCE

### Teaching

- 2020-present **Instructor**, “Ecological Systems” 3<sup>rd</sup> year BSc, Biology, Linköping University *Responsible for co-development of entire class with 2 colleagues and leading lectures on climate change, wetlands, carbon, nitrogen, and phosphorus cycling, systems thinking, and labs on watershed nutrient budgets and water quality management.*
- 2020-present **Instructor/Examiner**, “Being a good reviewer and a good author in the context of peer-review”. Graduate level open to all departments, Linköping University *Developed all class material and teach alone.*

- 2019-present **Instructor**, “The Challenges of Urban Planning”. 1<sup>st</sup> year BA Urban Planning, Linköping University  
*Developed and teach modules on sanitation and urban agriculture.*
- 2019-present **Instructor**, “Methods in Ecology”. 1<sup>st</sup> year MSc Biology, Linköping University  
*Responsible for co-development of entire class with 3 colleagues and leading lectures, labs and seminars on system thinking, science communication, and linking sustainable development goals to ecological research work.*
- 2018-present **Instructor/Examiner**, “Ecological Applications in Agriculture, Forestry, and Fisheries”. 1<sup>st</sup> year MSc in Biology, Linköping University  
*Developed and teach all class material when students pair with stakeholder groups to answer a real-world question that can use academic ecology input.*
- 2017 **Guest lecturer**, “Urban nutrient budgets and using interdisciplinary methods for sustainable management”, Urban Ecology, University of St-Thomas
- 2017 **Guest lecturer**, “Sustainable tourism, what are we not thinking of? Sanitation”, Exploration in tourism and travel, Ryerson University
- 2016 **Guest lecturer**, “Algal blooms and nutrients: Why should cities care?”, Earth People and the Environment, Rowan University
- 2016 **Guest lecturer**, “The Science-Policy Interface: The complexities of better managing phosphorus” Environmental Policy, Environmental Science, Washington State University Vancouver
- 2013-2020 **Guest lecturer**, “Phosphorus: an essential resource”, Geography of Natural Resources Arizona State University online undergraduate class. Video lecture
- 2013 **Guest lecturer**, “Agriculture, food, and water and the phosphorus lens”, Strategies for Sustainability, School of Management, McGill University
- 2011 **Guest lecturer**, “The use of extractive vs. participative methods in student sustainability research,” Research proposal writing, Arizona State University
- 2009-2011 **Teaching Assistant**, Arizona State University  
Sustainable Ecosystems (1 semester, undergraduate class)  
The Sustainable World (3 semesters, undergraduate class)  
Responsible for solo-teaching breakouts and co-developing curricula

### Supervision

- 2020-present **Supervisor** PhD student (Paulien Van de Vlasakker), Theoretical Biology, Linköping University
- 2020 **Supervisor** MSc student (Nikals Lindell), Agtech2030 project, Theoretical Biology, Linköping University
- 2020 **Supervisor** MSc students (Ida Lindergaard and Tove Ranggård), Technical Biology, Linköping University
- 2020-present **Co-supervisor** PhD student (Motshwaedi Collen Sepeng), Geography Department University of the Witwatersrand, South Africa
- 2019-2020 **Co-supervisor** MSc student (Boitumelo Malunga), Psychology, University of the



Witswatersrand, South Africa

- 2019 **Supervisor** 5 BSc students, Biotechnical Sciences, Linköping University
- 2019-present **Committee member** PhD Student (Kerstin Schreiber). Department of Geography, McGill University, Canada
- 2018 **Supervisor** Post Doctoral Fellows (Malin Tälle, Lotten Wiréhn, Daneil Ellström), Theoretical Biology, Thematic Studies, Management and Engineering, Linköping University
- 2018 **Supervisor** MSc students (Johanna Alander, Carl-Martin Johansson), Management and Engineering, Linköping University
- 2017-2020 **Co-supervisor** PhD student (Usman Akram), Theoretical Biology, Linköping University
- 2017 **Co-Supervisor** for BSc independent studies (Rebecca Clarke, Ashley Tseng). Data collection and analysis for phosphorus footprint of food, Washington State University Vancouver and McGill University
- 2017 **Supervisor** for BSc independent studies (Susanna Klassen, Francis Cardinal). Natural Resource Sciences, McGill University

### Examination

- 2020 **Examiner** MSc thesis (Niklas Lindell), Biology Linköping University
- 2020 **Examiner** BSc thesis (Daniel Lake), Biology Linköping University
- 2020 **Examination committee** PhD thesis (Megan Meachams), Stockholm Resilience Center
- 2020 **Examination committee** PhD thesis (Mia Persson), Biology, Linköping University
- 2019 **Opponent** PhD thesis (Rosanne Wielemaker), Environmental Technology, Wageningen University

### Training

- 2020 Course Design and Implementation 1901, Didacticum Linköping University
- 2019 Becoming a teaching in Higher Education 1901, Didacticum Linköping University
- 2018 Research Supervision 1802, Didacticum Linköping University
- 2015 Science Communication Training, Communication and outreach division, University of Technology Sydney
- 2013 COMPASS Science Communication Training, McGill University
- 2013 Leading Effective Discussions: Facilitation Skills Workshop, Leadership Training Office, McGill University
- 2009 Teaching Assistant Orientation and Training, Arizona State University

**ACADEMIC PRESENTATIONS**

**Talks** [29 as presenting author, not listing non-presenting co-author talks, 12 at international conferences, 17 seminars or local conferences]

Geneviève S. Metson. The role of urban citizens in sustainable phosphorus cycling: can urban agriculture act as a seed for transformation? 2019 **Transformations** Conference. Oct 16-18 2019, Santiago Chile (international conference)

Geneviève S. Metson. The role of urban citizens in sustainable phosphorus cycling. Closing meeting of Danish phosphorus waste recycling project. Oct 10 2019, Aalborg University Copenhagen Denmark (**invited** keynote).

Geneviève S. Metson. A need to better integrate substance flow analyses in to transdisciplinary spaces for transformative change in phosphorus recycling. 9<sup>th</sup> **International Phosphorus Workshop**. July 8-12 2019, Zurich Switzerland (international conference, **invited** keynote).

Geneviève S. Metson. How spatially explicit data and optimization modelling can help better manage nutrients on the landscape. Center for Environmental and Climate Research. **Departmental Seminar**, Feb 22 2019, Lund University Sweden.

Geneviève S. Metson. The role of urban citizens in sustainable phosphorus cycling. Center for sustainability studies. **Departmental Seminar**, Feb 21 2019 Lund University Sweden.

Geneviève S. Metson. Phosphorus and Society: The importance of consumer choices. United Nations Environment Program Special Session 6<sup>th</sup> **Sustainable Phosphorus Summit**. August 20-22 2018 Brasilia, Brazil (international conference, **invited**).

Geneviève S. Metson. The importance of spatially explicit data to inform phosphorus recycling between urban-rural and rural-rural divides. 6<sup>th</sup> **Sustainable Phosphorus Summit**. August 20-22 2018 Brasilia, Brazil (international conference).

Geneviève S. Metson, Tina-Simone Neset, Karin Eliasson, Michelle McCrackin. Exploring the importance of teleconnections for phosphorus sustainability in Sweden's food system strategy. 6<sup>th</sup> **Sustainable Phosphorus Summit**. August 20-22 2018 Brasilia, Brazil (international conference).

Geneviève S. Metson, Nils-Hassan Quttineh, Roozbeh Feiz, Usman Akram, Carl-Martin Johansson, Johana Wretman, Karin Tonderski, Uno Wennergren. Optimizing phosphorus recycling through biogas production: How can we optimally locate plants in Sweden? **Sustainable European Phosphorus Conference**. June 11-12 2018 Helsinki, Finland (international conference).

Geneviève S. Metson. Sustainability and resilience in the face of environmental change through urban and agricultural nutrient linkages. **Seminar**, October 3 2017, Institute of Meteorology and Climate Research, Karlsruhe Institute of Technology, Garmisch-Partenkirchen Germany (**invited**)

Geneviève S. Metson. Linking terrestrial phosphorus management to water quality across the USA, within the Willamette, and at the consumer level. Western Ecology Division Arid Division **Seminar**, April 26 2017, EPA Corvallis USA (**invited**)

Geneviève S. Metson. Sustainability and resilience in the face of environmental change through the urban phosphorus lens. **Seminar**, April 5 2017, Linköping University, Linköping Sweden (**invited**)

Geneviève S. Metson. Sustainability and resilience in the face of environmental change through the urban phosphorus lens. **Departmental Seminar**, March 22 2017, University of California Merced, Merced USA (**invited**)

Geneviève S. Metson. Sustainability and resilience in the face of environmental change through the urban phosphorus lens. **Seminar**, March 9 2017, Ryerson University, Toronto Canada (**invited**)

Geneviève S. Metson, Jiajia Lin, Jana E. Compton, John A. Harrison. Linking terrestrial phosphorus inputs to riverine export across the United States. **Association for Sciences of Limnology and Oceanography**, Feb 26-March 3 2017, Honolulu HI USA (international conference)

Geneviève S. Metson. Food and water security in the face of environmental change through the urban phosphorus lens. **Departmental Seminar**, October 27 2016, University of California Irvine, Irvine USA (**invited**)

Geneviève S. Metson. Sustainability and resilience in the face of environmental change through the urban phosphorus lens. **Departmental Seminar**, October 17 2016, University of Florida, Gainesville USA (**invited**)

Geneviève S. Metson. Integrating phosphorus into the nitrogen footprint calculator. **3<sup>rd</sup> Annual Nitrogen Footprint Network Meeting**, June 20-22 2016, University of New Hampshire, USA (**invited**)

Geneviève S. Metson. Sustainability and resilience in the face of environmental change through the urban phosphorus lens. **Departmental Seminar**, April 11 2016, Rowan University, New Jersey USA (**invited**)

Geneviève S. Metson. Sustainability and resilience in the face of environmental change through the urban phosphorus lens. **Departmental Seminar**, March 16 2016, Concordia University, Montreal Qc Canada (**invited**)

Geneviève S. Metson, Jana E. Compton, Dana Cordell, John A. Harrison, David Iwaniec. Shaping future phosphorus management pathways by understanding the past and present. **American Geophysical Union Fall Meeting**, Dec 14-18 2015, San Francisco USA (international conference, **invited**)

Geneviève S. Metson. From cities to oceans: How to integrate people into sustainable phosphorus management. **Departmental Seminar**. Nov 2 2015, Washington State University, Vancouver USA, (**invited**)

Geneviève Metson and Elena Bennett. The role of urban agriculture in Montreal phosphorus cycling. **4<sup>th</sup> Sustainability Phosphorus Summit**, Sept 1-3 2014, Montpellier France (international conference)

Geneviève Metson. Using dance to explore and communicate research on sustainable phosphorus management. **10<sup>th</sup> Interdisciplinary Graduate Student Research Symposium**, April 1-2 2014, McGill University, Montreal Qc Canada (international conference)

Geneviève Metson. L'importance de l'agriculture urbaine sur le cycle urbain du phosphore. Midi-conférence series 2012-2013 organized by Université du Québec à Montréal Science and Environment Institute, the Collectif en aménagement paysager et agriculture urbaine durable, and the Urban agriculture lab. April 9 2013, Montreal Qc Canada (**invited**)

Geneviève Metson, Elena Bennett, James Elser. The role of diet in mined P demand. **Third Sustainable Phosphorus Summit**. Feb 29-March 2 2012, University of Technology Sydney, Sydney Australia

Geneviève Metson, Arijit Guha, Edward Burgess, Lela Preshad. Comparative Remote Sensing work on Phoenix and London at ASU and visual representation through JEARTH. **The Comparative Genetics of Cities: Towards and Integrated Methodology for Pragmatic Urban Decision-making**. May 21-23 2010, Workshop at University College London UK

Geneviève Metson. Changes in life habits and environments of the Arcidae (Bivalvia, Mollusca) in

response to the rise of the Isthmus of Panama”. **Undergraduate Research Conference 2009**, UCSD, La Jolla CA USA

### Posters [12]

Kristy Forber, Shane Rothwell, Geneviève Metson, Donnacha Doddy, Helen Jarvie, Paul Withers. Historic trends in UK phosphorus consumption: will a change in diet increased our sewage phosphorus loading? 9<sup>th</sup> **International Phosphorus Workshop**. July 8-12 2019, Zurich Switzerland (international conference).

Usman Akram, Nils-Hassan Quttineh, Geneviève Metson, Uno Wennergren. A transition towards bio-based sustainable crop nutrition in Sweden and Pakistan. **Eco-Bio**, March 4-7 2018, Dublin Ireland (international conference)

Rebecca L. Clarke, Geneviève S. Metson, Allison M. Leach, Graham K. MacDonald, Jana E. Compton, Jennifer Andrews, Elizabeth Castner, James Galloway, Tim Moore. Towards an integrated nitrogen and phosphorus footprint tool for consumers in the United States. **Ecological Society of America**, Aug 6-11 2017, Portland OR USA

Dana Cordell, Geneviève Metson, David Iwaniec. P-FUTURES Phosphorus: Future Urban Transformations. 3<sup>rd</sup> **International Faecal Sludge Management Conference** Jan 18-21 2015, Hanoi Vietnam (international conference)

Dana Cordell, Geneviève Metson, David Iwaniec. P-FUTURES Phosphorus: Future Urban Transformations Cities in Future Earth, Third **Australian Earth System Outlook Conference** Dec 8-9 2014, Canberra Australia (international conference)

David Iwaniec, Geneviève Metson, Daniel Childers. Phosphorus Cycling in Phoenix and serendipitous recycling. **National Science Foundation site review** for CAP-LTER Sept 25-27 2013, Tempe AZ USA

Geneviève Metson, Elena Bennett, James Elser. Human diet affects phosphorus demand around the world. Fifth **McGill Conference on Global Food Security**- Food Prices and Political Instability. October 16-18, 2012, McGill, Montreal Qc Canada (international conference)

Geneviève Metson, Christopher Galletti, Elizabeth Cook, Rebecca Hale, Jessica Corman, David Iwaniec. Phosphorus in Phoenix: a budget and spatial analysis of phosphorus in urban ecosystems. **Sustainable Phosphorus Summit**, Feb 3-5 2011, ASU Tempe AZ USA (international conference)

Geneviève Metson, Jessica Corman, Elizabeth Cook, Rebecca Hale, David Iwaniec, Christopher Galletti. “Nutrient movements in human environment interactions: Phosphorus in Phoenix”. **CAP LTER Thirteenth Annual Poster Symposium** and All Scientists Meeting, Jan 13 2011, ASU, Tempe AZ USA

Geneviève Metson, Arijit Guha, Robin Cleland, Benjamin Jewel. “The different roles of urban agriculture: the response of farmers’ markets, community gardens, and dairy farming to economic recession and “green trends” in central Arizona”. ‘Land Systems, Global Change and Sustainability’, **Global Land Project Open Science Meeting**, Oct 17-19 2010, ASU, Tempe AZ USA (international conference)

Jessica Corman, Elizabeth Cook, Rebecca Hale, Geneviève Metson, David Iwaniec. “An Elemental Approach to Understanding Human-Environment Interactions”. **International Conference on Urbanization and Global Change**, Oct15-17 2010, ASU, Tempe AZ USA (international conference)

Elizabeth Cook, David Iwaniec, Jessica Corman, Rebecca Hale, Geneviève Metson, Jesse Sayles, Xiaoli Dong. “Urban Stoichiometry: An Elemental Approach to Understanding Human-Environment Interactions”. **Urban Ecology and Sustainability** Twelfth Annual Poster Symposium CAP-LTER,

Jan 14 2010, ASU, Tempe AZ USA

## SERVICE & OUTREACH

### Non-peer reviewed publications

Geneviève Metson. (2016) The Nature Of Cities Global Round Table: Urban agriculture has many benefits. Is one of them a contribution to urban sustainability? The Nature of Cities (June 28 2016: <http://www.thenatureofcities.com/> , **invited**)

Geneviève Metson. (2014) Cities as a key components of sustainable food-system P cycling. **Scope Newsletter** special issue Perspectives of phosphorus stewardship. European Sustainable Phosphorus Platform. August 2014 n°106 ([online](#))

Geneviève Metson. (2011) A tale of two neighbors: the United States' and Canada's distinct but intertwined paths to sustainability. **The Sustainability Review** ([online](#))

Geneviève Metson, Arijit Guha, Robin Cleland, Benjamin Jewel. Food and Urban Agriculture. The Comparative Genetics of Cities: Towards and Integrated Methodology for Pragmatic Urban Decision-making. Published by: Global Institute of Sustainability and Center for Sustainability Science Applications. Pamphlet presented at University College London, May 21-23, 2010. P 10-11

### Science communication and public outreach

- 2020 Interview with Michel Delapierre for [economie.fr](http://economie.fr). *Penser phosphate sur le long terme*. France (Jan)
- 2019 Interview with Izabella Rosengren for [forskning.se](http://forskning.se). *Fosfor från Marocko styr världens matproduktion*. Sweden (Aug)
- 2019 Invited speaker as part of the Sustainable Land Use? Synergies, Conflicts, and Solutions for Sweden and Beyond seminar series. *How Sweden could increase food and energy security through better waste management*. Almedalen week Gotland, Sweden (July)
- 2016 Public lecture. *The P-ness of it all: it's all about phosphorus*. Summer of Science Series, Portland, OR USA (Sept)
- 2012-2015 Founding member and regular writer for Montreal at your Ecological Service Website <http://esmontreal.ca/>
- 2012-2015 Research and science communication blog: [urbanphosphorusballet.com](http://urbanphosphorusballet.com)
- 2011 Runner-Up Social Science Category in *Dance your PhD 2010* contest sponsored by the American Association for the Advancement of Science.<sup>6</sup>
- 2014 Phosphorus and Dance performance and discussion. Freaky Fridays at the Redpath Museum, McGill University (Sept)
- 2014 *Substance P+Atomic #15* dance-science show. Festivale d'art souterrain and Nuit Blanche March 2014. Montreal Qc. Canada With The/Le Sensorium<sup>7</sup>
- 2014 Interview at Montreal par la Racine show on CIBL radio (18 Feb)

<sup>6</sup> Quoted in Why Do Scientists Dance? John Bohannon (5 Nov. 2010) *Science* 330 (6005), 752-b. [DOI:10.1126/science.330.6005.752-b]

<sup>7</sup> [Article](#) in the McGill Reporter and [video](#) on La Fabrique Culturelle (April)

- 2013 Finalist in the #McGillAndMe contest. *Why I study Phosphorus?*
- 2012 Green Thumb. Black Water. Art collaboration with Jose Methot and Francis Dumas. Dance Video contribution to Bodies of Water Project for The Art of Engagement online network, the Island Institute
- 2012 Public Lecture. *Hey, what are they growing on that roof?* Food Production in Our Cities. Ashtanga Montreal Studio, Qc Canada (**invited**)
- 2011 *The P-ness of it all*. Art collaboration with Edgar Cardenas (video installation). Shown at the Sustainable Phosphorus Summit and the Step Gallery Feb 2011 ASU, Tempe AZ USA
- 2011 Got Bones? Got Ca? Got P? Art collaboration with Joshua White (photography). Shown at the Sustainable Phosphorus Summit and the Step Gallery Feb 2011 ASU, Tempe AZ USA
- 2010 Geneviève Metson, Anna Krithis, Carissa Taylor The Future of Agriculture and Water in Arizona. Presentation and Discussion of findings to the general public. Feb 12 2010, Science Café, Chandler AZ USA

### Journal, grant, and publication peer-review

2011-2020 Peer-reviewer for manuscripts in the following journals and conference proceedings<sup>8</sup>, average 12 reviews per year:

Agroecology and Food System Transformation	Environmental Research Letters <sup>9</sup>	Ecological Engineering
Nutrients Cycling in Agroecosystems	Journal of Industrial Ecology	Resource Conservation and Recycling
Food Security	Science of the Total Environment	Global Change Biology
Global Environmental Change	Journal of the American Water Resources Association	Sustainability and Social Science Research Symposium
Landscape and Urban Planning	Earth's Future <sup>10</sup>	Nature Sustainability
Environmental Science and Technology	Urban Planning	AIMS Environmental Science
Nature Food	Journal of Environmental Management	AMBIO
	Nature Communications	BioScience
		Journal of Cleaner Production

2020 External reviewer of grant applications to The Swedish Research Council (VR) annual open call (NT-12: Ecology, systematics and evolution panel)

2017 External reviewer of grant applications to Vienna Science and Technology Fund

<sup>8</sup> [Publons](#) record of reviews.

<sup>9</sup> Commended Referee (shown in 10<sup>th</sup> anniversary highlights of ERL)

<sup>10</sup> 2017 American Geological Union Editor's Citation for Excellence in Refereeing for Earth's Future

- 2010 Reviewer and contributor to Dickson, E., Tiwari, A., Baker, J., Hoornweg, D. (2010). Understanding Urban Risk An Approach for Assessing Disaster & Climate Risk in Cities. Urban Development and Local Government Unit The World Bank

### Conference and organization contributions

- 2019 Invited speaker at Linköping University's Forum Scientium Summer Conference. Peer-reviewing as an opportunity for learning and giving back to science. Västervik Sweden (Aug)
- 2018 Presenter at career week. *Women in STEM and opportunities in environmental science*. Engelskaskolan high school students visiting, Linköping University, Sweden (Oct)
- 2018 Interactive ecology teaching for advanced high school students. *Nitrogen and you! What you can do to contribute to sustainable development?* Linnédagen, Linköping University, Sweden (Sept)
- 2018 Co-chair and convener. Session "Geopolitics of Phosphorus – the importance of trade, teleconnections and governance for phosphorus sustainability". 6<sup>th</sup> Sustainable Phosphorus Summit with Tina Neset. Brasilia, Brazil
- 2018 Rapporteur. Session "Nutrient Circular Economy", 3<sup>rd</sup> European Sustainable Phosphorus Conference, Helsinki, Finland (**invited**)
- 2016-2017 North America and European regional committee member. Integrated land ecosystem-atmosphere processes study (iLEAPs) Early Career Scientist Network. (**invited**)
- 2015 Volunteer session note-taker. World Resource Forum Asia-Pacific 2015. University of Technology Sydney, Australia
- 2014 Guest panelist for Vanier Celebrates Women in Science. Vanier College, Montreal, Qc Canada (**invited**)
- 2014 Working group facilitator at the 4<sup>th</sup> Sustainability Phosphorus Summit Montpellier, France (**invited**)
- 2013 Spokes-Person for Groupe de Travail en Agriculture Urbaine (GTAU) Montreal, Qc Canada. Elected position
- 2012-2014 Post-peer review commentaries for Faculty of 1000 Associate Faculty
- 2012 Graduate Student Social Chair, School of Sustainability, ASU. Elected Position

### MEMBERSHIPS & SPECIAL GROUP PARTICIPATION

- 2017 Association for Sciences of Limnology and Oceanography membership
- 2016 Participant. Transformative Knowledge Workshop for the Transformations to Sustainability International Social Science Council Programme. Jawaharlal Nehru University. New Delhi, India (**invited**)
- 2015 Participant. International Geosphere-Biosphere Program and Future Earth Workshop on co-design and co-production for early career researchers. San Francisco, CA USA (**invited**)
- 2015 American Geophysical Union membership

- 2012 Participant. Dissipation and Recycling Node. 4<sup>th</sup> Global transdisciplinary processes for sustainable phosphorus management (Global TraPs) Workshop. El Jadida, Morocco  
**(invited)**
- 2012 Ecology Society of America membership
- 2011-2015 Quebec Center for Biodiversity Science membership
- 2011-2014 Group de Travail en Agriculture Urbaine (GTAU) Montreal membership
- 2010 Participant. Farming and food systems as social-ecological systems: integrated assessment for resilience and adaptive capacity. NOVA University Network. Finland  
**(invited)**