

# Colin A. Cooke

---

1-26 Earth Sciences, University of Alberta  
Edmonton, AB T6G 2E3  
<https://apps.ualberta.ca/directory/person/cacooke>

office: (780) 492-7554  
cell: (780) 292-1096  
email: [cookeca@gmail.com](mailto:cookeca@gmail.com)

---

## EDUCATION

---

<b>Ph.D.</b> Earth and Atmospheric Sciences, University of Alberta	2006–2010
<b>M.Sc.</b> Geology and Planetary Science, University of Pittsburgh	2004–2006
<b>B.A.</b> Anthropology, University of Alberta	1998–2003

## PROFESSIONAL EXPERIENCE

---

<b>Senior Aquatic Scientist</b>	2024–present
<b>Aquatic Scientist</b>	2016–2024
<b>Acting Director of Watershed Sciences</b>	2017
Ministry of Environment and Protected Areas, Government of Alberta	
<b>Adjunct Professor</b>	2015–present
Department of Earth and Atmospheric Sciences, University of Alberta	
<b>Aquatic Ecosystems Scientist</b>	2013–2016
Alberta Environmental Monitoring, Evaluation and Reporting Agency	
<b>Research &amp; Teaching Fellow</b>	2013
Department of Geology and Planetary Science, University of Pittsburgh	
<b>Interdepartmental &amp; NSERC Postdoctoral Fellow</b>	2011–2012
Department of Geology & Geophysics, Yale University	
<b>NSERC &amp; Endeavour Postdoctoral Fellow</b>	2010
School of Geosciences, University of Sydney	

## PUBLICATIONS (\*student or postdoctoral trainee)

---

- Cooke CA**, Holland KM, Emmerton CE, Drevnick PD, Criscitiello AS, Newton B (*in press*) Mountaintop removal coal mining contaminates snowpack across a broad region *Environmental Science & Technology*.
- Cooke CA**, Emmerton CE, Drevnick PD (2024) Legacy coal mining impacts downstream ecosystems for decades in the Canadian Rockies *Environmental Pollution* 344: 123328.
- Serbu JA, St.Louis VL, Emmerton CE, Tank S, Criscitiello A, Silins U, Bhatia M, Cavaco M, Christenson C, **Cooke CA**, Drapea H, Enns SJ, Flett J, Holland K, Lavelle-Whiffen J, Ma M, Muir C, Poesch M, Shin J (2024) A Comprehensive Biogeochemical Assessment of

- Climate-Threatened Glacial River Headwaters on the Eastern Slopes of the Canadian Rocky Mountains *JGR Biogeosciences* 129: e2023JG007745.
59. Levesque LMJ, Roy J, Glozier N, Dirk L, **Cooke CA** (2023) Dissolved polycyclic aromatic compounds in Canada's Athabasca River in relation to oil sands from 2013 through 2019 *Environmental Monitoring and Assessment* 195: 1354.
  58. \*Staniszewska KJ, Reyes AVR, **Cooke CA** (2023) Glacial erosion drives high summer mercury exports from the Yukon River, Canada *Environmental Science & Technology Letters*.
  57. Lopez MLD, Bonderud M, Allison MJ, MacDermind F, Ussery EJ, McMaster ME, Dersch A, \*Staniszewska KJ, **Cooke CA**, Drevnick P, Helbing CC (2023) qPCR-based eDNA workflow for humic-rich lake sediments: Combined use of sedimentary DNA (sedDNA) and Indigenous knowledge in reconstructing historical fish records *Ecological Indicators*.
  56. Bonger JL, Muros V, O'Shea C, Gómez Mejía J, **Cooke CA**, Young M, Barnard H (2023) Painting personhood: Red pigment practices in Southern Peru *Journal of Anthropological Archaeology* 69: 101480.
  55. Kay ML, Jasiak I, Klemm WH, Faber JA, MacDonald LA, Telford JVK, Savage CAM, **Cooke CA**, Wolfe BB, Hall RI (2023) Paleolimnological evaluation of metal(loid) enrichment from oil sands and gold mining operations in northwestern Canada *Environmental Research* 216: 114439.
  54. Emmerton CE, Drevnick PD, Serbu J, **Cooke CA**, Graydon J, Reichert M, Evans M, McMaster M (2023) Downstream modification of mercury in diverse river systems underscores the role of local conditions in fish bioaccumulation. *Ecosystems* 26: 114–113.
  53. **Cooke CA**, Drevnick PE (2022) Transboundary atmospheric pollution from mountaintop coal mining. *Environmental Science & Technology Letters* 9: 943–948.
  52. **Cooke CA**, Emmerton CE, Yi Y, Levesque L, Glozier N (2022) Polycyclic aromatic compounds in rivers dominated by petrogenic sources after boreal megafire *Environmental Science & Technology* 56: 9408–9416.
  51. Steinmann BA, Stansell ND, Mann ME, **Cooke CA**, Abbott MB, Bird BW, Lachniet MS, Vuille M, Fernandez A (2022) Interhemispheric antiphasing of neotropical precipitation during the past millennium. *Proceedings of the National Academy of Sciences* 119: e2120015119.
  50. \*Staniszewska KJ, Reyes AV, **Cooke CA**, Miller BS, Woywitka RJ (2022) Permafrost, geomorphic, and hydroclimatic controls on mercury, methylmercury, and lead concentrations and exports in Old Crow River, arctic western Canada. *Chemical Geology* 596: 120810.
  49. **Cooke CA**, Curtis JH, Kenney WF, Drevnick P, Siegel PE (2022) Caribbean lead and mercury pollution archived in a crater lake. *Environmental Science & Technology* 56: 1736–1742.
  48. Smythe KK, **Cooke CA**, Drevnick PE, Cornett RJ, Blais JM (2022) Tracking historical sources of polycyclic aromatic compounds (PACs) in dated lake sediment cores near the *in-situ* bitumen operations of Cold Lake, Alberta. *Environmental Pollution* 294: 118567.
  47. Roberts SL, Kirk JL, Muir DCG, Wiklund JA, Evans MS, Gleason A, Allison T, Drevnick PE, Dastoor A, Ryjkov A, Yang F, Wang X, Lawson G, Pilote M, Keating J, Barst BD, Ahad JME, **Cooke CA** (2021) Quantification of spatial and temporal trends in atmospheric mercury deposition across Canada over the past 30 Years. *Environmental Science & Technology* 55: 15766–15775.

46. Ahad JME, Pakdel H, Labarre T, **Cooke CA**, Gammon PR, Savard MM (2021) Isotopic Analyses Fingerprint Sources of Polycyclic Aromatic Compound-Bearing Dust in Athabasca Oil Sands Region Snowpack. *Environmental Science & Technology* 55: 5887–5897.
45. \*Donadt C, **Cooke CA**, Graydon J, Poesch MS (2021) Biological factors moderate trace element accumulation in fish along an environmental concentration gradient. *Environmental Toxicology and Chemistry* 40: 422–434.
44. \*Donadt C, **Cooke CA**, Graydon J, Poesch MS (2021) Mercury bioaccumulation in stream fish from an agriculturally-dominated watershed *Chemosphere* 262: 128059.
43. Martínez Cortizas A, Horák-Terra I, Pérez-Rodríguez M, Bindler R, **Cooke CA**, Kylander M (2020) Structural equation modeling of long-term controls on mercury and bromine accumulation in Pinheiro mire (Minas Gerais, Brazil). *Science of the Total Environment* 757: 143940.
42. \*Staniszewska K, **Cooke CA**, Reyes AV (2020) Quantifying meltwater sources and contaminant fluxes from the Athabasca Glacier, Canada. *ACS Earth and Space Chemistry* 5: 23–32.
41. Rydberg J, **Cooke CA**, Tolu J, Wolfe AP, Vinebrooke RD (2020) An assessment of chlorophyll preservation in lake sediments using multiple analytical techniques applied to the annually laminated lake sediments of Nylandssjön *Journal of Paleolimnology* 64: 379–388.
40. Emmerton CA, **Cooke CA**, Hustins S, Silins U, Emelko MB, Lewis T, Kruk M, Taube N, Zhu D, Jackson B, Stone M, Kerr JG, Orwin JF (2020) Severe western Canadian wildfire affects water quality even at large basin scales *Water Research* 183: 116071.
39. Schneider L, **Cooke CA**, Stansell N, Haberle S (2020) Effects of Climate Variability on Mercury Deposition in Sediments of the Venezuelan Andes *Journal of Paleolimnology* 63: 211–224.
38. **Cooke CA**, Martinez-Cortizas A, Bindler R, Sexauer Gustin M (2020) Environmental archives of atmospheric Hg deposition – A review *Science of the Total Environment* 709: 134800.
37. \*Wasiuta V, Kirk JL, Chambers PA, Alexander AC, Wyatt FR, Rooney RC, **Cooke CA** (2019) Accumulating mercury and methylmercury burdens in watersheds impacted by oil sands pollution. *Environmental Science & Technology* 53: 12856–12864.
36. \*Gopalapillai Y, Kirk JL, Landis MS, Muir DCG, **Cooke CA**, Gleason A, Ho A, Kelly E, Schindler D, Wang X, Lawson G (2019) Source Analysis of Pollutant Elements in Winter Air Deposition in the Athabasca Oil Sands. *ACS Earth and Space Chemistry* 3: 1656–1668.
35. \*Bandara S, Froese DG, St Louis VL, **Cooke CA**, Calmels F (2019) Post depositional Mercury Mobility in an Ombrotrophic Peat Permafrost Archive from Central Yukon, Canada. *ACS Earth and Space Chemistry* 3: 770–778.
34. Kohl L, Meng M, de Vera J, Bergquist B, **Cooke CA**, Hustins S, Jackson B, Wentworth G, Chow CW, Chan AWH (2019) Limited retention of wildfire-derived PAHs and trace elements in indoor environments. *Geophysical Research Letters* 46: 383–391.
33. \*Emmerton C, **Cooke CA**, Wentworth G, Graydon J, Ryjkov A, Dastoor A (2018) Total mercury and methylmercury in lake water of Canada’s oil sands region. *Environmental Science & Technology* 52: 10946–10955.
32. Pompeani D, **Cooke CA**, Abbott MB, Drevnick PD (2018) Climate, Fire, and Vegetation Mediate Mercury Delivery to Mid-Latitude Lakes Over the Holocene. *Environmental Science & Technology* 52: 8157–8164.

31. Burger RL, Lane KE, **Cooke CA** (2017) A Response to the Commentary by Karen Olsen Bruhns, William E. Brooks, and Deborah Truhan on “Ecuadorian Cinnabar and the Prehispanic Trade in Vermilion Pigment: Viable Hypothesis or Red Herring?” *Latin American Antiquity* 28: 611–613.
30. **Cooke CA**, Kirk JL, Muir DCG, Wiklund JA, Wang X, Gleason A, Evans MS (2017) Spatial and Temporal Patterns in Trace Element Deposition to Lakes in the Athabasca Oil Sands Region (Alberta, Canada) *Environmental Research Letters* 124001.
29. Kerr JG, **Cooke CA** (2017) Erosion of the Alberta Badlands Produces Highly Variable and Elevated Heavy Metal Concentrations in the Red Deer River, Alberta *Science of the Total Environment* 596–597: 427–436.
28. Hall T, Penny D, Hendrickson M, **Cooke CA**, Hua Q (2016) Iron and fire: Geoarchaeological history of a Khmer peripheral centre during the decline of the Angkorian Empire, Cambodia *Journal of Archaeological Science: Reports* 6: 53–63.
27. Korosi JB, **Cooke CA**, Eickmeyer DC, Kimpe LE, Blais JM (2016) In-situ Bitumen Extraction Linked to Increased Petrogenic Polycyclic Aromatic Compounds in Lake Sediments *Environmental Pollution* 218: 915–922.
26. Drevnick PE, **Cooke CA**, and 31 others (2016) Spatiotemporal Patterns of Mercury Accumulation in Lake Sediments of Western North America *Science of the Total Environment* 568: 1157–1170.
25. Summers J, Kurek J, Kirk JL, Muir DCG, Wang X, Wiklund J, **Cooke CA**, Evans M, and J.P. Smol (2016) Recent Warming, Rather Than Industrial Emissions of Bioavailable Nutrients, is the Dominant Driver of Lake Primary Productivity Shifts Across the Athabasca Oil Sands Region *PloS ONE* 11(5): e0153987.
24. **Cooke CA**, Schwindt C, Davies M, Azim E, Donahue WF (2016) Initial Environmental Impacts of the Obed Mountain Coal Mine Process Water Spill into the Athabasca River (Alberta, Canada) *Science of the Total Environment* 557: 502–590.
23. Burger RL, Lane KE, **Cooke CA** (2016) Ecuadorian Cinnabar and the Prehispanic Trade in Vermilion Pigment: Viable Hypothesis or Red Herring? *Latin American Antiquity* 27: 22–35.
22. Michelutti N, Lemmen JL, **Cooke CA**, Hobbs WO, Wolfe AP, Kurek J, Smol JP (2016) Assessing the Effects of Climate and Volcanism on Diatom and Chironomid Assemblages in an Andean Lake Near Quito, Ecuador *Journal of Limnology* 75: 275–286.
21. Prieto G, Wright V, Burger R, **Cooke CA**, Zeballos-Velasquez EL, Watanave A, Suchomel MR, Suescum L (2016) The Source, Processing and Use of Red Pigment Based on Hematite and Cinnabar at Gramalote, an Early Initial Period (1500–1200 cal. B.C.) Maritime Community, North Coast of Peru *Journal of Archaeological Science: Reports* 5: 45–60.
20. Michelutti N, **Cooke CA**, Hobbs WO, Smol JP (2015) Climate-driven Changes in Lakes from the Peruvian Andes *Journal of Paleolimnology* 54: 153–160.
19. Uglietti C, Gabrielli P, **Cooke CA**, Vallelonga P, Thompson LG (2015) Widespread Pollution of the Andean Atmosphere Predates the Industrial Revolution by Centuries *Proceedings of the National Academy of Sciences* 112: 2349–2354
18. Michelutti N, Wolfe AP, **Cooke CA**, Hobbs WO, Vuille M, Smol JP (2015) Climate Change Forces New Ecological States in Tropical Andean Lakes *PLoS ONE* 10: e0115338.
17. Hillman AL, Yu JQ, Abbott MB, **Cooke CA**, Bain DJ, Steinman BA (2014) Rapid Environmental Change During Dynastic Transitions in Yunnan Province, China *Quaternary Science Reviews* 98: 24–32.

16. Engstrom DR, Fitzgerald WF, **Cooke CA**, Lamborg CH, Drevnick PE, Swain EB, Balogh SJ, Balcom PH (2014) Atmospheric Hg Emissions from Preindustrial Gold and Silver Sxtraction in the Americas: A Reeevaluation from Lake-sediment Archives *Environmental Science & Technology* 48: 6533–6543.
15. **Cooke CA**, Hintelmann H, Ague JJ, Burger R, Biester H, Sachs JP, Engstrom DR (2013) Use and legacy of Mercury in the Andes *Environmental Science & Technology* 47: 4181–4188.
14. Perren BB, Wolfe AP, **Cooke CA**, Kjær KH, Mazzucchi D, Steig E (2012) Twentieth-century Warming Revives the World’s Northernmost Lake *Geology* 40: 1003–1006.
13. **Cooke CA**, Michelutti N, Balcom PH, Briner JP, Wolfe AP (2012) A Holocene Perspective on Algal Mercury Scavenging to Sediments of an Arctic Lake *Environmental Science & Technology* 46: 7135–7141.
12. Wilson CR, Michelutti N, **Cooke CA**, Briner JP, Wolfe AP, Smol JP (2012) Arctic Lake Ontogeny Across Multiple Interglaciations. *Quaternary Science Reviews* 31: 112–126.
11. Reyes AV, **Cooke CA** (2011) Northern Peatland Initiation Lagged Abrupt Increases in Deglacial Atmospheric CH<sub>4</sub> *Proceedings of the National Academy of Sciences* 108: 4748–4753.
10. Phillips VJ, St. Louis VL, **Cooke CA**, Vinebrooke RD, Hobbs WO (2011) Increased Mercury Loadings to Western Canadian Alpine Lakes Over the Past 200 years *Environmental Science & Technology* 45: 2042–2047.
9. **Cooke CA**, Balcom PH, Kerfoot C, Abbott MB, Wolfe AP (2011) Pre-Colombian Mercury Pollution Associated with the Smelting of Argentiferous Ores in the Bolivian Andes *Ambio: A Journal of the Human Environment* 40: 18–25.
8. **Cooke CA**, Hobbs WO, Michelutti N, Wolfe AP (2010) Reliance on <sup>210</sup>Pb Chronology Can Compromise the Inference of Pre-Industrial Hg Flux to Lake Sediments *Environmental Science & Technology* 44: 1998–2003.
7. **Cooke CA**, Wolfe AP, Hobbs WO (2009) Lake-sediment geochemistry reveals 1400 years of evolving extractive metallurgy at Cerro de Pasco, Peruvian Andes *Geology* 37: 1019–1022.
6. Axford Y, Briner JP, **Cooke CA**, Francis DR, Michelutti N, Miller GH, Smol JP, Thomas EK, Wilson CR, Wolfe AP (2009) Recent Changes in a Remote Arctic Lake are Unique Within the Past 200,000 Years *Proceedings of the National Academy of Sciences* 106: 18443–18446.
5. **Cooke CA**, Balcom PH, Biester H, Wolfe AP (2009) Over Three Millennia of Mercury Pollution in the Peruvian Andes *Proceedings of the National Academy of Sciences* 106: 8830–8834.
4. **Cooke CA**, Abbott MB (2008) A Paleolimnological Perspective on Industrial-era metal Pollution in the Central Andes, Peru *Science of the Total Environment* 393: 262–272.
3. **Cooke CA**, Abbott MB, Wolfe AP (2008) Late-Holocene Atmospheric Lead Deposition in the Peruvian and Bolivian Andes *The Holocene* 18: 353–359.
2. **Cooke CA**, Abbott MB, Wolfe AP, Kittleson JL (2007) A Millennium of Metallurgy Recorded by Lake Sediments from Morococha, Peruvian Andes *Environmental Science & Technology* 41: 3469–3474.
1. Wolfe AP, **Cooke CA**, Hobbs WO (2006) Are current rates of atmospheric nitrogen deposition influencing lakes in the Eastern Canadian Arctic? *Arctic, Antarctic, and Alpine Research* 38: 465–476.

### Book chapters

2. **Cooke CA**, Bindler R (2015) Lake sediment Records of Preindustrial Metal Pollution In: *Environmental Contaminants: Using Natural Archives to Track Sources and Long-term Trends of Pollution* Blais JM, Rosen MR, Smol JP [Editors]. Developments in Paleoenvironmental Research. Dordrecht: Springer p.101–119
1. **Cooke CA**, Abbott MB, Wolfe AP (2008) Metallurgy in Southern South America. In: *Encyclopedia of the History of Science, Technology, and Medicine in Non-Western Cultures* Vol. 2, Seline H [Editor] Dordrecht: Springer p.1658–1662.

### Technical Reports

6. Emmerton CA, **Cooke CA**, Kerr JG, Laceby JP, Taube N (2023) Looking upstream: A 5-year review of Alberta's monitoring, evaluation, and reporting (MER) plan for lotic systems. <https://open.alberta.ca/publications/looking-upstream-5-year-review-of-mer-plan-for-lotic-systems>
5. Kerr JG, **Cooke CA** (2019) A five-year provincial water quality monitoring, evaluation and reporting plan for lotic systems. Government of Alberta, Ministry of Environment and Parks. ISBN 978-1-4601-4136-6. <https://open.alberta.ca/publications/9781460141366>
4. **Cooke CA**, Droppo IG, di Cenzo P, Glozier NE, Chambers PA, Conly M, Gupta A (2018) Rationalizing and Optimizing the Water Quality Monitoring Network in the Oil Sands. Oil Sands Monitoring Program. Technical Report Series No. 2. 21 p. ISBN: 978-1-4601-4019-2. <https://open.alberta.ca/publications/9781460140192>
3. Chambers PA, Trusiak AA, Kirk JL, Manzano C, **Cooke CA**, Hazewinkel R (2018) Surface Water Quality of Lower Athabasca River Tributaries. In: *A synthesis report prepared for the Canada-Alberta Joint Oil Sands Monitoring Plan*. <https://www.canada.ca/en/environment-climate-change/services/oil-sands-monitoring/documents-reports.html>
2. Glozier NE, Pippy K, Levesque L, Ritcey A, Armstrong B, Tobin O, **Cooke CA**, Conly M, Dirk L, Epp C, Gue A, Hazewinkel R, Keet E, Lindeman D, Maines J, Syrgiannis J, Su M, Tumber V (2018) Surface Water Quality of the Athabasca, Peace, and Slave Rivers and Riverine Waterbodies within the Peace-Athabasca Delta. In: *A synthesis report prepared for the Canada-Alberta Joint Oil Sands Monitoring Plan*. <https://www.canada.ca/en/environment-climate-change/services/oil-sands-monitoring/documents-reports.html>
1. Kirk JL, Muir DCG, Manzano C, **Cooke CA**, Wiklund J, Gleason A (2018) Atmospheric Deposition to the Athabasca Oil Sands Region using Snowpack Measurements and Dated Lake Sediment Cores In: *A synthesis report prepared for the Canada-Alberta Joint Oil Sands Monitoring Plan*. Available at: <https://www.canada.ca/en/environment-climate-change/services/oil-sands-monitoring/documents-reports.html>

### RESEARCH FUNDING

---

#### Current

Government of Alberta (2024–27) *Core River Water Quality Monitoring Program* ~\$800,000 per year

- Scientific lead of all lotic (river and stream) water quality monitoring across Alberta; oversee all contracts and grants

Government of Alberta (2022–24) *Coal Mining Contaminants in the Canadian Rocky Mountains* \$112,000

#### *Completed*

Government of Alberta (2020–21) *Crowsnest River watershed – Legacy coal mine contaminant inputs* \$160,000 (with P. Drevnick, C. Emmerton)

Alberta Fish and Wildlife (2018–20) *Tracking spatio-temporal dynamics of whirling disease in Alberta using paleo-eDNA* \$91,800 (with P. Drevnick, R. Vinebrook, M. Poesch, P. Hanington)

National Geographic Society (2020–21) *Ice Coring the Water Towers of the Columbia, Fraser, Athabasca and Saskatchewan Rivers in a Warming World* \$99,621 USD (with A. Criscitiello, M. Sharp, A. DeSilva).

Governments of Alberta and Canada, Oil Sands Monitoring Program (2020–21) *Aquatic Ecosystem Health Monitoring* \$12.2M (with P. Drevnick, N. Glozier, M. McMaster).

Government of Alberta (2015–16) *Contaminant loadings around the 9-21 bitumen flow to surface* \$58,884 (with J. Blais, J. Korosi).

Governments of Alberta and Canada, Oil Sands Monitoring Program (2014–20) *Surface Water Quality Monitoring* \$15.3M (with N. Glozier).

Governments of Alberta and Canada, Oil Sands Monitoring Program (2014–17) *Acid Sensitive Lake Monitoring* \$510,000.

National Geographic Society (2011–12) *New perspectives on the preindustrial mercury cycle: integrating geoarchaeology and biogeochemistry* \$21,600 (with R. Burger, J. Ague, H. Hintelmann, H. Biester)

Australian Institute of Nuclear Science and Engineering (2010–11) *Industries of Angkor Project: Documenting the history, scale, and environmental impact of iron production during the Khmer Empire (11<sup>th</sup>–15<sup>th</sup> c. CE) Cambodia* \$10,175 (with M. Hendrickson, Q. Hua, D. Penny).

National Geographic Society (2008–09) *Lake-sediment archives of pre-industrial mercury pollution from the Peruvian and Bolivian Andes* \$26,890 (with A. Wolfe, V. St. Louis).

National Geographic Society (2005–06) *Reconstruction of Pre-Incan Metallurgy Using Lake Sediments from Southern Peru* \$20,000 (with M. Abbott, A. Wolfe).

#### AWARDS AND HONOURS

---

2017	Premier's Distinction for First Responders to the 2016 Fort McMurray Wildfire
2011	Isaac Newton International Fellowship, Royal Society, UK
2009–2010	Dissertation Fellowship, University of Alberta
2009	Travel/Research Award, Mineralogical Association of Canada
2008–2009	Queen Elizabeth II Doctoral Scholarship, University of Alberta
2005–2007	Outstanding Student Research Award, Geological Society of America
2007	Kerry Kelts Award, Geological Society of America
2005	Claude C. Albritton, Jr. Geoarchaeology Award, Geological Society of America
2004–2006	Full Academic Scholarship, University of Pittsburgh

#### PRESENTATIONS

---

*Invited research seminars*

- 2023 Northern Alberta Institute of Technology (NAIT)  
2022 Government of Alberta, Policy Division  
2019 Peace River Watershed Alliance  
Alberta Energy Regulator  
University of Alberta, Department of Earth and Atmospheric Sciences  
2018 University of Pittsburgh, Department of Geology and Environmental Science  
2016 Trent University, School of Environmental Sciences  
MacEwan University, Department of Physical Sciences  
2015 University of Alberta, Department of Earth and Atmospheric Sciences  
2013 University of Minnesota–Duluth, Large Lakes Observatory  
University of Wisconsin–Madison  
2012 Eawag: Swiss Federal Institute of Aquatic Science and Technology  
Lakehead University, Department of Geology  
Yale University, Department of Anthropology  
Wesleyan University, Department of Earth and Environmental Sciences  
2011 Connecticut College, Departments of Botany and Biology  
University of Pittsburgh, Department of Geology and Planetary Science  
Woods Hole Oceanographic Institute, Department of Marine Chemistry and  
Geochemistry  
University of Connecticut, Department of Marine Sciences  
2010 University of Queensland, School of Geography Management  
Australia National University, Research School of Earth Sciences  
University of Maine, Climate Change Institute

*Recent (last 5 years) conference presentations*

- Cooke CA**, Drevnick PE (2022) Transboundary atmospheric pollution of polycyclic aromatic compounds (PACs) from mountaintop coal mining. *AGU Fall Meeting*
- \*Shin J, Criscitiello AS, **Cooke CA**, De Silva AO, Young C (2021) Contaminant deposition and fate on Snow Dome, Columbia Icefield, Canadian Rocky Mountains. *AGU Fall Meeting*
- Ahad JME, Padkel H, Labarre T, **Cooke CA**, Savard M, Gammon PR (2021) Quantitative source apportionment of polycyclic aromatic compounds (PACs) in the Athabasca oil sands region snowpack using compound-specific carbon and hydrogen isotope analysis. *Goldschmidt Geochemistry Conference*
- \*Staniszewska K, **Cooke CA**, Reyes AV (2020) Are melting alpine glaciers a source of legacy priority contaminants to downstream environments? A high-frequency analysis of water chemistry in the Canadian Rockies. *EGU General Assembly*
- Yi Y, **Cooke CA**, Glozier NE, Pippy K (2019) Estimation of substance loads from surface waters and groundwater in the Lower Athabasca River A mass balance approach *Society of Environmental Toxicology and Chemistry North America Annual Meeting*
- \*Donadt, C, **Cooke CA**, Graydon J, Poesch M (2019) The influence of environmental and biological factors on mercury concentrations in stream fish. *International Conference on Mercury as a Global Pollutant*
- Cooke CA**, Wasiuta V, Kirk JL, Chambers PA, Alexander AC, Wyatt FR, Rooney RC, Demers J, Blum JD (2019) Accumulating Hg and MeHg burdens in watersheds impacted by oil sands pollution. *International Conference on Mercury as a Global Pollutant*

- Cooke CA**, Verscherun D, Curtis J, Jeremiason J, Hintelmann H, Bandara S, Kenney WF (2019) Crater Lakes Archive the History of Hg Deposition in the Tropics. *International Conference on Mercury as a Global Pollutant*
- Kohl L, Meng M, de Vera J, Berquist B, **Cooke CA**, Hustins S, Jackson B, Chan AWH (2018) Persistence of wildfire-derived pollutants in indoor environments. *Goldschmidt Geochemistry Conference*
- Kohl L, Chan AWH, **Cooke CA**, Hustins S, Jackson B, Jing X, Meng M (2017) Chemistry, toxicology, and persistence of particulates during and after the 2016 Fort McMurray Wildfires in Alberta, Canada. *AGU Fall Meeting*
- Cooke CA**, Kerr JG (2017) Erosion, not Contamination, Drive High Mercury Concentrations in the Red Deer River (Alberta, Canada). *International Conference on Mercury as a Global Pollutant*
- Kirk JL, Muir DCG, Willis C, St Louis V, Lehnerr I, Gleason A, **Cooke CA**, Wasiuta V (2017) Mercury and Methylmercury in Snowpacks of the Athabasca Oil Sands Region of Northern Alberta, Canada. *International Conference on Mercury as a Global Pollutant*
- Cooke CA**, Kerr JG, Hustins S, Jackson B, Taube N, Kruk M (2017) Initial Impacts of the 2016 Fort McMurray Wildfire (Alberta, Canada) on Regional Water Quality. *Association for the Sciences of Limnology and Oceanography Aquatic Sciences Meeting*

## STUDENT TRAINING AND POSTDOCTORAL RESEARCH SUPERVISION

---

### *Post-doctoral research fellows supervised or co-supervised:*

- Dr. Jinhwa Shin, 09/2020–08/2022
- Dr. Edward Bam, 08/2019–12/2020
- Dr. Yamini Gopalapillai, 2019
- Dr. Vivian Wasiuta, 2016–2018
- Dr. Craig Emmerton, 2016

### *Current graduate student committee service as a co-advisor:*

- Brandon Hill, MSc program, EAS, University of Alberta, 2021–present
- Kasia Staniszevska, PhD program, EAS, University of Alberta, 2020–present

### *Completed graduate student committee service as a co-advisor:*

- Alvin Kwan, MSc program, EAS, University of Alberta, 2017–2021
- Caitlyn Donadt, MSc, Renewable Resources, University of Alberta, 2016–2019
- Kasia Staniszevska, MSc, EAS, University of Alberta, 2018–2020
- Sasiri Bandara, MSc, EAS, University of Alberta, 2015–2017

### *Completed service as an external examiner:*

- Molly Kane, Department of Geology and Planetary Science, Univ. of Pittsburgh, 2010

## SERVICE

---

### *Article reviews:*

Nature Geoscience, Science Advances, PNAS, Environmental Science & Technology, Environmental Science & Technology Letters, Science of the Total Environment, Global

Biogeochemical Cycles, Geochimica et Cosmochimica Acta, Quaternary Science Reviews, Journal of Great Lakes Research, Journal of Paleolimnology, Environmental Monitoring & Assessment, Applied Geochemistry, Chemical Geology, Environmental Science and Pollution Research, Journal of Geophysical Research – Biogeosciences, Global and Planetary Change, Environmental Pollution, Latin American Antiquity, Eos Transactions, Limnology and Oceanography, Canadian Water Resources Journal, Environmental Science: Processes & Impacts, ACS Earth and Space Chemistry, Journal of Hydrology: Regional Studies, FACETS

*Grant reviews:*

- United States National Science Foundation Programs:
  - Geography and Spatial Sciences
  - Archaeology
  - Paleo Perspectives on Climate Change
- Canada Foundation for Innovation
- National Science Centre Poland
- Geological Survey of Canada
- L'Agence Nationale de la Recherche
- European Science Foundation
- National Geographic Society
- Alberta Conservation Association

*Conference sessions chaired:*

- Advances in Mercury Biogeochemistry, 2016 Goldschmidt Geochemistry Conference
- (co-chair with Jeroen Sonke)
- Geochemical Proxies in Paleolimnology, 2009 International Paleolimnology Symposium
- (co-chair with Daniel Engstrom)

*Committee membership:*

- Water Quality Monitoring Laboratory Evaluation Committee member, Alberta Environment and Parks, 2020
- Technical Advisory Committee member, Oil Sands Monitoring Program, 2014–2019
- Technical Advisory Committee member, Athabasca Watershed Council, 2015
- Water Quality Monitoring Laboratory Evaluation Committee Chair, Alberta Environment and Parks, 2015

## TEACHING EXPERIENCE

---

- Primary instructor: The Atmosphere, Oceans, and Climate
- Teaching assistantships: Alpine Environments; Planet Earth: Introduction to Earth Science; Biogeography; Introduction to Geology; Environmental Geology; The Planets