Colin A. Cooke

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EDUCATION

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

PROFESSIONAL EXPERIENCE

Ministry of Environment and Protected Areas, Government of Alberta

2024–present	Senior Aquatic Scientist
2017	Acting Director of Watershed Sciences
2016–2024	Aquatic Scientist

Department of Earth and Atmospheric Sciences, University of Alberta

2015–present	Adjunct Professor

Alberta Environmental Monitoring, Evaluation and Reporting Agency

2013–2016	*Aquatic Ecosystems Scientist*

Department of Geology and Planetary Science, University of Pittsburgh

2013	Research & Teaching Fellow

Department of Geology & Geophysics, Yale University

2011–2012	Interdepartmental & NSERC Postdoctoral Fellow

School of Geosciences, University of Sydney

2010	NSERC & Endeavour Postdoctoral Fellow

PUBLICATIONS (*student or postdoctoral trainee; Scopus h-index=29)

- Heibati B, DeHaas E, Duchesne M, Chan A, Shrestha Palikhe N, Vliagoftis H, Wu J, **Cooke CA**, Chow C-W, Lacy P, Hicks A (*in review*) Impact of wildfire exposure on inflammatory cytokine profiles and respiratory health.

72. **Cooke CA**, Graydon JA, Luek A, Lu X, *Yu H, Le C, Reichert M (2026) Fish remain high in selenium long after mountaintop coal mines close. *Environmental Science & Technology* 60: 11938–11944.
71. Chételat J, Hebert C, Demers J, **Cooke CA**, McClelland C, Bergquist B, Campbell D, Evans M, Freemark M, Gunesli K, Gray Q, Greenwood S, Maclean B, McMaster M, Mundy L, Newman K, Tetrault G, Thomas P (2026) The Athabasca River increases methylmercury burdens of waterbirds breeding downstream. *Scientific Reports* 16: 5630.
70. *Kwan A, **Cooke CA**, Froese DG, Yi Y, *Young JM, Glozier NE, Hicks K (2025) Ten thousand years of bitumen and polycyclic aromatic compound transport in the Athabasca River, Canada. *ACS ES&T Water* 5: 7290–7298.

69. Wang Q, Arlos MJ, Wang J, McMaster M, Ussery E, **Cooke CA**, *Hill BR, Glozier N, Hicks KA (2025) Simulation of polycyclic aromatic compounds in the Athabasca River Basin: Integrated models and insights. *Water Research* 124731.
68. **Cooke CA**, Emmerton CE, Donahue WF, Kerr JG (2025) Downstream water quality impacts persist despite mountaintop coal mine reclamation in the Canadian Rocky Mountains. *Environmental Pollution* 383: 126841.
67. Young M, **Cooke CA**, Burger R, Kaplan E, Prieto G, Bongers J, Dalton J, Usama F, Yuan S, Hintelmann H (2025) Mass spectrometry measurements of mercury isotope ratios support geochemical sourcing of archaeological cinnabar in the Andean region. *PLoS One* 20(7): e0326414.
66. *Blanchard D, Gordon M, Dang H, Makar PA, **Cooke CA**, Yi Y, Lee K, Aherne J (2025) Chromophoric dissolved organic matter in the Athabasca Oil Sands Region, Canada, and its association to lake acid sensitivity. *Science of the Total Environment* 991: 179944.
65. Schneider L, Guerrero S, Mudd G; Aquino Lopez M, Beck K, Sun R, Haberle S, Fletcher M, Zawadzki A, Hintelmann H, Griffiths A, **Cooke CA**, de Caritat P (2025) The legacy of mercury contamination from Colonial non-ferrous mining in the Southern Hemisphere. *Environmental Science & Technology* 59: 13275–13285.
64. *Hill BR, **Cooke CA**, Reyes, AV, Gingras MK (2025) Geology and geomorphology drive polycyclic aromatic compound concentrations and composition in rivers draining the Alberta oil sands. *Environmental Science & Technology* 59: 6839–6849.
63. Alam MS, Ahad JME, **Cooke CA** (2025) Optimized sample cleanup for compound-specific isotopic analysis of polycyclic aromatic hydrocarbons in complex environmental samples. *Organic Geochemistry* 203: 104966.
62. **Cooke CA**, *Holland KM, Emmerton CE, Drevnick PD, Criscitiello AS, Newton B (2024) Mountaintop removal coal mining contaminates snowpack across a broad region. *Environmental Science & Technology* 53: 11718–11726.
61. **Cooke CA**, Emmerton CE, Drevnick PD (2024) Legacy coal mining impacts downstream ecosystems for decades in the Canadian Rockies. *Environmental Pollution* 344: 123328.
60. *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 CE, 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* 10: 1117−1124.
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* 115: 111014.
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, *Klemt 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: 114–133.
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 extraction in the Americas: A reevaluation 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_4. *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 ^{210}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.

Government Technical Reports

7. Emmerton CA, Drevnick P, Zurawell R, **Cooke CA** (2025) A five-year ambient aquatic ecosystem health monitoring, evaluation, and reporting (MER) plan (2025-2030) for lakes and reservoirs in Alberta.
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.
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.
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.
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*.
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.*
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.*

FUNDING

Research grants

Submitted	Co-PI NSERC Alliance "Integrated assessment of selenium contamination in the Crowsnest and Oldman River watersheds" $470K
2018–20	Co-PI Gov. of AB Fish and Wildlife Whirling Disease Program "Tracking spatio-temporal dynamics of whirling disease in Alberta using paleo-eDNA" $91K
2018–20	Co-PI National Geographic Society "Ice Coring the Water Towers of the Columbia, Fraser, Athabasca and Saskatchewan Rivers in a Warming World" $120K
2011–12	PI National Geographic Society "New perspectives on the preindustrial mercury cycle: integrating geoarchaeology and biogeochemistry" $21K

2008–09 PI National Geographic Society "Lake-sediment archives of pre-industrial mercury pollution from the Peruvian and Bolivian Andes" $27K

Monitoring program funding (non-competitive)

2024–27 PI Gov. of Alberta, Environmental Monitoring and Science Program "Core Surface Water Quality Monitoring Program for Lotic Systems" $2.4M

2022–24 PI Gov. of AB Environmental Monitoring and Science Program "Coal Mining Contaminants in the Canadian Rocky Mountains" $112K

2020–21 PI Gov. of AB Environmental Monitoring and Science Program "Crowsnest River watershed Legacy coal mine contaminant inputs" $160K

2020–21 Co-PI Gov. of Alberta and Canada, Oil Sands Monitoring Program "Aquatic Ecosystem Health Monitoring" $12.2M

2014–20 Co-PI Gov. of Alberta and Canada, Oil Sands Monitoring Program "Surface Water Quality Monitoring $15.3M

2014–20 Co-PI Gov. of Alberta and Canada, Oil Sands Monitoring Program "Acid Sensitive Lake Monitoring" $510K

AWARDS AND HONOURS

2017 Premier's Distinction for First Responders to the 2016 Fort McMurray Wildfire
2011 Isaac Newton International Fellowship, Royal Society, UK
2009–10 Dissertation Fellowship, University of Alberta
2009 Travel/Research Award, Mineralogical Association of Canada
2008–09 Queen Elizabeth II Doctoral Scholarship, University of Alberta
2005–07 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
2004–06 Full Academic Scholarship, University of Pittsburgh

PRESENTATIONS *(last 6 years)*

Invited research seminars

2026 Northern Alberta Institute of Technology (NAIT)
2025 University of Alberta, Department of Earth and Atmospheric Sciences
Alberta Energy Regulator (AER), Tailings Community of Practice
2024 Alberta Energy Regulator (AER), Environmental Professionals Meeting
2023 Northern Alberta Institute of Technology (NAIT)
2022 Government of Alberta, Policy Division

Conference presentations (last 6 years)

- *Staniszewska K, *Lamb C, Reyes AV, Cooke CA (2026) Sonde profiling reveals mixing and transport influences on water quality monitoring along the Yukon River, Canada. *Goldschmidt Geochemistry Conference*.
- *Staniszewska K, *Lamb C, Reyes AV, Cooke CA (2026) Slow lateral mixing and longitudinal transport variability challenge water quality monitoring along the Yukon River, Canada. *Arctic Workshop*
- *Staniszewska K, Cooke CA, Reyes AV (2024) Mercury cycling in a warming Arctic: permafrost thaw, glacier melt, and human impacts on mercury exports across the Yukon River basin. *Arctic Monitoring and Assessment Panel, Mercury sub-group*.
- *Staniszewska K, Cooke CA, Reyes AV (2024) Mercury sources and exports across the Yukon River basin. *ArcticNET Arctic Change Conference*.

- *Holland K, Cooke CA, Emmerton CE, Drevnick P, Criscitiello A, Newton B (2024) Widespread polycyclic aromatic compound pollution from mountaintop removal coal mining in snowpack across the southern Canadian Rocky Mountains. *AGU Fall Meeting.*
- *Staniszewska K, Cooke CA, Reyes AV (2024) Seasonal and Annual Mercury Exports Across the Physiographically Diverse Subarctic Yukon River Basin. *Society of Environmental Toxicology and Chemistry (SETAC) North America 45th Annual Meeting*.
- Alam MS, Ahad JME, Cooke CA (2023) Compound-Specific Isotope Analysis Reveals Sources of Polycyclic Aromatic Compounds in the Athabasca River. *Goldschmidt Geochemistry Conference.*
- *Staniszewska K, Cooke CA, Reyes AV (2023) Summertime sources of mercury in the Yukon River, Canada. *Goldschmidt Geochemistry Conference.*
- Cooke CA, Drevnick PE (2022) Transboundary atmospheric pollution of polycyclic aromatic compounds (PACs) from mountaintop coal mining. *AGU Fall Meeting.*
- *Staniszewska K, Reyes A, Cooke C, *Miller BS, Woywitka RJ (2021) Spring snow melt and rainfall, rather than permafrost thaw, control water chemistry in the Old Crow River. *Old Crow Research Gathering*.
- 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.*

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, 2016–18
- Dr. Craig Emmerton, 2016

Current graduate student committee service as a co-advisor:

- Brandon Hill, MSc program, EAS, University of Alberta, 2021–present
- Kasia Staniszewska, 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, 2017–21
- Caitlyn Donadt, MSc, Renewable Resources, University of Alberta, 2016–19
- Kasia Staniszewska, MSc, EAS, University of Alberta, 2018–20
- Sasiri Bandara, MSc, EAS, University of Alberta, 2015–17

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, ACS Environmental Au; Nature Scientific Reports, 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, Environmental Challenges, Environmental Toxicology & Chemistry

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 Recherché
- European Science Foundation
- National Geographic Society
- Alberta Conservation Association

Conference sessions chaired:
- Co-Chair "Advances in Mercury Biogeochemistry" 2016 Goldschmidt Geochemistry Conference
- Co-Chair "Geochemical Proxies in Paleolimnology" 2009 International Paleolimnology Symposium

Committee membership:
- Member Technical Advisory Committee, Public Health Agency of Canada Pesticide Monitoring Program, 2025–26
- Chair Water Quality Laboratory Evaluation Committee, Alberta Environment and Parks, 2023
- Member Water Quality Laboratory Evaluation Committee, Alberta Environment and Parks, 2020
- Member Technical Advisory Committee, Oil Sands Monitoring Program, 2014–2019
- Member Technical Advisory Committee, Athabasca Watershed Council, 2015
- Chair Water Quality Laboratory Evaluation Committee, Alberta Environment and Parks, 2015

TEACHING EXPERIENCE

- Primary instructor: GEOL 0030 The Atmosphere, Oceans, and Climate, 2013 Winter term
- Teaching assistantships: Alpine Environments; Planet Earth: Introduction to Earth Science; Biogeography; Introduction to Geology; Environmental Geology; The Planets
- Guest lectures: RenR 250 Water Resources Management, 2026 Fall term; Environmental Monitoring and Assessment (NAIT), 2023 Fall term