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- Abdalati, W. and K. Steffen, 2001. Greenland ice sheet melt extent: 1979-1999. *Journal of Geophysical Research*, 106:33983-33988.
- ACIA, 2005. Arctic Climate Impact Assessment. 1042 pp. Cambridge University Press.
- Adams, J.W., N.S. Holmes and J.N. Crowley, 2002. Uptake and reaction of HOBr on frozen and dry NaCl/NaBr surfaces between 253 and 233 K. *Atmospheric Chemistry and Physics*, 2:79-91.
- AEPS, 1991. Ministerial Declaration on the Protection of the Arctic Environment. First Arctic Ministerial Meeting. 42 pp. Arctic Environmental Protection Strategy, Rovaniemi, Finland.
- Afonne, O.J., O.E. Orisakwe, E. Obi, C.E. Dioka and G.I. Ndubuka, 2002. Nephrotoxic actions of low-dose mercury in mice: Protection by zinc. *Archives of Environmental Health*, 57:98-102.
- Allen, E.W., E.E. Prepas, S. Gabos, W.M.J. Strachan and W. Zhang, 2005. Methyl mercury concentrations in macroinvertebrates and fish from burned and undisturbed lakes on the Boreal Plain. *Canadian Journal of Fisheries and Aquatic Science*, 62:1963-1977.
- AMAP, 1997. Arctic Pollution Issues: A State of the Arctic Environment Report. xii+188 pp. Arctic Monitoring and Assessment Programme.
- AMAP, 1998. AMAP Assessment Report: Arctic Pollution Issues. xii+859 pp. Arctic Monitoring and Assessment Programme.
- AMAP, 2000. Issues of Concern: Updated Information on Human Health, Persistent Organic Pollutants, Radioactivity, and Mercury in the Arctic. 69 pp. Arctic Monitoring and Assessment Programme.
- AMAP, 2002. Arctic Pollution 2002: Persistent Organic Pollutants, Heavy Metals, Radioactivity, Human Health, Changing Pathways. 112 pp. Arctic Monitoring and Assessment Programme.
- AMAP, 2003. AMAP Assessment 2002: Human Health in the Arctic. xiii+137 pp. Arctic Monitoring and Assessment Programme.
- AMAP, 2004. Persistent Toxic Substances, Food Security and Indigenous Peoples of the Russian North. Final Report. Arctic Monitoring and Assessment Programme, Oslo, Norway.
- AMAP, 2005. AMAP Assessment 2002: Heavy Metals in the Arctic. xvi+265 pp. Arctic Monitoring and Assessment Programme.
- AMAP, 2007. Report of the AMAP Workshop on Statistical Analysis of Temporal Trends of Mercury in Biota, Stockholm, 30 October – 2 November 2006. Arctic Monitoring and Assessment Programme.
- AMAP, 2009a. The Greenland Ice Sheet in a Changing Climate: Snow, Water, Ice and Permafrost in the Arctic (SWIPA). The Greenland Ice Sheet in a Changing Climate: Snow, Water, Ice and Permafrost in the Arctic (SWIPA). By: Dahl-Jensen, D., J. Bamber, C.E. Bøggild, E. Buch, J.H. Christensen, K. Dethloff, M. Fahnestock, S. Marshall, M. Rosing, K. Steffen, R. Thomas, M. Truffer, M. van den Broeke and C.J. van der Veen. 115 pp. Arctic Monitoring and Assessment Programme.
- AMAP, 2009b. AMAP Assessment 2009: Human Health in the Arctic. 254 pp. Arctic Monitoring and Assessment Programme.
- AMAP, 2010. Updating Historical Global Inventories of Anthropogenic Mercury Emissions to Air. AMAP Technical Report No. 3. Arctic Monitoring and Assessment Programme.
- AMAP/UNEP, 2008. Technical Background Report to the Global Atmospheric Mercury Assessment. 159 pp. Arctic Monitoring and Assessment Programme / UNEP Chemicals Branch.
- Amato, P., R. Hennebelle, O. Magand, M. Sancelme, A.-M. Delort, C. Barbante, C. Boutron and C. Ferrari, 2007. Bacterial characterization of the snow cover at Spitzberg, Svalbard. *FEMS Microbiological Ecology*, 59:255-264.
- Amyot, M., D. Lean and G. Mierle, 1997. Photochemical formation of volatile mercury in high Arctic lakes. *Environmental Toxicology and Chemistry*, 16:2054-2063.
- Amyot, M., J.D. Lalonde, P.A. Ariya and A. Dastoor, 2003. Behavior of mercury in snow from different latitudes. *Journal de Physique IV*, 107:45-48.
- Anderson, L.G., K. Olsson, E.P. Jones, M. Chierici and A. Fransson, 1998. Anthropogenic carbon dioxide in the Arctic Ocean: Inventory and sinks. *Journal of Geophysical Research*, 103:27707-27716.
- Andersson, M.E., J. Sommar, K. Gardfeldt and O. Lindqvist, 2008. Enhanced concentrations of dissolved gaseous mercury in the surface waters of the Arctic Ocean. *Marine Chemistry*, 110:190-194.
- Appelquist, H., S. Asbjörk and I. Drabæk, 1984. Mercury monitoring – mercury stability in bird feathers. *Marine Pollution Bulletin*, 15:22-24.
- Arai, T., T. Ikemoto, A. Hokura, Y. Terada, T. Kunito, S. Tanabe and I. Nakai, 2004. Chemical forms of mercury and cadmium accumulated in marine mammals and seabirds as determined by XAFS analysis. *Environmental Science and Technology*, 38:6468-6474.
- Arctic Council, 2000. Barrow Declaration, on the occasion of the Second Ministerial Meeting of the Arctic Council. (<http://Arctic-council.org/filearchive/barrow%20-%20english.pdf> – accessed 24 August 2009).
- Arctic Council, 2006. Salkhard Declaration, on the occasion of the tenth Anniversary of the Arctic Council. ([http://arctic-council.org/filearchive/SALEKHARD\\_AC\\_DECLARATION\\_2006.pdf](http://arctic-council.org/filearchive/SALEKHARD_AC_DECLARATION_2006.pdf) – accessed 17 September 2010).
- Arctic Council, 2009. Tromsø Declaration, on the occasion of the sixth Ministerial Meeting of the Arctic Council. ([http://arctic-council.org/workarea/agenda\\_tromso\\_meeting\\_april\\_2009/filearchive/final\\_draft\\_declaration\\_28\\_apr\\_09\\_a4.pdf](http://arctic-council.org/workarea/agenda_tromso_meeting_april_2009/filearchive/final_draft_declaration_28_apr_09_a4.pdf) – accessed 17 September 2010).
- Ariya, P.A. and K. Peterson, 2005. Chemical transformation of gaseous elemental Hg in the atmosphere. In: Pirrone, N. and K.R. Mahaffey (Eds.), *Dynamics of Mercury Pollution on Regional and Global Scales*, pp. 261-294, Springer.
- Ariya, P.A., A. Khalizov and A. Gidas, 2002. Reactions of gaseous mercury with atomic and molecular halogens: Kinetics, product studies, and atmospheric implications. *Journal of Physical Chemistry A*, 106:7310-7320.
- Ariya, P.A., A.P. Dastoor, M. Amyot, W.H. Schroeder, L.A. Barrie, K. Anlauf, F. Raofie, A. Ryszkov, D. Davignon, J. Lalonde and A. Steffen, 2004. The Arctic: A sink for mercury. *Tellus B*, 56:397-403.
- Ariya, P.A., H. Skov, M.M.L. Grage and M.E. Goodsite, 2008. Gaseous elemental mercury in the ambient atmosphere: Review of the application of theoretical calculations and experimental studies for determination of reaction coefficients and mechanisms with halogens and other reactants. *Advances in Quantum Chemistry*, 55:43-55.
- Armstrong, B., K. Tofflemire, E. Myles, O. Receveur and L. Chan, 2007. Monitoring Temporal Trends of Human Environmental Contaminants in the NWT Study. 94 pp. Department of Health and Social Services, Government of Northwest Territories.
- Aschner, M. and J.L. Aschner, 1990. Mercury neurotoxicity – mechanisms of blood-brain barrier transport. *Neuroscience and Biobehavioral Reviews*, 14:169-176.
- Aspmo, K., C. Temme, T. Berg, C. Ferrari, P.A. Gauchard, X. Fain and G. Wibetoe, 2006. Mercury in the atmosphere, snow and melt water ponds in the North Atlantic Ocean during Arctic summer. *Environmental Science and Technology*, 40:4083-4089.
- ATSDR, 1999. Toxicological Profile for Mercury. 617 pp. Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services.
- Atwell, L., K.A. Hobson and H.E. Welch, 1998. Biomagnification and bioaccumulation of mercury in an arctic marine food web: insights from stable nitrogen isotope analysis. *Canadian Journal of Fisheries and Aquatic Sciences*, 55:1114-1121.
- Auel, H. and W. Hagen, 2002. Mesozooplankton community structure, abundance and biomass in the central Arctic Ocean. *Marine Biology*, 140:1013-1021.
- Babaluk, J.A., 1999. Selected chemical analyses of water from lakes in Ellesmere Island national park reserve, Nunavut. Report No. 0706-6465. Department of Fisheries and Oceans, Central and Arctic Region, Winnipeg, Canada.

- Babaluk, J.A., N.M. Halden, J.D. Reist, A.H. Kristofferson, J.L. Campbell and W.J. Teesdale, 1997. Evidence for non-anadromous behaviour of arctic charr (*Salvelinus alpinus*) from Lake Hazen, Ellesmere Island, northwest Territories, Canada, based on scanning proton microprobe analysis of otolith strontium distribution. *Arctic*, 50:224-233.
- Babaluk, J.A., N. Gantner, W. Michaud, D.C.G. Muir, M. Power, J.D. Reist, R. Sinnatamby and X. Wang, 2009. Chemical analyses of water from lakes and streams in Quttinirpaaq National Park, Nunavut 2001-2008. Canadian Data Report of Fisheries and Aquatic Sciences, 1217, v + 24 p.
- Bada, J.L., R.O. Peterson, A. Schimmelmann and R.E.M. Hedges, 1990. Moose teeth as monitors of environmental isotopic parameters. *Oecologia*, 82:102-106.
- Badzinski, S.S., P.L. Flint, K.B. Gorman and S.A. Petrie, 2009. Relationships between hepatic trace element concentrations, reproductive status, and body condition of female greater scaup. *Environmental Pollution*, 157:1886-1893.
- Baeyens, W., M. Leermakers, T. Papina, A. Saprykin, N. Brion, J. Noyen, M. De Gieter and L. Goeyens, 2003. Bioconcentration and biomagnification of mercury and methylmercury in North Sea and Scheldt Estuary fish. *Archives of Environmental Contamination and Toxicology*, 45:498-508.
- Bahr, D.B., M. Dyurgerov and M.F. Meier, 2009. Sea-level rise from glaciers and ice caps: A lower bound. *Geophysical Research Letters*, 36:L03501.
- Baird, P.H., 1994. Black-legged Kittiwake (*Rissa tridactyla*). In: Poole, A. and F. Gill (Eds.). *Birds of North America*, No. 92. Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington D.C.
- Bales, R.C., R.E. Davis and D.A. Stanley, 1989. Ion elution through shallow homogeneous snow. *Water Resources Research*, 25:1869-1877.
- Balogh, S.J., Y.B. Huang, H.J. Offerman, M.L. Meyer and D.K. Johnson, 2002. Episodes of elevated methylmercury concentrations in prairie streams. *Environmental Science and Technology*, 36:1665-1670.
- Balogh, S.J., Y.H. Nollet and E.B. Swain, 2004. Redox chemistry in Minnesota streams during episodes of increased methylmercury discharge. *Environmental Science and Technology*, 38:4921-4927.
- Banerjee, S. and S. Bhattacharya, 1994. Histopathology of kidney of *Channa punctatus* exposed to chronic nonlethal level of Elsan, mercury, and ammonia. *Ecotoxicology and Environmental Safety*, 29:265-275.
- Banic, C.M., S.T. Beauchamp, R.J. Tordon, W.H. Schroder, A. Steffen, K.A. Anlauf and H.K.T. Wong, 2003. Vertical distribution of gaseous elemental mercury in Canada. *Journal of Geophysical Research*, 108:4264.
- Bargagli, R., C. Agnorelli, f. Borghini and F. Monaci, 2005. Enhanced deposition and bioaccumulation of mercury in Antarctic terrestrial ecosystems facing a coastal polynya. *Environmental Science and Technology*, 39:8150-8155.
- Bargagli, R., F. Monaci and C. Bucci, 2007. Environmental biogeochemistry of mercury in Antarctic ecosystems. *Soil Biology and Biochemistry*, 39:352-360.
- Barkay, T. and A.J. Poulain, 2007. Mercury (micro)biogeochemistry in polar environments. *Fems Microbiology Ecology*, 59:232-241.
- Barkay, T., M. Gillman and R.R. Turner, 1997. Effects of dissolved organic carbon and salinity on bioavailability of mercury. *Applied and Environmental Microbiology*, 63:4267-4271.
- Barkay, T., S.M. Miller and A.O. Summers, 2003. Bacterial mercury resistance from atoms to ecosystems. *Fems Microbiology Reviews*, 27:355-384.
- Barnston, A.G. and R.E. Livezey, 1987. Classification, seasonality and persistence of low-frequency atmospheric circulation patterns. *Monthly Weather Review*, 115:1083-1126.
- Barrie, L.A., J.W. Bottenheim, R.C. Schnell, P.J. Crutzen and R.A. Rasmussen, 1988. Ozone destruction and photochemical-reactions at polar sunrise in the lower arctic atmosphere. *Nature*, 334:138-141.
- Basu, N. and J. Head, 2010. Mammalian wildlife as complementary models in environmental neurotoxicology. *Neurotoxicology and Teratology*, 32:114-119.
- Basu, N., K. Klenavic, M. Gamberg, M. O'Brien, D. Evans, A.M. Scheuhhammer and H.M. Chan, 2005. Effects of mercury on neurochemical receptor-binding characteristics in wild mink. *Environmental Toxicology and Chemistry*, 24:1444-1450.
- Basu, N., M. Kwan and H.M. Chan, 2006a. Mercury but not organochlorines inhibit muscarinic cholinergic receptor binding in the cerebrum of ringed seals (*Phoca hispida*). *Journal of Toxicology and Environmental Health A*, 69:1133-1143.
- Basu, N., A.M. Scheuhammer, K. Rouvinen-Watt, N. Grochowina, K. Klenavic, R.D. Evans and H.M. Chan, 2006b. Methylmercury impairs components of the cholinergic system in captive mink (*Mustela vison*). *Toxicological Sciences*, 91:202-209.
- Basu, N., A.M. Scheuhammer, S.J. Bursian, J. Elliott, K. Rouvinen-Watt and H.M. Chan, 2007a. Mink as a sentinel species in environmental health. *Environmental Research*, 103:130-144.
- Basu, N., A.M. Scheuhammer, K. Rouvinen-Watt, N. Grochowina, R.D. Evans, M. O'Brien and H.M. Chan, 2007b. Decreased N-methyl-D-aspartic acid (NMDA) receptor levels are associated with mercury exposure in wild and captive mink. *Neurotoxicology*, 28:587-593.
- Basu, N., A.M. Scheuhammer, C. Sonne, R.J. Letcher, E.W. Born and R. Dietz, 2009. Is dietary mercury of neurotoxicological concern to wild polar bears (*Ursus maritimus*)? *Environmental Toxicology and Chemistry*, 28:133-140.
- Bates, N.R. and J.T. Mathis, 2009. The Arctic Ocean marine carbon cycle: evaluation of air-sea CO<sub>2</sub> exchanges, ocean acidification impacts and potential feedbacks. *Biogeosciences*, 6:2433-2459.
- Bauer, D., L. D'Ottone, P. Campuzano-Jost and A.J. Hynes, 2003. Gas phase elemental mercury: a comparison of LIF detection techniques and study of the kinetics of reaction with the hydroxyl radical. *Journal of Photochemistry and Photobiology A*, 157:247-256.
- Baumann, P.Q., W.S. Stirewalt, B.D. O'Rourke, D. Howard and K.S. Nair, 1994. Precursor pools of protein synthesis: a stable isotope study in a swine model. *American Journal of Physiology – Endocrinology and Metabolism*, 267:203-209.
- Bearhop, S., G.D. Ruxton and R.W. Furness, 2000a. Dynamics of mercury in blood and feathers of great skuas. *Environmental Toxicology and Chemistry*, 19:1638-1643.
- Bearhop, S., R.A. Phillips, D.R. Thompson, S. Waldron and R.W. Furness, 2000b. Variability in mercury concentrations of great skuas *Catharacta skua*: the influence of colony, diet and trophic status inferred from stable isotope signatures. *Marine Ecology Progress Series*, 195:261-268.
- Becker, P.R., E.A. Mackey, R. Demiralp, R. Suydam, G. Early, B.J. Koster and S.A. Wise, 1995. Relationship of silver with selenium and mercury in the liver of two species of toothed whales (odontocetes). *Marine Pollution Bulletin*, 30:262-271.
- Becker, P.H., J.M. Cifuentes, B. Behrends and K.R. Schmieder, 2001. Contaminants in bird eggs in the Wadden Sea. Spatial and temporal trends 1991-2000. *Wadden Sea Ecosystem No. 11. Common Wadden Sea Secretariat*.
- Benoit, J.M., C.C. Gilmour, R.P. Mason and A. Heyes, 1999. Sulfide controls on mercury speciation and bioavailability to methylating bacteria in sediment pore waters. *Environmental Science and Technology*, 33:951-957.
- Benoit, J.M., C.C. Gilmour, A. Heyes, R.P. Mason and C.L. Miller, 2003. Geochemical and biological controls over methylmercury production and degradation in aquatic ecosystems. In: *Biogeochemistry of Environmentally Important Trace Elements*, pp. 262-297. ACS Symposium Series No. 835.
- Berg, T., C. Dye, J.E. Hanssen, T. Krognes, J. Munthe, A. Reissell, J. Schaug, N. Schmidbauer, A. Semb, K. Tørseth, H.T. Uggerud, A. Aas, K. Aasarød and L. Lisbeth Berntsen, 2002. EMEP Manual for Sampling and Chemical Analysis. Norwegian Institute for Air Research, Kjeller.
- Berg, T., S. Sekkesæter, E. Steinnes, A.K. Valdal and G. Wibetoe, 2003. Springtime depletion of mercury in the European Arctic as observed at Svalbard. *Science of the Total Environment*, 304:43-51.
- Berg, T., R. Kallenborn and S. Manø, 2004. Temporal trends in atmospheric heavy metal and organochlorine concentrations at Zeppelin, Svalbard. *Arctic, Antarctic, and Alpine Research*, 3:284-291.
- Berg, T., W. Aas, J. Pacyna, H.T. Uggerud and M. Vadset, 2008a. Atmospheric trace metal concentrations at Norwegian background sites during 25 years and its relation to European emission. *Atmospheric Environment*, 42:7494-7501.
- Berg, T., K. Aspmo and E. Steinnes, 2008b. Transport of Hg from atmospheric mercury depletion events to the mainland of Norway and its possible influence on Hg deposition. *Geophysical Research Letters*, 35:L09802.
- Bergman, A., A. Bergstrand and A. Bignert, 2001. Renal lesions in Baltic grey seals (*Halichoerus grypus*) and ringed seals (*Phoca hispida botnica*). *Ambio*, 30:397-409.

- Berlin, M., 1986. Mercury. In: Friberg, L., G.F. Nordberg and V.B. Vouk (Eds.). *Handbook on the Toxicology of Metals*, pp. 187-445, Elsevier Science Publishers.
- Bernhard, M. and M.O. Andreae, 1984. Transport of trace metals in marine food chains. In: Nriagu, J.O. (Ed.). *Changing Metal Cycles and Human Health*, pp. 143-167, Springer-Verlag.
- Bertilsson, S., L.A. Hansson, W. Graneli and A. Philibert, 2003. Size-selective predation on pelagic microorganisms in Arctic freshwaters. *Journal of Plankton Research*, 25:621-631.
- Biester, H., R. Bindler, A. Martinez-Cortizas and D.R. Engstrom, 2007. Modeling the past atmospheric deposition of mercury using natural archives. *Environmental Science and Technology*, 41:4851-4860.
- Bignert, A., 2001. Comments concerning the National Swedish Contaminant Monitoring Programme in Marine Biota. Annual report to the Swedish Environmental Protection Agency.
- Bignert, A., 2002. Comments Concerning the National Swedish Contaminant Monitoring Programme in Fresh Water Biota. Report to the Swedish Environmental Protection Agency. 66 pp.
- Bignert, A., F. Riget, B. Braune, P. Outridge and S. Wilson, 2004. Recent temporal trend monitoring of mercury in Arctic biota – how powerful are the existing data sets? *Journal of Environmental Monitoring*, 6:351-355.
- Bindler, R., I. Renberg, P.G. Appleby, N.J. Anderson and N.L. Rose, 2001a. Mercury accumulation rates and spatial patterns in lake sediments from West Greenland: A coast to ice margin transect. *Environmental Science and Technology*, 35:1736-1741.
- Bindler, R., C. Olofsson, I. Renberg and W. Frech, 2001b. Temporal trends in mercury accumulation in lake sediments in Sweden. *Water, Air and Soil Pollution: Focus*, 1:343-355.
- Bindler, R., A.M. Cortizas and M. Blaauw, 2005. Comment on “Atmospheric mercury accumulation rates between 5900 and 800 calibrated years BP in the High Arctic of Canada recorded by peat hummocks”. *Environmental Science & Technology*, 39:908-909, author reply 910-912.
- Biswas, A., J.D. Blum and G.J. Keeler, 2008. Mercury storage in surface soils in a central Washington forest and estimated release during the 2001 Rex Creek Fire. *Science of the Total Environment*, 404:129-138.
- Blais, J.M., D.W. Schindler, D.C.G. Muir, M. Sharp, D. Donald, M. Lafreniere, E. Braekvelt and W.M.J. Strachan, 2001. Melting glaciers: A major source of persistent organochlorines to subalpine Bow Lake in Banff National Park, Canada. *Ambio*, 30:410-415.
- Blais, J.M., L.E. Kimpe, D. McMahon, B.E. Keatley, M.L. Mattory, M.S.V. Douglas and J.P. Smol, 2005. Arctic seabirds transport marine-derived contaminants. *Science*, 309:445.
- Blais, J.M., R.W. Macdonald, D. Mackey, E. Webster, C. Harvey and J.P. Smol, 2007. Biologically mediated transport of contaminants to aquatic systems. *Environmental Science and Technology*, 41:1075-1084.
- Bodaly, R.A., R.E. Hecky and R.J.P. Fudge, 1984. Increases in fish mercury levels in lakes flooded by the Churchill River diversion, northern Manitoba. *Canadian Journal of Fisheries and Aquatic Sciences*, 41:682-691.
- Bodaly, R.A., J.W.M. Rudd, R.J.P. Fudge and C.A. Kelly, 1993. Mercury concentrations in fish related to size of remote Canadian shield lakes. *Canadian Journal of Fisheries and Aquatic Sciences*, 50:980-987.
- Bodaly, R.A., V.L. St.Louis, M.J. Paterson, R.J.P. Fudge, B.D. Hall, D.M. Rosenberg and J.W.M. Rudd, 1997. Bioaccumulation of mercury in the aquatic food chain in newly flooded areas. In: Sigel, A. and H. Sigel (Eds.). *Mercury and its Effects on Environment and Biology*, pp. 257-289, Marcel Dekker.
- Bodaly, R.A.D., W.A. Jansen, A.R. Majewski, R.J.P. Fudge, N.E. Strange, A.J. Derkson and D.J. Green, 2007. Postimpoundment time course of increased mercury concentrations in fish in hydroelectric reservoirs of northern Manitoba, Canada. *Archives of Environmental Contamination and Toxicology*, 53:379-389.
- Booth, S. and D. Zeller, 2005. Mercury, food webs, and marine mammals: Implications of diet and climate change for human health. *Environmental Health Perspectives*, 113:521-526.
- Born, E.W., I. Kraul and T. Kristensen, 1981. Mercury, DDT and PCB in the Atlantic walrus (*Odobenus rosmarus rosmarus*) from the Thule District, North Greenland. *Arctic*, 34:255-260.
- Born, E.W., A. Renzoni and R. Dietz, 1991. Total mercury in hair of polar bears (*Ursus maritimus*) from Greenland and Svalbard. *Polar Research*, 9:113-120.
- Born, E.W., P. Outridge, F.F. Riget, K. Hobson, R. Dietz, T. Haug and N. Øien, 2003. Stock structure of North Atlantic minke whales (*Balaenoptera acutorostrata*) inferred from regional variation of elemental and stable isotopic signatures in tissues. *Journal of Marine Systems*, 43:1-17.
- Bottenheim, J.W., A.G. Gallant and K.A. Brice, 1986. Measurements of NO<sub>x</sub> species and O<sub>3</sub> at 82° N latitude. *Geophysical Research Letters*, 13:113-116.
- Bottenheim, J.W., S. Netcheva, S. Morin and S.V. Nghiem, 2009. Ozone in the boundary layer air over the Arctic Ocean: measurements during the TARA transpolar drift 2006-2008. *Atmospheric Chemistry and Physics*, 9:4545-4557.
- Bouttron, C.F., G.M. Vandal, W.F. Fitzgerald and C.P. Ferrari, 1998. A forty year record of mercury in central Greenland snow. *Geophysical Research Letters*, 25:3315-3318.
- Boyd, I.L., D.J. McCafferty and T.R. Walker, 1997. Variation in foraging effort by lactating Antarctic fur seals: Response to simulated increased foraging costs. *Behavioral Ecology and Sociobiology*, 40:135-144.
- Bradstreet, M.S.W. and W.E. Cross, 1982. Trophic relationships at high arctic ice edges. *Arctic*, 35:1-12.
- Bradstreet, M.S.W., Finley, K.J., Sekerak, A.D., Griffiths, W.B., Evans, C.R., Fabijan, M., Stallard, H.E., 1986. Aspects of the biology of Arctic cod (*Boreogadus saida*) and its importance in Arctic marine food chains. Canadian Technical Report of Fisheries and Aquatic Sciences, No. 1491. 193 pp.
- Branfireun, B.A., D.P. Krabbenhoft, H. Hintelmann, R.J. Hunt, J.P. Hurley and J.W.M. Rudd, 2005. Speciation and transport of newly deposited mercury in a boreal forest wetland: A stable mercury isotope approach. *Water Resources Research*, 41: W06016.
- Braune, B.A., 2007. Temporal trends of organochlorines and mercury in seabird eggs from the Canadian Arctic, 1975-2003. *Environmental Pollution*, 148:599-613.
- Braune, B.M., R.J. Norstrom, M.P. Wong, B.T. Collins and J. Lee, 1991. Geographical distribution of metals in livers of polar bears from the northwest-territories, Canada. *Science of the Total Environment*, 100:283-299.
- Braune, B.M., G.M. Donaldson and K.A. Hobson, 2001. Contaminant residues in seabird eggs from the Canadian Arctic. Part I. Temporal trends 1975-1998. *Environmental Pollution*, 114:39-54.
- Braune, B.M., G.M. Donaldson and K.A. Hobson, 2002. Contaminant residues in seabird eggs from the Canadian Arctic. II. Spatial trends and evidence from stable isotopes for intercolony differences. *Environmental Pollution*, 117:133-145.
- Braune, B.M., P.M. Outridge, A.T. Fisk, D.C.G. Muir, P.A. Helm, K. Hobbs, P.F. Hoekstra, Z.A. Kuzyk, M. Kwan, R.J. Letcher, W.L. Lockhart, R.J. Norstrom, G.A. Stern and I. Stirling, 2005. Persistent organic pollutants and mercury in marine biota of the Canadian Arctic: An overview of spatial and temporal trends. *Science of the Total Environment*, 351:4-56.
- Braune, B.M., M.L. Mallory and H.G. Gilchrist, 2006. Elevated mercury levels in a declining population of ivory gulls in the Canadian Arctic. *Marine Pollution Bulletin*, 52:978-982.
- Brigelius-Flohe, R., 1999. Tissue-specific functions of individual glutathione peroxidases. *Free Radical Biology and Medicine*, 27:951-965.
- Brookens, T.J., J.T. Harvey and T.M. O’Hara, 2007. Trace element concentrations in the Pacific harbor seal (*Phoca vitulina richardii*) in central and northern California: influence of age, sex, and trophic level. *Science of the Total Environment*, 372:676-692.
- Brookens, T.J., T.M. O’Hara, R.J. Taylor, G.R. Brattan and J.T. Harvey, 2008. Total mercury body burden in Pacific harbor seal, *Phoca vitulina richardii*, pups from central California. *Marine Pollution Bulletin*, 56:27-41.
- Brooks, S.B., A. Saiz-Lopez, H. Skov, S.E. Lindberg, J.M.C. Plane and M.E. Goodsite, 2006. The mass balance of mercury in the springtime arctic environment. *Geophysical Research Letters*, 33:L13812.
- Brooks, S., S. Lindberg, G. Southworth and R. Arimoto, 2008. Springtime atmospheric mercury speciation in the McMurdo, Antarctica coastal region. *Atmospheric Environment*, 42:2885-2893.
- Brunborg, L.A., I.E. Graff, L. Frøyland and K. Julshamn, 2006. Levels of non-essential elements in muscle from harp seal (*Phagophilus groenlandicus*) and hooded seal (*Cystophora cristata*) caught in the Greenland Sea area. *Science of the Total Environment*, 366:784-798.

- Budtz-Jørgensen, E., P. Grandjean and P. Weihe, 2007. Separation of risks and benefits of seafood intake. *Environmental Health Perspectives*, 115:323-327.
- Bullock Jr., O.R., D. Atkinson, T. Braverman, K. Civerolo, A. Dastoor, D. Davignon, J.-Y. Ku, K. Lohman, T. Myers, R. Park, C. Seigneur, N.E. Selin, G. Sistla and K. Vijayaraghavan, 2008. The North American mercury model intercomparison study (NAMMIS). Study description and model-to-model comparisons. *Journal of Geophysical Research-Atmospheres*, 113:D17310.
- Bullock Jr., O.R., D. Atkinson, T. Braverman, K. Civerolo, A. Dastoor, D. Davignon, J.-Y. Ku, K. Lohman, T.C. Myers, R.J. Park, C. Seigneur, N.E. Selin, G. Sistla and K. Vijayaraghavan, 2009. An analysis of simulated wet deposition of mercury from the North American mercury model intercomparison study (NAMMIS). *Journal of Geophysical Research* 114:D08301.
- Burger, J. and M. Gochfeld, 2004. Metal levels in eggs of common terns (*Sterna hirundo*) in New Jersey: temporal trends from 1971 to 2002. *Environmental Research*, 94:336-343.
- Burger, J., M. Gochfeld, C. Jeitner, S. Burke, C.D. Volz, R. Snigaroff, D. Snigaroff, T. Shukla and S. Shukla, 2009. Mercury and other metals in eggs and feathers of glaucous-winged gulls (*Larus glaucescens*) in the Aleutians. *Environmental Monitoring and Assessment*, 152:179-194.
- Cabana, G. and J.B. Rasmussen, 1994. Modelling food chain structure and contaminant bioaccumulation using stable nitrogen isotopes. *Nature*, 372:255-257.
- Calvert, J.G. and S.E. Lindberg, 2005. Mechanisms of mercury removal by O<sub>3</sub> and OH in the atmosphere. *Atmospheric Environment*, 39:3355-3367.
- Campbell, L.M., R.J. Norstrom, K.A. Hobson, D.C.G. Muir, S. Backus and A.T. Fisk, 2005. Mercury and other trace elements in a pelagic Arctic marine food web (Northwater Polynya, Baffin Bay). *Science of the Total Environment*, 351-352:247-263.
- Canário, J., V. Branco and C. Vale, 2007. Seasonal variation of monomethylmercury concentrations in surface sediments of the Tagus Estuary (Portugal). *Environmental Pollution*, 148:380-383.
- Cardona-Marek, T., K.K. Knott, B.E. Meyer and T.M. O'Hara, 2009. Mercury concentrations in southern Beaufort Sea polar bears: variation based on stable isotopes of carbon and nitrogen. *Environmental Toxicology and Chemistry*, 28:1416-1424.
- Carmack, E. and D.C. Chapman, 2003. Wind-driven shelf/basin exchange on an Arctic shelf: The joint roles of ice cover extent and shelf-break bathymetry. *Geophysical Research Letters*, 30:1778.
- Carmack, E.C. and R.W. MacDonald, 2002. Oceanography of the Canadian shelf of the Beaufort Sea: A setting for marine life. *Arctic*, 55:29-45.
- Carmack, E.C., K. Aagaard, J.H. Swift, R.W. Macdonald, F.A. McLaughlin, E.P. Jones, R.D. Perkin, J.N. Smith, K. Ellis and K. L, 1997. Changes in temperature and tracer distributions within the Arctic Ocean: results from the 1994 Arctic Ocean section. *Deep-Sea Research II*, 44:1487-1502.
- Carmack, E., D. Barber, J. Christensen, R. Macdonald, B. Rudels and E. Sakshaug, 2006. Climate variability and physical forcing of the food webs and the carbon budget on panarctic shelves. *Progress in Oceanography*, 71:145-181.
- Carrie, J., H. Sanei, F. Goodarzi, G. Stern and F.Y. Wang, 2009. Characterization of organic matter in surface sediments of the Mackenzie River Basin, Canada. *International Journal of Coal Geology*, 77:416-423.
- Carrie, J., G.A. Stern, H. Sanei, R.W. Macdonald, P.M. Outridge and F. Wang, 2010. Increasing contaminant burdens in an Arctic fish, burbot (*Lota lota*), in a warming climate. *Environmental Science and Technology*, 44:316-322.
- Carvalho, C.M.L., E.H. Chew, S.I. Hashemy, J. Lu and A. Holmgren, 2008. Inhibition of the human thioredoxin system - A molecular mechanism of mercury toxicity. *Journal of Biological Chemistry*, 283:11913-11923.
- Chadwick, S.P., C.L. Babiarz, J.P. Hurley and D.E. Armstrong, 2006. Influences of iron, manganese, and dissolved organic carbon on the hypolimnetic cycling of amended mercury. *Science of the Total Environment*, 368:177-188.
- Chen, C.Y. and C.L. Folt, 2005. High plankton densities reduce mercury biomagnification. *Environmental Science and Technology*, 39:115-121.
- Chen, J., S.O. Pehkonen and C.J. Lin, 2003. Degradation of monomethylmercury chloride by hydroxyl radicals in simulated natural waters. *Water Research*, 37:2496-2504.
- Chételat, J. and M. Amyot, 2009. Elevated methylmercury in High Arctic *Daphnia* and the role of productivity in controlling their distribution. *Global Change Biology*, 15:706-718.
- Chételat, J., M. Amyot, L. Cloutier and A. Poulin, 2008. Metamorphosis in chironomids, more than mercury supply, controls methylmercury transfer to fish in High Arctic lakes. *Environmental Science and Technology*, 42:9110-9115.
- Christensen, J.H., J. Brandt, L.M. Frohn and H. Skov, 2004. Modelling of mercury in the Arctic with the Danish Eulerian Hemispheric Model. *Atmospheric Chemistry and Physics*, 4:2251-2257.
- Churg, J., J. Bernstein and R.J. Glassock, 1995. *Renal Disease: Classification and Atlas of Glomerular Diseases*. Igaku-Shoin, New York.
- Cizdziel, J., T. Hinnars, C. Cross and J. Pollard, 2003. Distribution of mercury in the tissues of five species of freshwater fish from Lake Mead, USA. *Journal of Environmental Monitoring*, 5:802-807.
- Clarkson, T.W. and L. Magos, 2006. The toxicology of mercury and its chemical compounds. *Critical Reviews in Toxicology*, 36:609-662.
- Cobbett, F.D., A. Steffen, G. Lawson and B.J. Van Heyst, 2007. GEM fluxes and atmospheric mercury concentrations (GEM, RGM and HgP) in the Canadian Arctic at Alert, Nunavut, Canada (February-June 2005). *Atmospheric Environment*, 41:6527-6543.
- Coelho, J.P., M. Nunes, M. Dolbeth, M.E. Pereira, A.C. Duarte and M.A. Pardal, 2008. The role of two sediment-dwelling invertebrates on the mercury transfer from sediments to the estuarine trophic web. *Estuarine, Coastal and Shelf Science*, 78:505-512.
- Cole, A.S. and A. Steffen, 2010. Trends in long-term gaseous mercury observations in the Arctic and effects of temperature and other atmospheric conditions. *Atmospheric Chemistry and Physics*, 10:4661-4672.
- Conaway, C.H., F.J. Black, M. Gault-Ringold, J.T. Pennington, F.P. Chavez and A.R. Flegal, 2009. Dimethylmercury in coastal upwelling waters, Monterey Bay, California. *Environmental Science and Technology*, 43:1305-1309.
- Conlan, K.E., H.S. Lenihan, R.G. Kyte and J.S. Oliver, 1998. Ice scour disturbance to benthic communities in the Canadian High Arctic. *Marine Ecology Progress Series*, 166:1-16.
- Constant, P., L. Poissant, R. Villemur, E. Yumvihoze and D. Lean, 2007. Fate of inorganic mercury and methyl mercury within the snow cover in the low arctic tundra on the shore of Hudson Bay (Quebec, Canada). *Journal of Geophysical Research*, 112:D08309.
- Coquery, M., D. Cossa and J.M. Martin, 1995. The distribution of dissolved and particulate mercury in three Siberian estuaries and adjacent Arctic coastal waters. *Water Air and Soil Pollution*, 80:653-664.
- Cossa, D., J.-M. Martin, K. Takayanagi and J. Sanjuan, 1997. The distribution and cycling of mercury species in the western Mediterranean. *Deep-Sea Research II*, 44:721-740.
- Cossa, D., B. Avery and N. Pirrone, 2009. The origin of methylmercury in open Mediterranean waters. *Limnology and Oceanography*, 54:837-844.
- Costa, M.F. and P.S. Liss, 1999. Photoreduction of mercury in seawater and its possible implications for Hg<sub>0</sub> air-sea fluxes. *Marine Chemistry* 66:87-95.
- Cotran, R.S., V. Kumar and T. Collins, 1999. *Robbins Pathologic Basis of Disease*. WB Saunders, Philadelphia.
- Craig, P.C., W.B. Griffiths, L. Haldorson and H. McElderry, 1982. Ecological studies of Arctic cod (*Boreogadus saida*) in Beaufort Sea coastal waters. *Canadian Journal of Fisheries and Aquatic Sciences*, 39:395-406.
- Cremona, F., D. Planas and M. Lucotte, 2008. Assessing the importance of macroinvertebrate trophic dead ends in the lower transfer of methylmercury in littoral food webs. *Canadian Journal of Fisheries and Aquatic Sciences*, 65:2043-2052.
- Crump, K.L. and V.L. Trudeau, 2009. Mercury-induced reproductive impairment in fish. *Environmental Toxicology and Chemistry*, 28:895-907.
- Cullen, J.T., Y. Rosenthal and P.G. Falkowski, 2001. The effect of anthropogenic CO<sub>2</sub> on the carbon isotope composition of marine phytoplankton. *Limnology and Oceanography*, 46:996-998.
- Czimczik, C.I., C.M. Preston, M.W.I. Schmidt and E.D. Schulze, 2003. How surface fire in Siberian Scots pine forests affects soil organic carbon in the forest floor: Stocks, molecular structure, and conversion to black carbon (charcoal). *Global Biogeochemical Cycles*, 17:1020.

- Daman, S., W.B. Eide and H.V. Kuhnlein, 2008. Indigenous peoples' nutrition transition and a right to food perspective. *Food Policy*, 33:135-155.
- Darnis, G., D.G. Barber and L. Fortier, 2008. Sea ice and the onshore-offshore gradient in pre-winter zooplankton assemblages in southeastern Beaufort Sea. *Journal of Marine Systems*, 74:994-1011.
- Dastoor, A.P. and Y. Larocque, 2004. Global circulation of atmospheric mercury: a modelling study. *Atmospheric Environment*, 38:147-161.
- Dastoor, A.P., D. Davignon, N. Theys, M. Van Roozendaal, A. Steffen and P.A. Ariya, 2008. Modeling dynamic exchange of gaseous elemental mercury at polar sunrise. *Environmental Science and Technology*, 42:5183-5188.
- Day, R.D., S.S. Vander Pol, S.J. Christopher, W.C. Davis, R.S. Pugh, K.S. Simac, D.G. Roseneau and P.R. Becker, 2006. Murre eggs (*Uria aalge* and *Uria lomvia*) as indicators of mercury contamination in the Alaskan marine environment. *Environmental Science and Technology*, 40:659-665.
- Dehn, L.A., G.G. Sheffield, E.H. Follmann, L.K. Duffy, D.L. Thomas, G.R. Bratton, R.J. Taylor and T.M. O'Hara, 2005. Trace elements in tissues of phocid seals harvested in the Alaskan and Canadian Arctic: influence of age and feeding ecology. *Canadian Journal of Zoology*, 83:726-746.
- Dehn, L.A., E.H. Follmann, C. Rosa, L.K. Duffy, D.L. Thomas, G.R. Bratton, R.J. Taylor and T.M. O'Hara, 2006. Stable isotope and trace element status of subsistence-hunted bowhead and beluga whales in Alaska and gray whales in Chukotka. *Marine Pollution Bulletin*, 52:301-319.
- DeNiro, M.J., 1985. Postmortem preservation and alteration of in vivo bone collagen isotope ratios in relation to palaeodietary reconstruction. *Nature*, 317:806-809.
- Déry, S.J. and E.F. Wood, 2005. Decreasing river discharge in northern Canada. *Geophysical Research Letters*, 32:L10401.
- Deutch, B., H.S. Pedersen, G. Asmund and J.C. Hansen, 2007. Contaminants, diet, plasma fatty acids, and smoking in Greenland 1999-2005. *Science of the Total Environment*, 372:486-496.
- Dewailly, E., P. Ayotte, S. Bruneau, G. Lebel, P. Levallois and P. Weber, 2001. Exposure of the Inuit population of Nunavik (Arctic Québec) to lead and mercury. *Archives of Environmental Health*, 56:350-357.
- Dewailly, É., R. Daillaire, D. Pereg, P. Ayotte, J. Fontaine and S. Dery, 2007a. Exposure to environmental contaminants in Nunavik: Persistent organic pollutants and new contaminants of concern. Institute National de Santé Publique du Québec, Nunavik Regional Board of Health and Social Services.
- Dewailly, É., P. Ayotte, D. Pereg, S. Dery, R. Dallaire, J. Fontaine and S. Côte, 2007b. Exposure to environmental contaminants in Nunavik: Metals. Institute National de Santé Publique du Québec, Nunavik Regional Board of Health and Social Services.
- Dietz, R., 2008. Contaminants in Marine Mammals in Greenland – with linkages to trophic levels, effects, diseases and distribution. 120 pp. National Environmental Research Institute, University of Aarhus, Aarhus.
- Dietz, R., C.O. Nielsen, M.M. Hansen and C.T. Hansen, 1990. Organic mercury in Greenland birds and mammals. *Science of the Total Environment*, 95:41-51.
- Dietz, R., E.W. Born, C.T. Agger and C.O. Nielsen, 1995. Zinc, cadmium, mercury and selenium in polar bears (*Ursus maritimus*) from Central East Greenland. *Polar Biology*, 15:175-185.
- Dietz, R., F. Riget and P. Johansen, 1996. Lead, cadmium, mercury and selenium in Greenland marine animals. *Science of the Total Environment*, 186:67-93.
- Dietz, R., J. Pacyna, D.J. Thomas, G. Asmund, V. Gordeev, P. Johansen, V. Kimstach, L. Lockhart, S.L. Pfirman, F.F. Riget, G. Shaw, R. Wagemann and W.M., 1998a. Heavy metals. In: AMAP Assessment Report: Arctic Pollution Issues, pp. 373-524, Arctic Monitoring and Assessment Programme.
- Dietz, R., P. Paludan-Müller, C.T. Agger and C. Overgaard Nielsen, 1998b. Cadmium, mercury, zinc and selenium in ringed seals (*Phoca hispida*) from Greenland and Svalbard. NAMMCO Scientific contributions 1:242-273.
- Dietz, R., J. Norgaard and J.C. Hansen, 1998c. Have Arctic marine mammals adapted to high cadmium levels? *Marine Pollution Bulletin*, 36:490-492.
- Dietz, R., F. Riget and E.W. Born, 2000a. Geographical differences of zinc, cadmium, mercury and selenium in polar bears (*Ursus maritimus*) from Greenland. *Science of the Total Environment*, 245:25-47.
- Dietz, R., F. Riget, M. Cleemann, A. Aarkrog, P. Johansen and J.C. Hansen, 2000b. Comparison of contaminants from different trophic levels and ecosystems. *Science of the Total Environment*, 331:107-124.
- Dietz, R., F. Riget and E.W. Born, 2000c. An assessment of selenium to mercury in Greenland marine animals. *Science of the Total Environment*, 245:15-24.
- Dietz, R., F. Riget, K. Hobson, M.P. Heide-Jørgensen, P. Møller, M. Cleemann, J. de Boer and M. Glacius, 2004. Regional and interannual patterns of heavy metals, organochlorines and stable isotopes in narwhals (*Monodon monoceros*) from West Greenland. *Science of the Total Environment*, 331:83-105.
- Dietz, R., F. Riget, E.W. Born, C. Sonne, P. Grandjean, M. Kirkegaard, M.T. Olsen, G. Asmund, A. Renzoni, H. Baagoe and C. Andreasen, 2006a. Trends in mercury in hair of Greenlandic polar bears (*Ursus maritimus*) during 1892-2001. *Environmental Science and Technology*, 40:1120-1125.
- Dietz, R., F. Riget, D. Boertmann, C. Sonne, M.T. Olsen, J. Fjeldsa, K. Falk, M. Kirkegaard, C. Egevang, G. Asmund, F. Wille and S. Møller, 2006b. Time trends of mercury in feathers of West Greenland birds of prey during 1851-2003. *Environmental Science and Technology*, 40:5911-5916.
- Dietz, R., F.F. Riget, C. Sonne, R. Letcher, M. McKinney, D. Muir, R. Bossi, K. Vorkamp and E. Born, 2008a. Temporal trends and bioaccumulation of selected contaminants in East Greenland ringed seals and polar bears. Paper presented at SETAC World Congress of the Society of Environmental Toxicology and Chemistry. 3-7 August 2008, Sydney, Australia.
- Dietz, R., F.F. Riget, C. Sonne, R. Letcher, M. McKinney, D. Muir, R. Bossi, K. Vorkamp and E. Born, 2008b. Contaminant linkages to climate parameters in polar bears (*Ursus maritimus*) from Greenland and Svalbard. Paper presented at Arctic Change 2008, 9-12 December 2008, Quebec City, Canada.
- Dietz, R., P.M. Outridge and K.A. Hobson, 2009a. Anthropogenic contributions to mercury levels in present-day Arctic animals – A review. *Science of the Total Environment*, 407:6120-6131.
- Dietz, R., F. Riget, M. Forchammer, C. Sonne, A. Aubail, E.W. Born, J. Aars, M. Andersen, Ø. Wiig, J.U. Skaare, N. Basu and P. Grandjean, 2009b. Temporal and geographical trends of Hg in polar bears (*Ursus maritimus*) hair linked to health effect levels and climate change parameters. Paper presented at 9th International Conference on Mercury as a Global Pollutant, 7-12 June 2009, Guiyang, China.
- Dietz, R., E.W. Born, F. Riget, A. Aubail, C. Sonne, R.C. Drimmei and N. Basu, 2011. Temporal trends and future predictions of mercury concentrations in Northwest Greenland polar bear (*Ursus maritimus*) hair. *Environmental Science and Technology*, 45:1458-1465.
- Dominé, F. and P.B. Shepson, 2002. Air-snow interactions and atmospheric chemistry. *Science*, 297:1506-1510.
- Dommergue, A., C.P. Ferrari, L. Poissant, P.A. Gauchard and C.F. Boutron, 2003a. Diurnal cycles of gaseous mercury within the snowpack at Kuujjuarapik/Whapmagoostui, Quebec, Canada. *Environmental Science & Technology*, 37:3289-3297.
- Dommergue, A., C.P. Ferrari, P.-A. Gauchard, L. Poissant, M. Pilote, P. Jitaru and F.C. Adams, 2003b. The fate of mercury species in a sub-arctic snowpack during snowmelt. *Geophysical Research Letters*, 30:1621.
- Dommergue, A., C.P. Ferrari, P.A. Gauchard, L. Poissant and C.F. Boutron, 2003c. Diurnal cycles of interstitial gaseous mercury inside a sub-arctic snow-pack prior to and during snowmelt events. *Journal de Physique IV*, 107:389-392.
- Dommergue, A., C. Larose, X. Fain, O. Clarisse, D. Foucher, H. Hintelmann, D. Schneider and C.P. Ferrari, 2010. Deposition of mercury species in the Ny-Ålesund area (79° N) and their transfer during snowmelt. *Environmental Science and Technology*, 44:901-907.
- Donaldson, G.M., A.J. Gaston, J.W. Chardine, K. Kampp, D.N. Nettleship and R.D. Elliot, 1997. Winter distributions of thick-billed murres from the eastern Canadian Arctic and western Greenland in relation to age and time of year. Occasional Paper No. 96. Canadian Wildlife Service, Environment Canada, Ottawa, Canada.
- Donaldson, S.G., N.C. Doubleday and J.V. Oostdam, 2006. Factors influencing food choices among women and men living in Cape Dorset, Nunavut, Canada. In: Smith, S. and J. Stow (Eds.). Synopsis of Research Conducted under the Northern Contaminants Program. Department of Indian and Northern Affairs, Ottawa, Canada.

- Doney, S.C., V.J. Fabry, R.A. Feely and J.A. Kleypas, 2009. Ocean acidification: The other CO<sub>2</sub> problem. Annual Reviews of Marine Science, 1:169-192.
- Dong, W., L. Liang, S. Brooks, G. Southworth and B. Gu, 2010. Roles of dissolved organic matter in the speciation of mercury and methylmercury in a contaminated ecosystem in Oak Ridge, Tennessee. Environmental Chemistry 7:94-102.
- Donohoue, D.L., D. Bauer and A.J. Hynes, 2005. Temperature and pressure dependent rate coefficients for the reaction of Hg with Cl and the reaction of Cl with Cl: A pulsed laser photolysis-pulsed laser induced fluorescence study. Journal of Physical Chemistry A, 109:7732-7741.
- Donohoue, D.L., D. Bauer, B. Cossairt and A.J. Hynes, 2006. Temperature and pressure dependent rate coefficients for the reaction of Hg with Br and the reaction of Br with Br: A pulsed laser photolysis-pulsed laser induced fluorescence study. Journal of Physical Chemistry A, 110:6623-6632.
- Douglas, T.A. and M. Sturm, 2004. Arctic haze, mercury and the chemical composition of snow across northwestern Alaska. Atmospheric Environment, 38:805-820.
- Douglas, T.A., M. Sturm, W.R. Simpson, S. Brooks, S.E. Lindberg and D.K. Perovich, 2005. Elevated mercury measured in snow and frost flowers near Arctic sea ice leads. Geophysical Research Letters, 32:L04502.
- Douglas, T.A., M. Sturm, W.R. Simpson, J.D. Blum, L. Alvarez-Aviles, G.J. Keeler, D.K. Perovich, A. Biswas and K. Johnson, 2008. Influence of snow and ice crystal formation and accumulation on mercury deposition to the Arctic. Environmental Science and Technology, 42:1542-1551.
- Drevnick, P.E. and M.B. Sandheinrich, 2003. Effects of dietary methylmercury on reproductive endocrinology of fathead minnows. Environmental Science and Technology, 37:4390-4396.
- Drevnick, P.E., A.P. Roberts, R.R. Otter, C.R. Hammerschmidt, R. Klaper and J.T. Oris, 2008. Mercury toxicity in livers of northern pike (*Esox lucius*) from Isle Royale, USA. Comparative Biochemistry and Physiology C, 147:331-338.
- Drexel, R.T., M. Haitzer, J.N. Ryan, G.R. Aiken and K.L. Nagy, 2002. Mercury(II) sorption to two Florida Everglades peats: Evidence for strong and weak binding and competition by dissolved organic matter released from the peat. Environmental Science and Technology, 36:4058-4064.
- Driscoll, C.T., V. Blette, C. Yan, C.L. Schofield, R. Munson and J. Holsapple, 1995. The role of dissolved organic-carbon in the chemistry and bioavailability of mercury in remote Adirondack lakes. Water, Air and Soil Pollution, 80:499-508.
- Driscoll, C.T., J. Holsapple, C.L. Schofield and R. Munson, 1998. The chemistry and transport of mercury in a small wetland in the Adirondack region of New York, USA. Biogeochemistry, 40:137-146.
- Durnford, D., A. Dastoor, D. Figueras-Nieto and A. Ryjkov, 2010. Long range transport of mercury to the Arctic and across Canada. Atmospheric Chemistry and Physics, 10:6063-6086.
- Dyurgerov, M.B. and M.F. Meier, 2005. Glaciers and the changing Earth system: A 2004 snapshot. 117 pp. Institute of Arctic and Alpine Research, University of Colorado.
- Eagles-Smith, C.A., J.T. Ackerman, J. Yee and T.L. Adelsbach, 2009. Mercury demethylation in waterbird livers: dose-response thresholds and differences among species. Environmental Toxicology and Chemistry, 28:568-577.
- Eaton, R.D.P. and J.P. Farant, 1982. The polar bear as a biological indicator of the environmental mercury burden. Arctic, 35:422-425.
- Ebinghaus, R., 2008. Mercury cycling in the Arctic – does enhanced deposition flux mean net-input? Environmental Chemistry, 5:87-88.
- Ebinghaus, R., H.H. Kock, C. Temme, J.W. Einax, A.G. Lowe, A. Richter, J.P. Burrows and W.H. Schroeder, 2002. Antarctic springtime depletion of atmospheric mercury. Environmental Science and Technology, 36:1238-1244.
- Edwards, M. and A.J. Richardson, 2004. Impact of climate change on marine pelagic phenology and trophic mismatch. Nature, 430:881-884.
- Eide, R. and G.R. Wesenberg, 1993. Mercury contents of indicators and target organs in rats after long-term, low-level, mercury-vapor exposure. Environmental Research, 61:212-222.
- Eide, R., G.R. Wesenberg and G. Fosse, 1993. Mercury in primary teeth in preindustrial Norway. Scandinavian Journal of Dental Research, 101:1-4.
- Eide, R., J.D. Schionning, R. Bjugn, G.R. Wesenberg and G. Fosse, 1994. Autometallographic demonstration of mercury in rat molars. Scandinavian Journal of Dental Research, 102:76-80.
- Eide, R., J.D. Schionning, E. Ernst, I.M. Hansen and G.R. Wesenberg, 1995. Mercury content in rat teeth after administration of organic and inorganic mercury. Acta Odontologica Scandinavica, 53:12-16.
- Ekstrom, E.B., F.M.M. Morel and J.M. Benoit, 2003. Mercury methylation independent of the acetyl-coenzyme: A pathway in sulfate-reducing bacteria. Applied Environmental Microbiology, 69:5414-5422.
- England, J.H., T.R. Lakeman, D.S. Lemmen, J.M. Bednar斯基, T.G. Stewart and D.J.A. Evans, 2008. A millennial-scale record of Arctic Ocean sea ice variability and the demise of the Ellesmere Island ice shelves. Geophysical Research Letters, 35:L19502.
- ESPREME, 2007. ESPREME. Estimation of willingness-to-pay to reduce risks of exposure to heavy metals and cost-benefit analysis for reducing heavy metals occurrence in Europe. Publishable final activity report. Project coordinator Reiner Friedrich, University of Stuttgart.
- Ethier, A.L.M., A.M. Scheuhammer and D.E. Bond, 2008. Correlates of mercury in fish from lakes near Clyde Forks, Ontario, Canada. Environmental Pollution, 154:89-97.
- Evans, M.S., D. Muir, W.L. Lockhart, G. Stern, M. Ryan and P. Roach, 2005a. Persistent organic pollutants and metals in the freshwater biota of the Canadian Subarctic and Arctic: An overview. Science of the Total Environment, 351:94-147.
- Evans, M.S., W.L. Lockhart, L. Doetzel, G. Low, D. Muir, K. Kidd, G. Stephens and J. Delaronde, 2005b. Elevated mercury concentrations in fish in lakes in the Mackenzie River Basin: The role of physical, chemical, and biological factors. Science of the Total Environment, 351-352:479-500.
- Evers, D.C., K.M. Taylor, A. Major, R.J. Taylor, R.H. Poppenga and A.M. Scheuhammer, 2003. Common loon eggs as indicators of methylmercury availability in North America. Ecotoxicology, 12:69-81.
- Evers, D.C., Y.J. Han, C.T. Driscoll, N.C. Kamman, M.W. Goodale, K.F. Lambert, T.M. Holsen, C.Y. Chen, T.A. Clair and T. Butler, 2007. Biological mercury hotspots in the northeastern United States and southeastern Canada. Bioscience, 57:29-43.
- Evers, D.C., L.J. Savoy, C.R. DeSorbo, D.E. Yates, W. Hanson, K.M. Taylor, L.S. Siegel, J.H. Cooley Jr, M.S. Bank, A. Major, K. Munney, B.F. Mower, H.S. Vogel, H. Schoch, M. Pokras, M.W. Goodale and J. Fair, 2008. Adverse effects from environmental mercury loads on breeding common loons. Ecotoxicology, 17:69-81.
- Faïn, X., C.P. Ferrari, P.A. Gauchard, O. Magand and C. Boutron, 2006a. Fast depletion of gaseous elemental mercury in the Kongsvegen Glacier snowpack in Svalbard. Geophysical Research Letters, 33:L06826.
- Faïn, X., C.P. Ferrari, P. Gauchard, O. Magand and C. Boutron, 2006b. Correction to "Fast depletion of gaseous elemental mercury in the Kongsvegen Glacier snowpack in Svalbard". Geophysical Research Letters, 33:L20807.
- Faïn, X., S. Grangeon, E. Bahlmann, J. Fritsche, D. Obrist, A. Dommergue, C.P. Ferrari, W. Cairns, R. Ebinghaus, C. Barbante, P. Cescon and C. Boutron, 2007. Diurnal production of gaseous mercury in the alpine snowpack before snowmelt. Journal of Geophysical Research-Atmospheres, 112:D21311.
- Faïn, X., C.P. Ferrari, A. Dommergue, M. Albert, M. Battle, L. Arnaud, J.M. Barnola, W. Cairns, C. Barbante and C. Boutron, 2008. Mercury in the snow and firn at Summit Station, Central Greenland, and implications for the study of past atmospheric mercury levels. Atmospheric Chemistry and Physics, 8:3441-3457.
- Faïn, X., D. Obrist, A.G. Hallar, I. McCubbin and T. Rahn, 2009a. High levels of reactive gaseous mercury observed at a high elevation research laboratory in the Rocky Mountains. Atmospheric Chemistry and Physics, 9:8049-8060.
- Faïn, X., C.P. Ferrari, A. Dommergue, M.R. Albert, M. Battle, J. Severinghaus, L. Arnaud, J.M. Barnola, W. Cairns, C. Barbante and C. Boutron, 2009b. Polar firn air reveals large-scale impact of anthropogenic mercury emissions during the 1970s. Proceedings of the National Academy of Sciences of the United States of America, 106:16114-16119.
- Fan, S.-M. and D.J. Jacob, 1992. Surface ozone depletion in Arctic spring sustained by bromine reactions on aerosols. Nature, 359:522-524.
- FAO/WHO, 2003. Summary and Conclusions, Annex 4, Joint FAO/WHO Expert Committee on Food Additives, 61st Meeting, U.N. Food and Agriculture Organization / World Health Organization.

- Farmer, J.G., P. Anderson, J.M. Cloy, M.C. Graham, A.B. MacKenzie and G.T. Cook, 2009. Historical accumulation rates of mercury in four Scottish ombrotrophic peat bogs over the past 2000 years. *Science of the Total Environment*, 407:5578-5588.
- Farris, F.F., R.L. Dedrick, P.V. Allen and J.C. Smith, 1993. Physiological model for the pharmacokinetics of methyl mercury in the growing rat. *Toxicology and Applied Pharmacology*, 119:74-90.
- Fechhelm, R.G., L.R. Martin, B.J. Gallaway, W.J. Wilson and W.B. Griffiths, 1999. Prudhoe Bay causeways and the summer coastal movements of arctic cisco and least cisco. *Arctic*, 52:139-151.
- Feely, R.A., C.L. Sabine, J.M. Hernandez-Ayon, D. Ianson and B. Hales, 2008. Evidence for upwelling of corrosive "acidified" water onto the continental shelf. *Science*, 320:1490-1492.
- Ferrari, C.P., A. Dommergue and C.F. Boutron, 2004. Profiles of mercury in the snow pack at Station Nord, Greenland shortly after polar sunrise. *Geophysical Research Letters*, 31:L03401.
- Ferrari, C.P., P.-A. Gauchard, K. Aspmo, A. Dommergue, O. Magand, E. Bahlmann, S. Nagorski, C. Temme, R. Ebinghaus, A. Steffen, C. Banic, T. Berg, F. Planchon, C. Barbante, P. Cescon and C.F. Boutron, 2005. Snow-to-air exchanges of mercury in an Arctic seasonal snow pack in Ny-Ålesund, Svalbard. *Atmospheric Environment*, 39:7633-7645.
- Ferrari, C.P., C. Padova, X. Fain, P.A. Gauchard, A. Dommergue, K. Aspmo, T. Berg, W. Cairns, C. Barbante, P. Cescon, L. Kaleschke, A. Richter, F. Wittrock and C. Boutron, 2008. Atmospheric mercury depletion event study in Ny-Alesund (Svalbard) in spring 2005. Deposition and transformation of Hg in surface snow during springtime. *Science of the Total Environment*, 397:167-177.
- Fimreite, N., 1971. Effects of dietary methylmercury on ring-necked pheasants with special reference to reproduction. 39 pp. Canadian Wildlife Service, Occasional paper No. 9. 39 pp.
- Fitzgerald, W.F. and C.H. Lamborg, 2004. Geochemistry of mercury in the environment. In: Lollar, B.S. (Ed.). *Environmental Geochemistry*, Vol. 9, Treatise on Geochemistry, pp. 1-47, Elsevier Ltd.
- Fitzgerald, W.F., D.R. Engstrom, C.H. Lamborg, C.M. Tseng, P.H. Balcom and C.R. Hammerschmidt, 2005. Modern and historic atmospheric mercury fluxes in northern Alaska: Global sources and Arctic depletion. *Environmental Science and Technology*, 39:557-568.
- Fitzgerald, W.F., C.H. Lamborg and C.R. Hammerschmidt, 2007. Marine biogeochemical cycling of mercury. *Chemical Reviews*, 107:641-662.
- Fleming, E.J., E.E. Mack, P.G. Green and D.C. Nelson, 2006. Mercury methylation from unexpected sources: Molybdate-inhibited freshwater sediments and an iron-reducing bacterium. *Applied and Environmental Microbiology*, 72:457-464.
- Fontaine, J., E. Dewailly, J.-L. Benedetti, D. Pereg, P. Ayotte and S. Dery, 2008. Re-evaluation of blood mercury, lead and cadmium concentrations in the Inuit population of Nunavik (Quebec): a cross-sectional study. *Environmental Health*, 7:25.
- Forest, A., M. Sampei, H. Hattori, R. Makabe, H. Sasaki, M. Fukuchi, P. Wassmann and L. Fortier, 2007. Particulate organic carbon fluxes on the slope of the Mackenzie Shelf (Beaufort Sea): Physical and biological forcing of shelf-basin exchanges. *Journal of Marine Systems*, 68:39-54.
- Francis, J.A., W.H. Chan, D.J. Leathers, J.R. Miller and D.E. Veron, 2009. Winter Northern Hemisphere weather patterns remember summer Arctic sea-ice extent. *Geophysical Research Letters*, 36:L07503.
- Freeman, H.C. and D.A. Horne, 1973. Mercury in Canadian seals. *Bulletin of Environmental Contamination and Toxicology*, 10:172-180.
- Frey, K.E. and L.C. Smith, 2007. How well do we know northern land cover? Comparison of four global vegetation and wetland products with a new ground-truth database for West Siberia. *Global Biogeochemical Cycles*, 21: GB1016.
- Friedli, H., A.F. Arellano, N. Pirrone and S. Cinnirella, 2009a. Mercury emissions from global biomass burning: Spatial and temporal distribution. In: Pirrone, N. and R. Mason (Eds.). *Mercury Fate and Transport in the Global Atmosphere*. Springer Science + Business Media.
- Friedli, H.R., A.F. Arellano, S. Cinnirella and N. Pirrone, 2009b. Initial estimates of mercury emissions to the atmosphere from global biomass burning. *Environmental Science and Technology*, 43:3507-3513.
- Frost, K.J. and L.F. Lowry, 1981. Trophic importance of some marine gadids in Northern Alaska and their body-otolith size relationships. *Fishery Bulletin*, 79:187-192.
- Fu, P., K. Kawamura, J. Chen and L.A. Barrie, 2009. Isoprene, monoterpenes, and sesquiterpene oxidation products in the High Arctic aerosols during late winter to early summer. *Environmental Science and Technology*, 43:4022-4028.
- Furgal, C., S. Bernier, G. Godin, S. Gingras, J. Grodin and E. Dewailly, 2001. Decision-making and diet in the North: Balancing the physical, economic and social components. In: Kalhok, S. (Ed.). *Synopsis of Research Conducted under the Northern Contaminants Program*. Department of Indian and Northern Affairs, Ottawa, Canada.
- Gaden, A., S.H. Ferguson, L. Harwood, H. Melling and G.A. Stern, 2009. Mercury trends in ringed seals (*Phoca hispida*) from the Western Canadian Arctic since 1973: Associations with length of ice-free season. *Environmental Science and Technology*, 43:3646-3651.
- Gagné, F., L. Poissant and C. Blaise, 2009. Ecotoxicity of snowpack collected from selected sites in Quebec, Canada. *Water Air and Soil Pollution*, 201:121-133.
- Gajewski, K., P.B. Hamilton and R. McNeely, 1997. A high resolution proxy-climate record from an arctic lake with annually-laminated sediments on Devon Island, Nunavut, Canada. *Journal of Paleolimnology*, 17:215-225.
- Gallaway, B.J., W.B. Griffiths, P.C. Craig, W.T. Gazey and J.W. Helmericks, 1983. An assessment of the Colville River delta stock of Arctic cisco: Migrants from Canada. *Biological Papers*, University of Alaska 21:4-23.
- Galloway, M.E. and B.A. Branfireun, 2004. Mercury dynamics of a temperate forested wetland. *Science of the Total Environment*, 325:239-254.
- Gälman, V., J. Rydberg, S.S. de-Luna, R. Bindler and I. Renberg, 2008. Carbon and nitrogen loss rates during aging of lake sediment: Changes over 27 years studied in varved lake sediment. *Limnology and Oceanography*, 53:1076-1082.
- Gamberg, M., B. Braune, E. Davey, B. Elkin, P.F. Hoekstra, D. Kennedy, C. Macdonald, D. Muir, A. Nirwal, M. Wayland and B. Zeeb, 2005. Spatial and temporal trends of contaminants in terrestrial biota from the Canadian Arctic. *Science of the Total Environment*, 351:148-164.
- Gandhi, N., S.P. Bhavsar, M.L. Diamond and J.S. Kuwabara, 2007. Development of a mercury speciation, fate, and biotic uptake (BIOTRANSPEC) model: Application to Lahontan reservoir (Nevada, USA). *Environmental Toxicology and Chemistry*, 26:2260-2273.
- Ganong, W., 2005. *Review of Medical Physiology*, 22nd Edn. 928 pp. Appleton and Lange, USA.
- Gantner, N., M. Power, J.A. Babaluk, J.D. Reist, G. Kock, L.W. Lockhart, K.R. Solomon and D.C.G. Muir, 2009. Temporal trends of mercury, cesium, potassium, selenium, and thallium in arctic char (*Salvelinus alpinus*) from Lake Hazen, Nunavut, Canada: effects of trophic position, size, and age. *Environmental Toxicology and Chemistry*, 28:254-263.
- Gantner, N., M. Power, D. Iqaluk, M. Meili, H. Borg, M. Sundbom, K.R. Solomon, G. Lawson and D.C.G. Muir, 2010a. Mercury concentrations in landlocked Arctic char (*Salvelinus alpinus*) from the Canadian High Arctic: Part I - Insights from trophic relationships in 18 lakes. *Environmental Toxicology and Chemistry*, 29:621-632.
- Gantner, N., D.C. Muir, M. Power, D. Iqaluk, J.D. Reist, M. Meili, H. Borg, J. Hammar, W. Michaud, J.B. Dempson and K.R. Solomon, 2010b. Mercury concentrations in landlocked Arctic char (*Salvelinus alpinus*) from the Canadian High Arctic: Part II - Influence of lake biotic and abiotic characteristics on geographic trends in 27 populations. *Environmental Toxicology and Chemistry*, 29:633-643.
- Gårdfeldt, K., J. Sommar, D. Stromberg and X.B. Feng, 2001. Oxidation of atomic mercury by hydroxyl radicals and photoinduced decomposition of methylmercury in the aqueous phase. *Atmospheric Environment*, 35:3039-3047.
- Gårdfeldt, K., J. Munthe, D. Stromberg and O. Lindqvist, 2003. A kinetic study on the abiotic methylation of divalent mercury in the aqueous phase. *Science of the Total Environment*, 304:127-136.
- Garneau, M.-È., W.F. Vincent, L. Alonso-Sàez, Y. Gratton and C. Lovejoy, 2006. Prokaryotic community structure and heterotrophic production in a river-influenced coastal arctic ecosystem. *Aquatic Microbial Ecology*, 42:27-40.
- Gauchard, P.A., K. Aspmo, C. Temme, A. Steffen, C. Ferrari, T. Berg, J. Strom, L. Kaleschke, A. Dommergue, E. Bahlmann, O. Magand, F. Planchon, R. Ebinghaus, C. Banic, S. Nagorski, P. Baussand and C. Boutron, 2005. Study of the origin of atmospheric mercury depletion events recorded in Ny-Alesund, Svalbard, spring 2003. *Atmospheric Environment*, 39:7620-7632.
- George, J.C.C., J. Zeh, R. Suydam and C. Clark, 2004. Abundance and population trend (1978-2001) of western Arctic bowhead whales surveyed near Barrow, Alaska. *Marine Mammal Science*, 20:755-773.

- Geynrikh, A., 1986. Mass species of oceanic phytophagous copepods and their ecology. *Oceanology*, 26:213-217.
- Giles, K.A., S.W. Laxon and A.L. Ridout, 2008. Circumpolar thinning of Arctic sea ice following the 2007 record ice extent minimum. *Geophysical Research Letters*, 35:L22502.
- Gilmour, C.C. and E.A. Henry, 1991. Mercury methylation in aquatic systems affected by acid deposition. *Environmental Pollution*, 71:131-169.
- Gilmour, C.C., E.A. Henry and R. Mitchell, 1992. Sulfate stimulation of mercury methylation in fresh-water sediments. *Environmental Science and Technology*, 26:2281-2287.
- Givelet, N., G. Le Roux, A. Cheburkin, B. Chen, J. Frank, M.E. Goodsite, H. Kempfer, M. Krachler, T. Noernberg, N. Rausch, S. Rheinberger, F. Roos-Barraclough, A. Sapkota, C. Scholz and W. Shotyk, 2004a. Suggested protocol for collecting, handling and preparing peat cores and peat samples for physical, chemical, mineralogical and isotopic analyses. *Journal of Environmental Monitoring*, 6:481-492.
- Givelet, N., F. Roos-Barraclough, M.E. Goodsite, A.K. Cheburkin and W. Shotyk, 2004b. Atmospheric mercury accumulation rates between 5900 and 800 calibrated years BP in the high Arctic of Canada recorded by peat hummocks. *Environmental Science and Technology*, 38:4964-4972.
- Gobeil, C., R.W. Macdonald and B. Sundby, 1997. Diagenetic separation of cadmium and manganese in suboxic continental margin sediments. *Geochimica et Cosmochimica Acta*, 61:4647-4654.
- Gobeil, C., R.W. Macdonald and J.N. Smith, 1999. Mercury profiles in sediments of the Arctic Ocean basins. *Environmental Science and Technology*, 33:4194-4198.
- Gobeil, C., R.W. Macdonald, J.N. Smith and L. Beaudin, 2001a. Lead contamination in Arctic basin sediments tracks Atlantic water flow pathways. *Science*, 293:1301-1304.
- Gobeil, C., B. Sundby, R.W. Macdonald and J.N. Smith, 2001b. Recent change in organic carbon flux to Arctic Ocean deep basins: Evidence from acid volatile sulfide, manganese and rhenium discord in sediments. *Geophysical Research Letters*, 28:1743-1746.
- Goetz, S.J., A.G. Bunn, G.J. Fiske and R.A. Houghton, 2005. Satellite-observed photosynthetic trends across boreal North America associated with climate and fire disturbance. *Proceedings of the National Academy of Sciences of the United States of America*, 102:13521-13525.
- Golding, G.R., C.A. Kelly, R. Sparling, P.C. Loewen, J.W.M. Rudd and T. Barkay, 2002. Evidence for facilitated uptake of Hg(II) by *Vibrio anguillarum* and *Escherichia coli* under anaerobic and aerobic conditions. *Limnology and Oceanography*, 47:967-975.
- Goñi, M.A., M.B. Yunker, R.W. Macdonald and T.I. Eglinton, 2005. The supply and preservation of ancient and modern components of organic carbon in the Canadian Beaufort Shelf of the Arctic Ocean. *Marine Chemistry*, 93:53-73.
- Goodsite, M.E., J.M.C. Plane and H. Skov, 2004. A theoretical study of the oxidation of Hg-0 to HgBr<sub>x</sub> in the troposphere. *Environmental Science and Technology*, 38:1772-1776.
- Gorham, E., 1991. Northern peatlands – role in the carbon-cycle and probable responses to climatic warming. *Ecological Applications*, 1:182-195.
- Gorski, P.R., L.B. Cleckner, J.P. Hurley, M.E. Sierszen and D.E. Armstrong, 2003. Factors affecting enhanced mercury bioaccumulation in inland lakes of Isle Royale National Park, USA. *Science of the Total Environment*, 304:327-348.
- Gorski, P.R., D.E. Armstrong, J.P. Hurley and D.P. Krabbenhoft, 2008. Influence of natural dissolved organic carbon on the bioavailability of mercury to a freshwater alga. *Environmental Pollution* 154:116-123.
- Gosselin, G., M. Levasseur, P.A. Wheeler, R.A. Horner and B.C. Booth, 1997. New measurements of phytoplankton and ice algal production in the Arctic Ocean. *Deep-Sea Research II*, 44:1623-1644.
- Grandjean, P. and E. Budtz-Jørgensen, 2007. Total imprecision of exposure biomarkers: Implications for calculating exposure limits. *American Journal of Industrial Medicine*, 50:712-719.
- Granskog, M.A., R.W. Macdonald, C.J. Mundy and D.G. Barber, 2007. Distribution, characteristics and potential impacts of chromophoric dissolved organic matter (CDOM) in the Hudson Strait and the Hudson Bay. *Continental Shelf Research*, 27:2032-2050.
- Gray, J.E., P.M. Theodorakos, E.A. Bailey and R.R. Turner, 2000. Distribution, speciation, and transport of mercury in stream sediment, stream water, and fish collected near abandoned mercury mines in southwestern Alaska, U.S.A. *Science of the Total Environment*, 260:21-33.
- Graydon, J.A., C.A. Emmerton, L.F.W. Lesack and E.N. Kelly, 2009. Mercury in the Mackenzie River delta and estuary: Concentrations and fluxes during open-water conditions. *Science of the Total Environment*, 407:2980-2988.
- Grieg, G., H.E. Gunning and O.P. Strausz, 1970. Reactions of metal atoms. II. The combination of mercury and bromine atoms and the dimerization of HgBr. *Journal of Chemical Physics*, 52:3684-3690.
- Grigal, D.F., 2002. Inputs and outputs of mercury from terrestrial watersheds: a review. *Environmental Reviews*, 10:1-39.
- Grigal, D.F., 2003. Mercury sequestration in forests and peatlands: A review. *Journal of Environmental Quality*, 32:393-405.
- Gubala, C.P., D.R. Engstrom and J.R. White, 1990. Effects of iron cycling on <sup>210</sup>Pb dating of sediments in an Adirondack lake, U.S.A. *Canadian Journal of Fisheries and Aquatic Sciences*, 47:1821-1829.
- Guentzel, J.L., R.T. Powell, W.M. Landing and R.P. Mason, 1996. Mercury associated with colloidal material in an estuarine and an open-ocean environment. *Marine Chemistry*, 55:177-188.
- Guiguer, K., J.D. Reist, M. Power and J.A. Babaluk, 2002. Using stable isotopes to confirm the trophic ecology of Arctic charr morphotypes from Lake Hazen, Nunavut, Canada. *Journal of Fish Biology*, 60:348-362.
- Guo, L.D. and R.W. Macdonald, 2006. Source and transport of terrigenous organic matter in the upper Yukon River: Evidence from isotope ( $\delta^{13}\text{C}$ ,  $\delta^{14}\text{C}$ , and  $\delta^{15}\text{N}$ ) composition of dissolved, colloidal, and particulate phases. *Global Biogeochemical Cycles*, 20:GB2011.
- Guo, L.D., C.L. Ping and R.W. Macdonald, 2007. Mobilization pathways of organic carbon from permafrost to arctic rivers in a changing climate. *Geophysical Research Letters*, 34: L13603.
- Gyrd-Hansen, N., 1981. Toxicokinetics of methyl mercury in pigs. *Archives of Toxicology*, 48:173-181.
- Hall, B., 1995. The gas-phase oxidation of elemental mercury by ozone. *Water Air and Soil Pollution*, 80:301-315.
- Hall, B.D., R.A. Bodaly, R.J.P. Fudge, J.W.M. Rudd and D.M. Rosenberg, 1997. Food as the dominant pathway of methylmercury uptake by fish. *Water Air and Soil Pollution*, 100:13-24.
- Hall, B.D., G.R. Aiken, D.P. Krabbenhoft, M. Marvin-DiPasquale and C.M. Swarzenski, 2008. Wetlands as principal zones of methylmercury production in southern Louisiana and the Gulf of Mexico region. *Environmental Pollution*, 154:124-134.
- Hamel, D., A. de Vernal, M. Gosselin and C. Hillaire-Marcel, 2002. Organic-walled microfossils and geochemical tracers: sedimentary indicators of productivity changes in the North Water and northern Baffin Bay during the last centuries. *Deep-Sea Research II*, 49:5277-5295.
- Hammerschmidt, C.R. and W.F. Fitzgerald, 2004. Geochemical controls on the production and distribution of methylmercury in near-shore marine sediments. *Environmental Science and Technology*, 38:1487-1495.
- Hammerschmidt, C.R. and W.F. Fitzgerald, 2005. Methylmercury in mosquitoes related to atmospheric deposition and contamination. *Environmental Science and Technology*, 39:3034-3039.
- Hammerschmidt, C.R. and W.F. Fitzgerald, 2006a. Photodecomposition of methylmercury in an Arctic Alaskan lake. *Environmental Science and Technology*, 40:1212-1216.
- Hammerschmidt, C.R. and W.F. Fitzgerald, 2006b. Methylmercury in freshwater fish linked to atmospheric mercury deposition. *Environmental Science and Technology*, 40:7764-7770.
- Hammerschmidt, C.R. and W.F. Fitzgerald, 2006. Methylmercury cycling in sediments on the continental shelf of southern New England. *Geochimica et Cosmochimica Acta*, 70:918-930.
- Hammerschmidt, C.R. and W.F. Fitzgerald, 2008. Methylmercury in arctic Alaskan mosquitoes: implications for impact of atmospheric mercury depletion events. *Environmental Chemistry*, 5:127-130.
- Hammerschmidt, C.R., M.B. Sandheinrich, J.G. Wiener and R.G. Rada, 2002. Effects of dietary methylmercury on reproduction of fathead minnows. *Environmental Science and Technology*, 36:877-883.
- Hammerschmidt, C.R., W.F. Fitzgerald, C.H. Lamborg, P.H. Balcom and C.M. Tseng, 2006. Biogeochemical cycling of methylmercury in lakes and tundra watersheds of Arctic Alaska. *Environmental Science and Technology*, 40:1204-1211.

- Hammerschmidt, C.R., C.H. Lamborg and W.F. Fitzgerald, 2007. Aqueous phase methylation as a potential source of methylmercury in wet deposition. *Atmospheric Environment*, 41:1663-1668.
- Hansen, J.C., T.Y. Toribara and A.G. Muhs, 1989. Trace metals in humans and animal hair from the 15th century graves in Qilakitsoq, compared with recent samples. In: Hansen, J.P. and H. Gulløv (Eds.). *The Mummies from Qilakitsoq*, pp. 161-167, Meddelelser om Grønland, Man and Society.
- Hansen, C.R.T., C.O. Nielsen, R. Dietz and M.M. Hansen, 1990. Zinc, cadmium, mercury and selenium in minke whales, belugas and narwhals from West Greenland. *Polar Biology*, 10:529-539.
- Hansen, J., B. Deutch and J. Odland, 2008. Dietary transitions and contaminants in the Arctic: Emphasis on Greenland. *Circumpolar Health Supplements* 2.
- Hansson, L.A., 1992. Factors regulating periphytic algal biomass. *Limnology and Oceanography*, 37:322-328.
- Hare, A., G.A. Stern, R.W. Macdonald, Z.Z. Kuzyk and F.Y. Wang, 2008. Contemporary and preindustrial mass budgets of mercury in the Hudson Bay marine system: The role of sediment recycling. *Science of the Total Environment*, 406:190-204.
- Hargrave, B.T., B. von Bodungen, P. Stoffyn-Egli and P.J. Mudie, 1994. Seasonal variability in particle sedimentation under permanent ice cover in the Arctic Ocean. *Continental Shelf Research*, 14:279-293.
- Harmens, H., D.A. Norris, G.R. Koerber, A. Buse, E. Steinnes and Å. Rühling, 2008. Temporal trends (1990-2000) in the concentration of cadmium, lead and mercury in mosses across Europe. *Environmental Pollution*, 151:368-376.
- Harrington, R. and R.C. Bales, 1998. Interannual, seasonal, and spatial patterns of meltwater and solute fluxes in a seasonal snowpack. *Water Resources Research*, 34:823-831.
- Harris, R.C., J.W.M. Rudd, M. Almyot and 21 others, 2007. Whole-ecosystem study shows rapid fish-mercury response to changes in mercury deposition. *Proceedings of the National Academy of Sciences of the United States of America*, 104:16586-16591.
- Hatch, S.A. and D.N. Nettleship, 1998. Northern fulmar (*Fulmaris glacialis*). In: Poole, A. and F. Gill (Eds.). *The Birds of North America*, No. 361.
- Hawkes, W.C. and N.C. Keim, 2003. Dietary selenium intake modulates thyroid hormone and energy metabolism in men. *Journal of Nutrition*, 133:3443-3448.
- Headon, C.M., R.J. Hall and G. Mierle, 1996. Dynamics of radiolabelled methylmercury in crayfish (*Orconectes viridis*). *Canadian Journal of Fisheries and Aquatic Sciences*, 53:2862-2869.
- Health Canada, 1984. Methylmercury in Canada Vol. II. Ministry of National Health and Welfare, Ottawa, Canada.
- Hecky, R.E. and R.H. Hesslein, 1995. Contributions of benthic algae to lake food webs as revealed by stable isotope analysis. *Journal of the North American Bentholological Society*, 14:631-653.
- Heinz, G.H., 1976. Methylmercury: second-year feeding effects on mallard reproduction and duckling behavior. *Journal of Wildlife Management*, 54:82-90.
- Heinz, G.H., D.J. Hoffman, J.D. Klimstra, K.R. Stebbins, S.L. Kondrad and C.A. Erwin, 2009. Species differences in the sensitivity of avian embryos to methylmercury. *Archives of Environmental Contamination and Toxicology*, 56:129-138.
- Helgason, L.B., R. Barrett, E. Lie, A. Polder, J.U. Skaare and G.W. Gabrielsen, 2008. Levels and temporal trends (1983-2003) of persistent organic pollutants (POPs) and mercury (Hg) in seabird eggs from Northern Norway. *Environmental Pollution*, 155:190-198.
- Hellou, J., W.G. Warren, J.F. Payne, S. Belkhode and P. Lobel, 1992. Heavy metals and other elements in three tissues of cod *Gadus morhua* from the northwest Atlantic. *Marine Pollution Bulletin*, 24:452-458.
- Hermanson, M.H., 1998. Anthropogenic mercury deposition to arctic lake sediments. *Water Air and Soil Pollution*, 101:309-321.
- Hill, W.R. and I.L. Larsen, 2005. Growth dilution of metals in microalgal biofilms. *Environmental Science and Technology*, 39:1513-1518.
- Hilton, G.M., D.R. Thompson, P.M. Sagar, R.J. Cuthbert, Y. Cherel and S.J. Bury, 2006. A stable isotopic investigation into the causes of decline in a sub-Antarctic predator, the rockhopper penguin *Eudyptes chrysocome*. *Global Change Biology*, 12:611-625.
- Hinzman, L.D., N.D. Bettez, W.R. Bolton and 32 others, 2005. Evidence and implications of recent climate change in northern Alaska and other arctic regions. *Climatic Change*, 72:251-298.
- Hirdman, D., K. Aspmo, J.F. Burkhart, S. Eckhardt, H. Sodemann and A. Stohl, 2009. Transport of mercury in the Arctic atmosphere: Evidence for a springtime net sink and summer-time source. *Geophysical Research Letters*, 36:L12814.
- Hobbie, J.E., B.J. Peterson, N. Bettez, L. Deegan, W.J. O'Brien, G.W. Kling, G.W. Kipphut, W.B. Bowden and A.E. Hershey, 1999. Impact of global change on the biogeochemistry and ecology of an Arctic freshwater system. *Polar Research*, 18:207-214.
- Hobson, K.A. and H.E. Welch, 1995. Cannibalism and trophic structure in a high Arctic lake: insights from stable-isotope analysis. *Canadian Journal of Fisheries and Aquatic Sciences*, 52:1195-1201.
- Hobson, K.A., R.T. Alisauskas and R.G. Clark, 1993. Stable-nitrogen isotope enrichment in avian-tissues due to fasting and nutritional stress – implications for isotopic analyses of diet. *Condor*, 95:388-394.
- Hobson, K.A., A. Fisk, N. Karnovsky, M. Holst, J.M. Gagnon and M. Fortier, 2002. A stable isotope ( $\delta^{13}\text{C}$ ,  $\delta^{15}\text{N}$ ) model for the North Water food web: implications for evaluating trophodynamics and the flow of energy and contaminants. *Deep-Sea Research II*, 49:5131-5150.
- Hodson, A., A.M. Anesio, M. Tranter, M. Fountain, M. Osborn, J. Priscu, J. Laybourn-Parry and B. Sattler, 2008. Glacial ecosystems. *Ecological Monographs*, 78:41-67.
- Hollweg, T.A., C.C. Gilmour and R.P. Mason, 2009. Methylmercury production in sediments of Chesapeake Bay and the mid-Atlantic continental margin. *Marine Chemistry*, 114:86-101.
- Holmes, C.D., D.J. Jacob, E.S. Corbett, J. Mao, X. Yang, R. Talbot and F. Slemr, 2010. Global atmospheric model for mercury including oxidation by bromine atoms. *Chemistry and Physics Discussions*, 10:19845-19900.
- Honda, M., J. Inoue and S. Yamane, 2009. Influence of low Arctic sea-ice minima on anomalously cold Eurasian winters. *Geophysical Research Letters*, 36:L08707.
- Hood, E., J. Fellman, R.G.M. Spencer, P.J. Hernes, R. Edwards, D. D'Amore and D. Scott, 2009. Glaciers as a source of ancient and labile organic matter to the marine environment. *Nature*, 462:1044-1048.
- Horner, R.A., 1985. *Sea Ice Biota*. CRC Press.
- Horner, R. and G.C. Schrader, 1982. Relative contributions of ice algae, phytoplankton, and benthic microalgae to primary production in nearshore regions of the Beaufort Sea. *Arctic*, 35:485-503.
- Horton, T.W., J.D. Blum, Z. Xie, M. Hren and P. Chamberlain, 2010. Stable isotope food-web analysis and mercury biomagnification in polar bears (*Ursus maritimus*). *Polar Research*, 28:443-454.
- Hoydal, K. and M. Dam, 2005. AMAP Faroe Islands Heavy metals and POPs Core programme 2004. Report No. 2005:2. 76 pp. Food-Veterinary and Environmental Agency, Faroe Islands.
- Hoydal, K. and M. Dam, 2009. AMAP Faroe Islands Heavy Metals and POPs Core Programme 2005-2008. Report No. 2009:1. 101 pp. Environment Agency, Faroe Islands.
- Hylander, L.D. and M.E. Goodsite, 2006. Environmental costs of mercury pollution. *Science of the Total Environment*, 368:352-370.
- Hylander, L.D., J. Grohn, M. Tropp, A. Vikstrom, H. Wolpher, E.D.E. Silva, M. Meili and L.J. Oliveira, 2006. Fish mercury increase in Lago Manso, a new hydroelectric reservoir in tropical Brazil. *Journal of Environmental Management*, 81:155-166.
- Ikemoto, T., T. Kunito, H. Tanaka, N. Baba, N. Miyazaki and S. Tanabe, 2004. Detoxification mechanism of heavy metals in marine mammals and seabirds: Interaction of selenium with mercury, silver, copper, zinc, and cadmium in liver. *Archives of Environmental Contamination and Toxicology*, 47:402-413.
- INAC, 2009. Canadian Arctic Contaminants and Health Assessment Report. Northern Contaminants Program. Indian and Northern Affairs Canada,
- IPCC, 2007. Climate Change 2007 – The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC. Solomon, S., D. Qin, M. Manning, M. Marquis, K. Averyt, M. Tignor, H. Miller and Z. Chen (Eds.). 996 pp. Intergovernmental Panel on Climate Change. Cambridge University Press.
- Iverfeldt, A., 1991. Occurrence and turnover of atmospheric mercury over the Nordic countries. *Water Air and Soil Pollution*, 56:251-265.
- Jackson, J.A., 1997. *Glossary of Geology*. 4th edition. 769 pp. American Geophysical Institute.

- Jaeger, I., H. Hop and G.W. Gabrielsen, 2009. Biomagnification of mercury in selected species from an Arctic marine food web in Svalbard. *Science of the Total Environment*, 407:4744-4751.
- Jaffe, D., E. Prestbo, P. Swartzendruber, P. Weiss-Penzias, S. Kato, A. Takami, S. Hatakeyama and Y. Kajii, 2005. Export of atmospheric mercury from Asia. *Atmospheric Environment*, 39:3029-3038.
- Janeway, C.A., P. Travers, M. Walport and M. Shlomchik, 2001. *Immune Biology – The Immune System in Health and Disease*. 5 edition.732 pp. Garland Publishing.
- JECFA, 2003. Sixty-First Meeting, Summary and Conclusions. Available: <ftp://ftp.fao.org/esn/jecfa/jecfa1sc.pdf>. Joint Expert Committee on Food Additives.
- Jewett, S.C. and L.K. Duffy, 2007. Mercury in fishes of Alaska, with emphasis on subsistence species. *Science of the Total Environment*, 387:3-27.
- Jia, G.S.J., H.E. Epstein and D.A. Walker, 2003. Greening of arctic Alaska, 1981-2001. *Geophysical Research Letters*, 30:2067.
- Johansen, P., D. Muir, G. Asmund and F. Riget, 2004. Human exposure to contaminants in the traditional Greenland diet. *Science of the Total Environment*, 331:189-206.
- Johnson, K.P., J.D. Blum, G.J. Keeler and T.A. Douglas, 2008. Investigation of the deposition and emission of mercury in arctic snow during an atmospheric mercury depletion event. *Journal of Geophysical Research-Atmospheres*, 113:D17304.
- Johnson-Down, L. and G.M. Egeland, 2010. Adequate nutrient intakes are associated with traditional food consumption in Nunavut Inuit children aged 3-5 years. *Journal of Nutrition*, 140:1311-1316.
- Jones, A.E., P.S. Anderson, E.W. Wolff, H.K. Roscoe, G.J. Marshall, A. Richter, N. Brough and S.R. Colwell, 2010. Vertical structure of Antarctic tropospheric ozone depletion events: characteristics and broader implications. *Atmospheric Chemical and Physical Discussions*, 10:8189-8246.
- Junge, K., H. Eicken, B.D. Swanson and J.W. Deming, 2006. Bacterial incorporation of leucine into protein down to -20 degrees C with evidence for potential activity in sub-eutectic saline ice formations. *Cryobiology*, 52:417-429.
- Kahl, J.D.W., J.A. Galbraith and D.A. Martinez, 1999. Decadal-scale variability in long-range atmospheric transport to the Summit of the Greenland Ice Sheet. *Geophysical Research Letters*, 26:481-484.
- Kaleschke, L., A. Richter, J. Burrows, O. Afe, G. Heygster, J. Notholt, A.M. Rankin, H.K. Roscoe, J. Hollwedel, T. Wagner and H.W. Jacobi, 2004. Frost flowers on sea ice as a source of sea salt and their influence on tropospheric halogen chemistry. *Geophysical Research Letters*, 31:L16114.
- Kamman, N.C., N.M. Burgess, C.T. Driscoll, H.A. Simonin, W. Goodale, J. Linehan, R. Estabrook, M. Hutcheson, A. Major, A.M. Scheuhammer and D.A. Scruton, 2005. Mercury in freshwater fish of northeast North America – A geographic perspective based on fish tissue monitoring databases. *Ecotoxicology*, 14:163-180.
- Kannan, K., T. Agusa, T.J. Evans and S. Tanabe, 2007. Trace element concentrations in livers of polar bears from two populations in Northern and Western Alaska. *Archives of Environmental Contamination and Toxicology*, 53:473-482.
- Karimi, R., C.Y. Chen, P.C. Pickhardt, N.S. Fisher and C.L. Folt, 2007. Stoichiometric controls of mercury dilution by growth. *Proceedings of the National Academy of Sciences of the United States of America*, 104:7477-7482.
- Karlsson, J. and P. Byström, 2005. Littoral energy mobilization dominates energy supply for top consumers in subarctic lakes. *Limnology and Oceanography*, 50:538-543.
- Karlsson, J., A. Jonsson and M. Jansson, 2005. Productivity of high-latitude lakes: climate effect inferred from altitude gradient. *Global Change Biology*, 11:710-715.
- Keller, W., A.M. Paterson, K.M. Somers, P.J. Dillon, J. Heneberry and A. Ford, 2008. Relationships between dissolved organic carbon concentrations, weather, and acidification in small Boreal Shield lakes. *Canadian Journal of Fisheries and Aquatic Sciences*, 65:786-795.
- Kelly, W.R., 1993. The liver and biliary system. In: Jubb, K.V.F., P.C. Kennedy and N. Palmer (Eds.). *Pathology of Domestic Animals*, pp. 319-406, Academic Press.
- Kerin, E.J., C.C. Gilmour, E. Roden, M.T. Suzuki, J.D. Coates and R.P. Mason, 2006. Mercury methylation by dissimilatory iron-reducing bacteria. *Applied and Environmental Microbiology*, 72:7919-7921.
- Kerr, R.A., 2009. Arctic summer sea ice could vanish soon but not suddenly. *Science*, 323:1655.
- Khalizov, A.F., B. Viswanathan, P. Larregaray and P.A. Ariya, 2003. A theoretical study on the reactions of Hg with halogens: Atmospheric implications. *Journal of Physical Chemistry A*, 107:6360-6365.
- Kidd, K.A., M.J. Paterson, R.H. Hesslein, D.C.G. Muir and R.E. Hecky, 1999. Effects of northern pike (*Esox lucius*) additions on pollutant accumulation and food web structure, as determined by  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$ , in a eutrophic and an oligotrophic lake. *Canadian Journal of Fisheries and Aquatic Sciences*, 56:2193-2202.
- Kim, E.Y., T. Murakami, K. Saeki and R. Tatsukawa, 1996. Mercury levels and its chemical form in tissues and organs of seabirds. *Archives of Environmental Contamination and Toxicology*, 30:259-266.
- King, M.D. and W.R. Simpson, 2001. Extinction of UV radiation in Arctic snow at Alert, Canada (82 degrees N). *Journal of Geophysical Research-Atmospheres*, 106:12499-12507.
- Kinghorn, A., M. Humphries, P. Outridge and H.M. Chan, 2006. Reconstructing historical mercury exposure from beluga whale consumption among Inuit in the Mackenzie Delta. *Journal of Ethnobiology*, 26:310-326.
- Kingsley, M., 1994. Mercury and other inorganic contaminants in country foods in eastern Hudson Bay. In: Murray, J.L. and R.G. Shearer (Eds.). *Synopsis of research conducted under the 1993/94 Northern Contaminants Program*. Environmental Studies No. 73. Department of Indian Affairs and Northern Development, Ottawa, Canada.
- Kirk, J.L., V.L.S. Louis and M.J. Sharp, 2006. Rapid reduction and reemission of mercury deposited into snowpacks during atmospheric mercury depletion events at Churchill, Manitoba, Canada. *Environmental Science and Technology*, 40:7590-7596.
- Kirk, J.L., V.L. St. Louis, H. Hintemann, I. Lehnherr, B. Else and L. Poissant, 2008. Methylated mercury species in marine waters of the Canadian High and sub-Arctic. *Environmental Science and Technology*, 42:8367-8373.
- Klaassen, C.D., Amdur, M.O., Doull, J., 2006. *Casarett and Doull's Toxicology. The Basic Science of Poisons*. 6th Edn. McGraw-Hill, 1280 pp.
- Klaassen, C.D., J. Liu and B.A. Diwan, 2009. Metallothionein protection of cadmium toxicity. *Toxicology and Applied Pharmacology*, 238:215-220.
- Klaminder, J., K. Yoo, J. Rydberg and R. Giesler, 2008. An explorative study of mercury export from a thawing palsa mire. *Journal of Geophysical Research*, 113:G04034.
- Klapfer, R., C.B. Rees, P. Drevnick, D. Weber, M. Sandheinrich and M.J. Carvan, 2006. Gene expression changes related to endocrine function and decline in reproduction in fathead minnow (*Pimephales promelas*) after dietary methylmercury exposure. *Environmental Health Perspectives*, 114:1337-1343.
- Knights, C.D., E.M. Sunderland, M.C. Barber, J.M. Johnston and R.B. Ambrose, 2009. Application of ecosystem-scale fate and bioaccumulation models to predict fish mercury response times to changes in atmospheric deposition. *Environmental Toxicology and Chemistry*, 28:881-893.
- Knudsen, L.B., G.W. Gabrielsen, J. Verreault, R. Barrett, J.U. Skaare, A. Polder and E. Lie, 2005. Temporal trends of brominated flame retardants, cyclododeca-1,5,9-triene and mercury in eggs of four seabird species from Northern Norway and Svalbard. SPFO-Report 942/2005. 942/2005, 42 pp. Norwegian Polar Institute.
- Kochtubajda, B., M.D. Flannigan, J.R. Gyakum, R.E. Stewart, K.A. Logan and T.-V. Nguyen, 2006. Lightening and fires in the Northwest Territories and responses to future climate change. *Arctic*, 59:211-221.
- Koeman, J. and W. van de Ven, 1975. Mercury and selenium in marine mammals and birds. *Science of the Total Environment*, 3:279-287.
- Koeman, J., W. Peeters, C. Koudstaal-Hol, P. Tijoe, J. De Goeij, 1973. Mercury-selenium correlations in marine mammals. *Nature*, 245:385-386.
- Koop, T., A. Kapilashrami, L.T. Molina and M.J. Molina, 2000. Phase transitions of sea-salt/water mixtures at low temperatures: Implications for ozone chemistry in the polar marine boundary layer. *Journal of Geophysical Research*, 105:26393-26402.
- Korhola, A., S. Sorvari, M. Rautio, P.G. Appleby, J.A. Dearing, Y. Hu, N. Rose, A. Lami and N.G. Cameron, 2002. A multi-proxy analysis of climate impacts on the recent development of subarctic Lake Saanajarvi in Finnish Lapland. *Journal of Paleolimnology*, 28:59-77.

- Koster, M.D., D.P. Ryckman, D.V.C. Weseloh and J. Struger, 1996. Mercury levels in Great Lakes herring gull (*Larus argentatus*) eggs, 1972-1992. *Environmental Pollution*, 93:261-270.
- Krabbenhoft, D.P., J.M. Benoit, C.L. Babiarz, J.P. Hurley and A.W. Andren, 1995. Mercury cycling in the allequash creek watershed, Northern Wisconsin. *Water Air and Soil Pollution*, 80:425-433.
- Kraepiel, A.M.L., K. Keller, H.B. Chin, E.G. Malcolm and F.M.M. Morel, 2003. Sources and variations of mercury in tuna. *Environmental Science and Technology*, 37:5551-5558.
- Krey, A., M. Kwan and L.H.M. Chan, 2008. Neurochemical changes associated with mercury exposure in polar bears (*Ursus maritimus*). Poster Session: Environmental Toxicology. Ecotoxicology of Emerging And Persistent Pollutants. 5th SETAC World Congress Sydney, Australia 3-7 August 2008.
- Krupnik, I. and J. Dyanna (Eds.), 2002. *The Earth Is Faster Now: Indigenous Observations of Arctic Environmental Change*. 383 pp. Frontiers in Polar Science. Arctic Research Consortium of the United States.
- Kuzyk, Z.Z.A., M.A. Goni, G.A. Stern and R.W. Macdonald, 2008. Sources, pathways and sinks of particulate organic matter in Hudson Bay: Evidence from lignin distributions. *Marine Chemistry*, 112:215-229.
- Kuzyk, Z.A., R.W. Macdonald, S.C. Johannessen, C. Gobeil and G.A. Stern, 2009. Towards a sediment and organic carbon budget for Hudson Bay. *Marine Geology*, 264:190-208.
- Kvittek, R.G., K.E. Conlan and O.J. Iampietro, 1998. Black pools of death: hypoxic, brine-filled ice gouge depressions become lethal traps for benthic organisms in a shallow Arctic embayment. *Marine Ecology Progress Series*, 162:1-10.
- Kwok, R. and D.A. Rothrock, 2009. Decline in Arctic sea ice thickness from submarine and ICESat records: 1958-2008. *Geophysical Research Letters*, 36:L15501.
- Lahoutifard, N., M. Sparling and D. Lean, 2005. Total and methyl mercury patterns in Arctic snow during springtime at Resolute, Nunavut, Canada. *Atmospheric Environment*, 39:7597-7606.
- Lahoutifard, N., L. Poissant and S.L. Scott, 2006. Scavenging of gaseous mercury by acidic snow at Kuujjuarapik, Northern Quebec. *Science of the Total Environment*, 355:118-126.
- Laidre, K.L., I. Stirling, L.F. Lowry, O. Wiig, M.P. Heide-Jorgensen and S.H. Ferguson, 2008. Quantifying the sensitivity of arctic marine mammals to climate-induced habitat change. *Ecological Applications*, 18:S97-S125.
- Lalonde, J., M. Amyot, A.M.L. Kraepiel and F.M.M. Morel, 2001. Photo-oxidation of Hg(0) in artificial and natural waters. *Environmental Science and Technology*, 35:1367-1372.
- Lalonde, J.D., A.J. Poulain and M. Amyot, 2002. The role of mercury redox reactions in snow on snow-to-air mercury transfer. *Environmental Science and Technology*, 36:174-178.
- Lalonde, J.D., Amyot, M., Doyon, M.-R., Auclair, J.-C., 2003. Photoinduced Hg(II) reduction in snow from the remote and temperate Experimental Lakes Area (Ontario, Canada). *Journal of Geophysical Research*, 108:4211.
- Lambertsson, L. and M. Nilsson, 2006. Organic material: The primary control on mercury methylation and ambient methyl mercury concentrations in estuarine sediments. *Environmental Science and Technology*, 40:1822-1829.
- Lamborg, C.H., W.F. Fitzgerald, J. O'Donnell and T. Torgersen, 2002a. A non-steady-state compartment model of global-scale mercury biogeochemistry with interhemispheric atmospheric gradients. *Geochimica et Cosmochimica Acta*, 66:1105-1118.
- Lamborg, C.H., W.F. Fitzgerald, A.W.H. Damman, J.M. Benoit, P.H. Balcom and D.R. Engstrom, 2002b. Modern and historic atmospheric mercury fluxes in both hemispheres: global and regional mercury cycling implications. *Global Biogeochemical Cycles*, 16:1104.
- Landers, D.H., J. Ford, C. Gubala, M. Monetti, B.K. Lasorsa and J. Martinson, 1995. Mercury in vegetation and lake-sediments from the US Arctic. *Water Air and Soil Pollution*, 80:591-601.
- Landers, D.H., C. Gubala, M. Verta, M. Lucotte, K. Johansson, T. Vlasova and W.L. Lockhart, 1998. Using lake sediment mercury flux ratios to evaluate the regional and continental dimensions of mercury deposition in arctic and boreal ecosystems. *Atmospheric Environment*, 32:919-928.
- Landers, D.H., S.L. Simonich, D.A. Jaffe, L.H. Geiser, D.H. Campbell, A.R. Schwindt, C.B. Schreck, M.L. Kent, W.D. Hafner, H.E. Taylor, K.J. Hageman, S. Usenko, L.K. Ackerman, J.E. Schrlau, N.L. Rose, T.F. Blett and M.M. Erway, 2008. The Fate, Transport, and Ecological Impacts of Airborne Contaminants in Western National Parks (USA). EPA/600/R-07/138. U.S. Environmental Protection Agency.
- Landis, M.S., R.K. Stevens, F. Schaedlich and E.M. Prestbo, 2002. Development and characterization of an annular denuder methodology for the measurement of divalent inorganic reactive gaseous mercury in ambient air. *Environmental Science and Technology*, 36:3000-3009.
- Larsen, R.B. and M. Dam, 2003. AMAP Faroe Islands 1997-1998. In: Hoydal, K. and M. Dam (Eds.). *AMAP Greenland and the Faroe Islands 1997-2001. Vol 3: The environment of the Faroe Islands*. Danish Ministry of Environment, Copenhagen. 265 pp.
- Larsson, P., N. Holmqvist, P. Stenroth, O. Berglund, P. Nyström and W. Graneli, 2007. Heavy metals and stable isotopes in a benthic omnivore in a trophic gradient of lakes. *Environmental Science & Technology*, 41:5973-5979.
- Laurier, F.J.G., R.P. Mason, G.A. Gill and L. Whalin, 2004. Mercury distributions in the North Pacific Ocean - 20 years of observations. *Marine Chemistry*, 90:3-19.
- Lavery, T.J., C.M. Kemper, K. Sanderson, C.G. Schultz, P. Coyle, J.G. Mitchell and L. Seuront, 2009. Heavy metal toxicity of kidney and bone tissues in South Australian adult bottlenose dolphins (*Tursiops aduncus*). *Marine Environmental Research*, 67:1-7.
- Lavoie, D., R.W. Macdonald and K.L. Denman, 2009. Primary productivity and export fluxes on the Canadian shelf of the Beaufort Sea: A modelling study. *Journal of Marine Systems*, 75:17-32.
- Lavoie, D., K.L. Denman and R.W. Macdonald, 2010. Effects of future climate change on primary productivity and export fluxes in the Beaufort Sea. *Journal of Geophysical Research*, 115:C04018.
- Law, R.J., 1996. Cadmium in small mammals. In: Nelson Beyer, W., G.H. Heinz and A.W. Redmon-Norwood (Eds.). *Environmental Contaminants in Wildlife. Interpreting Tissue Concentrations*, pp. 357-376, CRC Press.
- Lawrence, D.M., A.G. Slater, R.A. Tomas, M.M. Holland and C. Deser, 2008. Accelerated Arctic land warming and permafrost degradation during rapid sea ice loss. *Geophysical Research Letters*, 35:L11506.
- Laws, E.A., B.N. Popp, R.R. Bidigare, M.C. Kennicutt and S.A. Macko, 1995. Dependence of phytoplankton carbon isotopic composition on growth-rate and CO<sub>2</sub>: Theoretical considerations and experimental results. *Geochimica et Cosmochimica Acta*, 59:1131-1138.
- Lawson, N.M. and R.P. Mason, 1998. Accumulation of mercury in estuarine food chains. *Biogeochemistry*, 40:235-247.
- Legendre, L., S.F. Ackley, G.S. Dieckmann, B. Gulliksen, R. Horner, T. Hoshiai, I.A. Melnikov, W.S. Reeburgh, M. Spindler and C.W. Sullivan, 1992. Ecology of sea ice biota. 2. Global significance. *Polar Biology*, 12:429-444.
- Lehnher, I. and V.L.S. Louis, 2009. The importance of ultraviolet radiation in the photodemethylation of methylmercury in freshwater ecosystems. *Environmental Science and Technology*, 43:5692-5698.
- Leighton, F.A., M. Cattet, R. Norstrom and S. Trudeau, 1988. A cellular basis for high levels of vitamin-A in livers of polar bears (*Ursus maritimus*) – the Ito cell. *Canadian Journal of Zoology*, 66:480-482.
- Leitch, D.R., 2006. Mercury distribution in water and permafrost of the lower Mackenzie Basin, their contribution to the mercury contamination in the Beaufort Sea marine ecosystem, and potential effects of climate variation. Department of Environment and Geography. 118 pp. University of Manitoba.
- Leitch, D.R., J. Carrie, D. Lean, R.W. Macdonald, G.A. Stern and F.Y. Wang, 2007. The delivery of mercury to the Beaufort Sea of the Arctic Ocean by the Mackenzie River. *Science of the Total Environment*, 373:178-195.
- Letcher, R.J., J. Bustnes, R. Dietz, B.M. Janssen, E.H. Jørgensen, C. Sonne, J. Verreault, M.M. Vijayan and G.W. Gabrielsen, 2010. Exposure and effects assessment of persistent organohalogen contaminants in arctic wildlife and fish. *Science of the Total Environment*, 408:2995-3043.
- Li, Y.-F., R.W. Macdonald, L.M.M. Jantunen, T. Harner, T.F. Bidleman and W.M.J. Strachan, 2002. The transport of β-hexachlorocyclohexane to the western Arctic Ocean: a contrast to α-HCH. *Science of the Total Environment*, 291:229-246.
- Li, Y.-F., R.W. Macdonald, J.M. Ma, H. Hung and S. Venkatesh, 2004. Historical α-HCH budget in the Arctic Ocean: The Arctic mass balance box model (AMBBM). *Science of the Total Environment*, 324:115-139.
- Li, C.S., J. Cornett, S. Willie and J. Lam, 2009. Mercury in Arctic air: The long-term trend. *Science of the Total Environment*, 407:2756-2759.

- Lindberg, S.E., A.B. Brooks, C.J. Lin, K. Scott, T. Meyers, L. Chambers, M. Landis and R.K. Stevens, 2001. Formation of reactive gaseous mercury in the Arctic: evidence of oxidation of Hg<sub>0</sub> to gas-phase Hg-II compounds after arctic sunrise. *Water Air and Soil Pollution*, 1:295-302.
- Lindberg, S.E., S. Brooks, C.J. Lin, K.J. Scott, M.S. Landis, R.K. Stevens, M. Goodsite and A. Richter, 2002. Dynamic oxidation of gaseous mercury in the Arctic troposphere at polar sunrise. *Environmental Science and Technology*, 36:1245-1256.
- Lindberg, S., R. Bullock, R. Ebinghaus, D. Engstrom, X. Feng, W. Fitzgerald, N. Pirrone, E. Prestbo and C. Seigneur, 2007. A synthesis of progress and uncertainties in attributing the sources of mercury in deposition. *Ambio*, 36:19-32.
- Lindeberg, C., R. Bindler, I. Renberg, O. Emteryd, E. Karlsson and N.J. Anderson, 2006. Natural fluctuations of mercury and lead in Greenland Lake sediments. *Environmental Science and Technology*, 40:90-95.
- Lindeberg, C., R. Bindler, C. Bigler, P. Rosen and I. Renberg, 2007. Mercury pollution trends in subarctic lakes in the northern Swedish mountains. *Ambio*, 36:401-405.
- Lindqvist, O., K. Johansson, M. Aastrup, A. Andersson, L. Bringmark, G. Hovsenius, L. Hakanson, A. Iverfeldt, M. Meili and B. Timm, 1991. Mercury in the Swedish environment – recent research on causes, consequences and corrective methods. *Water Air and Soil Pollution*, 55:xi-261.
- Lindsay, R.W. and J. Zhang, 2005. The thinning of Arctic sea ice, 1988-2003: Have we passed a tipping point? *Journal of Climate*, 18:4879-4894.
- Lockhart, W.L. and M. Evans, 2000. Mercury in fish from stock surveys of lakes in the western Northwest Territories: Investigations into the factors affecting mercury levels. In: Kahok, S. (Ed.). *Synopsis of Research Conducted Under the 1999/2000 Northern Contaminants Program*, pp. 181-190, Indian and Northern Affairs Canada, Ottawa.
- Lockhart, W.L., P. Wilkinson, B.N. Billeck, R.A. Danell, R.V. Hunt, G.J. Brunskill, J. Delaronde and V. St. Louis, 1998. Fluxes of mercury to lake sediments in central and northern Canada inferred from dated sediment cores. *Biogeochemistry*, 40:163-173.
- Lockhart, W.L., G.A. Stern, G. Low, M. Hendzel, G. Boila, P. Roach, M.S. Evans, B.N. Billeck, J. DeLaronde, S. Friesen, K. Kidd, S. Atkins, D.C.G. Muir, M. Stoddart, G. Stephens, S. Stephenson, S. Harbicht, N. Snowshoe, B. Grey, S. Thompson and N. DeGraff, 2005a. A history of total mercury in edible muscle of fish from lakes in northern Canada. *Science of the Total Environment*, 351-352:427-463.
- Lockhart, W.L., G.A. Stern, R. Wagemann, R.V. Hunt, D.A. Metner, J. DeLaronde, B. Dunn, R.E.A. Stewart, C.K. Hyatt, L. Harwood and K. Mount, 2005b. Concentrations of mercury in tissues of beluga whales (*Delphinapterus leucas*) from several communities in the Canadian Arctic from 1981 to 2002. *Science of the Total Environment*, 351:391-412.
- Lodenius, M., A. Seppanen and M. Herranen, 1983. Accumulation of mercury in fish and man from reservoirs in northern Finland. *Water Air and Soil Pollution*, 19:237-246.
- Lokken, J.A., G.L. Finstad, K.L. Dunlap and L.K. Duffy, 2009. Mercury in lichens and reindeer hair from Alaska: 2005-2007 pilot survey. *Polar Record*, 45:368-374.
- Lonne, O.J. and G.W. Gabrielsen, 1992. Summer diet of seabirds feeding in sea-ice-covered waters near Svalbard. *Polar Biology*, 12:685-692.
- Lonne, O.J. and B. Gulliksen, 1989. Size, age and diet of polar cod, *Boreogadus saida* (Lepechin 1773), in ice covered waters. *Polar Biology*, 9:187-191.
- Loseto, L.L., 2007. Beaufort Sea beluga whales: an ecological approach to examining diet and dietary sources of mercury. Ph.D. Thesis. Dept of Zoology. 155 pp. University of Manitoba, Winnipeg.
- Loseto, L.L., D.R.S. Lean and S.D. Siciliano, 2004a. Snowmelt sources of methylmercury to High Arctic ecosystems. *Environmental Science and Technology*, 38:3004-3010.
- Loseto, L.L., S.D. Siciliano and D.R.S. Lean, 2004b. Methylmercury production in High Arctic wetlands. *Environmental Toxicology and Chemistry*, 23:17-23.
- Loseto, L.L., P. Richard, G.A. Stern, J. Orr and S.H. Ferguson, 2006. Segregation of Beaufort Sea beluga whales during the open-water season. *Canadian Journal of Zoology*, 84:1743-1751.
- Loseto, L.L., G.A. Stern and S.H. Ferguson, 2008a. Size and biomagnification: How habitat selection explains beluga mercury levels. *Environmental Science and Technology*, 42:3982-3988.
- Loseto, L.L., G.A. Stern, D. Deibel, T.L. Connelly, A. Prokopowicz, D.R.S. Lean, L. Fortier and S.H. Ferguson, 2008b. Linking mercury exposure to habitat and feeding behaviour in Beaufort Sea beluga whales. *Journal of Marine Systems*, 74:1012-1024.
- Loseto, L.L., G.A. Stern, T.L. Connelly, D. Deibel, B. Gemmill, A. Prokopowicz, L. Fortier and S.H. Ferguson, 2009. Summer diet of beluga whales inferred by fatty acid analysis of the eastern Beaufort Sea food web. *Journal of Experimental Marine Biology and Ecology*, 374:12-18.
- Lu, J.Y., W.H. Schroeder, L.A. Barrie, A. Steffen, H.E. Welch, K. Martin, L. Lockhart, R.V. Hunt, G. Boila and A. Richter, 2001. Magnification of atmospheric mercury deposition to polar regions in springtime: the link to tropospheric ozone depletion chemistry. *Geophysical Research Letters*, 28:3219-3222.
- Lucotte, M., R. Schetagne, N. Thérien, C. Langlois and A. Trembley (Eds.), 1999. *Mercury in the Biogeochemical Cycle: Natural Environments and Hydroelectric Reservoirs in Northern Québec*. Springer-Verlag.
- Luengen, A.C. and A.R. Flegal, 2009. Role of phytoplankton in mercury cycling in the San Francisco Bay estuary. *Limnology and Oceanography*, 54:23-40.
- Maage, A., K. Stange and J. Klungsoyr, 1996. Trace elements in fish and sediments from the Barents Sea. Draft report. Norwegian Institute for Marine Research.
- Macdonald, R.W., 1996. Awakenings in the Arctic. *Nature*, 380:286-287.
- Macdonald, R.W., 2000. Arctic estuaries and ice: a positive-negative estuarine couple In: Lewis, E.L. (Ed.). *The Freshwater Budget of the Arctic Ocean*, pp. 383-407.
- Macdonald, R.W., 2005. Climate change, risks and contaminants: A perspective from studying the Arctic. *Human and Ecological Risk Assessment*, 11:1099-1104.
- Macdonald, R.W. and J.M. Bewers, 1996. Contaminants in the arctic marine environment: priorities for protection. *ICES Journal of Marine Science*, 53:537-563.
- Macdonald, R.W. and L.L. Loseto, 2010. Are Arctic Ocean ecosystems exceptionally vulnerable to global emissions of mercury? A call for emphasized research on methylation and the consequences of climate change. *Environmental Chemistry*, 7:133-138.
- Macdonald, R.W., E.C. Carmack and D.W.R. Wallace, 1993. Tritium and radiocarbon dating of Canada Basin deep waters. *Science*, 259:103-104.
- Macdonald, R.W., T. Harner and J. Fyfe, 2005. Recent climate change in the Canadian Arctic and its impact on contaminant pathways and interpretation of temporal trend data. *Science of the Total Environment*, 342:5-86.
- MacLachlan, N.J. and J.M. Cullen, 1995. Liver, biliary system and exocrine pancreas. In: Carlton, W.W. and M. Donald McGavin (Eds.). *Thomsons Special Veterinary Pathology*, pp. 81-115, Mosby Year Book, St. Louis.
- Mailman, M., L. Stepnuk, N. Cicek and R.A. Bodaly, 2006. Strategies to lower methyl mercury concentrations in hydroelectric reservoirs and lakes: A review. *Science of the Total Environment*, 368:224-235.
- Mallory, M.L., 2005. At the gate to Hell: studying fulmars in northern Nunavut. *BirdWatch Canada* 32:8-11.
- Mann, J.L., S.E. Long, C.A. Shuman and W.R. Kelly, 2005. Determination of mercury content in a shallow firn core from Greenland by isotope dilution inductively coupled plasma mass spectrometry. *Water Air and Soil Pollution*, 163:19-32.
- Markager, S., W.F. Vincent and E.P.Y. Tang, 1999. Carbon fixation by phytoplankton in high Arctic lakes: Implications of low temperature for photosynthesis. *Limnology and Oceanography*, 44:597-607.
- Maslanik, J.A., C. Fowler, J. Stroeve, S. Drobot, J. Zwally, D. Yi and W. Emery, 2007. A younger, thinner Arctic ice cover: Increased potential for rapid, extensive sea-ice loss. *Geophysical Research Letters*, 34:L24501.
- Mason, R., 2009. Mercury emissions from natural sources and their importance in the global mercury cycle. In: Pirrone, N. and R. Mason (Eds.). *Mercury Fate and Transport in the Global Atmosphere*. Springer Science + Business Media.
- Mason, R.P. and W.F. Fitzgerald, 1993. The distribution and biogeochemical cycling of mercury in the Equatorial Pacific Ocean. *Deep-Sea Research*, 40:1897-1924.

- Mason, R.P. and G.R. Sheu, 2002. Role of the ocean in the global mercury cycle. *Global Biogeochemical Cycles*, 16:1093.
- Mason, R.P. and K.A. Sullivan, 1999. The distribution and speciation of mercury in the South and equatorial Atlantic. *Deep-Sea Research II*, 46:937-956.
- Mason, R.P., W.F. Fitzgerald and F.M.M. Morel, 1994. The biogeochemical cycling of elemental mercury: Anthropogenic influences. *Geochimica et Cosmochimica Acta*, 58:3191-3198.
- Mason, R.P., K.R. Rolfs and W.F. Fitzgerald, 1995. Methylated and elemental mercury cycling in surface and deep ocean waters of the North Atlantic. *Water, Air, and Soil Pollution*, 80:665-677.
- Mason, R.P., J.R. Reinfelder and F.M.M. Morel, 1996. Uptake, toxicity, and trophic transfer of mercury in a coastal diatom. *Environmental Science and Technology*, 30:1835-1845.
- Mason, R.P., K.R. Rolfs and W.F. Fitzgerald, 1998. Mercury in the North Atlantic. *Marine Chemistry*, 61:37-53.
- Mason, R.P., N.M. Lawson and G.-R. Sheu, 2001. Mercury in the Atlantic Ocean: factors controlling air-sea exchange of mercury and its distribution in the upper waters. *Deep-Sea Research II*, 48:2829-2853.
- Maxie, M.G., 1993. *Pathology of Domestic Animals*. Academic Press.
- McClelland, J.W., S.J. Dery, B.J. Peterson, R.M. Holmes and E.F. Wood, 2006. A pan-arctic evaluation of changes in river discharge during the latter half of the 20th century. *Geophysical Research Letters*, 33:L06715.
- McDonald, M.E., A.E. Hershey and M.C. Miller, 1996. Global warming impacts on lake trout in arctic lakes. *Limnology and Oceanography*, 41:1102-1108.
- McGuire, A.D., L.G. Anderson, T.R. Christensen, S. Dallimore, L. Guo, D.J. Hayes, M. Heimann, T.D. Lorenson, R.W. Macdonald and N. Roulet, 2009. Sensitivity of the carbon cycle in the Arctic to climate change. *Ecological Monographs*, 79:523-555.
- McIntyre, J.K. and D.A. Beauchamp, 2007. Age and trophic position dominate bioaccumulation of mercury and organochlorines in the food web of Lake Washington. *Science of the Total Environment*, 372:571-584.
- McLaughlin, F.A., E.C. Carmack, R.W. Macdonald and J.K.B. Bishop, 1996. Physical and geochemical properties across the Atlantic/Pacific water mass boundary in the southern Canadian Basin. *Journal of Geophysical Research*, 101:1183-1197.
- McNamara, J.P., D.L. Kane and L.D. Hinzman, 1998. An analysis of streamflow hydrology in the Kuparuk River basin, Arctic Alaska: A nested watershed approach. *Journal of Hydrology*, 206:39-57.
- McPhail, J., Lindsey, CC, 1970. Freshwater Fishes of North Western Canada and Alaska. *Fisheries Research Board of Canada Bulletin* 173. 381 pp.
- McPhee, M.G., A. Proshutinsky, J.H. Morison, M. Steele and M.B. Alkire, 2009. Rapid change in freshwater content of the Arctic Ocean. *Geophysical Research Letters*, 36:L10602.
- Meili, M., K. Bishop, L. Bringmark, K. Johansson, J. Munthe, H. Sverdrup and W. Vries, 2003. Critical levels of atmospheric pollution: criteria and concepts for operational modelling of mercury in forest and lake ecosystems. *Science of the Total Environment*, 304:83-106.
- Melnick, J.G. and G. Parkin, 2007. Cleaving mercury-alkyl bonds: A functional model for mercury detoxification by merB. *Science*, 317:225.
- Melnikov, S.A., S.V. Vlasov and A.N. Gorshkov, 2005. Final report on the Raipon/AMAP/GEF project Persistent Toxic Substances, Food Security and Indigenous Peoples of the Russian North. Activity 4. Study of biomagnification in Arctic food-chains. (Results tabulated in AMAP Assessment 2002: Heavy Metals in the Arctic, pp. 146-147).
- Mergler, D., H.A. Anderson, H.M. Chan, K.R. Mahaffey, M. Murray, M. Sakamoto and A.H. Stern, 2007. Methylmercury exposure and health effects in humans: a worldwide concern. *Ambio*, 36:3-11.
- Methé, B.A., K.E. Nelson, J.W. Deming and 23 others, 2005. The psychrophilic lifestyle as revealed by the genome sequence of *Colwellia psychrerythraea* 34H through genomic and proteomic analyses. *Proceedings of the National Academy of Sciences of the United States of America*, 102:10913-10918.
- Michaud, J., L. Fortier, P. Rowe and R. Ramseier, 1996. Feeding success and survivorship of Arctic cod larvae, *Boreogadus saida*, in the northeast water polynya (Greenland Sea). *Fisheries Oceanography*, 5:120-135.
- Michelutti, N., A. Wolfe, R. Vinebrooke and B. Rivard, 2005. Recent primary production increases in arctic lakes. *Geophysical Research Letters*, 32:L19715.
- Miljeteig, C., H. Strom, M.V. Gavrilo, A. Volkov, B.M. Jenssen and G.W. Gabrielsen, 2009. High levels of contaminants in ivory gull *Pagophila eburnea* eggs from the Russian and Norwegian Arctic. *Environmental Science and Technology*, 43:5521-5528.
- Moline, M.A., N.J. Karnovsky, Z. Brown, G.J. Divoky, T.K. Frazer, C.A. Jacoby, J.J. Torrese and W.R. Fraser, 2008. High latitude changes in ice dynamics and their impact on polar marine ecosystems. *Annals of the New York Academy of Sciences*, 1134:267-319.
- Montgomery, S., M. Lucotte and I. Rheault, 2000. Temporal and spatial influences of flooding on dissolved mercury in boreal reservoirs. *Science of the Total Environment*, 260:147-157.
- Moore, S.E. and H.P. Huntington, 2008. Arctic marine mammals and climate change: Impacts and resilience. *Ecological Applications*, 18:S157-S165.
- Moore, S.E. and K.L. Laidre, 2006. Trends in sea ice cover within habitats used by bowhead whales in the western Arctic. *Ecological Applications*, 16:932-944.
- Morel, F.M.M., A.M.L. Kraepiel and M. Amyot, 1998. The chemical cycle and bioaccumulation of mercury. *Annual Review of Ecology and Systematics*, 29:543-566.
- Morin, S., G.M. Marion, R. von Glasow, D. Voisin, J. Bouchez and J. Savarino, 2008. Precipitation of salts in freezing seawater and ozone depletion events: A status report. *Atmospheric Chemistry and Physics*, 8:7317-7324.
- Moses, S.K., A.V. Whiting, G.R. Bratton, R.J. Taylor and T.M. O'Hara, 2009. Inorganic nutrients and contaminants in subsistence species of Alaska: linking wildlife and human health. *International Journal of Circumpolar Health*, 68:53-74.
- Mozaffarian, D., 2009. Fish, mercury, selenium and cardiovascular risk: current evidence and unanswered questions. *International Journal of Environmental Research and Public Health*, 6:1894-1916.
- Mueller, D.R., L. Copland, A. Hamilton and D. Stern, 2008. Examining Arctic ice shelves prior to the 2008 breakup. *EOS, Transactions, American Geophysical Union*, 89:502-503.
- Muir, D., X.W. Wang, D. Bright, L. Lockhart and G. Kock, 2005. Spatial and temporal trends of mercury and other metals in landlocked char from lakes in the Canadian Arctic archipelago. *Science of the Total Environment*, 351:464-478.
- Muir, D.C.G., X. Wang, F. Yang, N. Nguyen, T.A. Jackson, M.S. Evans, M. Douglas, G. Kock, S. Lamoureux, R. Pienitz, J.P. Smol, W.F. Vincent and A. Dastoor, 2009. Spatial trends and historical deposition of mercury in eastern and northern Canada inferred from lake sediment cores. *Environmental Science and Technology*, 43:4802-4809.
- Mumm, N., H. Auel, H. Hanssen, W. Hagen, C. Richter and H.J. Hirche, 1998. Breaking the ice: large-scale distribution of mesozooplankton after a decade of Arctic and transpolar cruises. *Polar Biology*, 20:189-197.
- Munn, M.D. and T.M. Short, 1997. Spatial heterogeneity of mercury bioaccumulation by walleye in Franklin D. Roosevelt Lake and the upper Columbia River, Washington. *Transactions of the American Fisheries Society*, 126:477-487.
- Munthe, J., I. Wangberg, A. Iverfeldt, O. Lindqvist, D. Stromberg, J. Sommar, K. Gardfeldt, G. Petersen, R. Ebinghaus, E. Prestbo, K. Larjava and V. Siemens, 2003. Distribution of atmospheric mercury species in Northern Europe: final results from the MOE project. *Atmospheric Environment*, 37:S9-S20.
- NESCAUM, 2010. Technologies for Control and Measurement of Mercury Emissions from Coal- Fired Power Plants in the United States: A 2010 Status Report. Northeast States for Coordinated Air Use Management (NESCAUM),
- Newman, J., E. Zillioux, E. Rich, L. Liang and C. Newman, 2005. Historical and other patterns of monomethyl and inorganic mercury in the Florida panther (*Puma concolor coryi*). *Archives of Environmental Contamination and Toxicology*, 48:75-80.
- Newsome, S.D., M.A. Etnier, C.M. Kurle, J.R. Waldbauer, C.P. Chamberlain and P.L. Koch, 2007. Historic decline in primary productivity in western Gulf of Alaska and eastern Bering Sea: isotopic analysis of northern fur seal teeth. *Marine Ecology Progress Series*, 332:211-224.
- Nicholson, M.D., R.J. Fryer and R.J. Larsen, 1998. Temporal trend monitoring: Robust method for analysing contaminant trend

- monitoring data. ICES Techniques in Marine Environmental Sciences No. 20. 22 pp. International Council for the Exploration of the Sea.
- Niki, H., P.D. Maker, C.M. Savage and L.P. Breitenbach, 1983a. A long-path fourier-transform infrared study of the kinetics and mechanism for the ho-radical initiated oxidation of dimethylmercury. *Journal of Physical Chemistry*, 87:4978-4981.
- Niki, H., P.S. Maker, C.M. Savage and L.P. Breitenbach, 1983b. A Fourier-transform infrared study of the kinetics and mechanism of the reaction of atomic chlorine with dimethylmercury. *Journal of Physical Chemistry*, 87:3722-3724.
- Norstrom, R.J., R.E. Schweinsberg and B.T. Collins, 1986. Heavy metals and essential elements in livers of the polar bear (*Ursus maritimus*) in the Canadian Arctic. *Science of the Total Environment*, 48:195-212.
- Nozaki, K., 2002. Characteristics of primary production in the littoral zone of lake. *Japanese Journal of Limnology*, 63:225-231.
- NRC, 2000. Toxicological Effects of Methylmercury. National Research Council. 368 pp. National Academy Press.
- Nriagu, J.O. and J.M. Pacyna, 1988. Quantitative assessment of worldwide contamination of air, water and soils by trace-metals. *Nature*, 333:134-139.
- O'Brien, M.C., R.W. Macdonald, H. Melling and K. Iseki, 2006. Geochemistry and physical forcing of sediment transport and deposition in the Canadian Beaufort Sea. *Continental Shelf Research*, 26:41-81.
- O'Driscoll, N.J., S.D. Siciliano, D.R.S. Lean and M. Amyot, 2006. Gross photo-reduction kinetics of mercury in temperate freshwater lakes and rivers: Application to a general model for DGM dynamics. *Environmental Science and Technology*, 40:873-843.
- O'Hara, T.M. and P.R. Becker, 2003. Persistent organic contaminants in arctic marine mammals. In: Vos, J.G., G.D. Bossart, M. Fournier and T.J. O'Shea (Eds.). *Toxicology of Marine Mammals*. Taylor & Francis Publishers.
- O'Hara, T.M., V. Woshner and G. Bratton, 2003. Inorganic pollutants in Arctic marine mammals. In: Vos, J.G., G.D. Bossart, M. Fournier and T.J. O'Shea (Eds.). *Toxicology of Marine Mammals*, pp. 206-246. Taylor & Francis.
- O'Shea, T.J., 1999. Environmental contaminants and marine mammals. In: Reynolds, J.E. and S.A. Rommel (Eds.). *Biology of Marine Mammals*, pp. 485-536. Smithsonian Institution Press.
- Oberman, N.G., 2008. Contemporary permafrost degradation of Northern European Russia. Paper presented at The Ninth International Conference on Permafrost, pp. 1305-1310, Fairbanks, Alaska.
- Obrist, D., A.G. Hallar, I. McCubbin, B.B. Stephens and T. Rahn, 2008. Atmospheric mercury concentrations at Storm Peak Laboratory in the Rocky Mountains: Evidence for long-range transport from Asia, boundary layer contributions, and plant mercury uptake. *Atmospheric Environment*, 42:7579-7589.
- Odsjö, T., J. Räikkönen and A. Bignert, 2007. Time trends of metals in liver and muscle of reindeer (*Rangifer tarandus*) from northern and central Lapland, Sweden, 1983-2005. 33 pp. Rapport till Naturvårdsverket.
- Oiffer, L. and S.D. Siciliano, 2009. Methyl mercury production and loss in Arctic soil. *Science of the Total Environment*, 407:1691-1700.
- Olsen, G.H., M. Mauritzen, A.E. Derocher, E.G. Sørmo, S. J.U. Ø. Wiig and B.M. Jenssen, 2003. Space-use strategy determines PCB burdens in female polar bears. *Environmental Science and Technology*, 37:4919-4924.
- Oltmans, S.J. and W.D. Komhyr, 1986. Surface ozone distributions and variations from 1973-1984 measurements at the NOAA geophysical monitoring for climatic change baseline observatories. *Journal of Geophysical Research*, 91:5229-5236.
- Oremland, R.S., C.W. Culbertson and M.R. Winfrey, 1991. Methylmercury decomposition in sediments and bacterial cultures – involvement of methanogens and sulfate reducers in oxidative demethylation. *Applied and Environmental Microbiology*, 57:130-137.
- Oremland, R.S., L.G. Miller, P. Dowdle, T. Connell and T. Barkay, 1995. Methylmercury oxidative-degradation potentials in contaminated and pristine sediments of the Carson River, Nevada. *Applied and Environmental Microbiology*, 61:2745-2753.
- Orihel, D.M., M.J. Paterson, P.J. Blanchfield, R.A. Bodaly and H. Hintelmann, 2007. Experimental evidence of a linear relationship between inorganic mercury loading and methylmercury accumulation by aquatic biota. *Environmental Science and Technology*, 41:4952-4958.
- Osterkamp, T.E., 2008. Thermal state of permafrost in Alaska during the fourth quarter of the Twentieth Century. Paper presented at The Ninth International Conference on Permafrost, pp. 1333-1338, Fairbanks, Alaska.
- Ostertag, S.K., G. Stern and H.M. Chan, 2009. Mercury concentration and distribution in brains from belugas (*Delphinapterus leucas*) harvested in the western Canadian Arctic. Oral presentation. Paper presented at The International Conference on Mercury as a Global Pollutant. 8-12 June 2009, Guiyang, China.
- Östlund, H.G., 1982. The residence time of the freshwater component in the Arctic Ocean. *Journal of Geophysical Research*, 87:2035-2043.
- Outridge, P.M., 2005. Using biological archives to discriminate natural and anthropogenic mercury in animals: a methodological review. In: Parsons, M.B. and J.B. Percival (Eds.). *Mercury – Sources, Measurements, Cycles and Effects*, pp. 217 – 234, Mineralogical Association of Canada Short Course Halifax, Nova Scotia.
- Outridge, P.M., R. Wagemann and R. McNeely, 2000. Teeth as biomonitor of soft tissue mercury concentrations in beluga, *Delphinapterus leucas*. *Environmental Toxicology and Chemistry*, 19:1517-1522.
- Outridge, P.M., K.A. Hobson, R. McNeely and A. Dyke, 2002. A comparison of modern and preindustrial levels of mercury in the teeth of beluga in the Mackenzie Delta, Northwest Territories, and walrus at Igloolik, Nunavut, Canada. *Arctic*, 55:123-132.
- Outridge, P.M., K.A. Hobson and J.M. Savelle, 2005a. Changes in mercury and cadmium concentrations and the feeding behaviour of beluga (*Delphinapterus leucas*) near Somerset Island, Canada, during the 20th century. *Science of the Total Environment*, 350:106-118.
- Outridge, P.M., G.A. Stern, P.B. Hamilton, J.B. Percival, R. McNeely and W.L. Lockhart, 2005b. Trace metal profiles in the varved sediments of an Arctic lake. *Geochimica et Cosmochimica Acta*, 69:4881-4894.
- Outridge, P.M., H. Sanei, G.A. Stern, P.B. Hamilton and F. Goodarzi, 2007. Evidence for control of mercury accumulation rates in Canadian High Arctic lake sediments by variations of aquatic primary productivity. *Environmental Science and Technology*, 41:5259-5265.
- Outridge, P.M., R.W. Macdonald, F. Wang, G.A. Stern and A.P. Dastoor, 2008. A mass balance inventory of mercury in the Arctic Ocean. *Environmental Chemistry*, 5:89-111.
- Outridge, P.M., K.A. Hobson and J. Savelle, 2009. Long-term changes of mercury levels in ringed seal (*Phoca hispida*) from Amundsen Gulf, and beluga (*Delphinapterus leucas*) from the Beaufort Sea, western Canadian Arctic. *Science of the Total Environment*, 407:6044-6051.
- Overland, J.E., M. Wang and S. Salo, 2008. The recent Arctic warm period. *Tellus A*, 60:589-597.
- Pacyna, J.M., 1986. Emission factors of atmospheric elements. In: Nriagu, J.O. and C.I. Davidson (Eds.). *Toxic Metals in the Atmosphere. Advances in Environmental Science and Technology*. John Wiley and Sons.
- Pacyna, E.G. and J.M. Pacyna, 2002. Global emission of mercury from anthropogenic sources in 1995. *Water Air and Soil Pollution*, 137:149-165.
- Pacyna, J.M. and E.G. Pacyna, 2005. Anthropogenic sources and global inventory of mercury emissions. In: Parsons, M.B. and J.B. Percival (Eds.). *Mercury: Sources, Measurements, Cycles and Effects*. Mineralogical Association of Canada, Short Course Series Volume No. 32.
- Pacyna, J.M., E.G. Pacyna, F. Steenhuisen and S. Wilson, 2003. Mapping 1995 global anthropogenic emissions of mercury. *Atmospheric Environment*, 37:109-117.
- Pacyna, E.G., J.M. Pacyna, F. Steenhuisen and S. Wilson, 2006. Global anthropogenic mercury emission inventory for 2000. *Atmospheric Environment*, 40:4048-4063.
- Pacyna, E.G., J.M. Pacyna, K. Sundseth, J. Munthe, K. Kindbom, S. Wilson, F. Steenhuisen and P. Maxson, 2010a. Global emission of mercury to the atmosphere from anthropogenic sources in 2005 and projections to 2020. *Atmospheric Environment*, 40:2487-2499.
- Pacyna, J.M., K. Sundseth, E.G. Pacyna, W. Jozewicz, J. Munthe, M. Belhaj and S. Astrom, 2010b. An assessment of costs and benefits associated with mercury emission reductions from major anthropogenic sources. *Journal of Air and Waste Management Association*, 60:302-315.
- Pal, B. and P.A. Ariya, 2004a. Kinetics and mechanism of O<sub>3</sub>-initiated reaction of Hg<sub>0</sub>: atmospheric implication. *Journal of Physical Chemistry-Chemical Physics*, 6:752.

- Pal, B. and P.A. Ariya, 2004b. Gas-phase HO center dot-Initiated reactions of elemental mercury: Kinetics, product studies, and atmospheric implications. *Environmental Science and Technology*, 38:5555-5566.
- Paludan-Müller, P., C. Thyge Agger, R. Dietz and C.C. Kinze, 1993. Cadmium, mercury, selenium, copper and zinc in harbour porpoise (*Phocoena phocoena*) from West Greenland. *Polar Biology*, 13:311-320.
- Parker, H.H. and L. Johnson, 1991. Population structure, ecological segregation and reproduction in non-anadromous Arctic charr, *Salvelinus alpinus* (L.), in four unexploited lakes in the Canadian high Arctic. *Journal of Fish Biology*, 38:123-147.
- Perry, E., S.A. Norton, N.C. Kamman, P.M. Lorey and C.T. Driscoll, 2005. Deconstruction of historic mercury accumulation in lake sediments, northeastern United States. *Ecotoxicology*, 14:85-99.
- Peterson, B.J., R.M. Holmes, J.W. McClelland, C.J. Vörösmarty, R.B. Lammers, A.I. Shiklomanov, I.A. Shiklomanov and S. Rahmstorf, 2002. Increasing river discharge to the Arctic Ocean. *Science*, 298:2171-2173.
- Peterson, C., M. Gustin and S. Lyman, 2009a. Atmospheric mercury concentrations and speciated measured from 2004 to 2007 in Reno, Nevada, USA. *Atmospheric Environment*, 43:4646-4654.
- Peterson, T.C., M.O. Baringer, H.J. Diamond, R.L. Fogt, J.M. Levy, J. Richter-Menge, P.W. Thorne, L.A. Vincent and A.B. Watkins, 2009b. State of the climate in 2008. *Bulletin of the American Meteorological Society*, 90:S1-S196.
- Pickhardt, P.C. and N.S. Fisher, 2007. Accumulation of inorganic and methylmercury by freshwater phytoplankton in two contrasting water bodies. *Environmental Science and Technology*, 41:125-131.
- Pickhardt, P.C., C.L. Folt, C.Y. Chen, B. Klaue and J.D. Blum, 2002. Algal blooms reduce the uptake of toxic methylmercury in freshwater food webs. *Proceedings of the National Academy of Sciences of the United States of America*, 99:4419-4423.
- Pilsner, J.R., A.L. Lazarus, D. Nam, R.J. Letcher, C. Sonne, R. Dietz and N. Basu, 2010. Mercury-associated DNA hypomethylation in polar bear brains via the LUMinometric Methylation Assay: a sensitive method to study epigenetics in wildlife. *Molecular Ecology*, 19:307-314.
- Piot, M. and R. von Glasow, 2008. The potential importance of frost flowers, recycling on snow, and open leads for ozone depletion events. *Atmospheric Chemistry and Physics*, 8:2437-2467.
- Poissant, L. and M. Pilote, 2003. Time series analysis of atmospheric mercury in Kuujjuarapik / Whapmagoostui (Quebec). *Journal de Physique IV*, 107:1079-1082.
- Poissant, L., H.H. Zhang, J. Canario and P. Constant, 2008. Critical review of mercury fates and contamination in the arctic tundra ecosystem. *Science of the Total Environment*, 400:173-211.
- Poltermann, M., 2001. Arctic sea ice as feeding ground for amphipods – food sources and strategies. *Polar Biology*, 24:89-96.
- Pongratz, R. and K.G. Heumann, 1998. Production of methylated mercury and lead by polar macroalgae – A significant natural source for atmospheric heavy metals in clean room compartments. *Chemosphere*, 36:1935-1946.
- Pongratz, R. and K.G. Heumann, 1999. Production of methylated mercury, lead, and cadmium by marine bacteria as a significant natural source for atmospheric heavy metals in polar regions. *Chemosphere*, 39:89-102.
- Poppel, B., J. Kruse, G. Duhaime and L. Abryutina, 2007. Survey of living conditions in the Arctic: The Results. Institute of Social and Economic Research, University of Alaska Anchorage.
- Porvari, P., 1998. Development of fish mercury concentrations in Finnish reservoirs from 1979 to 1994. *Science of the Total Environment*, 213:279-290.
- Porvari, P. and M. Verta, 2003. Total and methyl mercury concentrations and fluxes from small boreal forest catchments in Finland. *Environmental Pollution*, 123:181-191.
- Post, D.M., M.L. Pace and N.G. Hairston, 2000. Ecosystem size determines food-chain length in lakes. *Nature*, 405:1047-1049.
- Post, E., M.C. Forchhammer, M.S. Bret-Harte and 22 others, 2009. Ecological dynamics across the Arctic associated with recent climate change. *Science*, 325:1355-1358.
- Poulain, A.J., J.D. Lalonde, M. Amyot, J.A. Shead, F. Raofie and P.A. Ariya, 2004. Redox transformations of mercury in an Arctic snowpack at springtime. *Atmospheric Environment*, 38:6763-6774.
- Poulain, A.J., E. Garcia, M. Amyot, P.G.C. Campbell and P.A. Ariya, 2007a. Mercury distribution, partitioning and speciation in coastal vs. inland High Arctic snow. *Geochimica et Cosmochimica Acta*, 71:3419-3431.
- Poulain, A.J., E. Garcia, M. Amyot, P.G.C. Campbell, F. Raofie and P.A. Ariya, 2007b. Biological and chemical redox transformations of mercury in fresh and salt waters of the High Arctic during spring and summer. *Environmental Science and Technology*, 41:1883-1888.
- Poulain, A.J., S.M. Ni Chadhain, P.A. Ariya, M. Amyot, E. Garcia, P.G.C. Campbell, G.J. Zylstra and T. Barkay, 2007c. Potential for mercury reduction by microbes in the High Arctic. *Applied and Environmental Microbiology*, 73:2230-2238.
- Poulain, A.J., V. Roy and M. Amyot, 2007d. Influence of temperate mixed and deciduous tree covers on Hg concentrations and photoredox transformations in snow. *Geochimica et Cosmochimica Acta*, 71:2448-2462.
- Power, M., G.M. Klein, K. Guiguer and M.K.H. Kwan, 2002. Mercury accumulation in the fish community of a sub-Arctic lake in relation to trophic position and carbon sources. *Journal of Applied Ecology*, 39:819-830.
- Proshutinsky, A., R. Krishfield, M.L. Timmermans, J. Toole, E. Carmack, F. McLaughlin, W.J. Williams, S. Zimmermann, M. Itoh and K. Shimada, 2009. Beaufort Gyre freshwater reservoir: State and variability from observations. *Journal of Geophysical Research-Oceans*, 114:C00A10.
- Prowse, T.D. and C. Furgal, 2009. Northern Canada in a Changing Climate: Major Findings and Conclusions. *Ambio*, 38:290-292.
- Prowse, T.D., F.J. Wrona, J.D. Reist, J.J. Gibson, J.E. Hobbie, L.M.J. Levesque and W.F. Vincent, 2006. Climate change effects on hydroecology of Arctic freshwater ecosystems. *Ambio*, 35:347-358.
- Pye, S., G. Jones, R. Tewart, M. Woodfield, K. Kubica, R. Kubica and J.M. Pacyna, 2005. Costs and Environmental Effectiveness of Options for Reducing Mercury Emissions to Air from Small-Scale Combustion Installations. Report AEAT/ED48706. AEA Technology/NILU Polska, Harwell, U.K.
- Quay, P.D., B. Tillbrook and C.S. Wong, 1992. Oceanic uptake of fossil fuel CO<sub>2</sub>; carbon-13 evidence. *Science* 256:44-79.
- Raatz, W.E., 1984. Tropospheric circulation patterns during the Arctic gas and aerosol sampling program (AGASP), March/April 1983. *Geophysical Research Letters*, 11:449-452.
- Ralston, N.V.C., J.L. Blackwell and L.J. Raymond, 2007. Importance of molar ratios in selenium-dependent protection against methylmercury toxicity. *Biological Trace Element Research*, 119:255-268.
- Rankin, A.M., V. Auld and E.W. Wolff, 2000. Frost flowers as a source of fractionated sea salt aerosol in the polar regions. *Geophysical Research Letters*, 27:3469-3472.
- Raoofie, F. and P.A. Ariya, 2003. Reactions of BrO with mercury: kinetic studies. *Journal de Physique IV*, 107:1119-1121.
- Rask, M., M. Verta, M. Korhonen, S. Salo, M. Forsius, L. Arvola, R. Jones and M. Kiljunen, 2010. Does thermocline change affect methyl mercury concentrations in fish? *Biogeochemistry*, 101:311-322.
- Ravichandran, M., 2004. Interactions between mercury and dissolved organic matter – a review *Chemosphere*, 55:319-331.
- Rawson, A.J., G.W. Patton, S. Hofmann, G.G. Pietra and L. Johns, 1993. Liver abnormalities associated with chronic mercury accumulation in stranded Atlantic bottle-nosed dolphins. *Ecotoxicology and Environmental Safety*, 25:41-47.
- Raymond, L.J. and N.V. Ralston, 2004. Mercury: selenium interactions and health implications. *Seychelles Medical and Dental Journal*, 7(1): Special issue.
- Regnell, O. and T. Hammar, 2004. Coupling of methyl and total mercury in a minerotrophic peat bog in southeastern Sweden. *Canadian Journal of Fisheries and Aquatic Sciences*, 61:2014-2023.
- Reist, J.D., E.C. Gyselman, J.A. Babaluk, D.J. Johnson and R.H. Wissink, 1995. Evidence for two morphotypes of Arctic char (*Salvelinus alpinus*) from Lake Hazen, Ellesmere Island, Northwest Territories, Canada. *Nordic Journal of Freshwater Research*, 71:396-410.
- Reist, J.D., F.J. Wrona, T.D. Prowse, M. Power, J.B. Dempson, R.J. Beamish, J.R. King, T.J. Carmichael and C.D. Sawatzky, 2006a. General effects of climate change on Arctic fishes and fish populations. *Ambio*, 35:370-380.
- Reist, J.D., F.J. Wrona, T.D. Prowse, J.B. Dempson, M. Power, G. Kock, T.J. Carmichael, C.D. Sawatzky, H. Lehtonen and R.F. Tallman, 2006b. Effects of climate change and UV radiation on fisheries for Arctic freshwater anadromous species. *Ambio*, 35:402-410.

- Renberg, I., C. Bigler, R. Bindler, M. Norberg, J. Rydberg and U. Segerstrom, 2009. Environmental history: A piece in the puzzle for establishing plans for environmental management. *Journal of Environmental Management*, 90:2794-2800.
- Renzoni, A. and R.J. Norstrom, 1990. Mercury in the hairs of polar bears (*Ursus maritimus*). *Polar Record*, 26:326-328.
- Riget, F.F., K.H. Nygaard and B. Christensen, 1986. Population structure, ecological segregation, and reproduction in a population of arctic char (*Salvelinus alpinus*) from Lake Tasersuaq, Greenland. *Canadian Journal of Fisheries and Aquatic Sciences*, 43:985-992.
- Riget, F., R. Dietz and P. Johansen, 1997. Zinc, cadmium, mercury and selenium in Greenland fish. *Meddelser om Gronland, Bioscience*, 48:5-29.
- Riget, F., G. Asmund and P. Aastrup, 2000. Mercury in Arctic char (*Salvelinus alpinus*) populations from Greenland. *Science of the Total Environment*, 245:161-172.
- Riget, F., R. Dietz, K. Vorkamp, P. Johansen and D. Muir, 2004. Levels and spatial and temporal trends of contaminants in Greenland biota: an updated review. *Science of the Total Environment*, 331:29-52.
- Riget, F., D. Muir, Kwan, T. Savinova, M. Nyman, V. Woshner and T. O'Hara, 2005. Circumpolar pattern of mercury and cadmium in ringed seals. *Science of the Total Environment*, 351-352:312-322.
- Riget, F., R. Dietz, E.W. Born, C. Sonne and K.A. Hobson, 2007. Temporal trends of mercury in marine biota of west and northwest Greenland. *Marine Pollution Bulletin*, 54:72-80.
- Riordan, B., D. Verbyla and A.D. McGuire, 2006. Shrinking ponds in subarctic Alaska based on 1950-2002 remotely sensed images. *Journal of Geophysical Research*, 111:G04002.
- Roehm, C.L., R. Giesler and J. Karlsson, 2009. Bioavailability of terrestrial organic carbon to lake bacteria: The case of a degrading subarctic permafrost mire complex. *Journal of Geophysical Research*, 114:G03006.
- Rognrud, S., J.O. Grimalt, B.O. Rosseland, P. Fernandez, R. Hofer, R. Lackner, B. Lauritzen, L. Lien, J.C. Massabuau and A. Ribes, 2002. Mercury and organochlorine contamination in brown trout (*Salmo trutta*) and Arctic charr (*Salvelinus alpinus*) from high mountain lakes in Europe and the Svalbard Archipelago. *Water, Air and Soil Pollution: Focus*, 2:209-232.
- Rolphus, K.R., H.E. Sakamoto, L.B. Cleckner, R.W. Stoor, C.L. Babiarz, R.C. Back, H. Manolopoulos and J.P. Hurley, 2003. Distribution and fluxes of total and methylmercury in Lake Superior. *Environmental Science and Technology*, 37:865-872.
- Ronald, K., R.J. Frank, J. Dougan, R. Frank and H.E. Braun, 1984. Pollutants in harp seals (*Phoca groenlandica*). II. Heavy metals and selenium. *Science of the Total Environment*, 38:153-166.
- Rosa, C., J.E. Blake, G.R. Bratton, L.A. Dehn, M.J. Gray and T.M. O'Hara, 2008. Heavy metal and mineral concentrations and their relationship to histopathological findings in the bowhead whale (*Balaena mysticetus*). *Science of the Total Environment*, 399:165-178.
- Ross, P.S., 2000. Marine mammals as sentinels in ecological risk assessment. *Human and Ecological Risk Assessment*, 6:29-46.
- Rothrock, D.A., D.B. Percival and M. Wensnahan, 2008. The decline in arctic sea ice thickness: Separating the spatial, annual, and interannual variability in a quarter century of submarine data. *Journal of Geophysical Research*, 113:C05003.
- Rudd, J.W.M., 1995. Sources of methyl mercury to freshwater ecosystems – a review. *Water Air and Soil Pollution*, 80:697-713.
- Rudels, B. and H.J. Friedrich, 2000. The transformations of Atlantic water in the Arctic Ocean and their significance for the freshwater budget. In: Lewis, E.L., E.P. Jones, P. Lemke, T.D. Prowse and P. Wadham (Eds.). *The Freshwater Budget of the Arctic Ocean*, pp. 503-532, Kluwer Academic.
- Rumbeifa, W.K., S.D. Fitzgerald, W.E. Braselton, R.A. Roth, J.J. Pestka and J.B. Kaneene, 2000. Augmentation of mercury-induced nephrotoxicity by endotoxin in the mouse. *Toxicology*, 151:103-116.
- Rush, S.A., K. Borga, R. Dietz, E.W. Born, C. Sonne, T. Evans, D.C.G. Muir, R.J. Letcher, R.J. Norstrom and A.T. Fisk, 2008. Geographic distribution of selected elements in the livers of polar bears from Greenland, Canada and the United States. *Environmental Pollution*, 153:618-626.
- Rydberg, J., J. Klaminder, P. Rosen and R. Bindler, 2010. Climate driven release of carbon and mercury from permafrost mires increases mercury loading to sub-arctic lakes. *Science of the Total Environment*, 408:4778-4783.
- Saiz-Lopez, A., J.M.C. Plane, A.S. Mahajan, P.S. Anderson, S.J.B. Bauguitte, A.E. Jones, H.K. Roscoe, R.A. Salmon, W.J. Bloss, J.D. Lee and D.E. Heard, 2008. On the vertical distribution of boundary layer halogens over coastal Antarctica: implications for O<sub>3</sub>, HOx, NOx and the Hg lifetime. *Atmospheric Chemistry and Physics Discussions*, 2007:9385-9417.
- Sakshaug, E., 2004. Primary and secondary production in the Arctic Seas. In: Stein, R. and R.W. Macdonald (Eds.). *The Organic Carbon Cycle in the Arctic Ocean*. Springer, Berlin.
- Sander, R., J. Burrows and L. Kaleschke, 2006. Carbonate precipitation in brine – a potential trigger for tropospheric ozone depletion events. *Atmospheric Chemistry and Physics*, 6:4653-4658.
- Sandheinrich, M.B. and K.M. Miller, 2006. Effects of dietary methylmercury on reproductive behavior of fathead minnows (*Pimephales promelas*). *Environmental Toxicology and Chemistry*, 25:3053-3057.
- Sandheinrich, M.B. and J.G. Wiener, 2010. Methylmercury in freshwater fish: Recent advances in assessing toxicity of environmentally relevant exposures. In: Beyer, N. and J. Meador (Eds.). *Environmental Contaminants in Biota: Interpreting Tissue Concentrations*. Taylor and Francis.
- Sanei, H. and F. Goodarzi, 2006. Relationship between organic matter and mercury in recent lake sediment: The physical-geochemical aspects. *Applied Geochemistry*, 21:1900-1912.
- Sanei, H., P.M. Outridge, F. Goodarzi, F. Wang, D. Armstrong, K. Warren and L. Fishback, 2010. Wet deposition mercury fluxes in the Canadian sub-Arctic and southern Alberta, measured using an automated precipitation collector adapted to cold regions. *Atmospheric Environment*, 44:1672-1681.
- Satoh, M., N. Nishimura, Y. Kanayama, A. Naganuma, T. Suzuki and C. Tohyama, 1997. Enhanced renal toxicity by inorganic mercury in metallothionein-null mice. *Journal of Pharmacology and Experimental Therapeutics*, 283:1529-1533.
- Schaefers, J.K. and F.M.M. Morel, 2009. High methylation rates of mercury bound to cysteine by *Geobacter sulfurreducens*. *Nature Geoscience*, 2:123-126.
- Schell, D.M., 1983. Carbon-13 and carbon-14 abundances in Alaskan aquatic organisms: Delayed production from peat in Arctic food webs. *Science*, 219:1068-1071.
- Schell, D.M., 2000. Declining carrying capacity in the Bering Sea: Isotopic evidence from whale baleen. *Limnology and Oceanography*, 45:459-462.
- Schetagne, R., J.F. Doyon and J.J. Fournier, 2000. Export of mercury downstream from reservoirs. *Science of the Total Environment*, 260:135-145.
- Scheuhammer, A.M., A.H.K. Wong and D. Bond, 1998. Mercury and selenium accumulation in common loons (*Gavia immer*) and common mergansers (*Mergus merganser*) from eastern Canada. *Environmental Toxicology and Chemistry*, 17:197-201.
- Scheuhammer, A.M., M.W. Meyer, M.B. Sandheinrich and M.W. Murray, 2007. Effects of environmental methylmercury on the health of wild birds, mammals, and fish. *Ambio*, 36:12-18.
- Scheuhammer, A.M., N. Basu, N.M. Burgess, J.E. Elliott, G.D. Campbell, M. Wayland, L. Champoux and J. Rodrigue, 2008. Relationships among mercury, selenium, and neurochemical parameters in common loons (*Gavia immer*) and bald eagles (*Haliaeetus leucocephalus*). *Ecotoxicology*, 17:93-101.
- Schindler, D.W. and J.P. Smol, 2006. Cumulative effects of climate warming and other human activities on freshwaters of Arctic and subarctic North America. *Ambio*, 35:160-168.
- Schlosser, P., B. Kromer, G. Östlund, B. Ekwurzel, G. Bönnisch, H.H. Loosli and R. Furtschert, 1994. On the <sup>14</sup>C and <sup>39</sup>Ar distribution in the central Arctic Ocean: implications for deep water formation. *Radiocarbon*, 36:327-345.
- Schmutz, J.A., K.A. Trust and A.C. Matz, 2009. Red-throated loons (*Gavia stellata*) breeding in Alaska, USA, are exposed to PCBs while on their Asian wintering grounds. *Environmental Pollution*, 157:2386-2393.
- Schroeder, W.H. and J. Munthe, 1998. Atmospheric mercury – An overview. *Atmospheric Environment*, 32:809-822.
- Schroeder, W.H., K.G. Anlauf, L.A. Barrie, J.Y. Lu, A. Steffen, D.R. Schneeberger and T. Berg, 1998. Arctic springtime depletion of mercury. *Nature*, 394:331-332.

- Schroeder, W.H., A. Steffen, K. Scott, T. Bender, E. Prestbo, R. Ebinghaus, J.Y. Lu and S.E. Lindberg, 2003. Summary report: first international Arctic atmospheric mercury research workshop. *Atmospheric Environment*, 37:2551-2555.
- Schuster, P.F., J.B. Shanley, M. Marvin-Dipasquale, M.M. Reddy, G.R. Aiken, D.A. Roth, H.E. Taylor, D.P. Krabbenhoft and J.F. DeWild, 2008. Mercury and organic carbon dynamics during runoff episodes from a northeastern USA watershed. *Water Air and Soil Pollution*, 187:89-108.
- Schuur, E.A.G., J.G. Vogel, K.G. Crummer, H. Lee, J.O. Sickman and T.E. Osterkamp, 2009. The effect of permafrost thaw on old carbon release and net carbon exchange from tundra. *Nature*, 459:556-559.
- Scott, K.J., 2001. Bioavailable mercury in arctic snow determined by light-emitting mer-lux bioreporter. *Arctic*, 54:92-95.
- Scott, W.B. and E.J. Crossman, 1973. Freshwater Fishes of Canada. Fisheries Research board of Canada Bulletin No. 184. 966 pp.
- Seigneur, C., P. Karamchandani, K. Lohman and K. Vijayaraghavan, 2001. Multiscale modeling of the atmospheric fate and transport of mercury. *Journal of Geophysical Research*, 106:27,795-727,809.
- Seigneur, C., K. Vijayaraghavan, K. Lohman, P. Karamchandani and C. Scott, 2004. Global source attribution for mercury deposition in the United States. *Environmental Science and Technology*, 38:555-569.
- Selin, N.E., D.J. Jacob, R.J. Park, R.M. Yantosca, S. Strode, L. Jaegle and D. Jaffe, 2007. Chemical cycling and deposition of atmospheric mercury: Global constraints from observations. *Journal of Geophysical Research*, 112:D02308.
- Sellers, P., C.A. Kelly and J.W.M. Rudd, 2001. Fluxes of methylmercury to the water column of a drainage lake: The relative importance of internal and external sources. *Limnology and Oceanography*, 46:623-631.
- Sellers, P., C.A. Kelly, J.W.M. Rudd and A.R. MacHutchon, 1996. Photodegradation of methylmercury in lakes. *Nature*, 380:694-697.
- Semiletov, I., O. Dudarev, V. Luchin, A. Charkin, K.-H. Shin and N. Tanaka, 2005. The East Siberian Sea as a transition zone between Pacific-derived waters and Arctic shelf waters. *Geophysical Research Letters*, 32:L10614.
- Semkin, R.G., G. Mierle and R.J. Neureuther, 2005. Hydrochemistry and mercury cycling in a High Arctic watershed. *Science of the Total Environment*, 342:199-221.
- Serreze, M.C., J.E. Walsh, F.S. Chapin, T. Osterkamp, M. Dyurgerov, V. Romanovsky, W.C. Oechel, J. Morison, T. Zhang and R.G. Barry, 2000. Observational evidence of recent change in the northern high-latitude environment. *Climatic Change*, 46:159-207.
- Serreze, M.C., A.P. Barrett, A.G. Slater, R.A. Woodgate, K. Aagaard, R.B. Lammers, M. Steele, R. Moritz, M. Meredith and C.M. Lee, 2006. The large-scale freshwater cycle of the Arctic. *Journal of Geophysical Research*, 111:C11010.
- Sharma, S., D.A. Jackson, C.K. Minns and B.J. Shuter, 2007. Will northern fish populations be in hot water because of climate change? *Global Change Biology*, 13:2052-2064.
- Shepler, B.C., N.B. Balabanov and K.A. Peterson, 2007.  $Hg+Br \rightarrow HgBr$  recombination and collision-induced dissociation dynamics. *Journal of Chemical Physics*, 127:164304.
- Shia, R.-L., C. Seigneur, P. Pai, M. Ko and N.D. Sze, 1999. Global simulation of atmospheric mercury concentrations and deposition fluxes. *Journal of Geophysical Research*, 104:23,747-723,760.
- Shibata, Y., M. Morita and K. Fuwa, 1992. Selenium and arsenic in biology: Their chemical forms and biological functions. *Advances in Biophysics*, 28:31-80.
- Shiklomanov, A.I., T.I. Yakovleva, R.B. Lammers, I.P. Karasev, C.J. Vorosmarty and E. Linder, 2006. Cold region river discharge uncertainty - estimates from large Russian rivers. *Journal of Hydrology*, 326:231-256.
- Shotyk, W., M.E. Goodsite, F. Roos-Barracough, R. Frei, J. Heinemeier, G. Asmund, C. Lohse and T.S. Hansen, 2003. Anthropogenic contributions to atmospheric Hg, Pb and As accumulation recorded by peat cores from southern Greenland and Denmark dated using the 14C "bomb pulse curve". *Geochimica et Cosmochimica Acta*, 67:3991-4011.
- Shotyk, W., N. Givelet, A.K. Cheburkin, M.E. Goodsite and F. Roos-Barracough, 2005a. Response to Comment on "Atmospheric mercury accumulation rates between 5900 and 800 calibrated years BP in the High Arctic of Canada recorded by peat hummocks". *Environmental Science and Technology*, 39:910-912.
- Shotyk, W., M.E. Goodsite, F. Roos-Barracough, N. Givelet, G. Le Roux, D. Weiss, A.K. Cheburkin, K. Knudsen, J. Heinemeier, W.O. Van der Knaap, S.A. Norton and C. Lohse, 2005b. Accumulation rates and predominant atmospheric sources of natural and anthropogenic Hg and Pb on the Faroe Islands. *Geochimica et Cosmochimica Acta*, 69:1-17.
- Shuter, B.J. and K.K. Ing, 1997. Factors affecting the production of zooplankton in lakes. *Canadian Journal of Fisheries and Aquatic Sciences*, 54:359-377.
- Siegel, F.R., J.H. Kravitz and J.J. Galasso, 2001. Arsenic and mercury contamination in 31 cores taken in 1965, St. Anna Trough, Kara Sea, Arctic Ocean. *Environmental Geology*, 40:528-542.
- Siegel, G.J., R.W. Albers, S.T. Brady and D.L. Price, 2006. Basic Neurochemistry. Molecular, Cellular and Medical Aspects. 7th Edn. Elsevier.
- Sierszen, M.E., M.E. McDonald and D.A. Jensen, 2003. Benthos as the basis for arctic lake food webs. *Aquatic Ecology*, 37:437-445.
- Silver, S. and T.K. Misra, 1988. Plasmid-mediated heavy-metal resistances. *Annual Review of Microbiology*, 42:717-743.
- Simoneau, M., M. Lucotte, S. Garceau and D. Laliberte, 2005. Fish growth rates modulate mercury concentrations in walleye (*Sander vitreus*) from eastern Canadian lakes. *Environmental Research*, 98:73-82.
- Simpson, W.R., L. Alvarez-Aviles, T.A. Douglas, M. Sturm and F. Domine, 2005. Halogens in the coastal snow pack near Barrow, Alaska: Evidence for active bromine air-snow chemistry during springtime. *Geophysical Research Letters*, 32:L04811.
- Simpson, W.R., R. von Glasow, K. Riedel, P. Anderson, P. Ariya, J. Bottenheim, J. Burrows, L.J. Carpenter, U. Friess, M.E. Goodsite, D. Heard, M. Hutterli, H.W. Jacobi, L. Kaleschke, B. Neff, J. Plane, U. Platt, A. Richter, H. Roscoe, R. Sander, P. Shepson, J. Sodeau, A. Steffen, T. Wagner and E. Wolff, 2007a. Halogens and their role in polar boundary-layer ozone depletion. *Atmospheric Chemistry and Physics*, 7:4375-4418.
- Simpson, W.R., D. Carlson, G. Honninger, T.A. Douglas, M. Sturm, D. Perovich and U. Platt, 2007b. First-year sea-ice contact predicts bromine monoxide (BrO) levels at Barrow, Alaska better than potential frost flower contact. *Atmospheric Chemistry and Physics*, 7:621-627.
- Skaare, J.U., E. Degre and P.E. Aspholm, 1994. Mercury and selenium in Arctic and coastal seals of the coast of Norway. *Environmental Pollution* 85:153-160.
- Skov, H., J.H. Christensen, M.E. Goodsite, N.Z. Heidam, B. Jensen, P. Wahlin and G. Geernaert, 2004. Fate of elemental mercury in the arctic during atmospheric mercury depletion episodes and the load of atmospheric mercury to the arctic. *Environmental Science and Technology*, 38:2373-2382.
- Skyllberg, U., J. Qian, W. Frech, K. Xia and W.F. Bleam, 2003. Distribution of mercury, methyl mercury and organic sulphur species in soil, soil solution and stream of a boreal forest catchment. *Biogeochemistry*, 64:53-76.
- Skyllberg, U., 2010. Chapter 13 – Mercury biogeochemistry in soils and sediments. *Developments in Soil Science*, 34:379-410.
- Slemr, F., E.G. Brunke, R. Ebinghaus, C. Temme, J. Munthe, I. Wängberg, W.H. Schroeder, A. Steffen and T. Berg, 2003. Worldwide trend of atmospheric mercury since 1977. *Geophysical Research Letters*, 30:1516.
- Smith, T.G., 1987. The ringed seal, *Phoca hispida*, of the Canadian western Arctic. *Canadian Bulletin of Fisheries and Aquatic Sciences*, 216:81.
- Smith, T.G. and F.A.J. Armstrong, 1978. Mercury and selenium in ringed and bearded seal tissues from Arctic Canada. *Arctic* 31:75-84.
- Smith, L.C., Y. Sheng, G.M. MacDonald and L.D. Hinzman, 2005a. Disappearing Arctic lakes. *Science*, 308:1429.
- Smith, S.L., M.M. Burgess, D. Riseborough and F.M. Nixon, 2005b. Recent trends from Canadian permafrost thermal monitoring network sites. *Permafrost and Periglacial Processes*, 16:19-30.
- Smith, L.C., Y. Sheng and G.M. MacDonald, 2007. A first-pen-Arctic assessment of the influence of glaciation, permafrost, topography and peatlands on Northern Hemisphere lake distribution. *Permafrost and Periglacial Processes*, 18:201-208.
- Smol, J.P., A.P. Wolfe, H.J.B. Birks and 23 others, 2005. Climate-driven regime shifts in the biological communities of arctic lakes. *Proceedings of the National Academy of Sciences of the United States of America*, 102:4397-4402.

- Smol, J.P. and M.S.V. Douglas, 2007a. Crossing the final ecological threshold in high Arctic ponds. *Proceedings of the National Academy of Sciences of the United States of America*, 104:12395-12397.
- Smol, J.P. and M.S.V. Douglas, 2007b. From controversy to consensus: making the case for recent climate change in the Arctic using lake sediments. *Frontiers in Ecology and the Environment*, 5:466-474.
- Sokal, R.R. and F.J. Rohlf, 1981. *Biometry. The Principles and Practice of Statistics in Biological Research*. 2nd Ed. 859 pp. Freeman & Co.
- Sommar, J., K. Gårdfeldt, X. Feng and O. Lindqvist, 1999. Rate coefficients for gas-phase oxidation of elemental mercury by bromine and hydroxyl radicals. Paper presented at Mercury as a Global Pollutant – 5th International Conference. CETEM – Center for Mineral Technology, Rio de Janerio, Brazil, May 23-28.
- Sommar, J., K. Gårdfeldt, D. Stromberg and X.B. Feng, 2001. A kinetic study of the gas-phase reaction between the hydroxyl radical and atomic mercury. *Atmospheric Environment*, 35:3049-3054.
- Sommar, J., I. Wangberg, T. Berg, K. Gårdfelt, J. Munthe, A. Richter, A. Urba, F. Wittrock and W.H. Schroeder, 2004. Circumpolar transport and air-surface exchange of atmospheric mercury at Ny-Alesund (79°N), Svalbard, spring 2002. *Atmospheric Chemistry and Physics Discussions*, 4:1727-1771.
- Sommar, J., I. Wangberg, T. Berg, K. Gårdfelt, J. Munthe, A. Richter, A. Urba, F. Wittrock and W.H. Schroeder, 2007. Circumpolar transport and air-surface exchange of atmospheric mercury at Ny-Alesund (79 degrees N), Svalbard, spring 2002. *Atmospheric Chemistry and Physics*, 7:151-166.
- Sommar, J., M.E. Andersson and H.-W. Jacobi, 2010. Circumpolar measurements of speciated mercury, ozone and carbon monoxide in the boundary layer of the Arctic Ocean. *Atmospheric Chemistry and Physics*, 10:5031-5045.
- Sonne, C., 2010. Health effects from long-range transported contaminants in Arctic top predators: An integrated review based on studies of polar bears and relevant model species. *Environment International*, 36:461-491.
- Sonne, C., R. Dietz, P.S. Leifsson, G. Asmund, E.W. Born and M. Kirkegaard, 2007. Are liver and renal lesions in East Greenland polar bears (*Ursus maritimus*) associated with high mercury levels? *Environmental Health*, 6:11.
- Sonne, C., M. Dam, P.L. Leifsson and R. Dietz, 2010. Liver and renal histopathology of North Atlantic long-finned pilot whales (*Globicephala melas*) contaminated with high concentrations of heavy metals and organochlorine compounds. *Toxicological and Environmental Chemistry* 92:969-985.
- Sou, T. and G. Flato, 2009. Sea Ice in the Canadian Arctic Archipelago: Modeling the past (1950-2004) and the future (2041-60). *Journal of Climate*, 22:2181-2198.
- Springer, A.M., C.P. McRoy and M.V. Flint, 1996. The Bering Sea green belt: shelf-edge process and ecosystem production. *Fish Oceanography*, 5:205-223.
- Sprovieri, F., N. Pirrone, M. Landis and R.K. Stevens, 2005. Oxidation of gaseous elemental mercury to gaseous divalent mercury during 2003 polar sunrise at Ny-Alesund. *Environmental Science and Technology*, 39:9156-9165.
- St Louis, V.L., J.W.M. Rudd, C.A. Kelly, R.A. Bodaly, M.J. Paterson, K.G. Beaty, R.H. Hesslein, A. Heyes and A.R. Majewski, 2004. The rise and fall of mercury methylation in an experimental reservoir. *Environmental Science and Technology*, 38:1348-1358.
- St Louis, V.L., M.J. Sharp, A. Steffen, A. May, J. Barker, J.L. Kirk, D.J.A. Kelly, S.E. Arnott, B. Keatley and J.P. Smol, 2005. Some sources and sinks of monomethyl and inorganic mercury on Ellesmere island in the Canadian High Arctic. *Environmental Science and Technology*, 39:2686-2701.
- St Louis, V.L., H. Hintelmann, J.A. Graydon, J.L. Kirk, J. Barker, B. Dimock, M.J. Sharp and I. Lehnher, 2007. Methylated mercury species in Canadian High Arctic marine surface waters and snowpacks. *Environmental Science and Technology*, 41:6433-6441.
- Stange, K., A. Maage and J. Klungosoyr, 1996. Contaminants in fish and sediments in the North Atlantic ocean. *TemaNord* 1996:522. Nordic Council of Ministers, Copenhagen.
- Stanley, J.B., P.F. Schuster, M.M. Reddy, D.A. Roth, H.E. Taylor and G.R. Aiken, 2002. Mercury on the move during snowmelt in Vermont. *Eos, Transactions, American Geophysical Union*, 83:45, 47-48.
- Steen, A.O., T. Berg, A.P. Dastoor, D.A. Durnford, L.R. Hole and K.A. Pfaffhuber, 2009. Dynamic exchange of gaseous elemental mercury during polar night and day. *Atmospheric Environment*, 43:5604-5610.
- Steen, A.O., T. Berg, A.P. Dastoor, D.A. Durnford, L.R. Hole and K.A. Pfaffhuber, 2010. Natural and anthropogenic atmospheric mercury in the European Arctic: a speciation study. *Atmospheric Chemistry and Physics Discussions*, 10:27255-27281.
- Steffen, A., 2009. Mercury measurements at Alert. In: Smith, S., J. Stow and J. Edwards (Eds.). *Synopsis of Research Conducted under the 2008-2009 Northern Contaminants Program*, pp. 58-64, Minister of Northern Affairs and Development, Ottawa.
- Steffen, A., W. Schroeder, J. Bottenheim, J. Narayan and J.D. Fuentes, 2002. Atmospheric mercury concentrations: measurements and profiles near snow and ice surfaces in the Canadian Arctic during Alert 2000. *Atmospheric Environment*, 36:2653-2661.
- Steffen, A., W. Schroeder, R. Macdonald, L. Poissant and A. Konoplev, 2005. Mercury in the Arctic atmosphere: An analysis of eight years of measurements of GEM at Alert (Canada) and a comparison with observations at Amdarma (Russia) and Kuujjuarapik (Canada). *Science of the Total Environment*, 342:185-198.
- Steffen, A., T. Douglas, M. Amyot, P. Ariya, K. Aspmo, T. Berg, J. Bottenheim, S. Brooks, F. Cobbett, A. Dastoor, A. Dommergue, R. Ebinghaus, C. Ferrari, K. Gårdfeldt, M.E. Goodsite, D. Lean, A.J. Poulain, C. Scherz, H. Skov, J. Sommar and C. Temme, 2008a. A synthesis of atmospheric mercury depletion event chemistry in the atmosphere and snow. *Atmospheric Chemistry and Physics*, 8:1445-1482.
- Steffen, A., T. Douglas, M. Amyot, P. Ariya, K. Aspmo, T. Berg, J. Bottenheim, S. Brooks, F. Cobbett, A. Dastoor, A. Dommergue, R. Ebinghaus, C. Ferrari, K. Gårdfeldt, M.E. Goodsite, D.R.S. Lean, A.J. Poulain, C. Scherz, H. Skov, J. Sommar and C. Temme, 2008b. A synthesis of atmospheric mercury depletion event chemistry linking atmosphere, snow and water. *Atmospheric Chemical and Physical Discussions*, 7:10837-10931.
- Stein, R. and R.W. Macdonald (Eds.), 2004. *The Organic Carbon Cycle in the Arctic Ocean*. 336 pp. Springer.
- Stein, R. and R.W. Macdonald, 2004. Organic carbon budget: Arctic Ocean vs global ocean. In: Stein, R. and R.W. Macdonald (Eds.). *The Organic Carbon Cycle in the Arctic Ocean*, pp. 315-322, Springer.
- Stein, J.N., C.S. Jessop, T.R. Porter and K.T.J. Chang-Kue, 1973. Fish Resources of the Mackenzie River Valley. Interim report II. 260 pp. Fisheries Service of Environment Canada.
- Steinacher, M., F. Joos, T.L. Frölicher, G.K. Plattner and S.C. Doney, 2008. Imminent ocean acidification projected with the NCAR global coupled carbon cycle-climate model. *Biogeosciences Discussions*, 5:4353-4393.
- Steinnes, E. and T.E. Sjøbakk, 2005. Order-of-magnitude increase of Hg in Norwegian peat profiles since the outset of industrial activity in Europe. *Environmental Pollution*, 137:365-370.
- Steinnes, E., T. Berg and T.E. Sjøbakk, 2003. Temporal and spatial trends in Hg deposition monitored by moss analysis. *Science of the total Environment*, 304:215-219.
- Stemmler, I. and G. Lammel, 2009. Cycling of DDT in the global environment 1950-2002: World ocean returns the pollutant. *Geophysical Research Letters*, 36:L24602.
- Stern, G.A. and L. Lockhart, 2009. Mercury in beluga, narwhal and walrus from the Canadian Arctic: status in 2009. In: Smith, S., J. Stow and J. Edwards (Eds.). *Synopsis of Research Conducted under the 2008/2009 Northern Contaminant Program*, R71-64-2009E, pp. 108-122. Indian and Northern Affairs Canada, Ottawa, Canada.
- Stern, G.A. and R.W. Macdonald, 2005. Biogeographical provinces of total and methyl mercury in zooplankton and fish from the Beaufort and Chukchi Seas: Results from the SHEBA drift. *Environmental Science and Technology*, 39:4707-4713.
- Stern, G.A., H. Sanei, P. Roach, J. Dalaronde and P.M. Outridge, 2009. Historical interrelated variations of mercury and aquatic organic matter in lake sediment cores from a subarctic lake in Yukon, Canada: Further evidence toward the algal-mercury scavenging hypothesis. *Environmental Science and Technology*, 43:7684-7690.
- Stevick, P.T., B.J. McConnell and P.S. Hammond, 2002. Patterns of movement. In: Hoelzel, A.R. (Ed.). *Marine Mammal Biology: An Evolutionary Approach*, pp. 185-216. Blackwell Science.
- Stewart, D.B. and L.M.J. Bernier, 1982. An aquatic resource survey of islands bordering Viscount Melville Sound, District of Franklin, Northwest Territories. *Background Report 2*, 108 pp. Environment

- Canada, Lands Directorate, Indian and Northern Affairs Canada, Northern Environment Branch.
- Stewart, R.E.A., S.E. Campana, C.M. Jones and B.E. Stewart, 2006. Bomb radiocarbon dating calibrates beluga (*Delphinapterus leucas*) age estimates. Canadian Journal of Zoology, 84:1840-1852.
- Stirling, I., N.J. Lunn and J. Iacozza, 1999. Long-term trends in the population ecology of polar bears in western Hudson Bay in relation to climatic change. Arctic, 52:294-306.
- Stohl, A., T. Berg, J.F. Burkhardt, A.M. Fjæraa, C. Forster, A. Herber, Ø. Hov, C. Lunder, W.W. McMillan, S. Oltmans, M. Shiobara, D. Simpson, S. Solberg, K. Stebel, J. Ström, K. Torseth, R. Treffeisen, K. Virkunnen and K.E. Yttri, 2007. Arctic smoke – record high air-pollution in the European Arctic due to agricultural fires in Eastern Europe in spring 2006. Atmospheric Chemistry and Physics, 7:511-534.
- Streets, D.G., Q. Zhang and Y. Wu, 2009. Projections of global mercury emissions in 2050. Environmental Science and Technology, 43:2983-2988.
- Strode, S.A., L. Jaegle, N.E. Selin, D.J. Jacob, R.J. Park, R.M. Yantosca, R.P. Mason and F. Slemr, 2007. Air-sea exchange in the global mercury cycle. Global Biogeochemical Cycles, 21: GB1017.
- Strode, S., L. Jaeglé and N. Selin, 2009. Impact of mercury emissions from historic gold and silver mining: Global modeling. Atmospheric Environment, 43:2012-2017.
- Stroeve, J., M.M. Holland, W. Meier, T. Scambos and M. Serreze, 2007. Arctic sea ice decline: Faster than forecast. Geophysical Research Letters, 34:L09501.
- Stroeve, J., M. Serreze, S. Drobot, S. Gearheard, M. Holland, J. Maslanik, W. Meier and T. Scambos, 2008. Arctic sea ice extent plummets in 2007. Eos, Transactions, American Geophysical Union, 89:12-14.
- Sun, L.G., X.B. Yin, X.D. Liu, R.B. Zhu, Z.Q. Xie and Y.H. Wang, 2006. A 2000-year record of mercury and ancient civilizations in seal hairs from King George Island, West Antarctica. Science of the Total Environment, 368:236-247.
- Sunderland, E.M. and R.P. Mason, 2007. Human impacts on open ocean mercury concentrations. Global Biogeochemical Cycles, 21:GB4022.
- Sunderland, E.M., D.P. Krabbenhoft, J.W. Moreau, S.A. Strode and W.M. Landing, 2009. Mercury sources, distribution, and bioavailability in the North Pacific Ocean: Insights from data and models. Global Biogeochemical Cycles, 23:GB2010.
- Sundseth, K., J.M. Pacyna, E.G. Pacyna, J. Munthe, M. Belhaj and S. Astrom, 2010. Economic benefits from decreased mercury emissions: Projections for 2020. Journal of Cleaner Production, 18:386-394.
- Swartzendruber, P.C., D.A. Jaffe, E.M. Prestbo, P. Weiss-Penzias, N.E. Selin, R. Park, D.J. Jacob, S. Strode and L. Jaegle, 2006. Observations of reactive gaseous mercury in the free troposphere at the Mount Bachelor Observatory. Journal of Geophysical Research-Atmospheres, 111:D24301.
- Tackett, P.J., A. Cavender, A.D. Keil, P.B. Shepson, J.W. Bottenheim, S. Morin, J. Deary, A. Steffen and C. Doerge, 2007. A study of the vertical scale of halogen chemistry in the Arctic troposphere during polar sunrise at Barrow, Alaska. Journal of Geophysical Research, 112:D07306.
- Tape, K., M. Sturm and C. Racine, 2006. The evidence for shrub expansion in Northern Alaska and the Pan-Arctic. Global Change Biology, 12:686-702.
- Tarasick, D.W. and J.W. Bottenheim, 2002. Surface ozone depletion episodes in the Arctic and Antarctic from historical ozonesonde records. Atmospheric Chemistry and Physics, 2:197-205.
- Temme, C., J.W. Einax, R. Ebinghaus and W.H. Schroeder, 2003. Measurements of atmospheric mercury species at a coastal site in the Antarctic and over the south Atlantic Ocean during polar summer. Environmental Science and Technology, 37:22-31.
- Temme, C., P. Blanchard, A. Steffen, C. Banic, S. Beauchamp, L. Poissant, R. Tordon and B. Wiens, 2007. Trend, seasonal and multivariate analysis study of total gaseous mercury data from the Canadian atmospheric mercury measurement network (CAMNet). Atmospheric Environment, 41:5423-5441.
- Theriault, T.W. and D. Schneider, 1998. Predicting change in fish mercury concentrations following reservoir impoundment. Environmental Pollution, 101:33-42.
- Thompson, D.R., 1996. Mercury in birds and terrestrial mammals. In: Beyer, W.N., G.H. Heinz and A.W. Redmon-Norwood (Eds.). Environmental Contaminants in Wildlife: Interpreting Tissue Concentrations. SETAC Special Publication Series., pp. 341-356, Lewis Publishers.
- Thyen, S., P.H. Becker and H. Behmann, 2000. Organochlorine and mercury contamination of little terns (*Sterna albifrons*) breeding at the western Baltic Sea, 1978-96. Environmental Pollution, 108:225-238.
- Tian, W., G.M. Egeland, I. Sobol and H.M. Chan, 2011. Mercury hair concentrations and dietary exposure among Inuit preschool children in Nunavut, Canada. Environment International, 37:42-48.
- Tilbury, K.L., J.E. Stein, C.A. Krone, R.L. Brownell, S.A. Blokhin, J.L. Bolton and D.W. Ernest, 2002. Chemical contaminants in juvenile gray whales (*Eschrichtius robustus*) from subsistence harvest in Arctic feeding grounds. Chemosphere, 47:555-564.
- Timoney, K.P. and P. Lee, 2009. Does the Alberta tar sands industry pollute? The scientific evidence. The Open Conservation Biology Journal, 3:65-81.
- Tingga, U., 2003. Essentiality and toxicity of selenium and its status in Australia: a review. Toxicology Letters, 137:103-110.
- Tokos, J.J.S., B. Hall, J.A. Calhoun and E.M. Prestbo, 1998. Homogeneous gas-phase reaction of  $Hg^0$  with  $H_2O_2$ ,  $O_3$ ,  $CH_3I$ , and  $(CH_3)_2S$ : Implications for atmospheric Hg cycling. Atmospheric Environment, 32:823-827.
- Tranter, M., P. Brimblecombe, T.D. Davies, C.E. Vincent, P.W. Abrahams and I. Blackwood, 1986. The composition of snowfall, snowpack and meltwater in the Scottish Highlands – evidence for preferential elution. Atmospheric Environment, 20:517-525.
- Travnikov, O., 2005. Contribution of the intercontinental atmospheric transport to mercury pollution in the Northern Hemisphere. Atmospheric Environment, 39:7541-7548.
- Travnikov, O., J.E. Jonson, A.S. Andersen, M. Gauss, A. Gusev, O. Rozovskaya, D. Simpson, V. Sokovyy, S. Valiyaveetil and P. Wind, 2009. Development of the EMEP global modelling framework: Progress report. Available: <http://www.msceast.org/publications.html>.
- Travnikov, O., C.-J. Lin and A. Dastoor, 2010. Global and regional modeling. In: Pironne, N. and T. Keating (Eds.). Hemispheric Transport of Air Pollution 2010. Part B: Mercury, pp. 97-144, Economic Commission for Europe.
- Tremblay, A., M. Lucotte and R. Schetagne, 1998. Total mercury and methylmercury accumulation in zooplankton of hydroelectric reservoirs in northern Québec (Canada). Science of the Total Environment, 213:307-315.
- Tseng, C.M., C. Lamborg, W.F. Fitzgerald and D.R. Engstrom, 2004. Cycling of dissolved elemental mercury in Arctic Alaskan lakes. Geochimica et Cosmochimica Acta, 68:1173-1184.
- Tsui, M.T.K. and W.X. Wang, 2004. Uptake and elimination routes of inorganic mercury and methylmercury in *Daphnia magna*. Environmental Science and Technology, 38:808-816.
- Tucker, S., W.D. Bowen and S.J. Iverson, 2007. Dimensions of diet segregation in grey seals *Halichoerus grypus* revealed through stable isotopes of carbon ( $\delta^{13}C$ ) and nitrogen ( $\delta^{15}N$ ). Marine Ecology Progress Series, 339:271-282.
- Tvinnereim, H.M., R. Eide and T. Riise, 2000. Heavy metals in human primary teeth: some factors influencing the metal concentrations. Science of the Total Environment, 255:21-27.
- UN ECE, 2000. Joint EMEP/CORINAIR Atmospheric Emission Inventory Guidebook. United Nations Economic Commission for Europe.
- UNEP, 2002. Global Mercury Assessment. United Nations Environment Programme, Geneva.
- UNEP, 2008. The Global Atmospheric Mercury Assessment: Sources, Emissions and Transport. 42 pp. United Nations Environment Programme – Chemicals Branch, Geneva.
- UNEP, 2009. Climate Change Science Compendium. McMullen, C.P. (Ed.). United Nations Environment Programme, 68 pp.
- US EPA, 1997. Mercury study report to Congress. Vol. VII: Characterization of human health and wildlife risks from mercury exposure in the United States. 152 pp. U.S. Environmental Protection Agency.
- US EPA, 2006. Characterization of Mercury-Enriched Coal Combustion Residues from Electric Utilities Using Enhanced Sorbents for Mercury Control. US Environmental Protection Agency EPA-600/R-06/008.
- US EPA, 2008. Characterization of Coal Combustion Residues from Electric Utilities Using Wet Scrubbers for Multi-pollutant Control. US Environmental Protection Agency EPA-600/R-08/077.

- USGS, 2006. Mercury statistics. [http://minerals.usgs.gov/ds/2005/140\\_mercury-use.pdf](http://minerals.usgs.gov/ds/2005/140_mercury-use.pdf). United States Geological Survey.
- Vadeboncoeur, Y., E. Jeppesen, M.J. Vander Zanden, H.H. Schierup, K. Christoffersen and D.M. Lodge, 2003. From Greenland to green lakes: Cultural eutrophication and the loss of benthic pathways in lakes. *Limnology and Oceanography*, 48:1408-1418.
- Van Metre, P.C. and C.C. Fuller, 2009. Dual-core mass-balance approach for evaluating mercury and Pb-210 atmospheric fallout and focusing to lakes. *Environmental Science and Technology*, 43:26-32.
- Vandal, G.M., R.P. Mason and W.F. Fitzgerald, 1991. Cycling of volatile mercury in temperate lakes. *Water, Air and Soil Pollution*, 56:791-803.
- Verbyla, D., 2008. The greening and browning of Alaska based on 1982-2003 satellite data. *Global Ecology and Biogeography*, 17:547-555.
- Verta, M., S. Rekolainen and K. Kinnunen, 1985. Causes of increased fish mercury levels in Finnish reservoirs. *Publications of the Water Research Institute, National Board of Waters, Finland*, 65:32-43.
- Verta, M., S. Salo, M. Korhonen, P. Porvari, A. Paloheimo and J. Munthe, 2010. Climate induced thermocline change has an effect on the methyl mercury cycle in small boreal lakes. *Science of the Total Environment*, 408:3639-3647.
- Visschedijk, A.J.H., H.A.C. Denier van der Gon, M. van het Bolscher and P.Y.J. Zandveld, 2006 Study to the effectiveness of the UN ECE Heavy Metals (HM) Protocol and cost of additional measures. TNO report No. 2006-A-R0087/B.
- Vogt, R., P.J. Crutzen and R. Sander, 1996. A mechanism for halogen release from sea-salt aerosol in the remote marine boundary layer. *Nature*, 383:327-330.
- von Storch, H., C. Hagner, M. Costa-Cabral, F. Feser, J. Pacyna, E. Pacyna and S. Kolb, 2002. Reassessing past European gasoline lead policies. *EOS, Transactions, American Geophysical Union*, 83:Number 36; 33 September 2002.
- Vörösmarty, C., L. Hinzman, B. Peterson, D. Bromwich, L. Hamilton, J. Morison, V. Romanovsky, M. Sturm and R. Webb, 2002. Arctic-CHAMP: A program to study arctic hydrology and its role in global change, *EOS, Transactions, American Geophysical Union*, 83:241-249.
- Wagemann, R. and R.E.A. Stewart, 1994. Concentrations of heavy-metals and selenium in tissues and some foods of walrus (*Odobenus rosmarus rosmarus*) from the eastern Canadian Arctic and sub-Arctic, and associations between metals, age, and gender. *Canadian Journal of Fisheries and Aquatic Sciences*, 51:426-436.
- Wagemann, R., E. Trebacz, G. Boila and W.L. Lockhart, 1998. Methylmercury and total mercury in tissues of arctic marine mammals. *Science of the Total Environment*, 218:19-31.
- Walker, G., 2007. Climate Change 2007: A world melting from the top down. *Nature*, 446:718-722.
- Wallace, J.M. and D.S. Gutzler, 1981. Teleconnections in the geopotential height field during the northern hemisphere winter. *Monthly Weather Review*, 109:784-812.
- Walsh, J.E., 2008. Climate of the arctic marine environment. *Ecological Applications*, 18:S3-S22.
- Walsh, C.T., M.D. Distefano, M.J. Moore, L.M. Shewchuk and G.L. Verdine, 1988. Molecular-basis of bacterial-resistance to organomercurial and inorganic mercuric-salts. *FASEB Journal*, 2:124-130.
- Wang, A., D. Barber and C.J. Pfeiffer, 2001. Protective effects of selenium against mercury toxicity in cultured Atlantic spotted dolphin (*Stenella plagiiodon*) renal cells. *Archives of Environmental Contamination and Toxicology*, 41:403-409.
- Wang, D., S.M. Henrichs and L. Guo, 2006. Distributions of nutrients, dissolved organic carbon and carbohydrates in the western Arctic Ocean. *Continental Shelf Research*, 26:1654-1667.
- Wang, F., R.W. Macdonald, G.A. Stern and P.M. Outridge, 2010. When noise becomes the signal: Chemical contamination of aquatic ecosystems under a changing climate. *Marine Pollution Bulletin*, 60:1633-1635.
- Wängberg, I., J. Munthe, R. Ebinghaus, K. Gardfeldt, A. Iverfeldt and J. Sommar, 2003. Distribution of TPM in northern Europe. *Science of the Total Environment*, 304:53-59.
- Wängberg, I., J. Munthe, T. Berg, R. Ebinghaus, H.H. Kock, C. Temme, E. Bieber, T.G. Spain and A. Stolk, 2007. Trends in air concentration and deposition of mercury in the coastal environment of the North Sea Area. *Atmospheric Environment*, 41:2612-2619.
- Wängberg, I., K. Aspmo Pfaffhuber, T. Berg, H. Hakola, K. Kyllonen, J. Munthe, P. Porvari and M. Verta, 2010. Atmospheric and catchment mercury concentrations and fluxes in Fennoscandia. *Nordic Council of Ministers*.
- Watras, C.J. and N.S. Bloom, 1992. Mercury and methylmercury individual zooplankton-implications for bioaccumulation. *Limnology and Oceanography*, 37:1313-1318.
- Watras, C.J., R.C. Back, S. Halvorsen, R.J.M. Hudson, K.A. Morrison and S.P. Wente, 1998. Bioaccumulation of mercury in pelagic freshwater food webs. *Science of the Total Environment*, 219:183-208.
- Watras, C.J., K.A. Morrison, A. Kent, N. Price, O. Regnell, C. Eckley, H. Hintelmann and T. Hubacher, 2005. Sources of methylmercury to a wetland-dominated lake in northern Wisconsin. *Environmental Science and Technology*, 39:4747-4758.
- Webber, H.M. and T.A. Haines, 2003. Mercury effects on predator avoidance behavior of a forage fish, golden shiner (*Notemigonus crysoleucas*). *Environmental Toxicology and Chemistry*, 22:1556-1561.
- Weihe, P., J.C. Hansen, K. Murata, F. Debes, P. Jørgensen, U. Steuerwald, R.F. White and P. Grandjean, 2002. Neurobehavioral performance of Inuit children with increased prenatal exposure to methylmercury. *International Journal of Circumpolar Health*, 61:41-49.
- Weihe, P., U. Steuerwald, S. Taheri, O. Færø, A.S. Veyhe and D. Nicolaisen, 2003. The human health programme in the Faroe Islands, 1985-2001. In: Deutch, B. and J.C. Hansen (Eds.). AMAP, Greenland and the Faroe Islands, 1997-2001. Volume 1 Human Health. Ministry of Environment, Denmark.
- Weiss-Penzias, P., D.A. Jaffe, P. Swartzendruber, W. Hafner, D. Chand and E. Prestbo, 2007. Quantifying Asian biomass burning sources of mercury using the Hg/CO ratio in pollution plumes observed at the Mount Bachelor Observatory. *Atmospheric Environment*, 41:4366-4379.
- Welch, H.E. and J. Kalf, 1974. Benthic photosynthesis and respiration in Char Lake. *Journal of the Fisheries Research Board of Canada*, 31:609-620.
- Wennberg, M., T. Lundh, I.A. Bergdahl, G. Hallmans, J. Jansson, B. Stegmayr, H.M. Custodio and S. Skerfving, 2007. Time trends in burdens of cadmium, lead, and mercury in the population of northern Sweden. *Environmental Research*, 100:330-338.
- Whalin, L., E.-H. Kim and R.P. Mason, 2007. Factors influencing the oxidation, reduction, methylation and demethylation of mercury species in coastal waters. *Marine Chemistry*, 107:278-294.
- Wheatley, B. and M.A. Wheatley, 1988. Methylmercury in the Canadian Arctic environment past and present – natural or industrial? *Arctic Medical Research* 47:163-167.
- WHO, 1990. Methylmercury. International Programme on Chemical Safety. Environmental Health Criteria 101. World Health Organization, Geneva.
- WHO, 1998. Summary and Conclusions: Joint FAO/WHO Expert Committee on Food Additives. Presented at the 51st meeting. World Health Organization.
- Wiener, J.G. and D.J. Spry, 1996. Toxicological significance of mercury in freshwater fish. In: Beyer, W.N., G.H. Heinz and A.W. Redmon-Norwood (Eds.). *Environmental Contaminants in Wildlife: Interpreting Tissue Concentrations*, pp. 297-339. CRC Press.
- Wiener, J.G., D.P. Krabbenhoft, G.H. Heinz and A.M. Scheuhammer, 2003. Ecotoxicology of mercury. In: Hoffman, D.J., B.A. Rattner, G.A.J. Burton and J.J. Cairns (Eds.). *Handbook of Ecotoxicology*. Second Edition, pp. 409-463. Lewis Publishers.
- Wilhelm, S.M., L. Liang, D. Cussen and D.A. Kirchgessner, 2007. Mercury in crude oil processed in the United States (2004). *Environmental Science and Technology*, 41:4509-4514.
- Williams, M.W. and J.M. Melack, 1991. Solute chemistry of snowmelt and runoff in an alpine basin, Sierra-Nevada. *Water Resources Research*, 27:1575-1588.
- Wilson, S.J., F. Steenhuisen, J.M. Pacyna and E.G. Pacyna, 2006. Mapping the spatial distribution of global anthropogenic mercury atmospheric emission inventories. *Atmospheric Environment*, 40:4621-4632.
- Witze, A., 2008. Climate change: Losing Greenland. *Nature*, 452:798-802.
- Wolfe, M.F., S. Schwarzbach and R.A. Sulaiman, 1998. Effects of mercury on wildlife: A comprehensive review. *Environmental Toxicology and Chemistry*, 17:146-160.
- Woo, M.K., 1983. Hydrology of a drainage-basin in the Canadian High Arctic. *Annals of the Association of American Geographers*, 73:577-596.

- Woo, M.K. and R. Thorne, 2003. Streamflow in the Mackenzie Basin, Canada. Arctic, 56:328-340.
- Woshner, V.M., 2000. Concentrations and interactions of selected elements in tissues of four marine mammal species harvested by Inuit hunters in arctic Alaska, with an intensive histologic assessment, emphasizing the beluga whale. PhD Dissertation. University of Illinois.
- Woshner, V.M., T.M. O'Hara, G.R. Bratton, R.S. Suydam and V.R. Beasley, 2001a. Concentrations and interactions of selected essential and non-essential elements in bowhead and beluga whales of arctic Alaska. Journal of Wildlife Diseases, 37:693-710.
- Woshner, V.M., T.M. O'Hara, G.R. Bratton and V.R. Beasley, 2001b. Concentrations and interactions of selected essential and non-essential elements in ringed seals and polar bears of arctic Alaska. Journal of Wildlife Diseases, 37:711-721.
- Woshner, V.M., T.M. O'Hara, J.A. Eurell, M.A. Wallig, G.R. Bratton, R.S. Suydam and V.R. Beasley, 2002. Distribution of inorganic mercury in liver and kidney of beluga and bowhead whales through autometallographic development of light microscopic tissue sections. Toxicologic Pathology, 30:209-215.
- Woshner, V., K. Knott, R. Wells, C. Willetto, R. Swor and T. O'Hara, 2008. Mercury and selenium in blood and epidermis of bottlenose dolphins (*Tursiops truncatus*) from Sarasota Bay, FL: Interaction and relevance to life history and hematologic parameters. Ecohealth, 5:360-370.
- Wrona, F., T. Prowse, J. Reist, R. Beamish, J.J. Gibson, J. Hobbie, E. Jeppesen, J. King, A. Korhola, R.W. Macdonald, M. Power, V. Skvortsov, G. Koeck, W. Vincent and L. Levesque, 2005. Freshwater ecosystems. In: Arctic Climate Impact Assessment, pp. 353-452. Cambridge University Press.
- Xu, C.H., L.D. Guo, F.G. Dou and C.L. Ping, 2009. Potential DOC production from size-fractionated Arctic tundra soils. Cold Regions Science and Technology, 55:141-150.
- Yamamoto-Kawai, M., F.A. McLaughlin, E.C. Carmack, S. Nishino and K. Shimada, 2009. Aragonite undersaturation in the Arctic Ocean: Effects of ocean acidification and sea ice melt. Science, 326:1098-1100.
- Yokoo, E.M., J.G. Valente, L. Grattan, S.L. Schmidt, I. Platt and E.K. Silbergeld, 2003. Low level methylmercury exposure affects neuropsychological function in adults. Environmental Health, 2:8.
- Young, J.F., W.D. Wosilait and R.H. Luecke, 2001. Analysis of methylmercury deposition in humans utilizing a PBPK model and animal pharmacokinetic data. Journal of Toxicology and Environmental Health A, 63:19-52.
- Young, B., L. Loseto and S. Ferguson, 2010. Diet differences among age classes of Arctic seals: evidence from stable isotope and mercury biomarkers. Polar Biology, 33:153-162.
- Zaccone, C., A. Santoro, C. Cocozza, R. Terzano, W. Shotyk and T.M. Miano, 2009. Comparison of Hg concentrations in ombrotrophic peat and corresponding humic acids, and implications for the use of bogs as archives of atmospheric Hg deposition. Geoderma, 148:399-404.
- Zauke, G.P., V.M. Savinov, J. Ritterhoff and T. Savinova, 1999. Heavy metals in fish from the Barents Sea (summer 1994). Science of the Total Environment, 227:161-173.
- Zdanowicz, C., D. Lean and I. Clark, 2009. Atmospheric deposition and release of methylmercury in glacially-fed catchments of Auyittuq National Park, Baffin Island. In: Smith, S., J. Stow and J. Edwards (Eds.). Synopsis of Research Conducted under the 2008-2009 Northern Contaminants Program, pp. 193-199. Indian and Northern Affairs Canada, Ottawa.
- Zheng, J., D. Fisher, R. Koerner, C. Zdanowicz, C. Bourgeois, G. Hall, P. Pelchat, W. Shotyk, M. Krachler and F. Ke, 2009. Temporal studies of atmospheric Hg deposition with ice cores and snow in the Canadian High Arctic. In: Smith, S., J. Stow and J. Edwards (Eds.). Synopsis of Research Conducted under the 2008-2009 Northern Contaminants Program, pp. 221-225, Indian and Northern Affairs Canada, Ottawa.
- Zhong, H. and W.-X. Wang, 2009. Controls of dissolved organic matter and chloride on mercury uptake by a marine diatom. Environmental Science and Technology, 43:8998-9003.



## Abbreviations and Acronyms

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$\delta^{13}\text{C}$	Stable carbon isotope	RFSL	Russian food safety limit
$\delta^{15}\text{N}$	Stable nitrogen isotope	S2	Methodologically-defined component of carbon (S1 and S2 components are mostly algal-derived kerogen; S3 is oxygen-bearing organic matter. See Carrie et al., 2010)
[..]	Concentration, e.g. [Hg] = total Hg concentration		
ACI	Activated carbon injection		
AMAP	Arctic Monitoring and Assessment Programme	SCR	Selective catalytic reduction
AMDE	Atmospheric mercury depletion event	Se	Selenium
ASGM	Artisanal and small-scale gold mining	SQ	'Status Quo' emissions scenario
BMDL	Benchmark dose lower limit	Ti	Titanium
Br	Bromine	TOC	Total organic carbon
bw	Body weight	TWI	Tolerable weekly intake
C	Carbon	UNEP	United Nations Environment Programme
Cd	Cadmium	USD	U.S. Dollar
C-DOM	Colored dissolved organic matter	USEPA	U.S. Environmental Protection Agency
$\text{CH}_4$	Methane	USFDA	U.S. Food and Drug Administration
$\text{CO}_2$	Carbon dioxide	UV	Ultraviolet
Cu	Copper	ww	Wet weight
DOC	Dissolved organic carbon	Zn	Zinc
DOM	Dissolved organic matter		
dw	Dry weight		
ESPs	Electrostatic precipitators		
EXEC	'Extended Emissions Control' emissions scenario	Models	
Fe	Iron	DEHM	Danish Eulerian Hemispheric model
FFs	Fabric filters	GEOS-Chem	Goddard Earth Observing System – chemical transport model
FGD	Flue gas desulfurization	GLEMOS	Global EMEP Multi-media Modelling System
HC	Hydrocarbon	GRAHM	Global/Regional Atmospheric Heavy Metal model
HCH	Hexachlorocyclohexane		
Hg	Mercury		
IPCC	Intergovernmental Panel on Climate Change	Mercury terminology	
LOAEL	Lowest observed adverse effect level	DGM	Dissolved gaseous mercury
LRTAP	UNECE Convention on Long-range Transboundary Air Pollution	DMHg	Dimethylmercury
MFTR	'Maximum Feasible Technological Reduction' emissions scenario	FPM	Fine particulate mercury
N	Nitrogen	GEM	Gaseous elemental mercury
NAO	North Atlantic Oscillation	GOM	Gaseous oxidized mercury
NMDA	N-methyl-D-aspartate	Hg(II)	Inorganic divalent mercury
NOEL	No Observed Effect Level	Hg(0)	Elemental mercury
ODE	Ozone depletion event	HgP / PHg	Particulate mercury
Pb	Lead	HgT / THg	Total mercury
$p\text{CO}_2$	Partial pressure of carbon dioxide	HgR / RGM	Reactive gaseous mercury
PNA	Pacific North American	MeHg	Methylmercury
POC	Particulate organic carbon	MMHg	Monomethylmercury
POM	Particulate organic matter	RGM / Hg <sub>R</sub>	Reactive gaseous mercury
POP	Persistent organic pollutant	TGM	Total gaseous mercury
RfD	Reference dose	THg / HgT	Total mercury
		TPM	Total particulate mercury