

## Canada

### ***Cruise activities***

- The renewal of the Line P iron program (collaboration between UBC (Vancouver) UVic (Victoria) and DFO (Sydney). Three cruises a year (February, May and August)
- NSERC-CCAR funded 2 cruises in the Arctic in 2015. The Canadian Arctic GEOTRACES Program: Biogeochemical and tracer study of a rapidly changing Arctic Ocean. R. Francois plus 20 others (\$5,000,000 for 5 years).

### ***Publications***

- Fu, Y., Keats, K. F., Rivkin, R. B. and Lang, A. S. 2013. Water mass and depth determine the distribution and diversity of Rhodobacterales in an Arctic marine system FEMS. In Press
- Taylor, R.L., D.M. Semeniuk, C.D. Payne, J. Zhou, J.E. Tremblay, J.T. Cullen, and M.T. Maldonado. 2013. Colimitation by light, nitrate, and iron in the Beaufort Sea in late summer, *J. Geophys. Res. Oceans*, 118, doi: 10.1002/jgrc.20244.
- Melling, H., R. Francois, P. G. Myers, W. Perrie, A. Rochon, and R. L. Taylor. 2012. The Arctic Ocean—a Canadian perspective from IPY. *Climatic Change* DOI 10.1007/s10584-012-0576-4.
- Normandeau C, Hill A, KIENAST M, and Cullen J (subm. 2011, working on revisions) On the effect of salinity on alkenone concentrations and unsaturation: A culture study, *Organic Geochemistry*, ms# OG-1567
- MILLER L.A., GIESBRECHT K.E., MUCCI A. and ZIMMERMAN S. (2013) Decadal changes in the marine carbonate system of the western Canadian Arctic. Submitted to *Polar Research*.
- ELSE B.G.T., PAPAKYRIAKOU T., ASPLIN M., BARBER D., GALLEY R., MILLER L. and MUCCI A. (2013) Annual cycle of air-sea CO<sub>2</sub> exchange in an Arctic Polynya region. *Global Biogeochem. Cycles* (in press, accepted December 2012). doi:10.1002/gbc.20016
- GIESBRECHT K.E., MILLER L.A., ZIMMERMAN S., CARMACK E., JOHNSON W.K., MACDONALD R.W., MCLAUGHLIN F., MUCCI A., WILLIAMS W.J. and WONG C.S. and YAMAMOTO-KAWAI M. Measurements of the dissolved inorganic carbon system and associated biogeochemical parameters in the Canadian Arctic, 1974-2009. *Earth System Science Data Discussion* 6: 223-254. doi: 10.5194/essdd-6-223-2013.
- ELSE B.G.T., GALLEY R.J., LANSARD B., BARBER D.G., BROWN K., MILLER L.A., MUCCI A., PAPAKYRIAKOU T.N., TREMBLAY J.-É. and RYSGAARD S. (2013) Further observations of a decreasing atmospheric CO<sub>2</sub> uptake capacity in the Canada Basin (Arctic Ocean) due to sea ice loss. *Geophys. Res. Letts.* 40: 1132–1137, doi:10.1002/grl.50268.
- ELSE B.G.T., GALLEY R.J., PAPAKYRIAKOU T.N., MILLER L.A., MUCCI A. and BARBER D. (2012) Sea surface pCO<sub>2</sub> cycles and CO<sub>2</sub> fluxes at landfast sea- ice edges in the Amundsen Gulf, Canada. *Journal of Geophysical Research-Oceans* 117: C09010, doi:10.1029/2012JC007901.
- ELSE B.G.T., PAPAKYRIAKOU T.N., GALLEY R.J., MUCCI A., GOSSELIN M., MILLER L.A., SHADWICK E.H. and THOMAS H. (2012) Annual cycles of pCO<sub>2sw</sub> in the southeastern Beaufort Sea: New understandings in air-sea CO<sub>2</sub> exchange in arctic polynya regions. *J. Geophys. Res.-Oceans* 117: C00G13. 16 pp., doi:10.1029/2011JC007346.
- LANSARD B., MUCCI A., MILLER L.A., MACDONALD R.W. and GRATTON Y. (2012) Seasonal variability of water mass distribution in the southeastern Beaufort Sea

determined by total alkalinity and  $\delta^{18}\text{O}$ . *J. Geophys. Res.-Oceans* 117: C03003, 19 pp., doi:10.1029/2011JC007299.

- Thomas, H., Shadwick, E.H., Dehairs, F., Lansard, B., Mucci, A., Navez, J., Gratton, Y., Prowe, A.E.F., Chierici, M., Fransson, A., Papakyriakou, T.N., Sternberg, E., Miller, L., Tremblay, J.-É., and Monnin, C. (2011). Barium and Carbon fluxes in the Canadian Arctic Archipelago. *JOURNAL OF GEOPHYSICAL RESEARCH-OCEANS* 116, Article Number: C00G08 DOI: 10.1029/2011JC007120
- Granger, J., M. G. Prokopenko, D. M. Sigman, C. W. Mordy, L. V. Morales, Z. M. Morse, R. N. Sambrotto. 2011. Nitrification-coupled denitrification in sediment of the eastern Bering Sea shelf leads to  $^{15}\text{N}$ -enrichment of fixed N in shelf waters. *Journal of Geophysical Research – Oceans*, doi: 10.129/2010JC0006751.

### **Reports**

- PAPAKYRIAKOU T., CARNAT G., CHIERICI M., DELILLE B., ELSE B., FRANSSON A., GEILFUS N.-X., LANSARD B., MILLER L., MUCCI A., SHADWICK E., THOMAS H., and TISON J.-L. (2012) Balancing greenhouse gases. Chapt. 6, pp. 109-122. In: *On the Edge: From Knowledge to Action during the Fourth International Polar Year Circumpolar Flaw Lead System Study (2007-2008)*. Barber D., Tjaden T., Leitch D., Barber L. and Chan W. (Eds.) University of Manitoba, Winnipeg, Manitoba. 248 pp.

### **Communications, posters and abstracts**

- Cullen, J.T., J. Zhou, R.L. Taylor, D.M. Semeniuk, M.T. Maldonado. Dissolved iron and the co-limitation of phytoplankton growth in the Beaufort Sea, Arctic Ocean. Florence, Italy, August 2013.
- LANSARD B., MUCCI A., BROWN K. and BABIN M. (2012) A multi-proxy study of the Mackenzie Shelf waters (Canadian Arctic). Contributed poster presentation, 22st V.M. Goldschmidt Conference, June 24-29, Montréal, Canada. *Mineralogical Mag.* 76: 1973.
- ELSE B.G.T., PAPAKYRIAKOU T., GALLEY R., ASPLIN M., BARBER D., DRENNAN W., MUCCI A., MILLER L.A., SHADWICK E. and THOMAS H. (2012) New understandings of air-sea  $\text{CO}_2$  exchange in polynya systems: Results from the IPY ArcticNet and CFL projects in the Cape Bathurst Polynya. Contributed oral presentation, IPY-2012 Conference, April 22-27, Montreal, Canada.
- FRANCOIS R., BROWN K., CULLEN J., GRANGER J., HOLMDEN C., KIENAST M., MALDONADO M., MILLER L., MUCCI A., ORIANI K., RIVKIN R.B., SAITO M., THOMAS H., TORTELL P. and VARELA D. (2012) Canadian IPY-GEOTRACES: Multi-tracer investigation of the effect of climate change on primary production, seawater chemistry and circulation of the Arctic Ocean. Contributed poster presentation, IPY-2012 Conference, April 22-27, Montreal, Canada.
- R. Francois, M. Soon, C. Not, C. Hillaire-Marcel. Recent incursion of deep water from the central Arctic into Canada Basin inferred from 230Th water column profiles measured during the IPY-GEOTRACES project. IPY-2012 Conference, April 22-27, Montreal.
- LANSARD B., MUCCI A., GRATTON Y., MILLER L.A., THOMAS H. (2012) Chemical and physical properties of the surface mixed layer during sea-ice formation in the Canadian Arctic. Contributed oral presentation, IPY-2012 Conference, April 22-27, Montreal, Canada.
- PAPAKYRIAKOU T., CARNAT G., CHIERICI M., DELILLE B., ELSE B.G.T., FRANSSON A., GEILFUS N.-X., MILLER L.A., MUCCI A., SHADWICK E., THOMAS H. and TISON J.-L. (2012) Seasonal evolution of the  $\text{CO}_2$  source/sink dynamics and air-sea exchange in the Amundsen Gulf and southeastern Beaufort Sea: A synthesis of results from CFL. IPY-2012 Conference, April 22-27, Montreal, Canada.

- Rivkin, R. B., Tucker, J. Hamilton, A. and Hale. M. S. 2012. Microbial dynamics in the Beaufort Sea during the Fall 2009 IPY Geotraces Expedition. International Polar Year 2012 Conference. Montreal, Canada, April 2012.
- K. F. Keats, K. F., Hale, M. S. Rivkin, R. B. 2012. Nutrient regulation of heterotrophic bacterial growth in water masses of northern Baffin Bay and in the Canadian Arctic. International Polar Year 2012 Conference. Montreal, Canada, April 2012.
- Rivkin, R. B., and Way, C. J. 2012. Nutrient control of microzooplankton processes cold coastal and Arctic oceans. Association for the Sciences of Limnology and Oceanography. Otsu, Japan July 2012.
- Tucker, J. M., Rivkin, R. B., Li, W. K. and Moulard, R. 2011. Microbial processes in the Beaufort Sea. American Society of Limnology and Oceanography Meeting. San Juan Puerto Rico. February 2011
- K. Scheiderich, M. Amini, C. Holmden and R. Francois. Canadian IPY-GEOTRACES: Chromium isotope fractionation in Arctic Ocean waters. International Polar Year 2012 Conference. Montreal, Canada, April 2012.
- Taylor, R.D., D.M. Semeniuk, C. Payne, M.T. Maldonado. Co-limitation by Nitrate, Light, and Iron in the Beaufort Sea. International Polar Year 2012 Conference. Montreal, Canada, April 2012.
- K. Brown, F. McLaughlin, R. Francois, P. Tortell, M. Yamamoto-Kawai, and B. Hunt. Effects of Changing Sea Ice Thickness & Distribution on Carbon Cycling in the Canada Basin (C3O-JOIS: 2008-2009). International Polar Year 2012 Conference. Montreal, Canada, April 2012.
- LANSARD B., MUCCI A., GRATTON Y., MILLER L.A., MACDONALD R.W., THOMAS H. CHIERICI M., FRANSSON A. and PAPAKYRIAKOU T. Chemical and physical properties of the surface mixed layer during sea-ice formation in the Canadian Arctic. International Polar Year 2012 Conference. Montreal, Canada, April 2012.
- Cullen J.T., T. Giesbrecht, N. Sim, A. Davidson, N.E. Sutherland, W. Keith Johnson, K.J. Orians. Tracing the relative impact of sea-ice melt and river input on bioactive trace metal distributions in the Arctic Ocean during the Canadian C3O and GEOTRACES programs. International Polar Year 2012 Conference. Montreal, Canada, April 2012.
- Zhou, J., A. Noble, R. E. Ramirez, M. Saito, J.T. Cullen. The distribution of iron and cobalt in the Beaufort Sea during the Canadian GEOTRACES IPY Arctic Ocean expedition. International Polar Year 2012 Conference. Montreal, Canada, April 2012.
- Zhou, J., R. E. Ramirez, J.T. Cullen. The redox speciation of dissolved iron in seawater of the Arctic Ocean: Observations from the GEOTRACES IPY Expedition in the Beaufort Sea. Ocean Sciences Meeting, Salt Lake City, UT USA, Feb. 20-24, 2012
- Granger, J. and D. M. Sigman. Distinction of Atlantic vs. Pacific Nitrate in the Beaufort Sea from Coupled N and O Isotope Ratios; Presentation; International Polar Year Conference Montreal April 25th, 2012. [oral]
- Granger, J. and D. M. Sigman. Distinction of Atlantic vs. Pacific Nitrate in the Beaufort Sea from Coupled N and O Isotope Ratios Ocean Sciences Meeting 2012, Salt Lake City.

### ***Dissertations***

- Taylor, R.L. 2011. Studies in Fe bioavailability: co-limitation of primary productivity by iron, light, and nitrate in the Beaufort Sea, and direct iron-siderophore uptake mechanisms in Fe deficient phytoplankton. Master of Science Thesis. Oceanography. University of British Columbia, Vancouver, Canada. <https://circle.ubc.ca/handle/2429/39285>.

Submitted by: Maite Maldonado