Spatiotemporal variations of heavy metals in sediments from the Canadian Arctic Archipelago

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The Arctic is the region of the planet where the seafloor's topography and composition are the least studied and understood. Indeed, the vast majorities of the channels within the Canadian Arctic Archipelago (CAA) as well as coastal areas close to Inuit communities are characterized by a substantial knowledge gap of the seafloor sediment composition and associated contaminants. Therefore, a wider spatial coverage of sedimentary records across the marine CAA is essential to provide fundamental baseline information on the geochemical sediment properties. In this context, the Ph.D. project will focus on investigating heavy metal concentrations of 115 surface sediment samples, eight box cores, and three gravity cores collected over a large area from the Canadian Beaufort Sea to Baffin Bay. The primary goal of this project is to characterize the modern spatial distribution patterns and the temporal trends of heavy metals within the CAA, including coastal areas close to Inuit communities. Heavy metal analysis of three acid extractions (HF, aqua regia, HCl) will be performed on bulk sediment samples and then analyzed by ICP-AES and ICP-MS. Overall, the geochemical data generated during this Ph.D. project will help federal government agencies (e.g., Environment and Climate Change Canada) to assess environmental risk and set regulatory levels of pollutants within the CAA. The student recruited for this project will have the opportunity to participate in several missions in the Canadian Arctic aboard the CCGS *Amundsen*. Applicants must be proficient in both written and oral French and English.

Additional information and thesis supervision: Jean-Carlos Montero-Serrano, Supervisor, and Richard Saint-Louis, Co-supervisor.