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ISSUED TO: Jochen Halfar
Dept. Of Chemical & Physical Sciences
University of Toronto at Mississauga
3359 Mississauga Road, Davis Buidling, Room 4044
Mississauga, Ontario
L5L 1C6 Canada

TEAM MEMBERS: M.Dias

TITLE: Past climate reconstruction using annually-layered carbonate buildups on the Nunavut shallow seafloor


Climate data in the Canadian Arctic prior to the beginning of instrumental observations in the 20th century is sparse. Hence, at present we do not have a good understanding of ocean temperature and sea ice evolution during the past centuries. During our cruise we will collect small carbonate (limestone) mounds on the shallow seafloor of Arctic Bay, Nunavut. These mounds contain annual bands and can form on the seafloor for hundreds of years, hence, allowing a reconstruction of Arctic climate several centuries back. Using the small vessel Vagabond we will collect mounds using SCUBA at water depths of 15-20m along SE Ellesmere Island. Mounds are generally 3-8 centimeters in diameter, up to 3 centimeters high, and can be removed from rocky seafloor using a small hammer and chisel. At each site we plan to remove 20 mounds, which are structures made up entirely of inorganic calcium carbonate that were originally formed by an underwater alga. The mounds will be analyzed for their amount of yearly growth and element composition in the laboratory, which will provide data for long time series of sea surface temperature and past sea ice reconstructions. Ultimately the published results are expected to be integrated into climate models.

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DATES: July 31,2022 to Sewptember 10,2022

LOCATION: SE Ellesmere Island

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Mosha Cote
Science Administration
Officer

