

# Nunavummi Qaujsaqtulirijikkut / Nunavut Research Institute

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## SCIENTIFIC RESEARCH LICENSE

LICENSE # 02 054 19R-M

ISSUED TO: Jochen Halfar  
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### TEAM MEMBERS:

AFFILIATION: University of Toronto at Mississauga

TITLE: Past Climate Reconstruction using Annually-Layered Carbonate Buildups on the  
Nunavut shallow seafloor

### OBJECTIVES OF RESEARCH:

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 at Arctic Bay. 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.

### TERMS & CONDITIONS:

The holder of the licence will be bound by the terms and conditions of the Nunavut Impact Review Board Screening Decision Report and the Department of Culture & Heritage archaeological sites terms and conditions. These terms and conditions will form part of this licence.

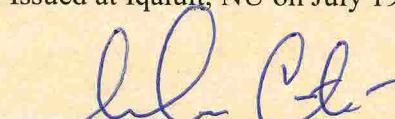
### DATA COLLECTION IN NU:

DATES: August 10, 2019-September 16, 2019

LOCATION: Arctic Bay

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for Mary Ellen Thomas  
Science Advisor

