

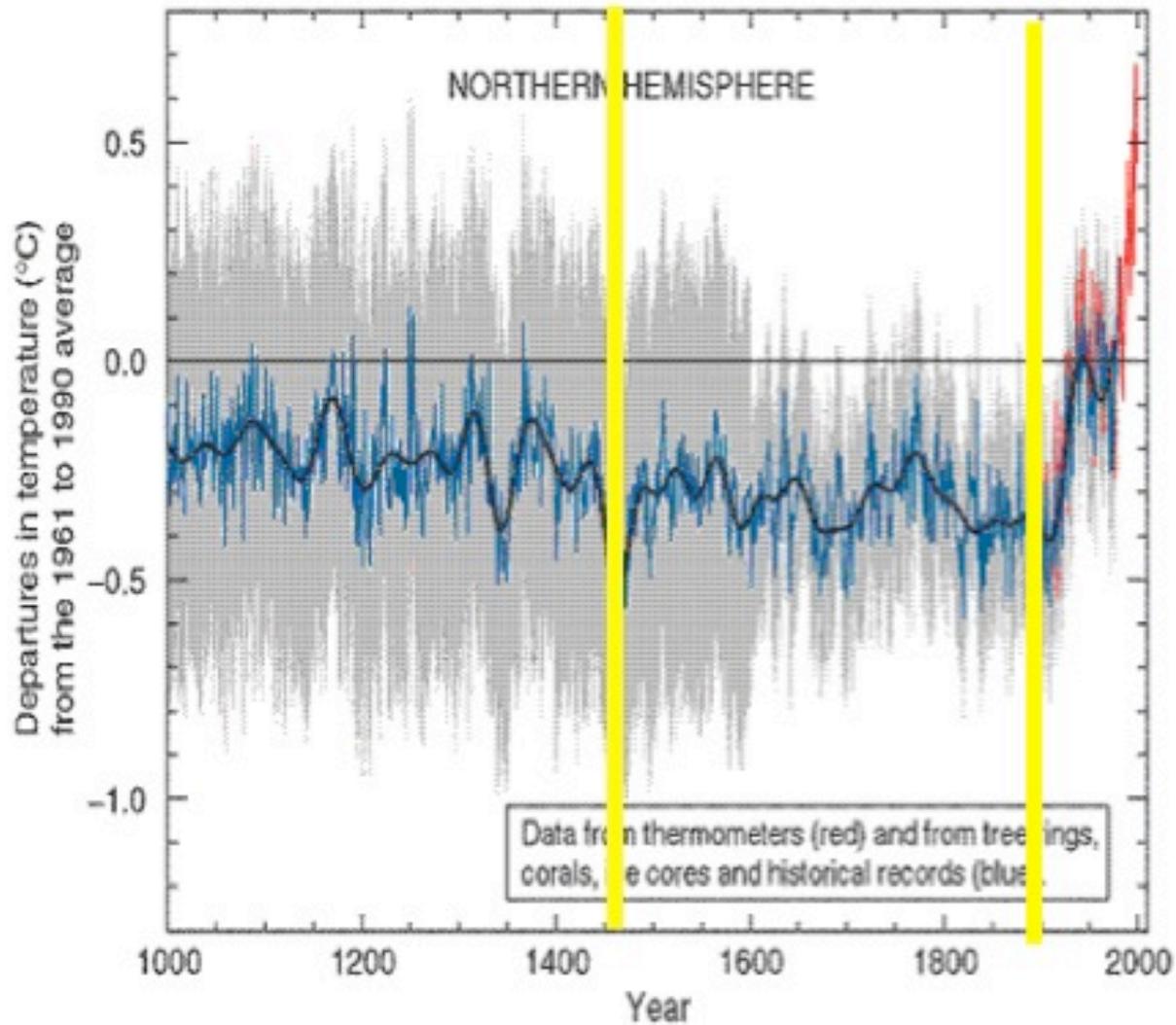
Climate change and wood use by Inui of Nunavik and Nunatsiavut (Canada) since the Little Ice Age (1500 – 1870)

Congress-ISE2012
Montpellier (France)

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CEN & Dép. géographie
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The Little Ice Age period

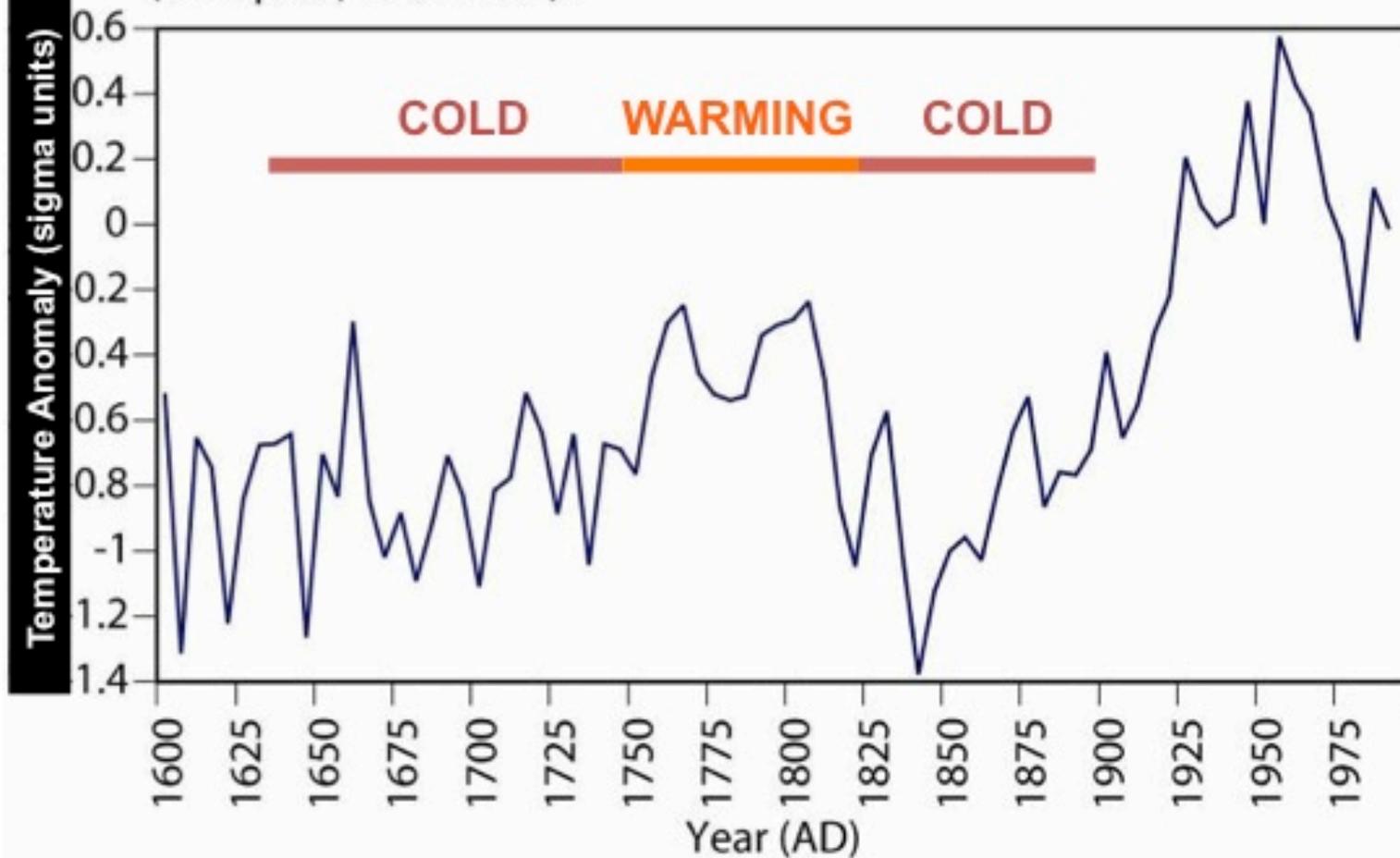


In Northern Hemisphere

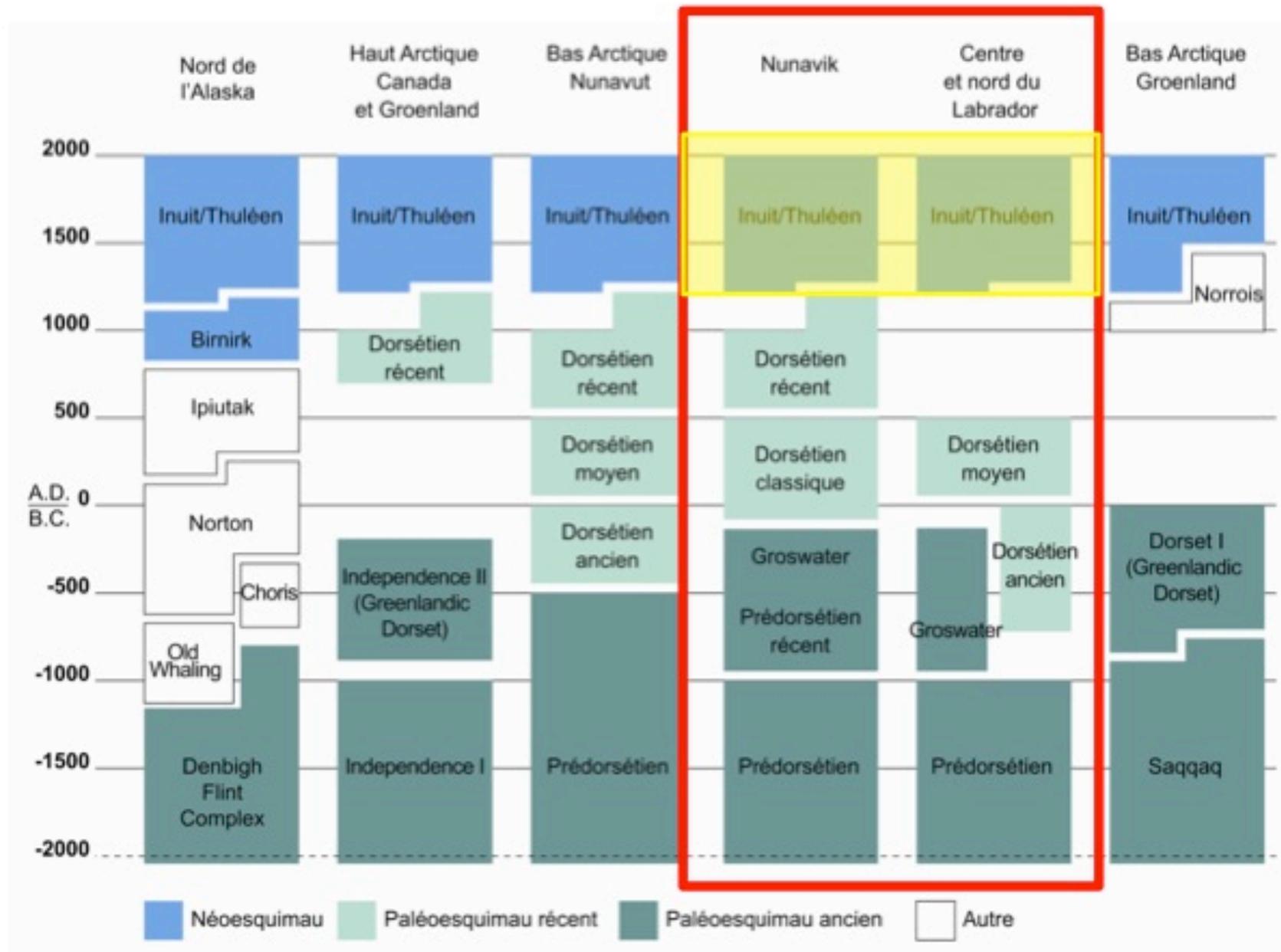
(Intergovernmental Panel on Climate Change, 2001)

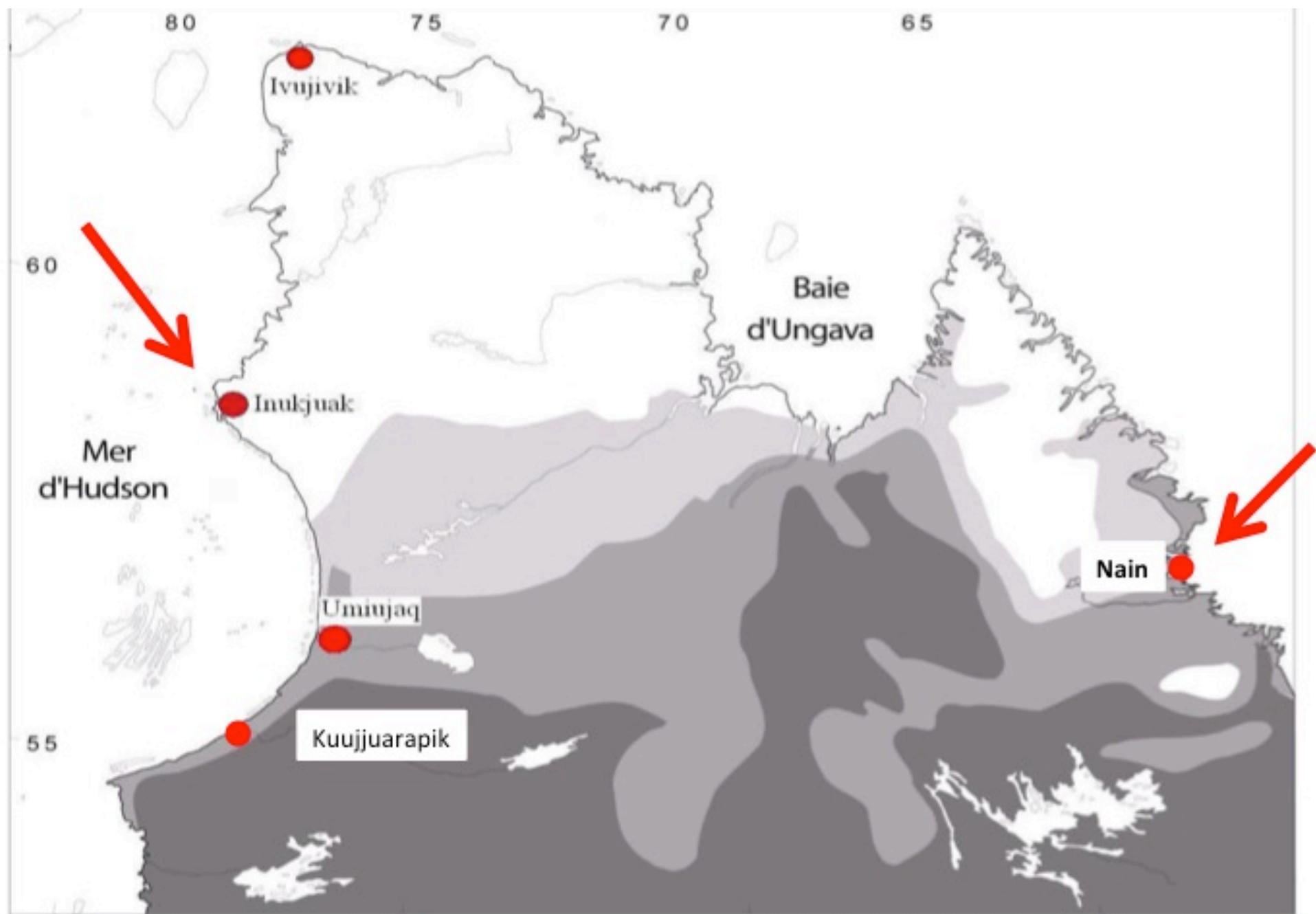
The Little Ice Age period

Reconstructed Arctic Temperature Anomaly from Amalgamated Tree Ring Records (Overpeck, et al. 2000).



Human occupation in Northern Canada





 sporadic permafrost

 discontinuous and widespread permafrost

 discontinuous and dispersed permafrost

 continuous permafrost

The Geoarchaeology and Traditional Knowledge of Winter Sod Houses in Eastern Hudson Bay, Canadian Low Arctic

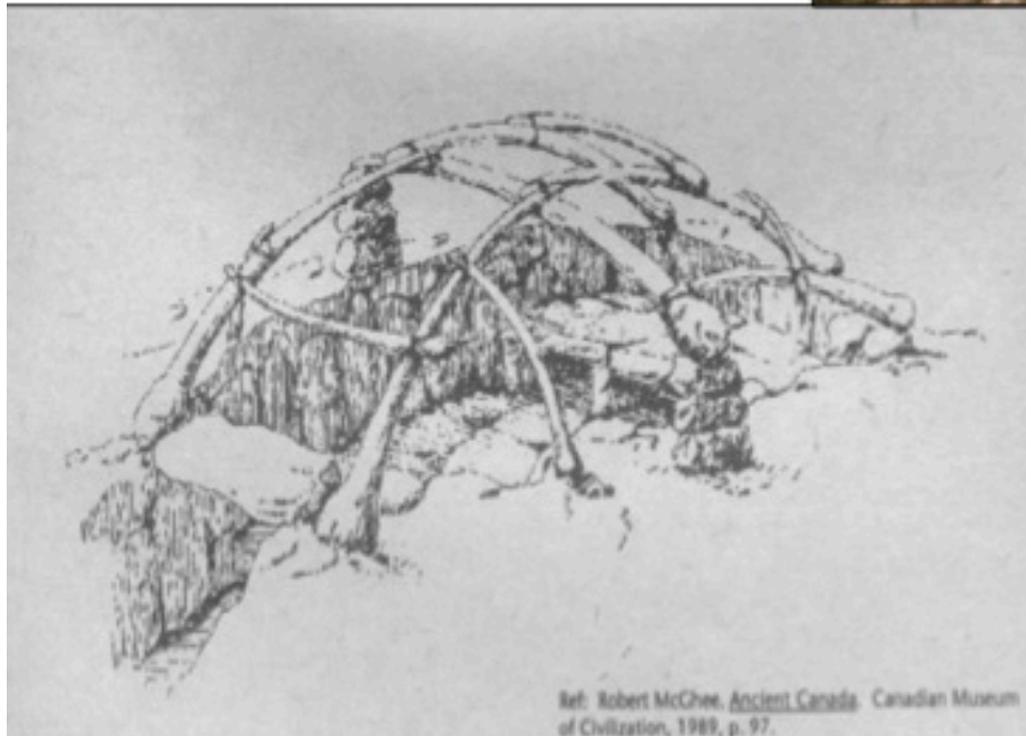
*Géoarchéologie et savoir traditionnel des maisons
semi-souterraines à l'est de la baie d'Hudson,
Bas-Arctique du Canada*

Main published papers:

- Desrosiers, P., Gendron, G., Todisco, D., Monchot, H., Rahmani, N., Bhiry, N. & Houmard, C.
-(2008). *L'Anthropologie* 112, 747-779
Lemieux, A-M (2009). Msc. Thesis, Université Laval
- Desrosiers, Lofthouse, Bhiry, Lemieux, Monchot, Gendron & Marguerie (2010).
Geografisk Tidsskrift-Danish Journal of Geography 110(2)
- Lemieux, Bhiry & Desrosiers (2012). *Geoarchaeology : An International Journal*, 24, 743-791)



Thule winter houses



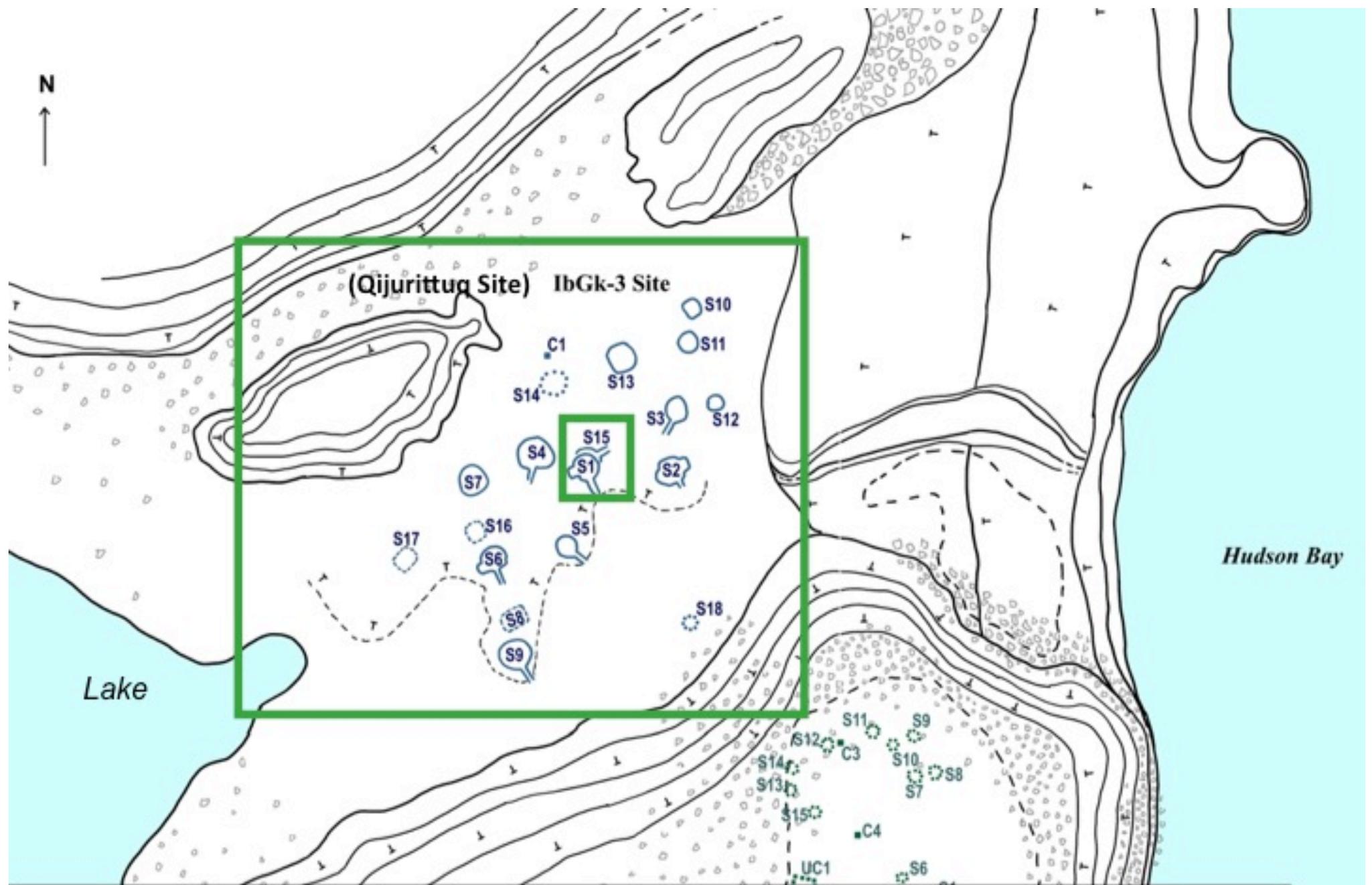
Ruins of Semi-subterranean houses



Inukjuak : a sod house was reconstructed for cultural activities organized by the Avataq Cultural Institute and Pukik, the local cultural committee.



Drayton Island



Qijurittuq Site includes 13 semi-subterranean sod houses, a cache, a tent ring and one shallow rectangular depression. Two overlapping house structures (1 and 15) were selected for excavation.

Drayton Island, Inukjuak



A Semi-subterranean house

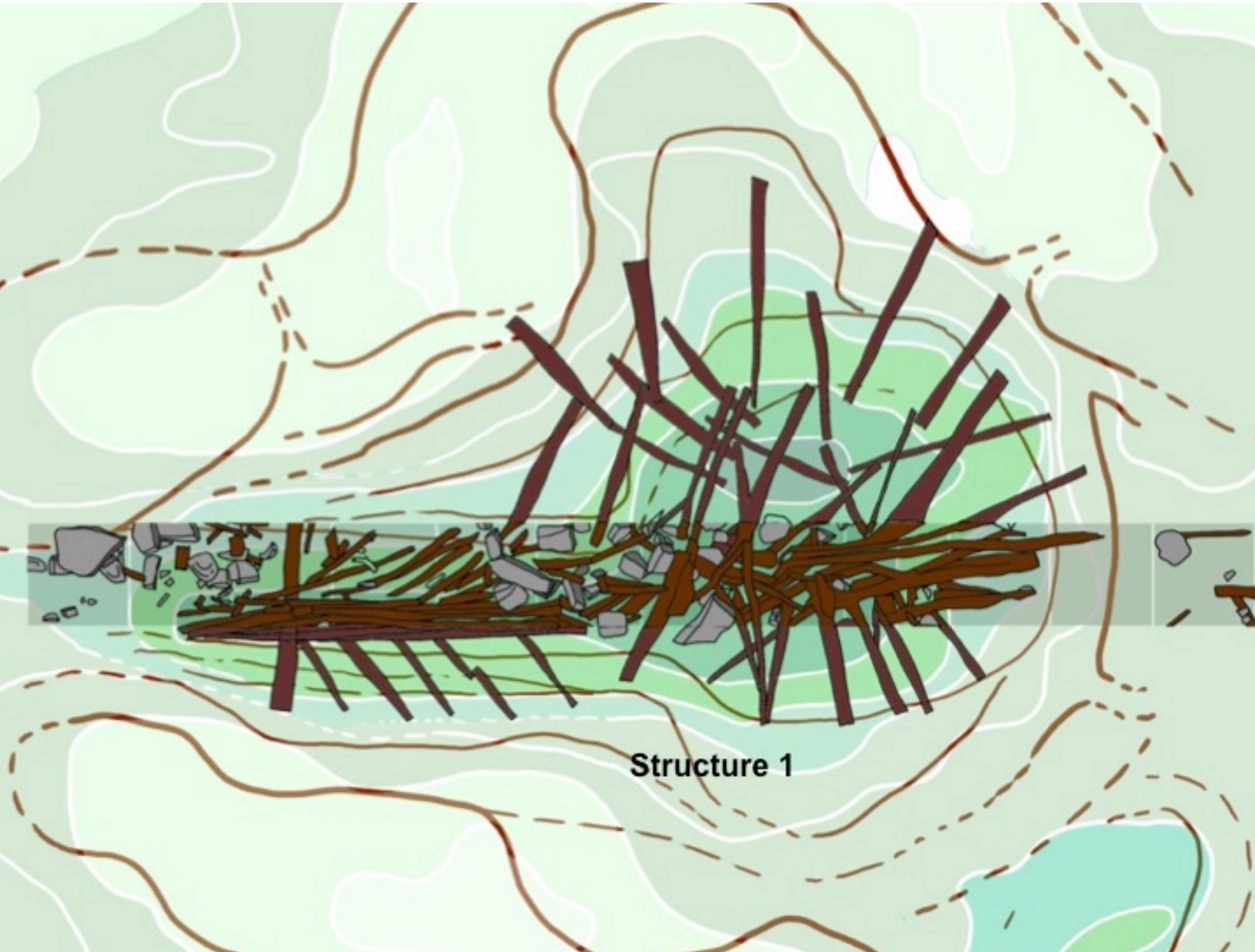
Thule period

Inside S1: compact peat blocs overlapping rock and wood. They constitute the remains of the house walls and roof that collapsed after it was abandoned.





Structure 1



Structure 1

550 yr cal. BP
390 yr cal. BP
170 yr cal. BP
160 yr cal. BP

which excludes the possibility that the Thule/Inuit procured the wood from living trees that would have been cut at the same time.





Traditional knowledge and land occupation

Elders Interviewed about Climate Changes and the Archaeological Site

All of them (11) lived semi-nomadically
when they were young, and they were
all born on the east coast of Hudson Bay.



**Main Elements Mentioned by Elders Interviewed about Climate Changes and the Archaeological Site
(n/11 : Number of elders who mentioned that element.)**

<p>Actual Climate Change Impacts</p> <ul style="list-style-type: none"> •Weather and wind change quickly and it is difficult to forecast. (6/11) •Summers are warmer and longer. (5/11) •Winter and spring are shorter and sea ice thaws quickly. (2/11) •The permafrost has thawed and the land is softer and muddy. (2/11) •Plants grow quicker and better. (7/11) •There are some new animals, birds and insects. (6/11) 	<p>Reasons for the Choice of IbGk-3 Site Location</p> <ul style="list-style-type: none"> •There are many seals in the area. (8/11) •The valley provides protection from the wind. (8/11) •The land is good to live on. (5/11) •It is a good area for hunting and fishing. (3/11) •The site provides a good view of the sea and the strait. (2/11)
<p>Climate Changes Experienced by Ancestors</p> <ul style="list-style-type: none"> •It was colder in the ancestors' time. (3/11) •The ancestors had to adapt by changing camp site locations. (2/11) •The ancestors did not experience the same climate changes as today. (2/11) •There were bigger trees at the time of the ancestors. (1/11) •Hunting and fishing were different. (1/11) 	<p>Subterranean Houses</p> <ul style="list-style-type: none"> •They were warmer than igloos. (8/11) •Walls made of peat provide good protection from the wind. (6/11) •Peat was used because there was no snow. (2/11) •The wood from the roof structure was drift wood. (5/11) •The wood from the roof structure came from the tree line. (3/11) •The wood from the roof structure came from Drayton Island because there were bigger trees there in their ancestors' time. (2/11)

Wood

Subterranean Houses

- They were warmer than igloos. (8/11)
- Walls made of peat provide good protection from the wind. (6/11)
- Peat was used because there was no snow. (2/11)
- The wood from the roof structure was drift wood. (5/11)
- The wood from the roof structure came from the tree line. (3/11)
- The wood from the roof structure came from Drayton Island because there were bigger trees there in their ancestors' time. (2/11)

summary

- The building of the Qijurittuq Site's semi-subterranean sod houses was in turn made possible by the abundance of driftwood.
- During the dry, cold conditions of the Little Ice Age (ca. 510 yr BP to 110 cal. yr BP) the Thule/Inuit people used semi-subterranean houses rather than igloos on the Qijurittuq Site.

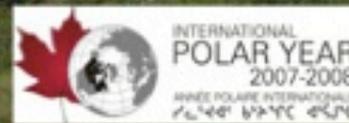
Human-environment relationship in Nunatsiavut (Labrador, Canada)

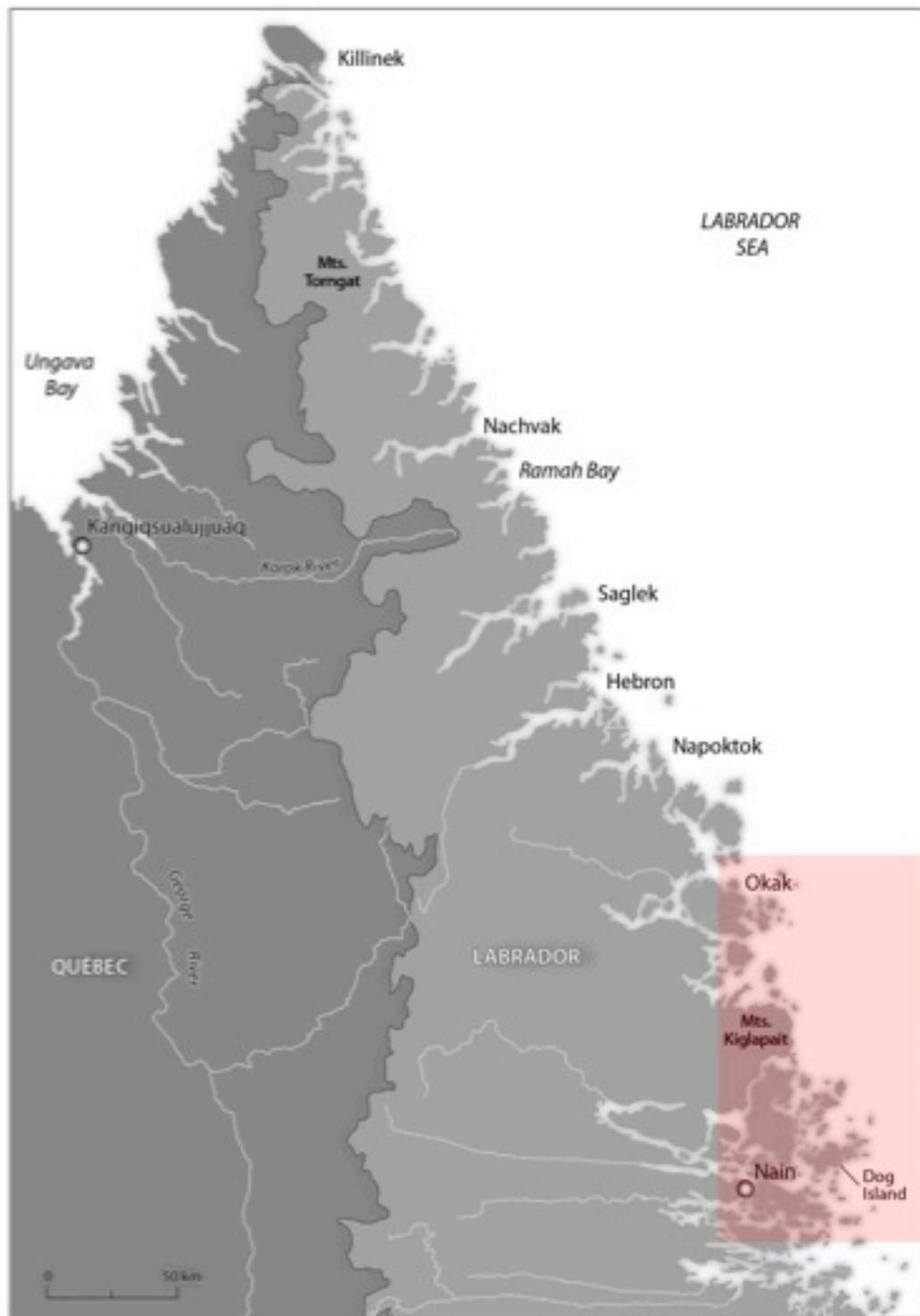
Relation Homme-Environnement au Nunatsiavut (Labrador, Canada)

Team:

*Najat Bhiry, James Woollett, Cynthia
Zutter, Allison Bain, Suzan Kaplan*

*Students: Natasha Roy, Isabel Lemus
Lauzon, Andréanne Couture, Linsay*



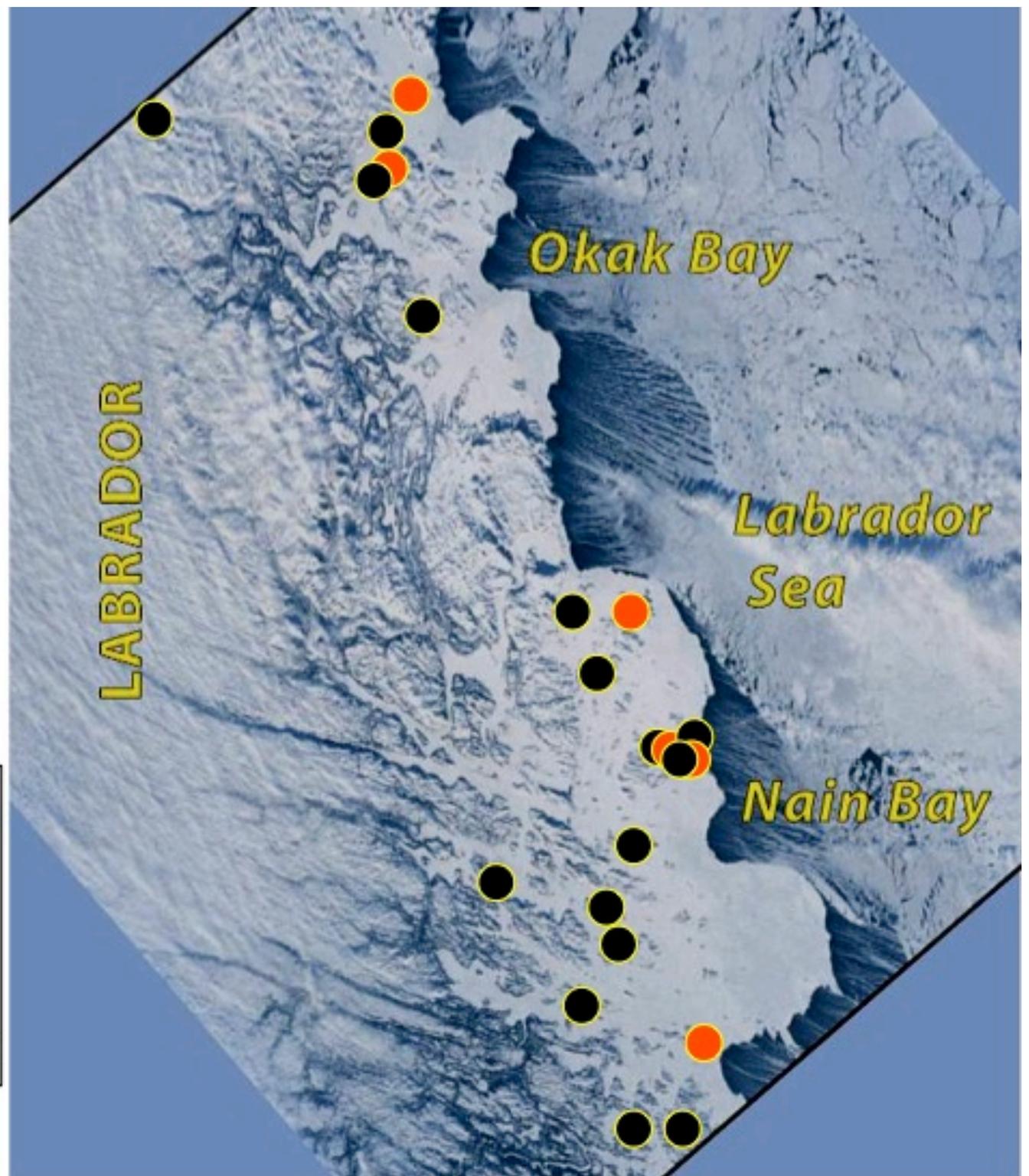




Collection of Peary-MacMillan Arctic Museum and Arctic Studies Center

needs the land fast ice to hunt

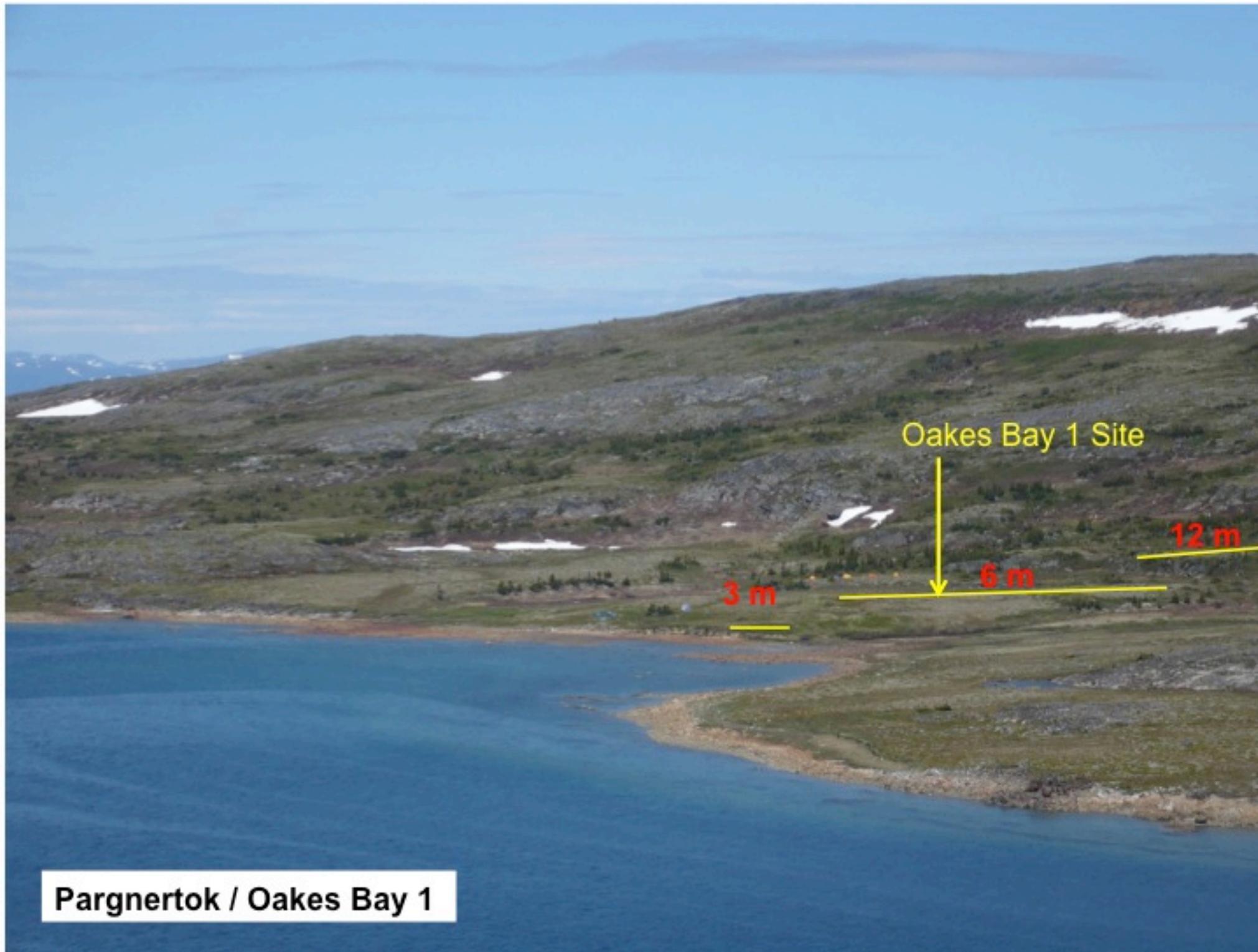
Inuit moved, at beginning of the 18th century, from their outer locations to inner islands and sheltered bays. These new sites provided a better access to a wider range of resources, including wood which might have been increasingly used as fuel during this period of LIA.



Winter site occupied before
circa. 1700

Winter site occupied between
circa. 1700 and 1850

Image: Visible Earth (<http://visibleearth.nasa.gov/>)



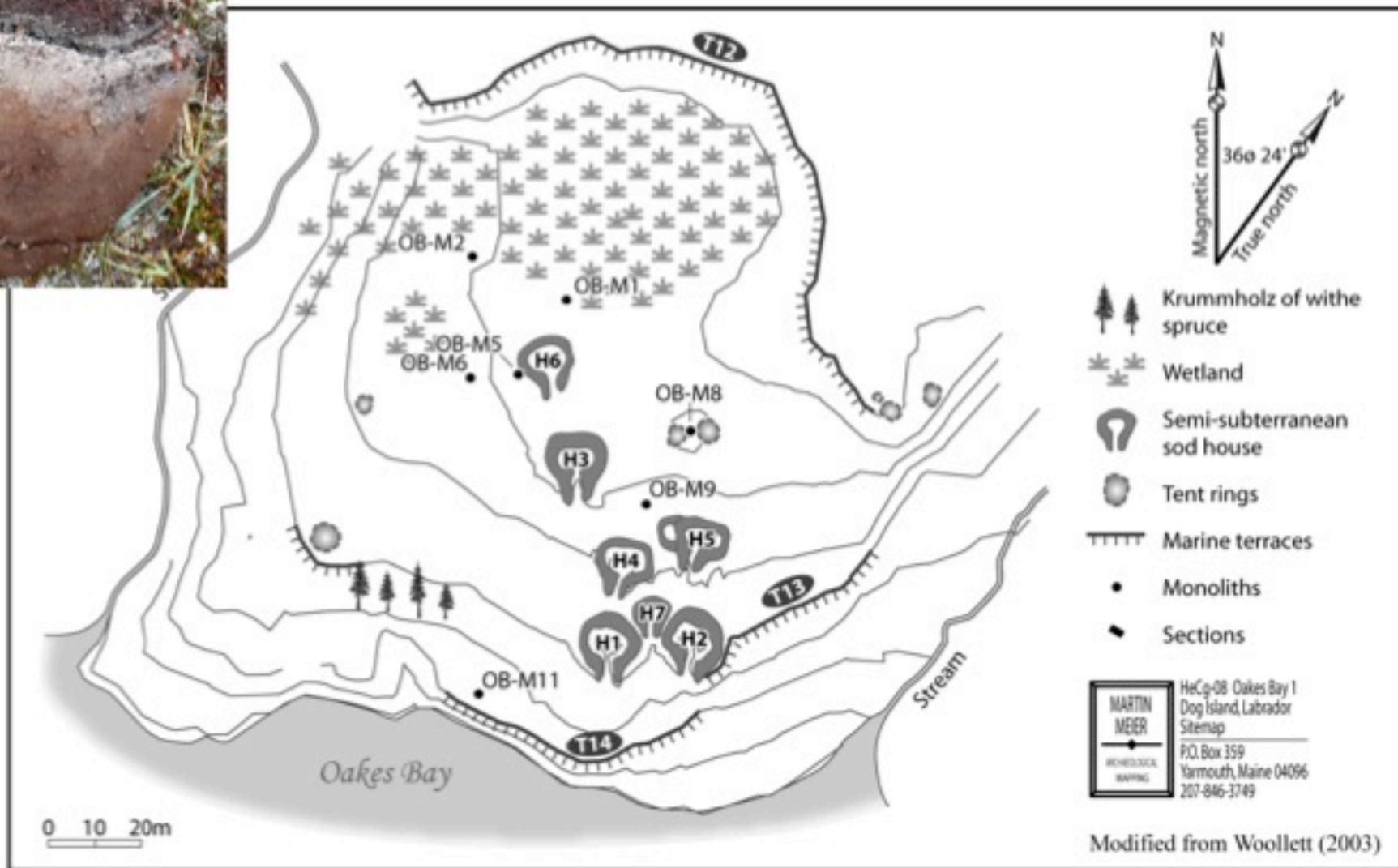
Oakes Bay 1 Site

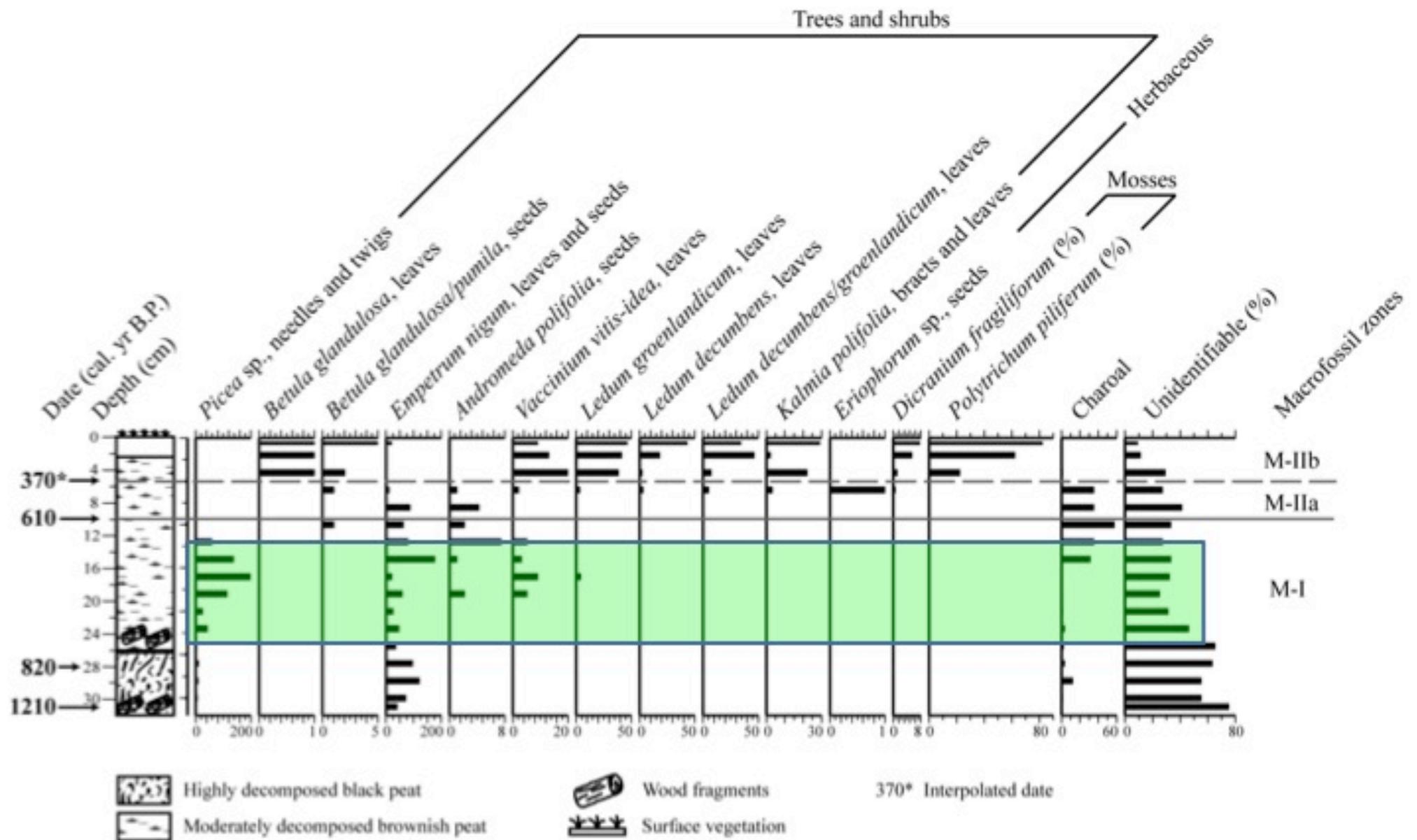
3 m

6 m

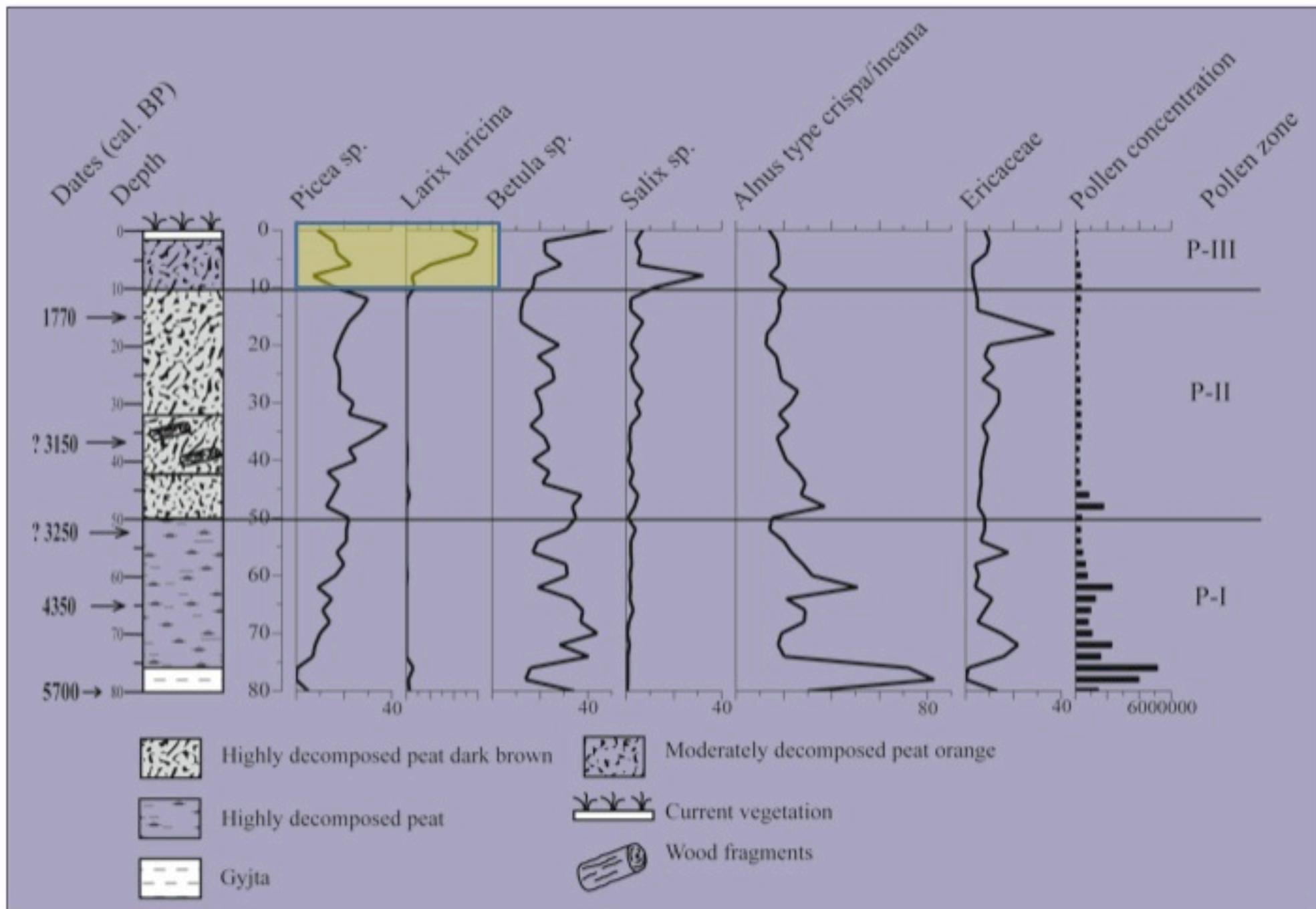
12 m

Pargnertok / Oakes Bay 1





Macrofossil diagram of OB-M8, Oakes Bay 1, Dog Island



Pollen diagram of tree and shrub species (%)





Clear cutting area, site Nain2

Photo: Isabel Lemus-Lauzon

**Kammāsuk,
circa 1920**

Photo: courtesy of
Katie Winters, Nain



At the end of the 18th century :
the arrival of the
Moravian missionaries
caused a changing
cultural and environmental
context.



Kammāsuk, 2011

Photo : Isabel
Lemus-Lauzon

Inuit resource harvesting
activities became increasingly
oriented towards providing
resources for, and obtaining
access to trade goods from,
European markets.



Source: Labrador Inuit through moravian eyes
Winter 1902

wood harvesting is still one of the major activities related to local resource use.

The majority of Nain households own a wood stove and wood remains the main heating source.

In order to retrieve wood, Nainimiut go “wooding” in the surrounding areas, mainly during winter



Photo: Harry Haye, Nain
Winter 2011

interviews with Inuit elders

Example:

“The population grew here, in the last 50-60-30 years or something like that, and the amount of consumption of firewood has increase. Because one person might go out and get 12 sticks of wood on a sled and come back, and you got 30 or 40 people doing this consistently, everyday almost, then you lose your trees. And so we have to go further and further and further “

« There’s no dry wood around anymore. It’s all been cut down within a two hours ride of ski-doo. Now people have to go further”

Summary

the significant human impact on Nain region : continuous exploitation during the last centuries transformed the forest landscape

Today, the decrease in wood harvesting in certain areas, combined with the effects of climate warming, allows the regrowth of trees.

Our ongoing work in dendrochronology (tree-ring study) and paleoecology (pollen and macrofossil analyses) will allow us to better understand the impact of wood harvesting on this subarctic borderline forest and its dynamics.

A photograph of a sunset over a large body of water, likely a lake or bay. The sun is a bright orange-red orb on the horizon, casting a long, thin reflection across the water. The sky transitions from a deep orange near the horizon to a pale blue at the top. In the foreground, the dark, silhouetted land is visible. The text "Thank you for your attention" is overlaid in a stylized, italicized, yellow font with a drop shadow effect.

Thank you for your attention

A model of the interior space of the semi-subterranean houses based on excavations and a summary of all interviews with elders of Inukjuak

