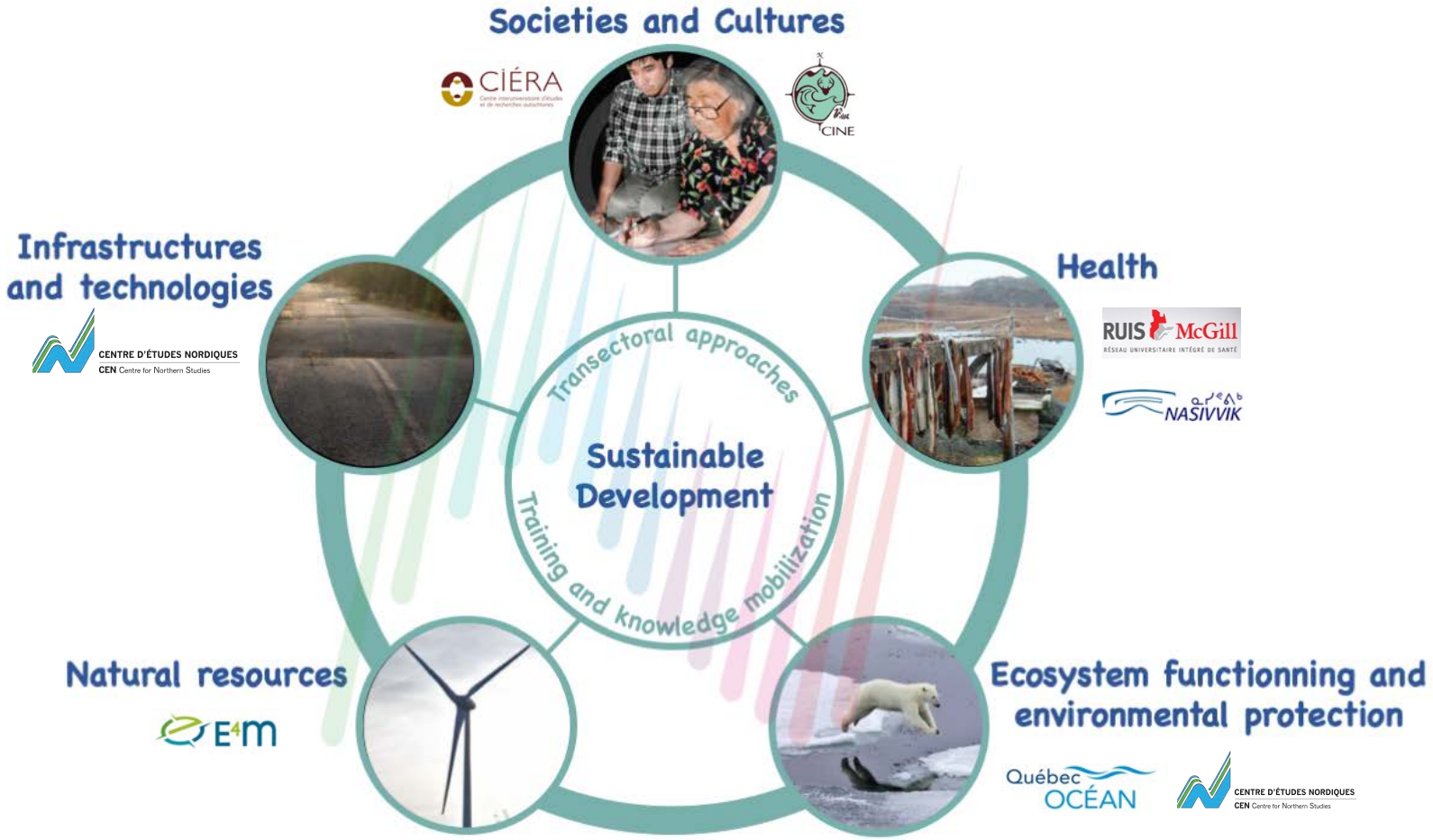
UNIVERSITÉ LAVAL

Jean-Éric Tremblay & Philippe Archambault
Marcel Babin, Louis Fortier, Frédéric Maps, Mélanie Lemire,
Patrick Lajeunesse, Connie Lovejoy, Ladd Johnson

Institut nordique
du Québec

Together for the North



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Sentinelle Nord

Québec OCÉAN

TAKUVIK

AMUNDSEN SCIENCE

UNIVERSITÉ DE SHERBROOKE · ÉTS · INRS UNIVERSITÉ DE RECHERCHE · UNIVERSITÉ LAVAL · McGill · Concordia University · Polytechnique Montréal · Université de Montréal · Université du Québec · UQÀM · UQAR · Université du Québec à Rimouski · Université du Québec à Trois-Rivières · UQAT · UQAC · Université du Québec à Chicoutimi · TÉLUQ

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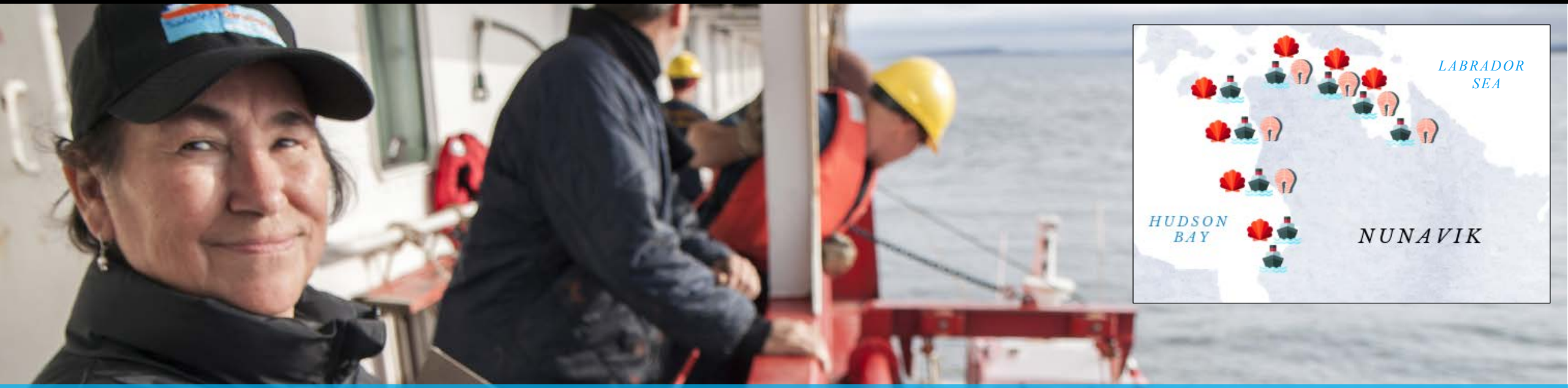
BriGHT

Bridging Global Change, Inuit Health and the Transforming Arctic Ocean

Sentinel North

CANADA FIRST RESEARCH EXCELLENCE FUND



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Québec OCÉAN

CHU de Québec Centre de recherche

Forêts, Faune et Parcs Québec

Trans BIOTech Centre de recherche et de transfert en biotechnologies

ᖃᓄᐃᓕᓕᐸᑦ? Qanuilirpitaa? NUNAVIK 2017

Société Makivik Makivik Corporation

TAKUVIK

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Institut national de santé publique Québec

Pêches et Océans Canada

AMUNDSEN SCIENCE

RÉGIE RÉGIONALE DE LA SANTÉ ET DES SERVICES SOCIAUX DU NUNAVIK
NUNAVIK REGIONAL BOARD OF HEALTH AND SOCIAL SERVICES

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BriGHT

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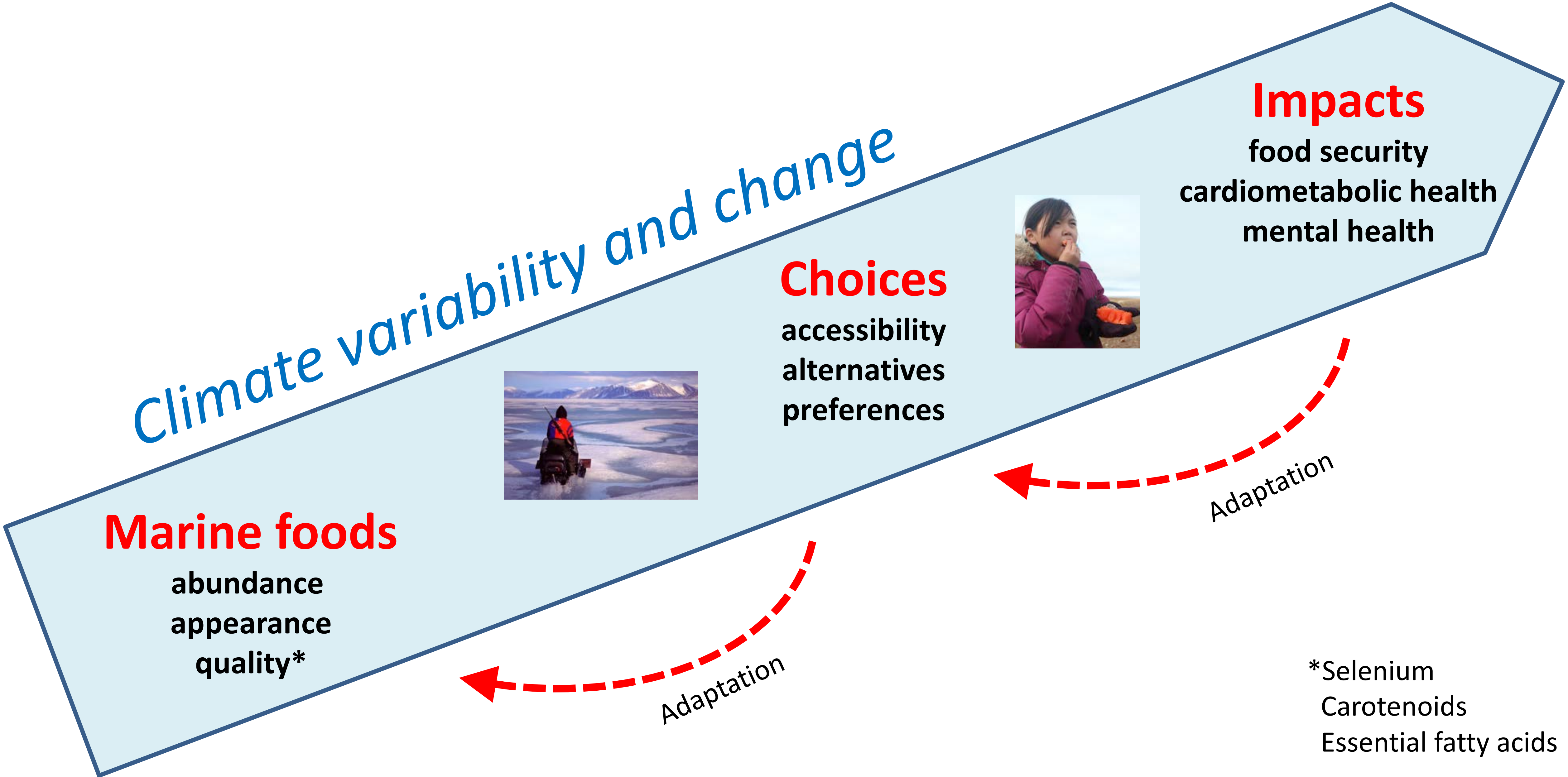
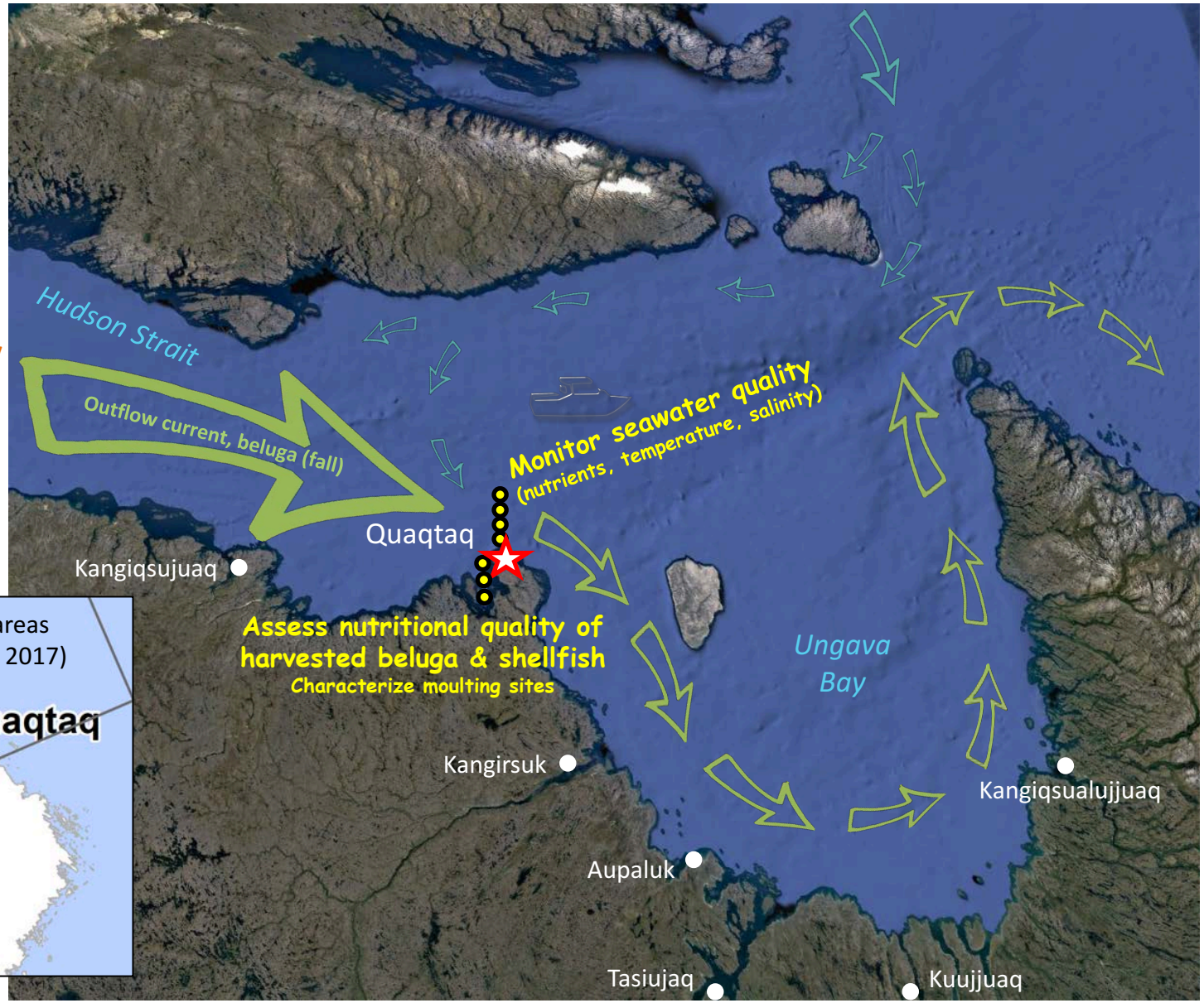


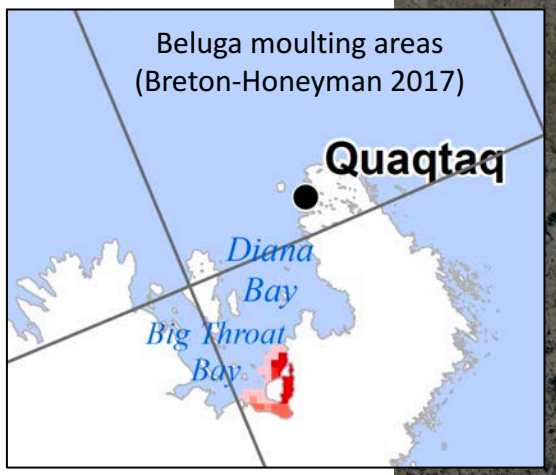
Institut nordique du Québec

Enabling marine time-series in Quaqtaq & Qikiqtarjuaq

Quaqtaq is directly exposed to the massive outflow from Hudson Bay (HB), which affects the living environment of marine animals that the community harvests for food.

Because of ocean connectivity (outflow current), a project focusing on Quaqtaq is relevant to other communities in Hudson Strait and Ungava Bay





Work with NMRWB and the LNUK (Hudson Strait Pilot Project) to relate the composition of beluga tissues (selenium, omega-3, mercury, stable isotopes) to observations made by hunters regarding the timing of the hunt and stock of origin (visual cues and genetic markers for WHB and EHB stocks)

Shellfish are:
- eaten directly by Quaqtamiut
- an element in food insecurity prevention strategies
- possibly a major source of selenium for beluga and walrus.
- good indicators of seawater quality since they filter it.

Sediment, rocks and benthic organisms are possibly important sources of selenoneine-producing bacteria for beluga skin.

Joint CFI Proposal for two research stations in Baffin Bay

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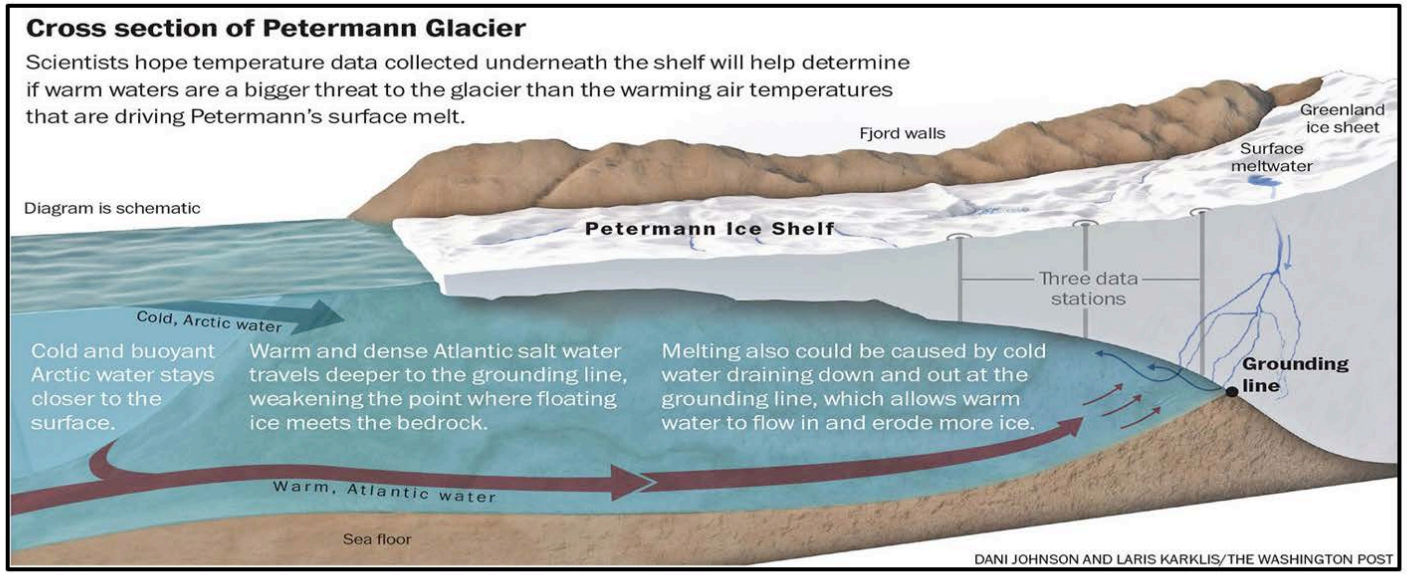
CENTRE D'ÉTUDES NORDIQUES
CEN Centre for Northern Studies

Chair on the robotic exploration of the dark Arctic Ocean

- Ongoing destabilization of the Greenland Ice Sheet
- Observations of sea ice and benthos
- Methane emissions under Arctic sea ice.
- Geology of Canadian ice-covered seas.

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CORE RESEARCH PROGRAM

16 Projects with Marine Components

ArcticNet

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- Understanding climate change impacts on fish species in Ungava Bay (Kuujjuaq, Quebec)- **PI: Michael Power**, University of Waterloo
- ArcticFish: Fisheries resources in the changing Canadian Arctic Ocean- **PI: Maxime Geoffroy**, Fisheries and Marine Institute of Memorial University
- Community-based research on winter mixing, nutrients and biological productivity in the coastal domain of the Hudson Bay system- **PI: Zou Zou Kuzyk**, University of Manitoba
- Using Co-Produced Knowledge to Understand and Manage Subsistence Marine Harvests in a Changing Climate- **PI: Lisa Loseto**, University of Manitoba
- GO-Ice: Glacier-Ocean-Iceberg Dynamics in a Changing Arctic- **PI: Luke Copland**, University of Ottawa
- Sustainable development of community Greenland halibut fisheries in the Eastern Canadian Arctic- **PI: Nigel E. Hussey**, University of Windsor
- A co-operative, multi-platform effort to observe marine biogeochemical processes and address Arctic community research priorities- **PI: Brent Else**, University of Calgary

CORE RESEARCH PROGRAM

16 Projects with Marine Components

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- Mitigating Arctic Shipping Risks Through Improved Prediction of Conditions Leading to Ship Besetment in
- Pressured Ice: A Case Study in Hudson Strait- **PI: Andrea Scott**, University of Waterloo

- Arctic mapping and marine geology- **PI: Jean-Carlos Montero-Serrano**, ISMER-UQAR

- Towards a marine management plan for Nunatsiavut: Coastal ecosystem research in support of priority concerns
- of Inuit- **Pis: Tanya Brown**, University of Windsor & **Max Liboiron**, Memorial University

- Arctic Shipping and Transportation in a Rapidly Changing Arctic- **PI: Jackie Dawson**, University of Ottawa

- Downscaling future oceanography projections in the Arctic and Subarctic- **PI: Eric Oliver**, Dalhousie University

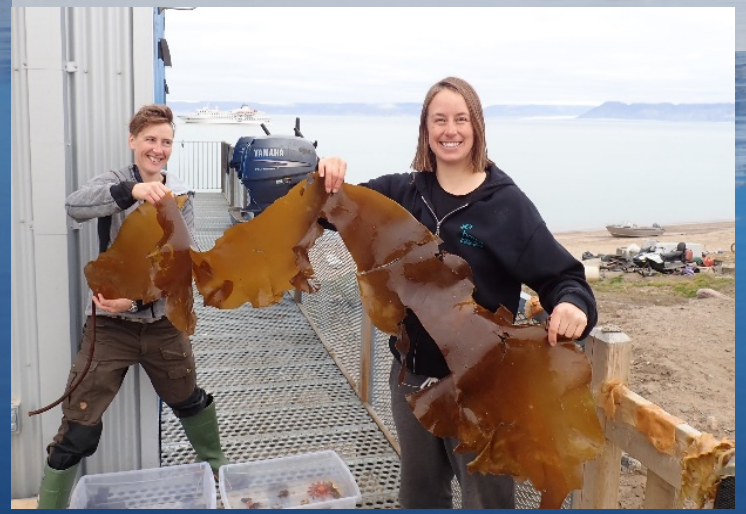
- Understanding the effects of climate change and industrial development on contaminant processes and exposure in the Canadian Arctic marine ecosystem- **PI: Gary Stern**, University of Manitoba

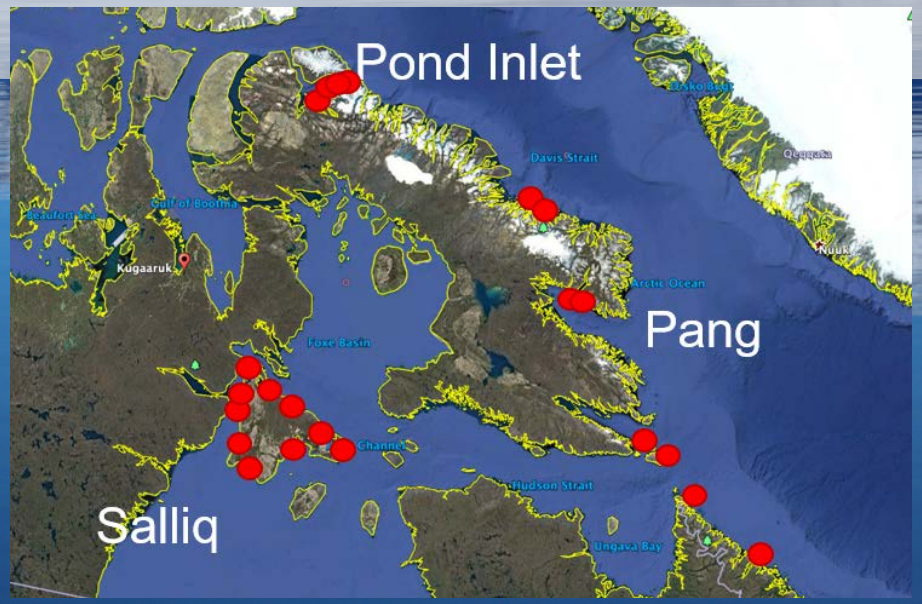
- Nunataryuk - Permafrost thaw and the changing Arctic coast: the MacKenzie delta and coastal waters **sampling-PI: Marcel Babin**, Université Laval

Fate of kelp forests in a rapidly changing Arctic (ArcticKelp)

P. Archambault, K. Filbee-Dexter, P. Snelgrove, L. Johnson, C. Nozais, S Bélanger, C. McKindsey, K. Howland, S. Ziegler

1. Create predictive, actual and anticipated maps of Arctic kelp coverage (or distribution) in Canadian Arctic;
2. Assess how changing Arctic environmental conditions impact kelp eco-physiological performances;
3. Quantify the stability of these ecosystems by conducting manipulative clearing experiments;
4. Estimate the ecological functions and services provided by kelp forests for Arctic benthic ecosystems and societies ?





Arctic Substrates

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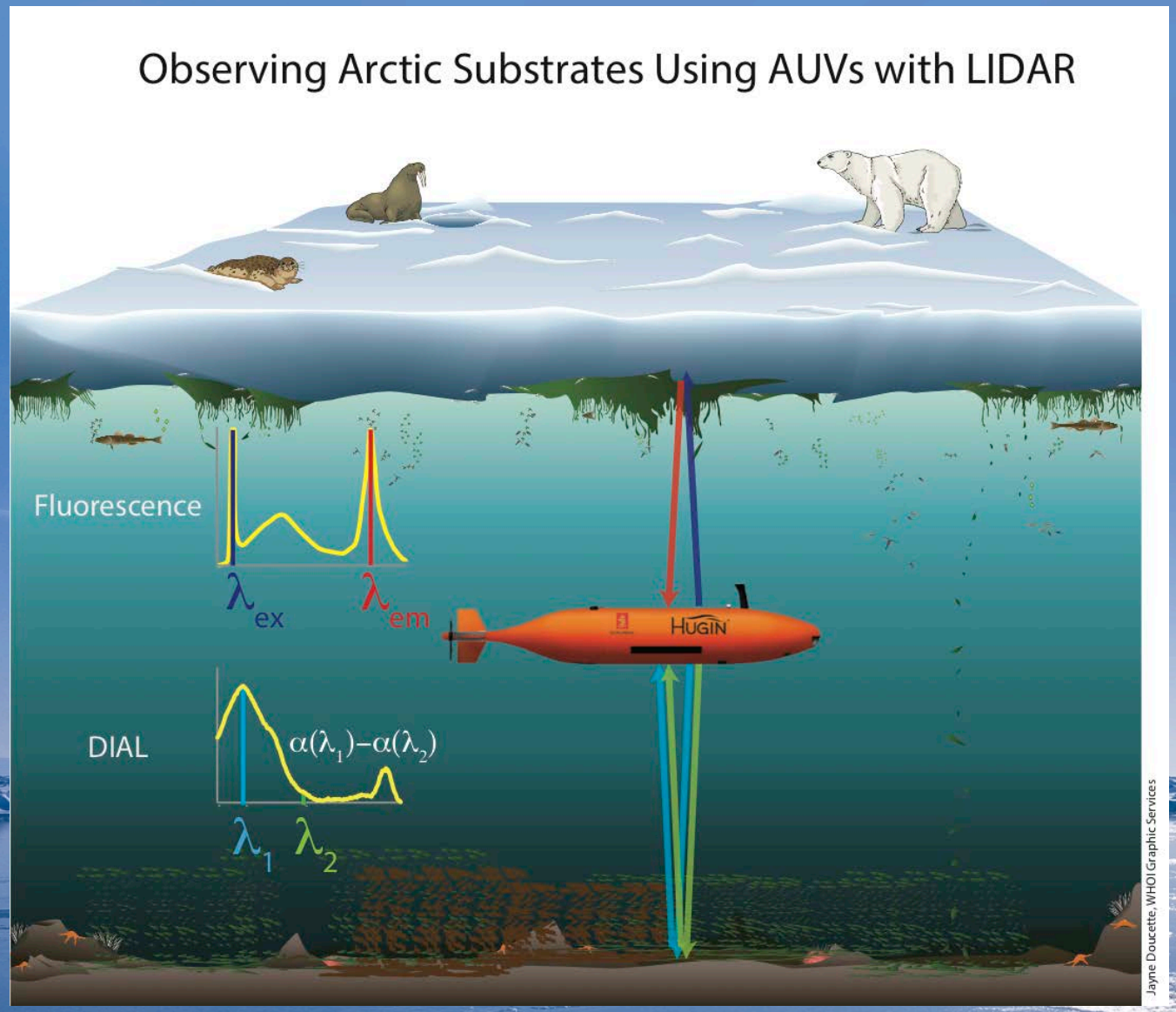
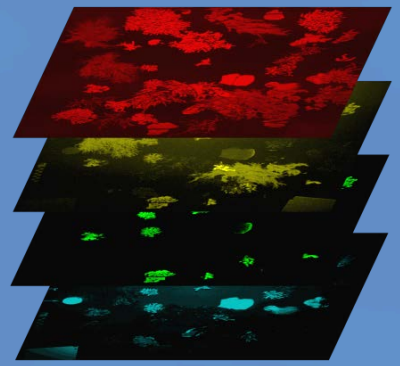
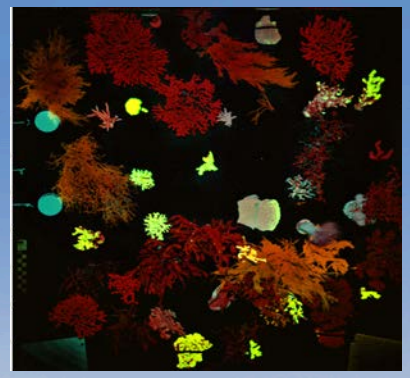
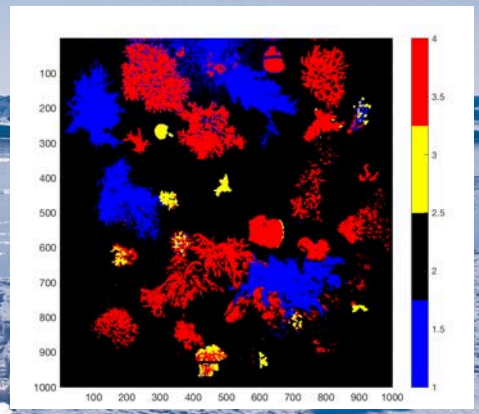
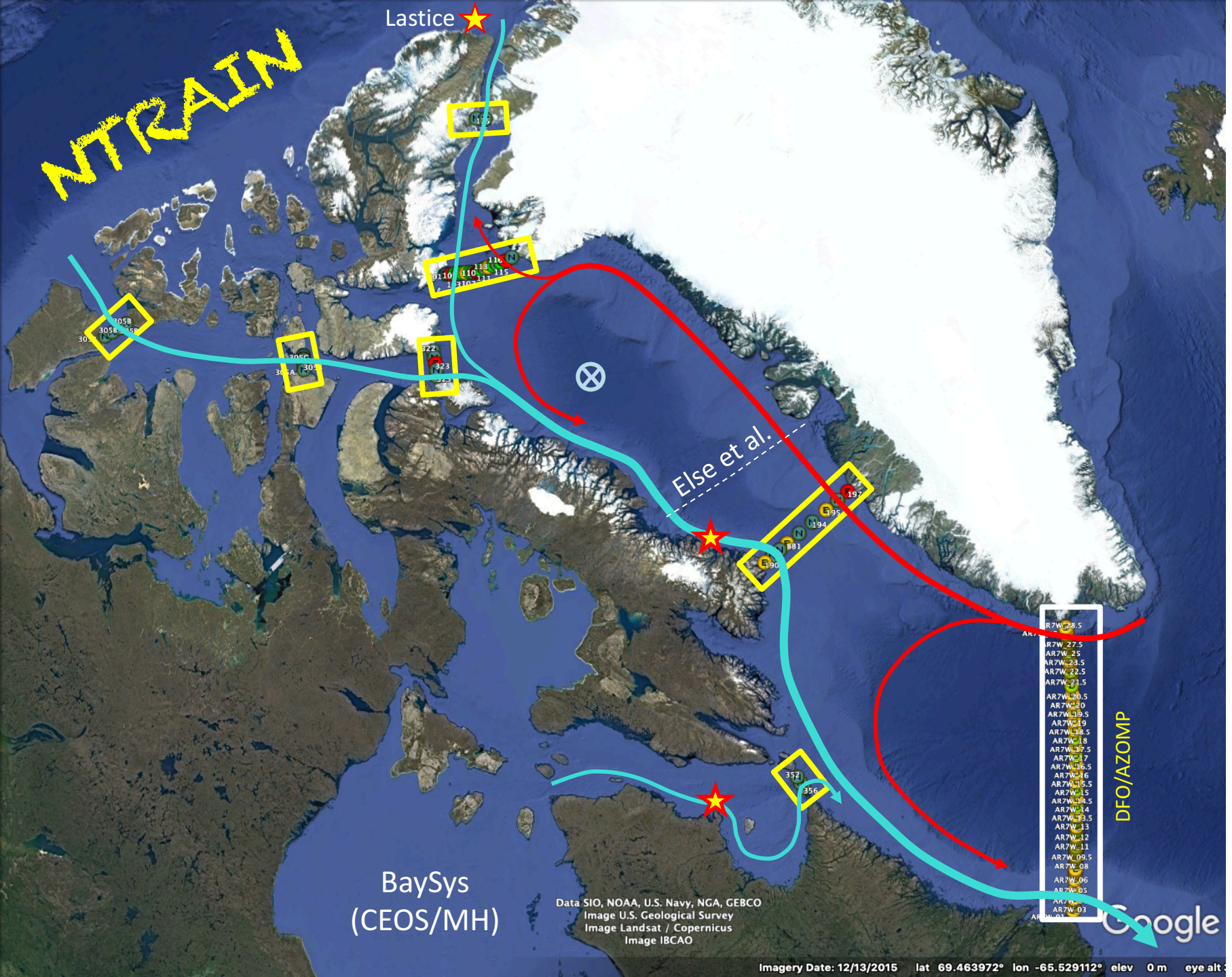








Macroalgae targets can be classified according to fluorescence and differential absorption from these “image stacks”



Nutrient **T**ransports **A**cross the **I**nuit **N**unangat

- Obtain a comprehensive view of micro & macro nutrient transports across CA and Baffin Bay/Labrador Sea
- Evaluate the flow of microbes and genes (N-cycling, FA synthesis) across major oceanic gateways
- Interpret these flows with respect to processes taking place in remote source waters (through national & international networking)
- Assess the biological carrying capacity of the region and its sensitivity to climate change