Distribution Patterns of Canadian Beaufort Shelf Macrobenthos

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Outline of this Presentation

• Objective
• Macrobenthos sampling
• Kugmallit Valley transect: Ice keel scouring of seafloor
• Cape Bathurst polynya: Upwelling
• Permafrost degradation and mud volcanoes (pingo-like features)
• Summary
Arctic benthic communities: are strongly coupled to the pelagic system; may be highly productive; provide essential food resources for sea birds and marine mammals.
Objectives

- Document the spatial and temporal variability in benthic community structure.
  - regional scale: Beaufort shelf
  - specific seabed features: ice keel scours mud volcanoes
Macrobenthic Sampling

CCGS Nahidik

0.25 m² Boxcore
Multibeam Seabed Profiling
Video Camera
Kugmallit Valley Transect
Nearshore Community (< 20 m)
Main shelf community (35 to 200 m)
Pressure Ridge and Ice Keel Scours

Draft \( \leq 50 \) m
Inside 24 m Isobath: 97% Disturbed in <100 Years

1. Fast Ice Zone B
   < 20 m

2. Flaw Lead Zone A, C, D, E
   20-35 m

3. Main Shelf Zone F, G
   35-200 m
Scour recolonization: western Arctic

Need to follow recolonization of existing scours and add scours in the 8-10 yr age group

Polychaete data only
Polynya

William Williams, Institute of Ocean Sciences
Cape Bathurst Polynya
Need to determine the extent of this benthic community.
Mud Volcanoes (Pingo-like Features)
SE to NW profile of Kaglulik Mud Volcano. Seistec Data; 2450730, Line 45, Water Depth 43-44m.
Mud Volcanoes (Pingo-like Features)
Mud Volcano Community

- Chone sp.
- Prionospio cirrifera
- Hydroid
- Bryozoan
- Goesia depressa
- Podocopid sp. 2
- Cyprideis sorbyana
- Portlandia arctica
Mud volcano communities differ from the reference community.
Summary

• Sea ice scouring influences nearshore benthic community structure
• Upwelling associated with sea ice motion creates a distinct nearshore benthic community at Cape Bathurst
• Venting of methane gas associated with mud volcanoes creates distinct nearshore benthic communities
Thank You
Merci
Questions?