Laurentide Ice vs. Beringia: Coastal permafrost landscape development in the southern Beaufort Sea area

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Key Questions
- Where is the Gumik formation?
- Where is the Ermian?
- Herschel Basin: Pro-glacial lake vs. paleo-Babbage River Delta?

What do we know?
- Yukon Coastal Plain is easternmost margin of Beringia
- Exposed sediments are terrestrial only
- Alluvial-proluvial plain in Late Wisconsin
- Rapid climate warming in early Holocene (HTM)
- Extensive carbon sequestration
- Organic carbon stored as POC & DOC
- Middle/Late Holocene permafrost aggradation

Trout Lake (162 m asl)
- Lakes formed directly beyond the glacial margin in Beringia 16 cal ka BP
- Pronounced Younger Dryas record
- HTM subdued
- Precipitation-limited vegetation spread
- Middle/Late Holocene paludification due to permafrost aggradation

What do we know?
- Herschel Island is MIS 2 push moraine
- Likely late glaciation ~16.2 cal ka BP
- Large masses of buried glacier ice
- Late Wisconsinan ice wedge preserved
- Rapid climate warming in early Holocene (HTM) → Regional thaw unconformity → Rapid coastal erosion

16 ka lake record

Scheme of Late Wisconsinan-Holocene landscape dynamics showing the main stages of sediment deposition, ground ice formation, and degradation beyond the LIS maximum extent