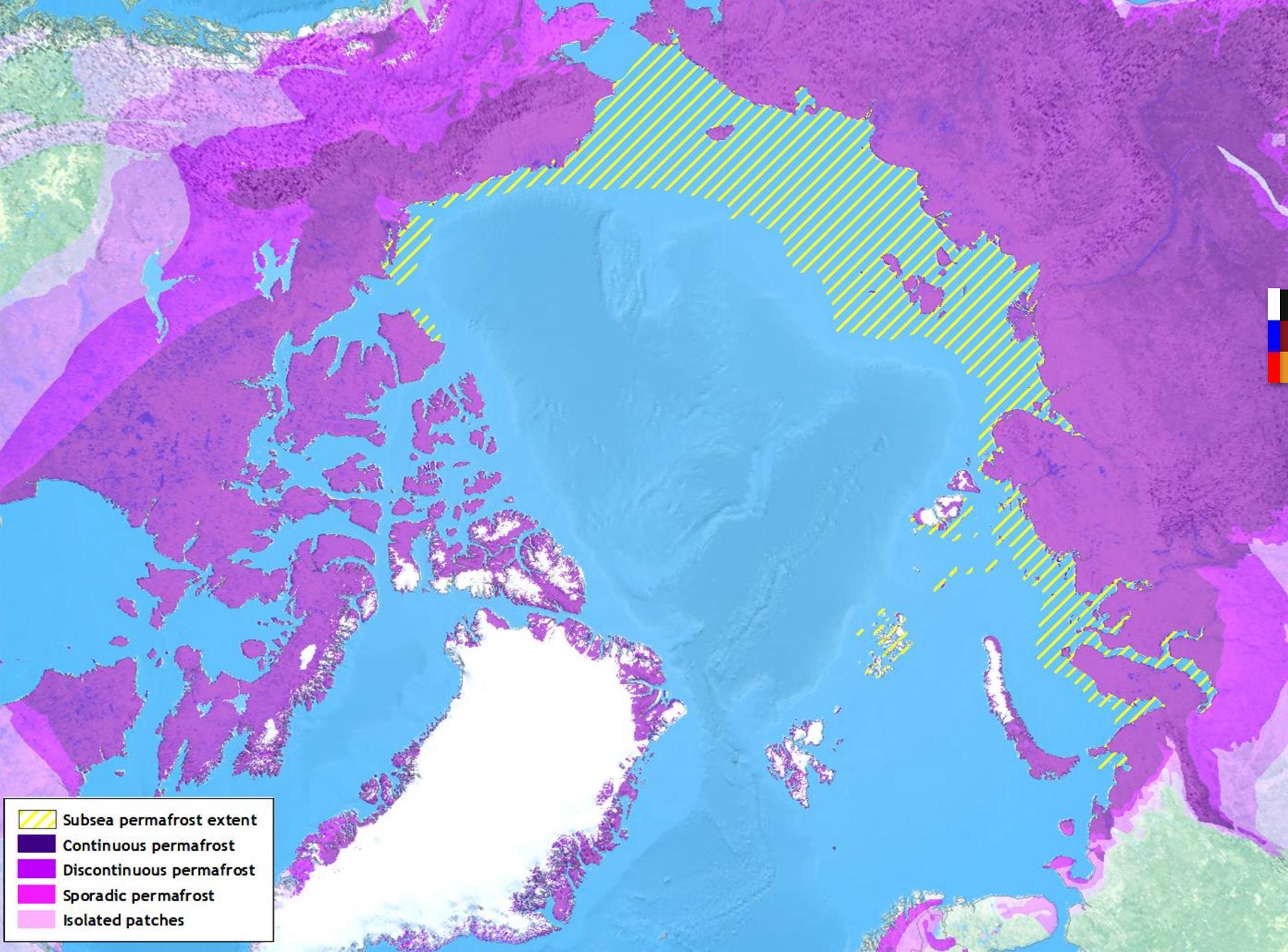


Subsea Permafrost

Подводная Мерзлота

Mikhail N. Grigoriev, Georgy Cherkashov,
Paul Overduin, Alexey Portnov

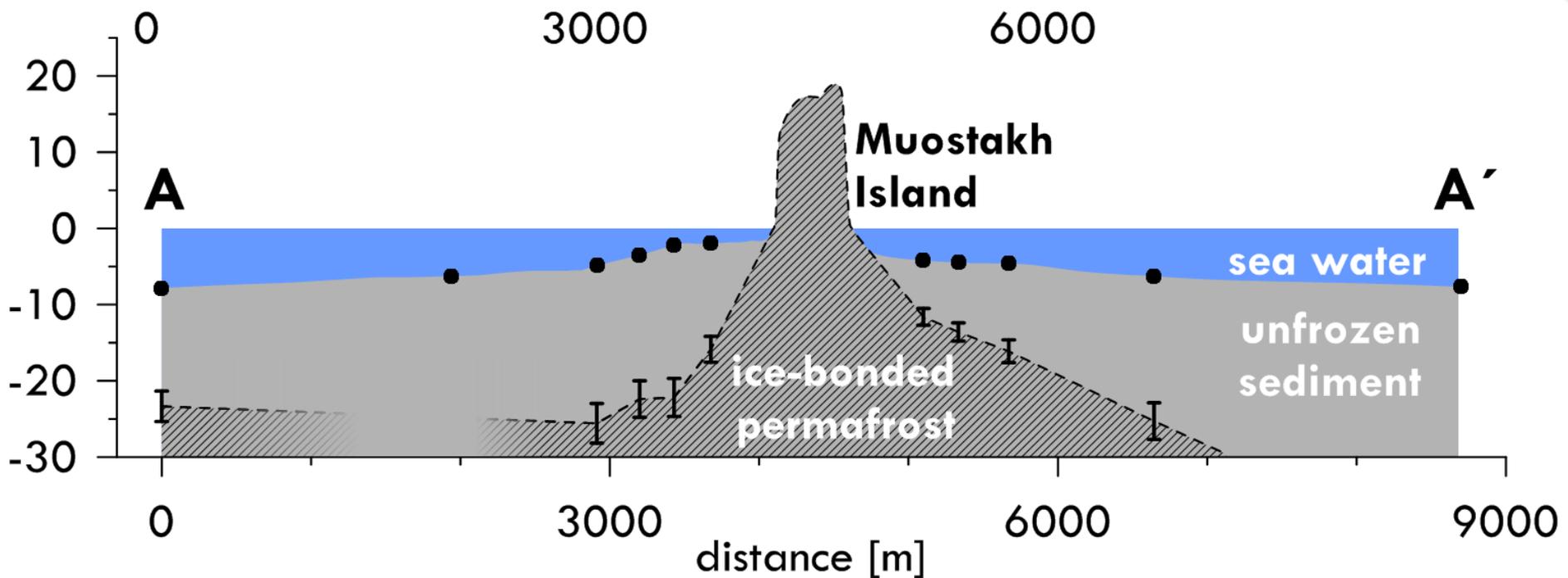
MPI: Mel'nikov Permafrost Institute, Siberian Branch Russian Academy of Sciences, Yakutsk
JSC MAGE: Marine Arctic Geophysical Expedition, Murmansk
CAGE: Centre for Arctic Gas Hydrate, Environment and Climate, Tromsø
AWI: Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Potsdam
GFZ: Helmholtz Centre Potsdam GFZ German Research Centre for Geosciences



-  Subsea permafrost extent
-  Continuous permafrost
-  Discontinuous permafrost
-  Sporadic permafrost
-  Isolated patches

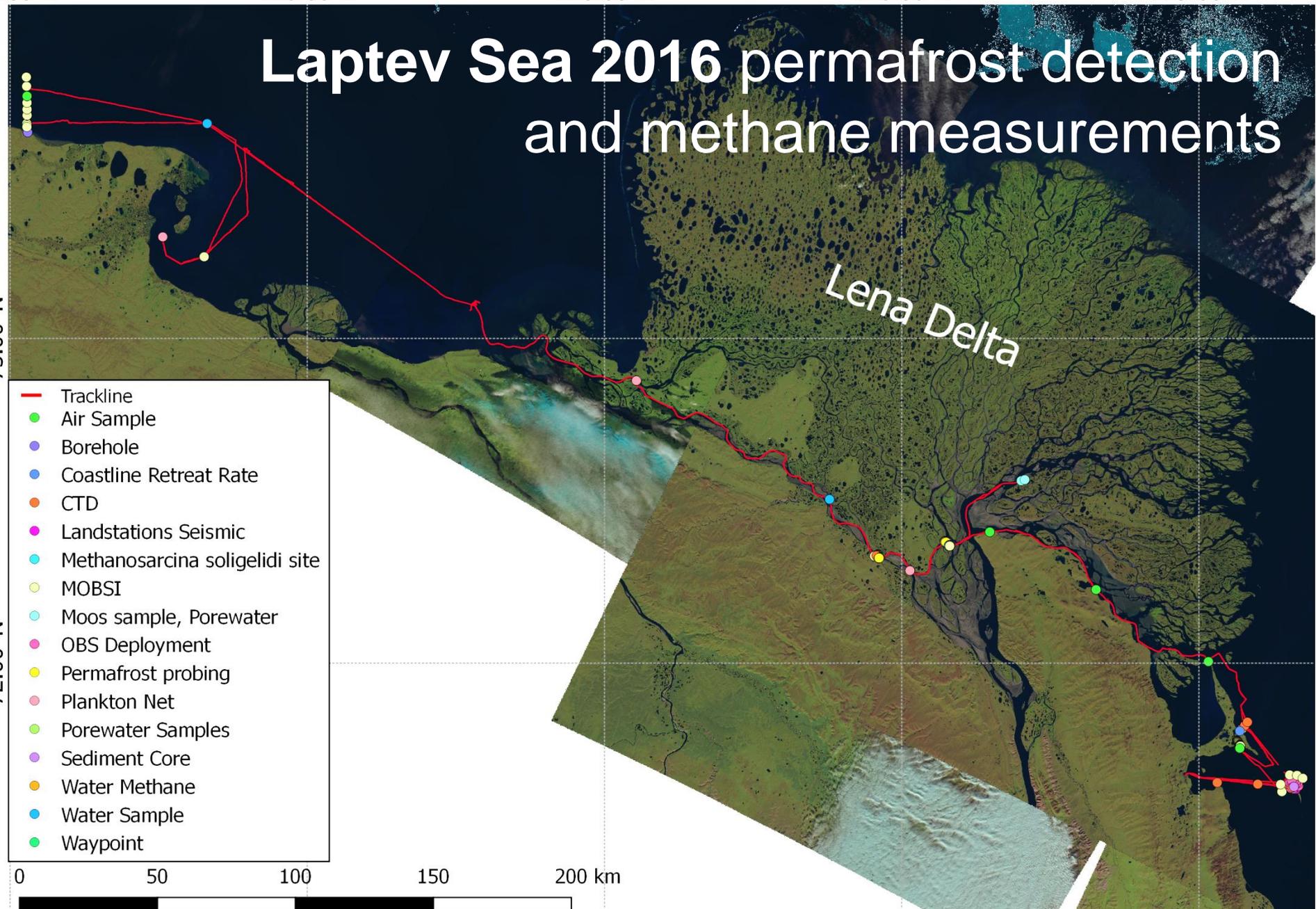
Results from 2015

Detecting submarine permafrost thaw with a passive seismic method



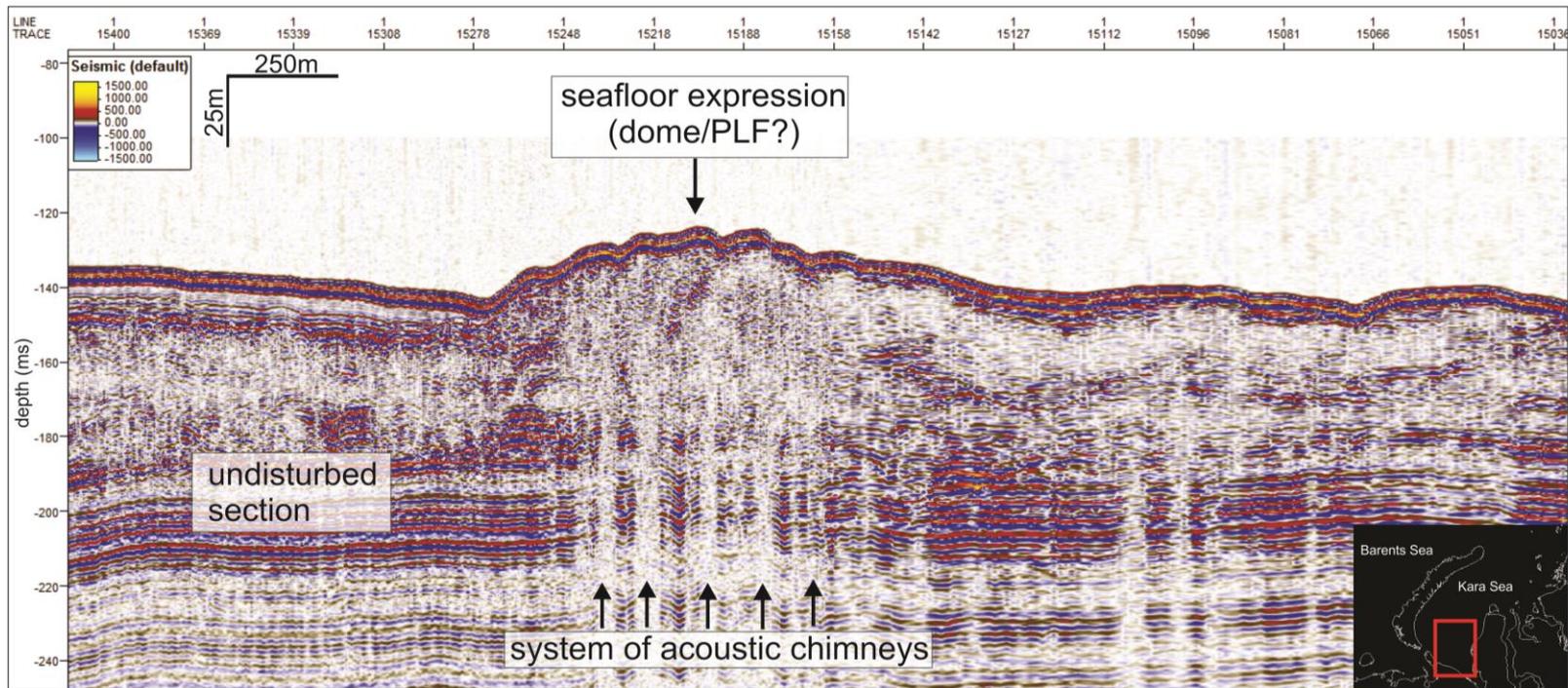
120.00°E 123.00°E 126.00°E 129.00°E

Laptev Sea 2016 permafrost detection and methane measurements



Recent results

Kara Sea, sub-bottom profiling shows gas emission

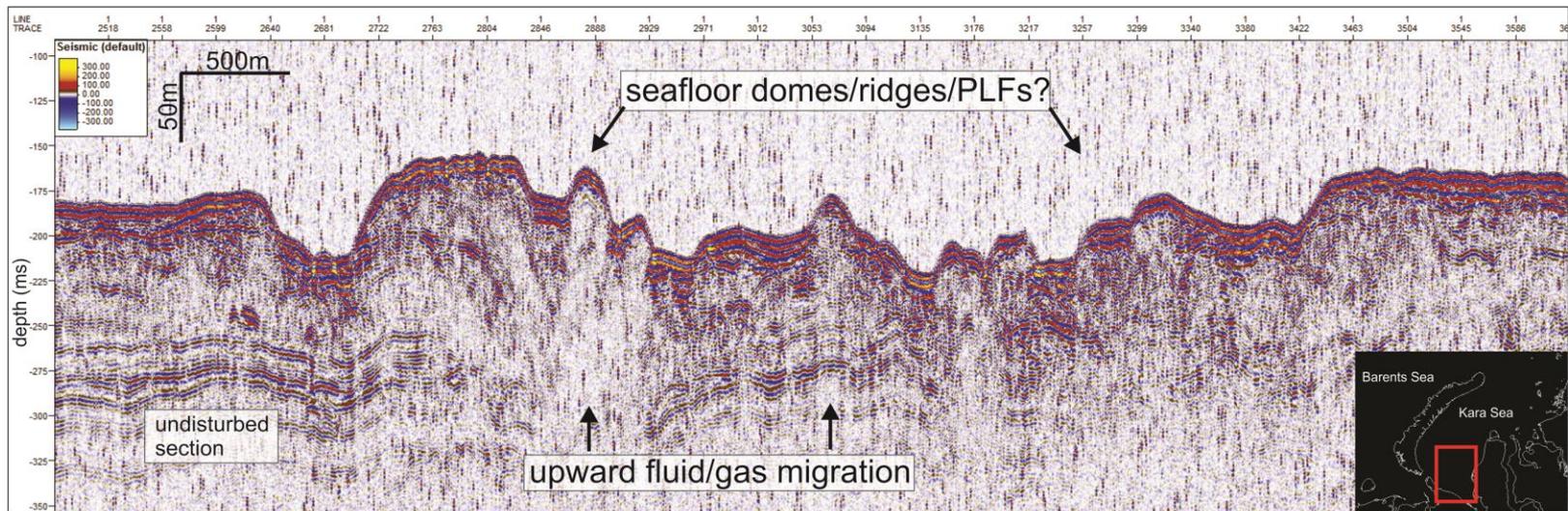


JSC MAGE: Marine Arctic Geophysical Expedition, Murmansk

CAGE: Centre for Arctic Gas Hydrate, Environment and Climate, Tromsø

Recent results

Kara Sea, sub-bottom profiling shows gas emission and possible permafrost degradation

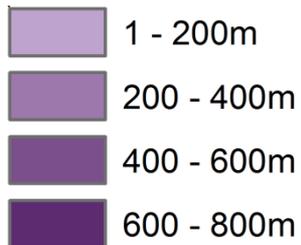


JSC MAGE: Marine Arctic Geophysical Expedition, Murmansk

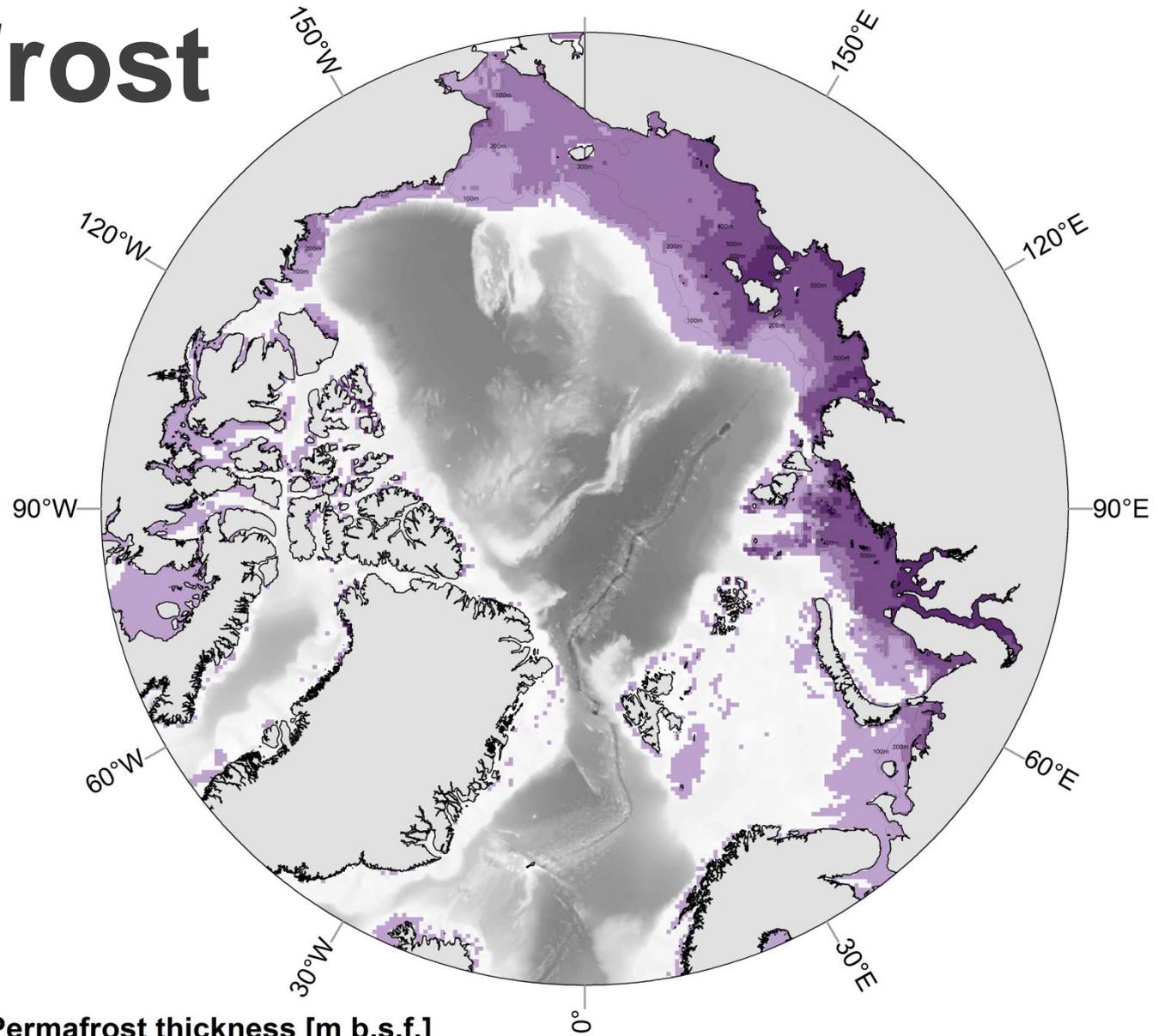
CAGE: Centre for Arctic Gas Hydrate, Environment and Climate, Tromsø

Ongoing work: subsea permafrost model

Permafrost depth below surface [m]



Permafrost thickness [m b.s.f.]





- 
- For subsea permafrost on Arctic Shelf and along the Arctic Ocean coast, Siberia is the most important region
 - In the context of strong partnerships, capacity for scientific drilling and marine expeditions are required to push science forward
 - Priority should be given to hot spots of change, where unexpected consequences arise – permafrost and greenhouse gas dynamics on the shelf are a perfect example