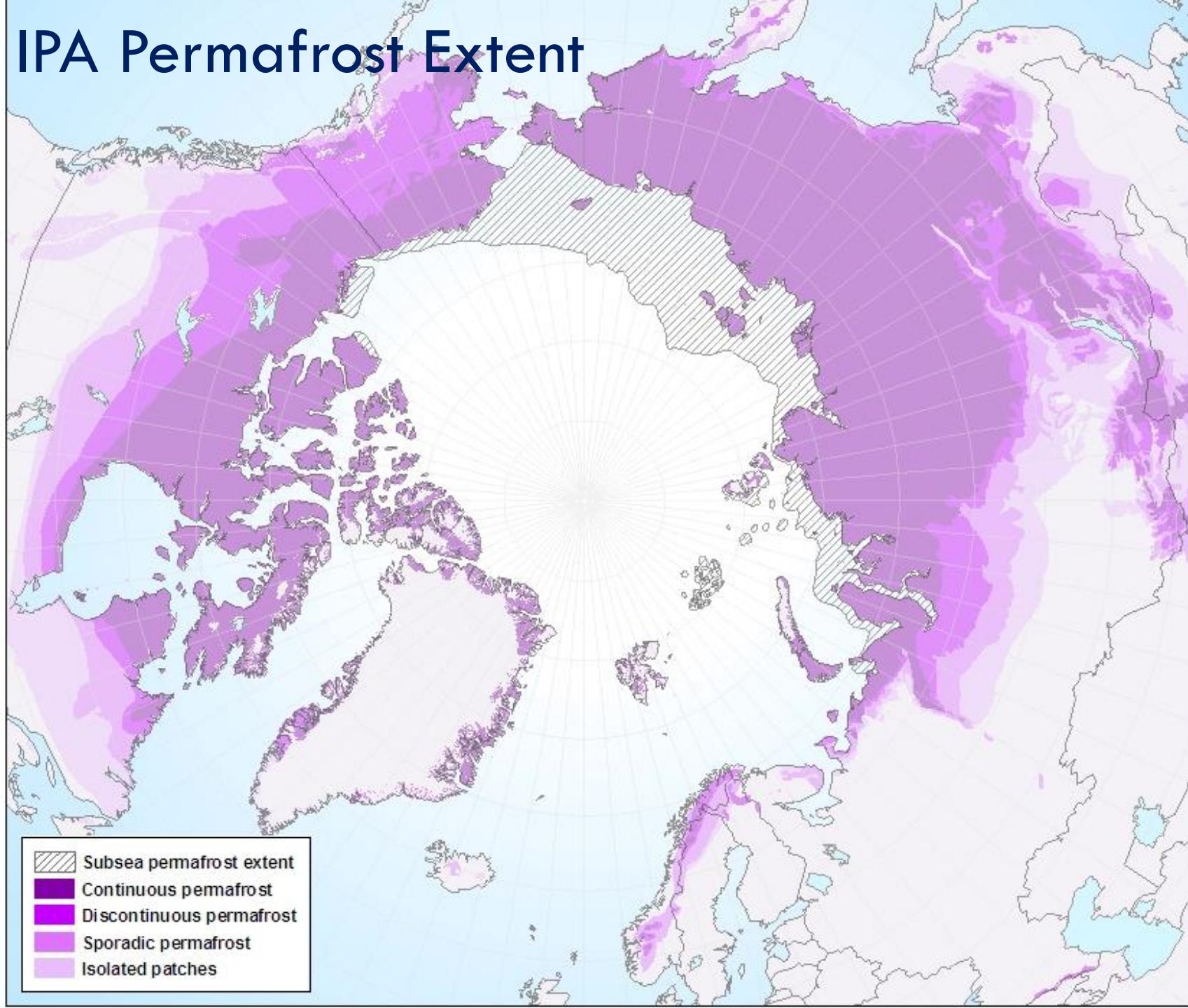


# Shallow geophysical surveys of submarine permafrost beneath the arctic coastal shoreface

P. P. Overduin, AWI Potsdam

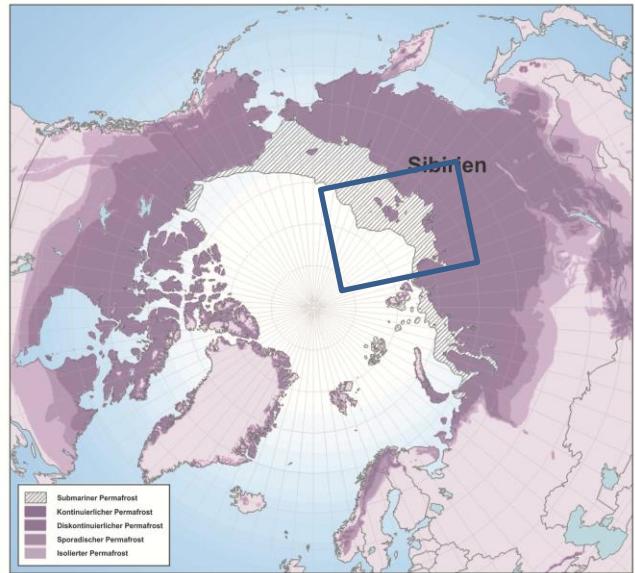
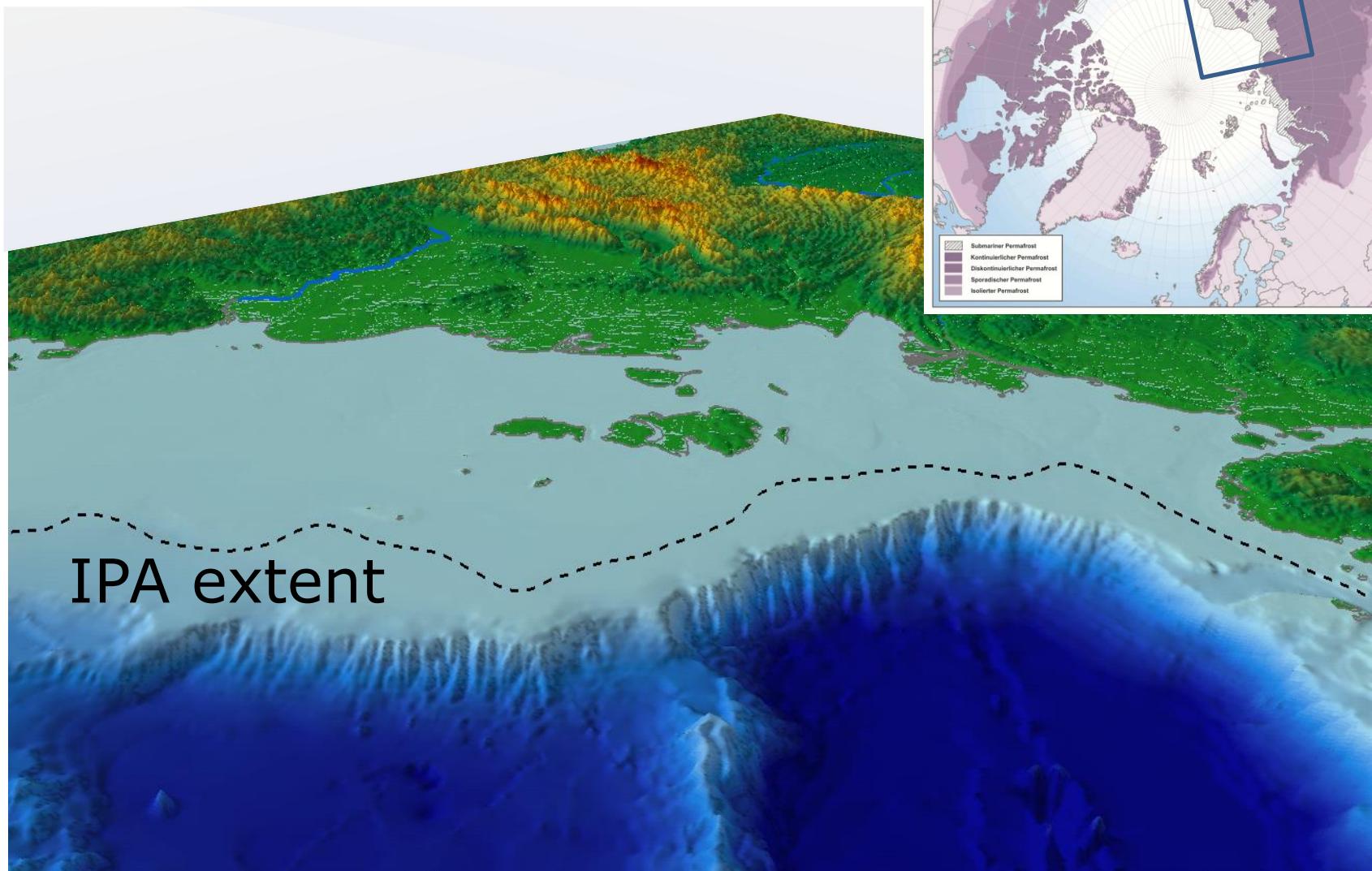
M. N. Grigoriev, Melnikov Permafrost  
Institute Yakutsk

# IPA Permafrost Extent



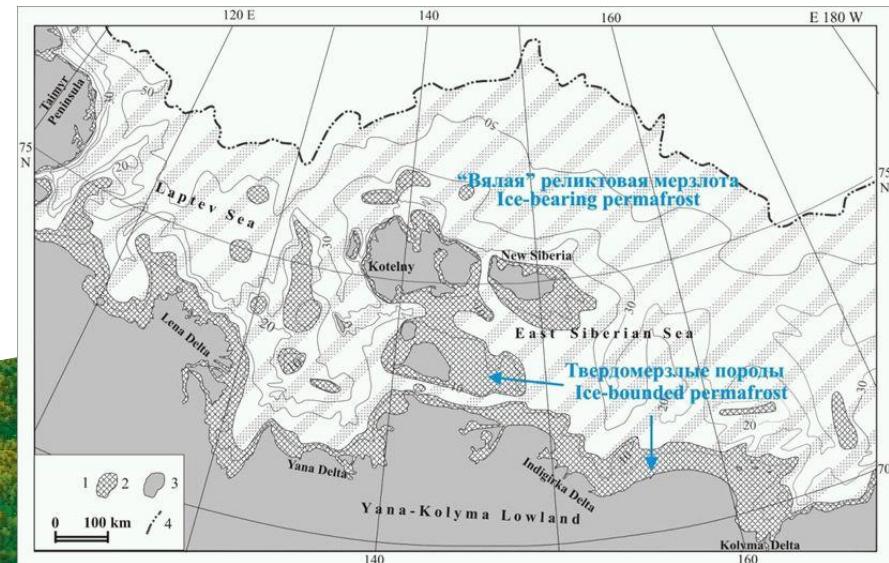
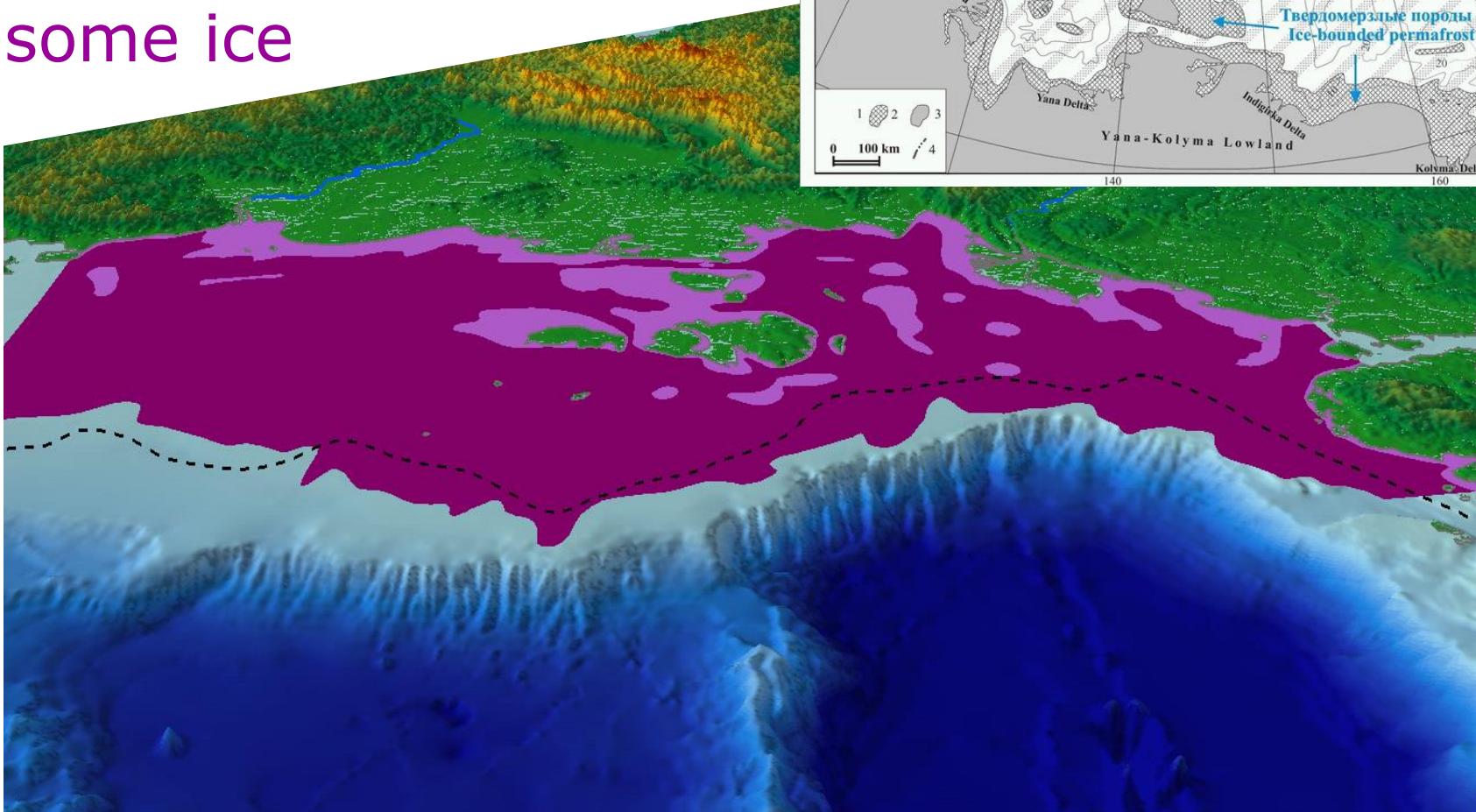
Subsea permafrost extent
Continuous permafrost
Discontinuous permafrost
Sporadic permafrost
Isolated patches

# IPA Permafrost Extent East Siberian Shelf



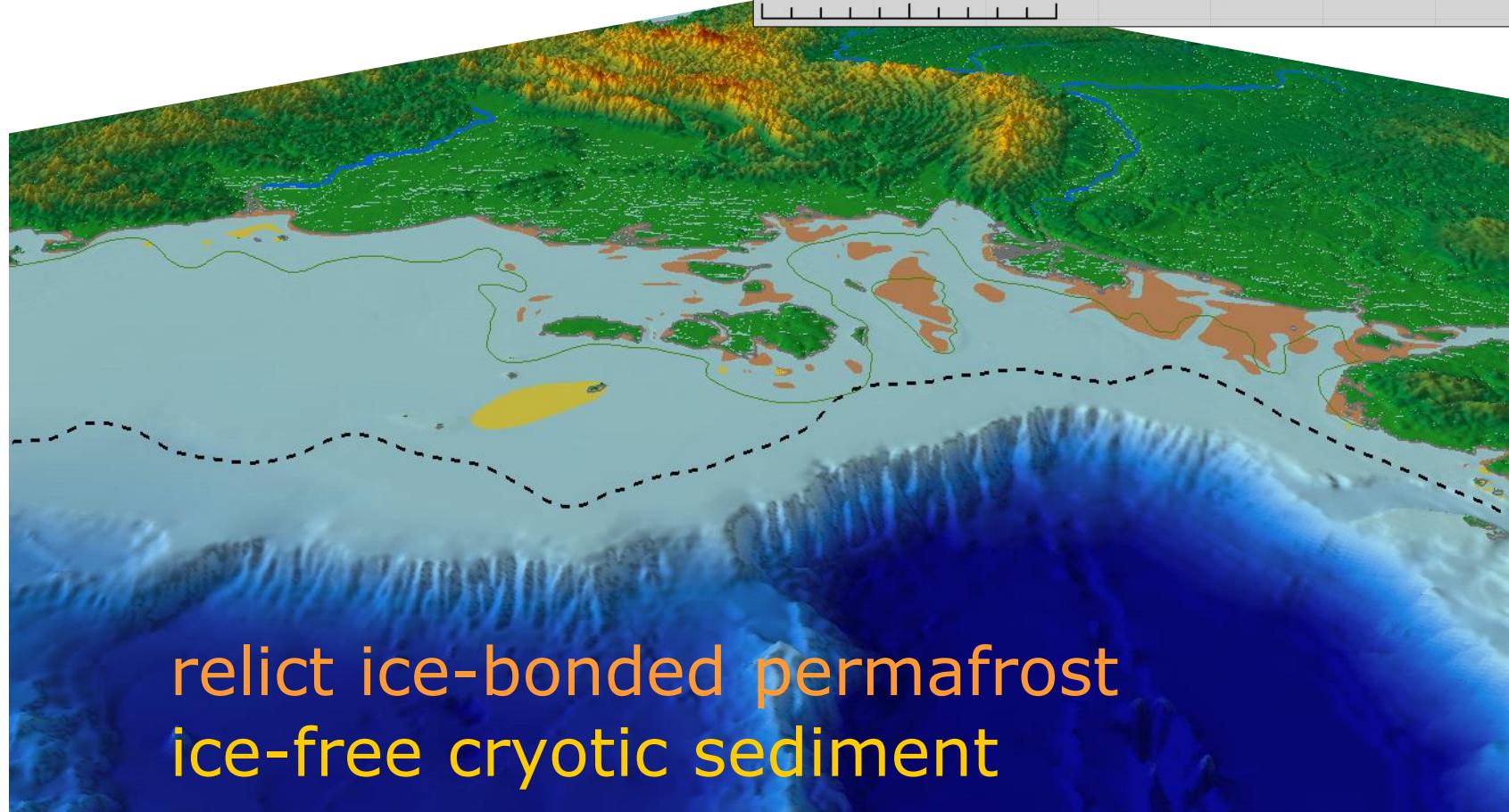
Brown et al. (1997)

# Modelled Extent from Romanovskii ice-bonded some ice



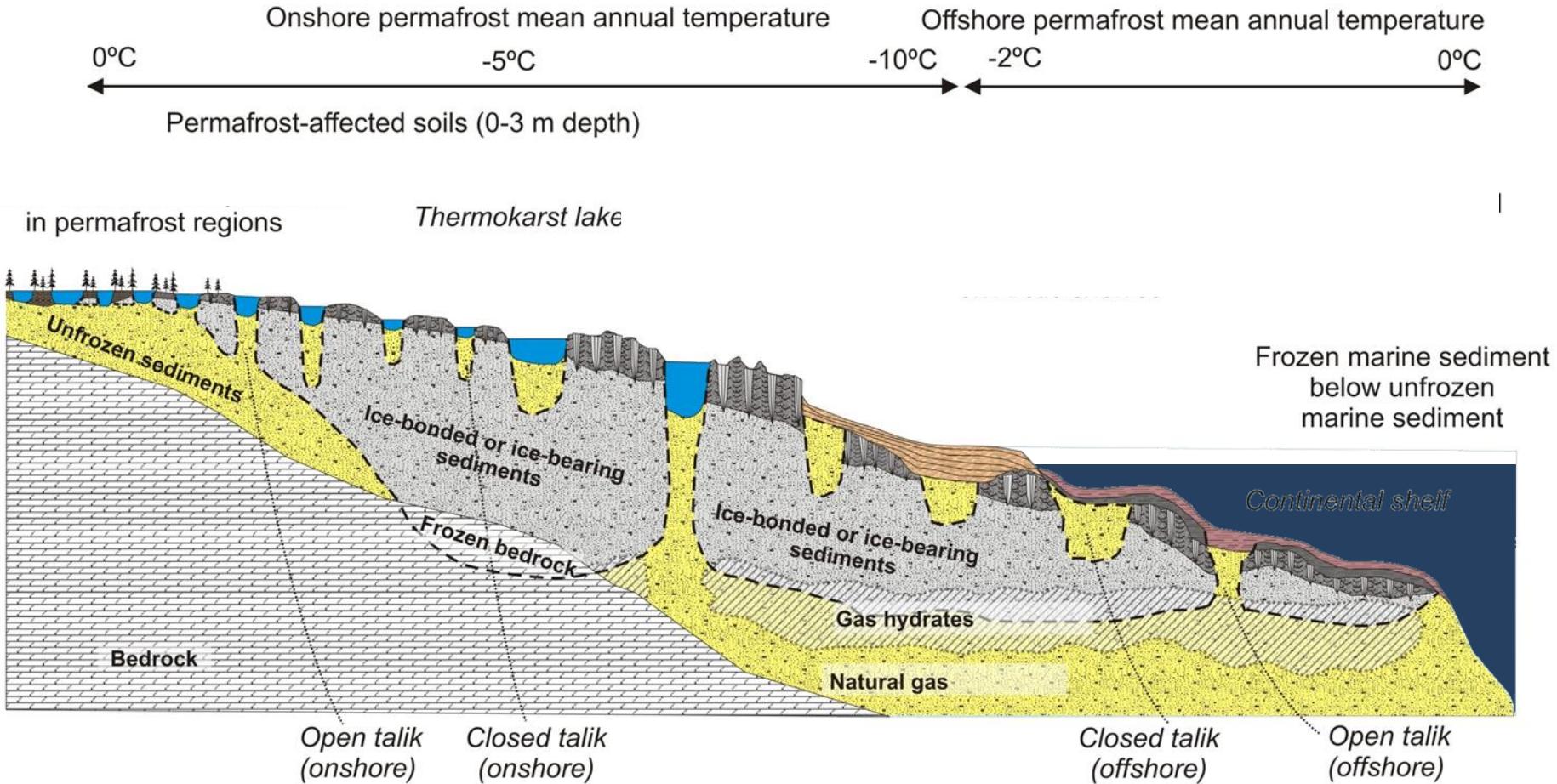
Hubberten & Romanovskii (2003)

# Modelled Extent from Zhigarev



Zhigarev (1997)

# Cross-section concept of the shelf



Grosse, Romanovsky, Jorgenson, Walter Anthony, Brown, Overduin (2011)

# Research questions:

Submarine permafrost

## **...distribution:**

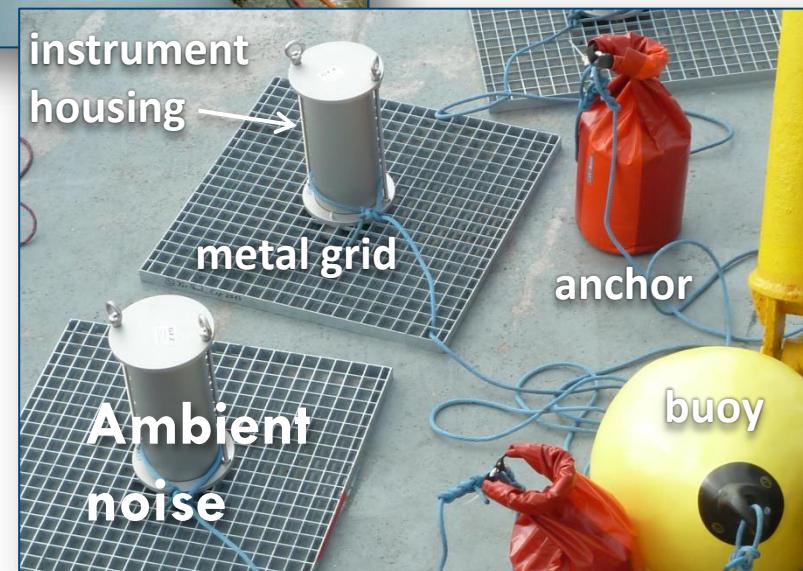
- depth of the top of submarine permafrost?
- how thick is submarine permafrost?

## **...degradation:**

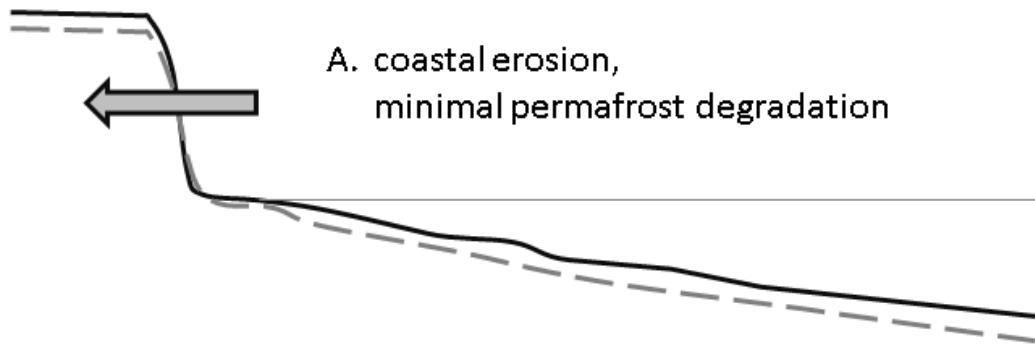
- sedimentation history
- coastal erosion
- bottom water
- temperature & salinity
- geomorphology at land surface



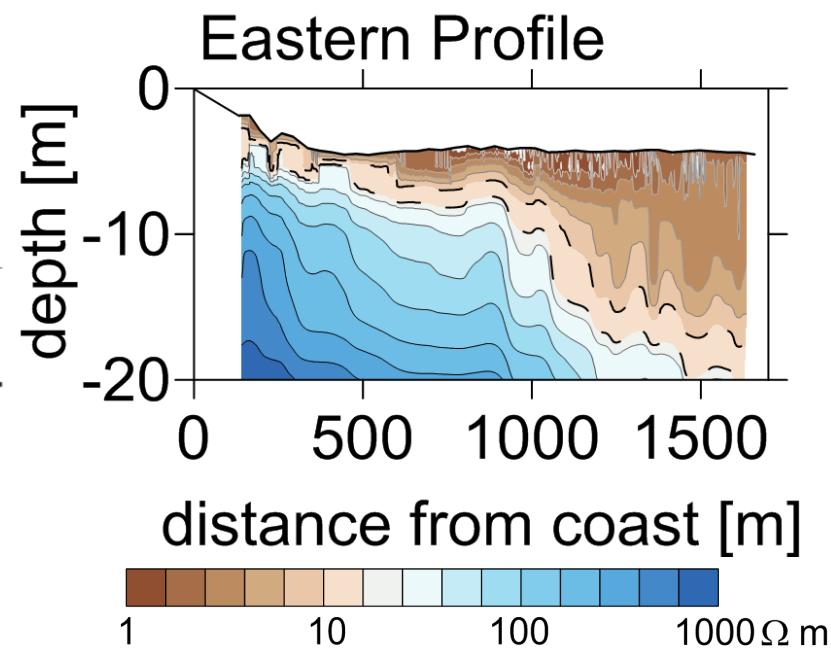
Sediment coring



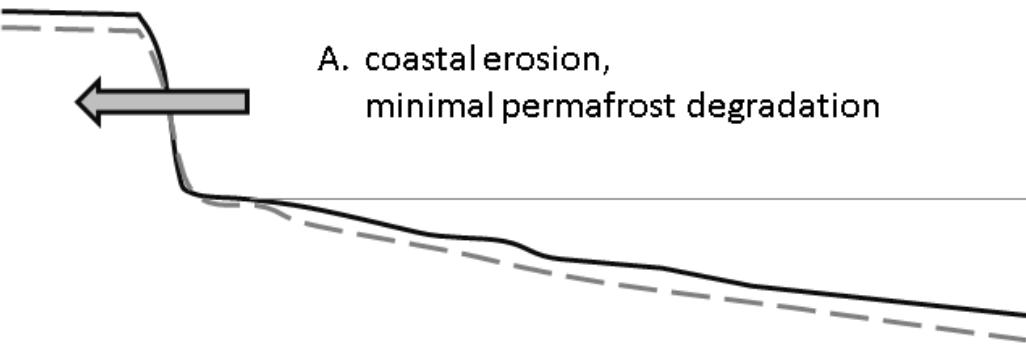
# Coastal erosion & submarine permafrost



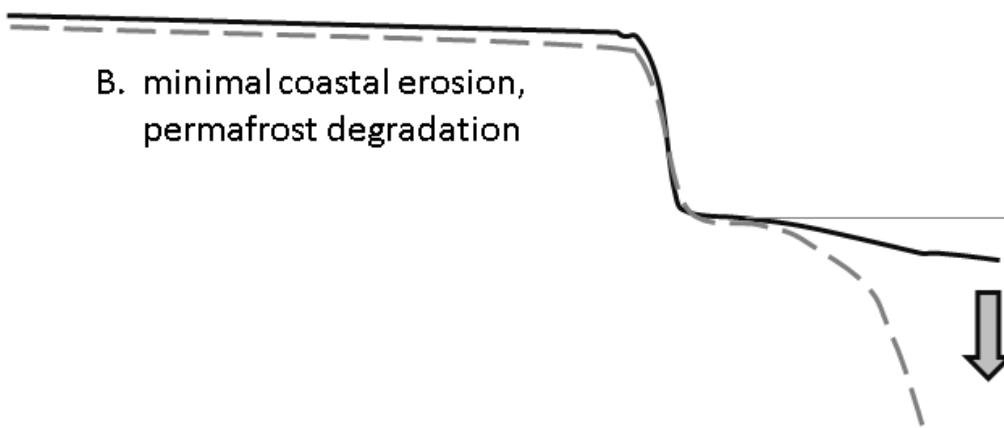
A. coastal erosion,  
minimal permafrost degradation



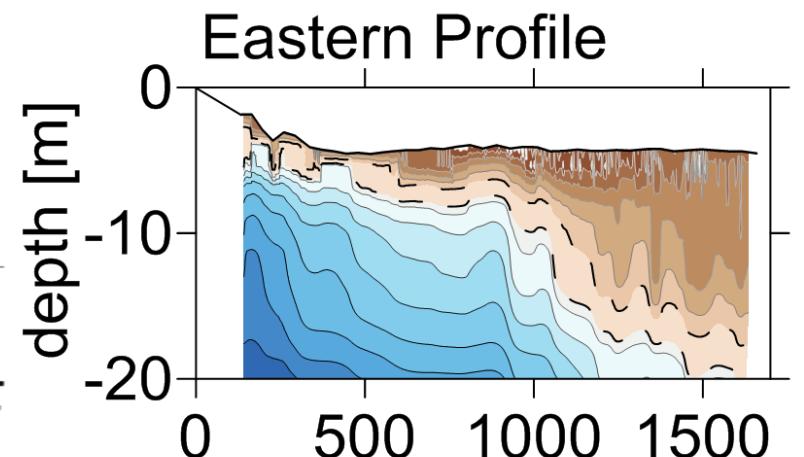
# Coastal erosion & submarine permafrost



A. coastal erosion,  
minimal permafrost degradation

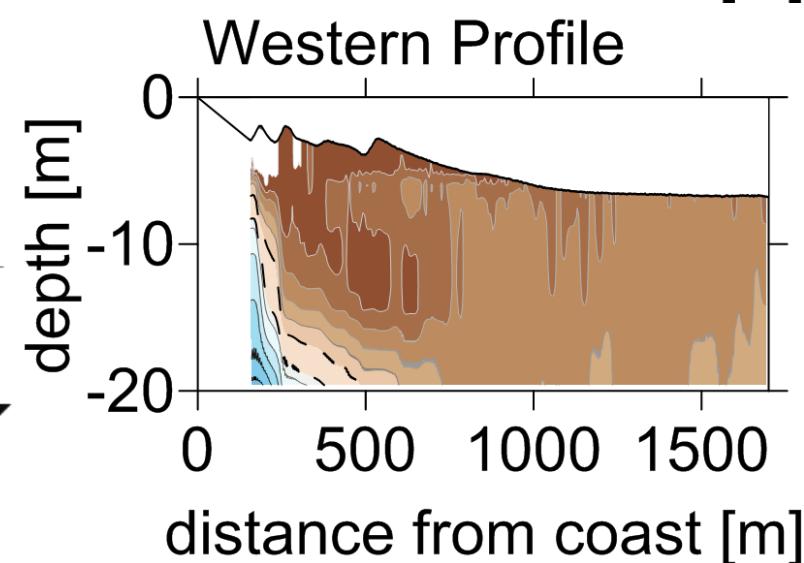


B. minimal coastal erosion,  
permafrost degradation



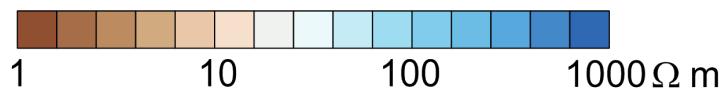
depth [m]

distance from coast [m]



depth [m]

distance from coast [m]



# Ambient noise

