REPUBLIC OF ESTONIA
GEOLOGICAL SURVEY

Metal-Rich Iron-Manganese Oxyhydroxide Concretions

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EGT-TWINN

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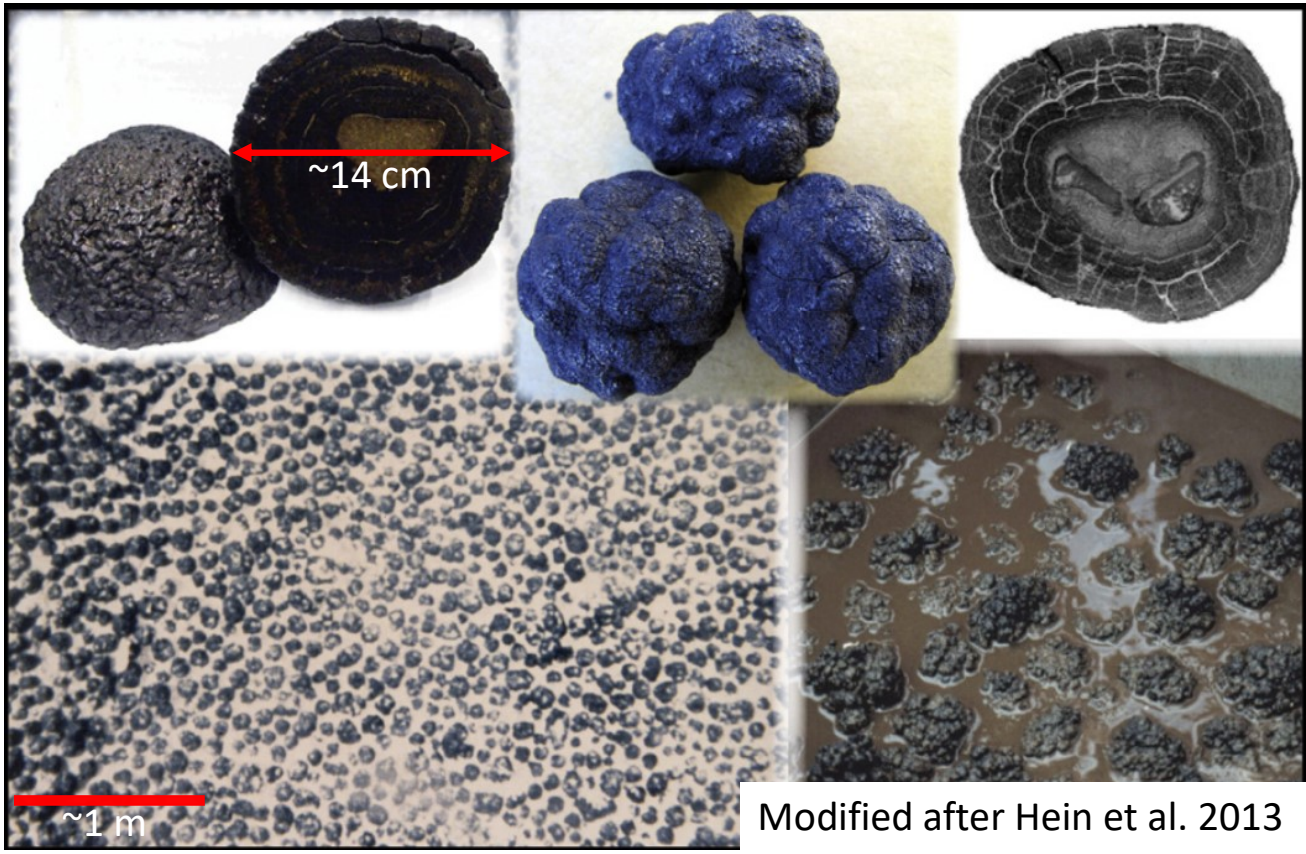
Iron-Manganese Oxyhydroxide Concretions

- Globally occurring
- Oceans, shallow šelf seas, temperate climate lakes
- Sedimentary bodies
- Primarily composed of iron and manganese compounds
- Chemo(bio)genic
- Round or crust-like shapes
- Changing redox conditions



Modified after Hein et al. 2013


Foto: Sten Suuroja

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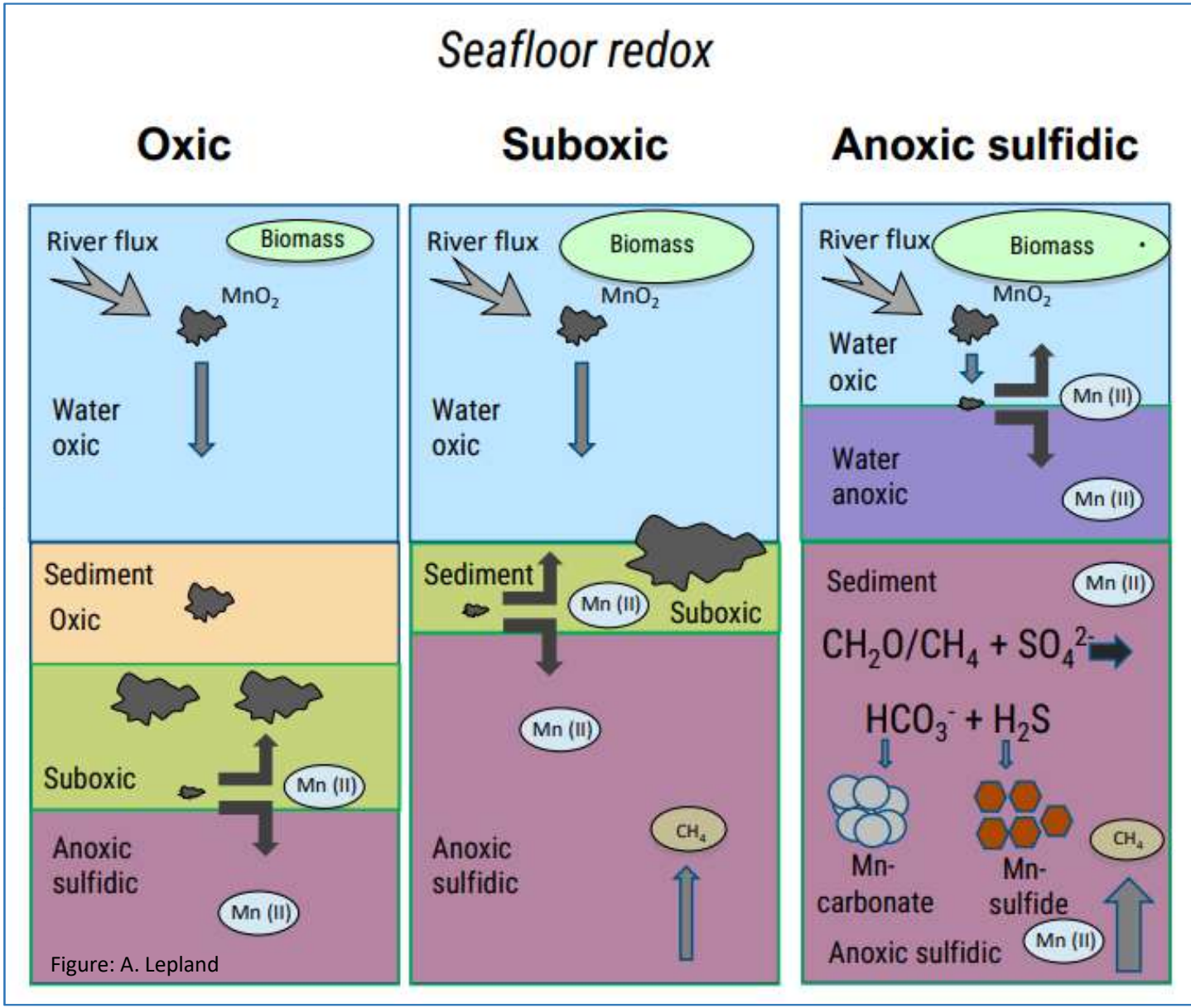
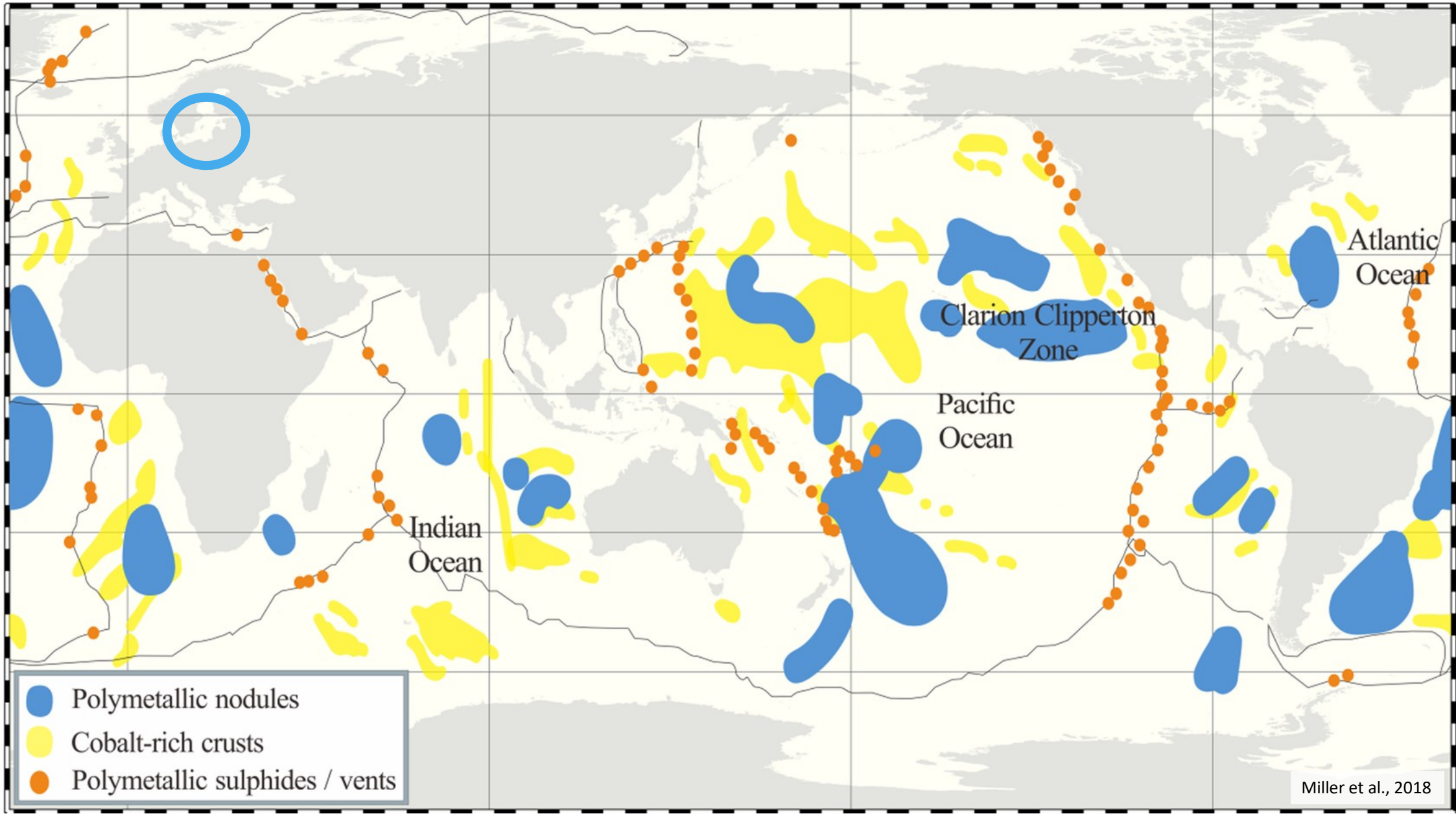
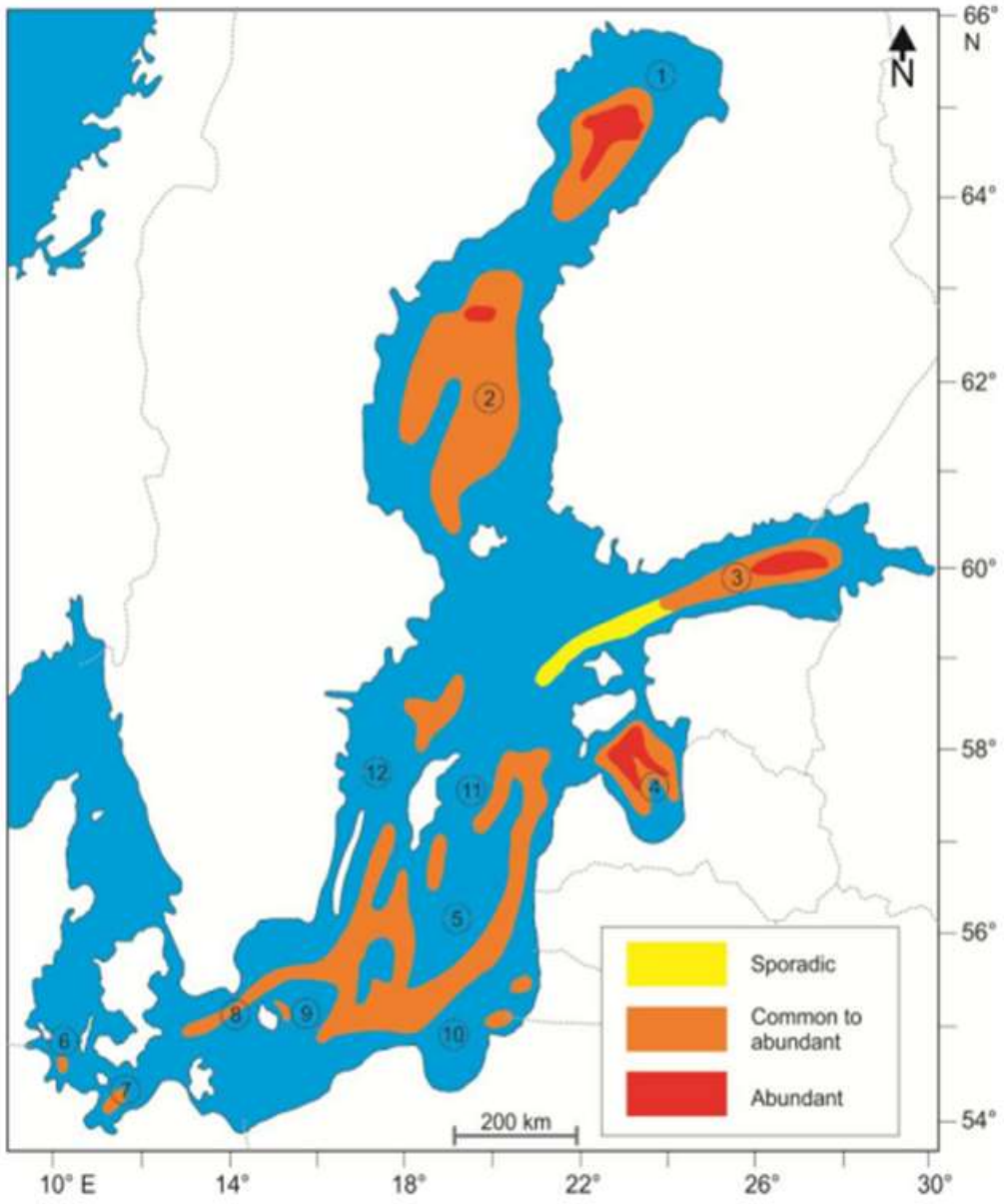
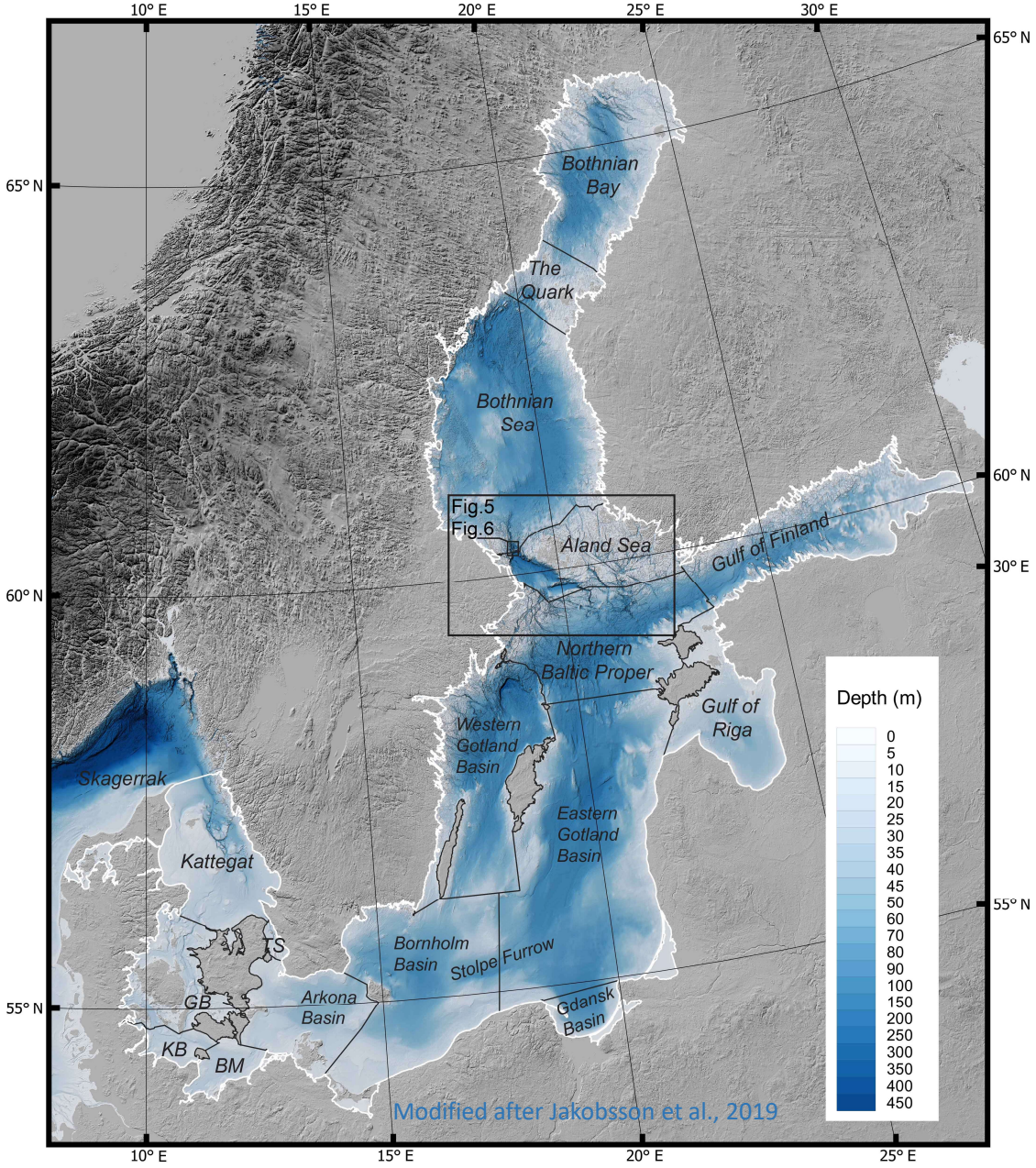


Figure: A. Lepland


Atlantic Ocean
Clarion Clipperton Zone
Pacific Ocean
Indian Ocean
Polymetallic nodules
Cobalt-rich crusts
Polymetallic sulphides / vents
Miller et al., 2018

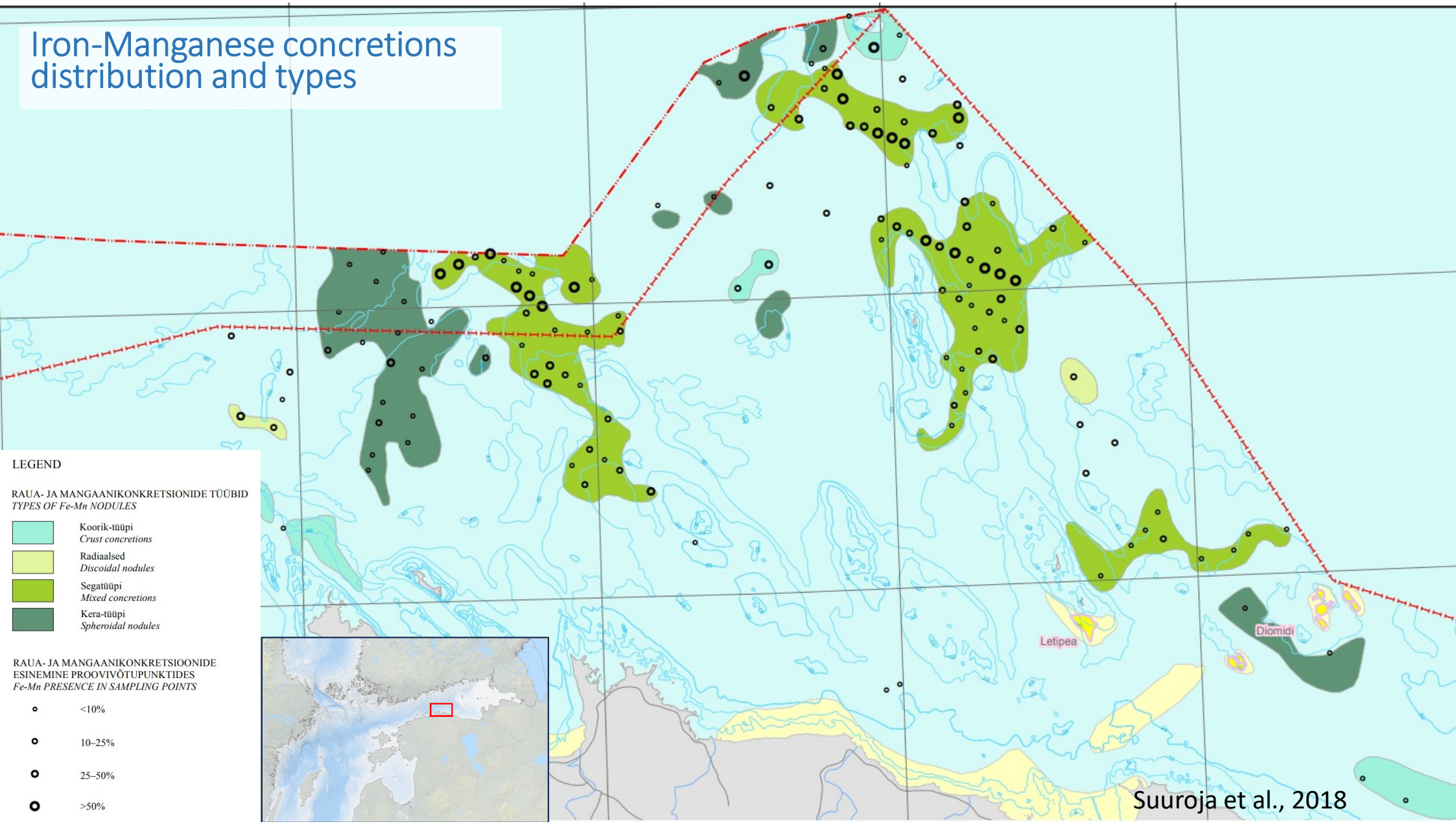


Modified after Wasiljeff, 2005 and Glasby, 1997

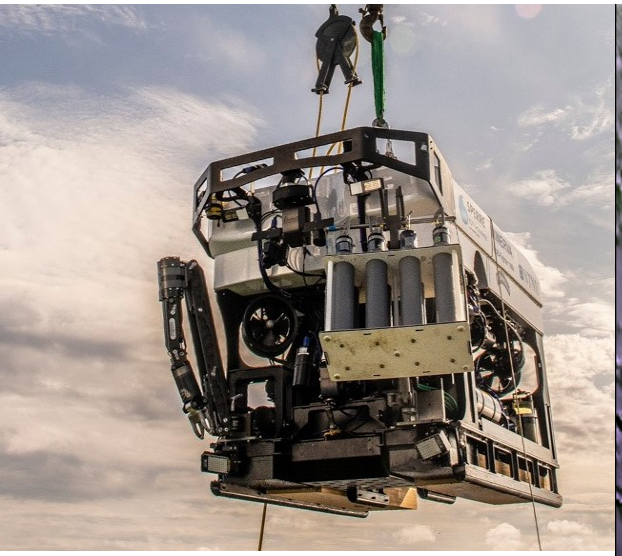


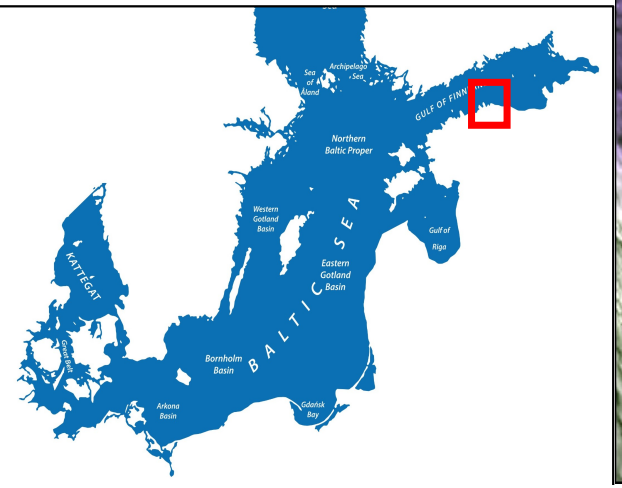
Modified after Jakobsson et al., 2019

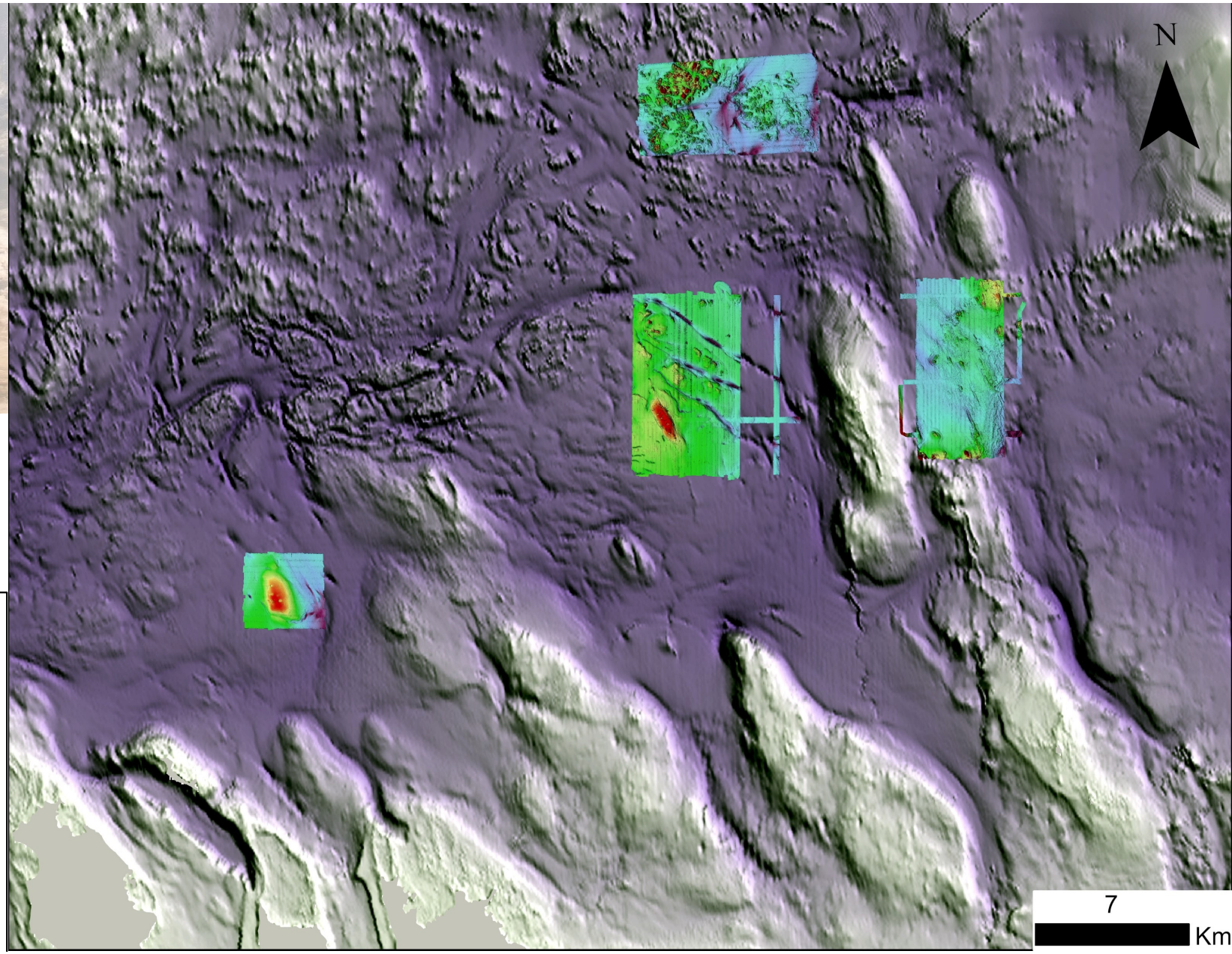
Iron-Manganese concretions distribution and types

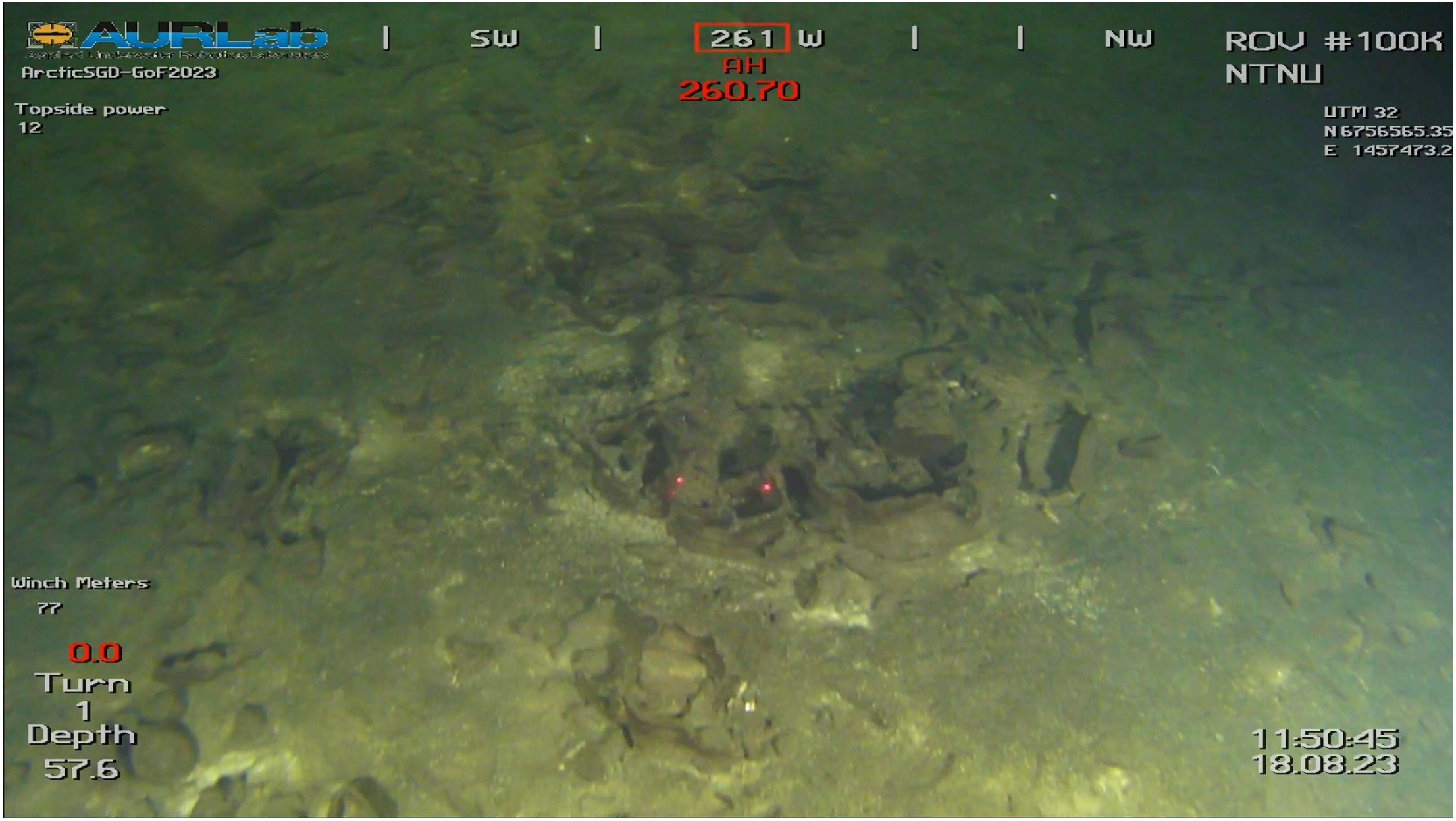


Suuroja et al., 2018

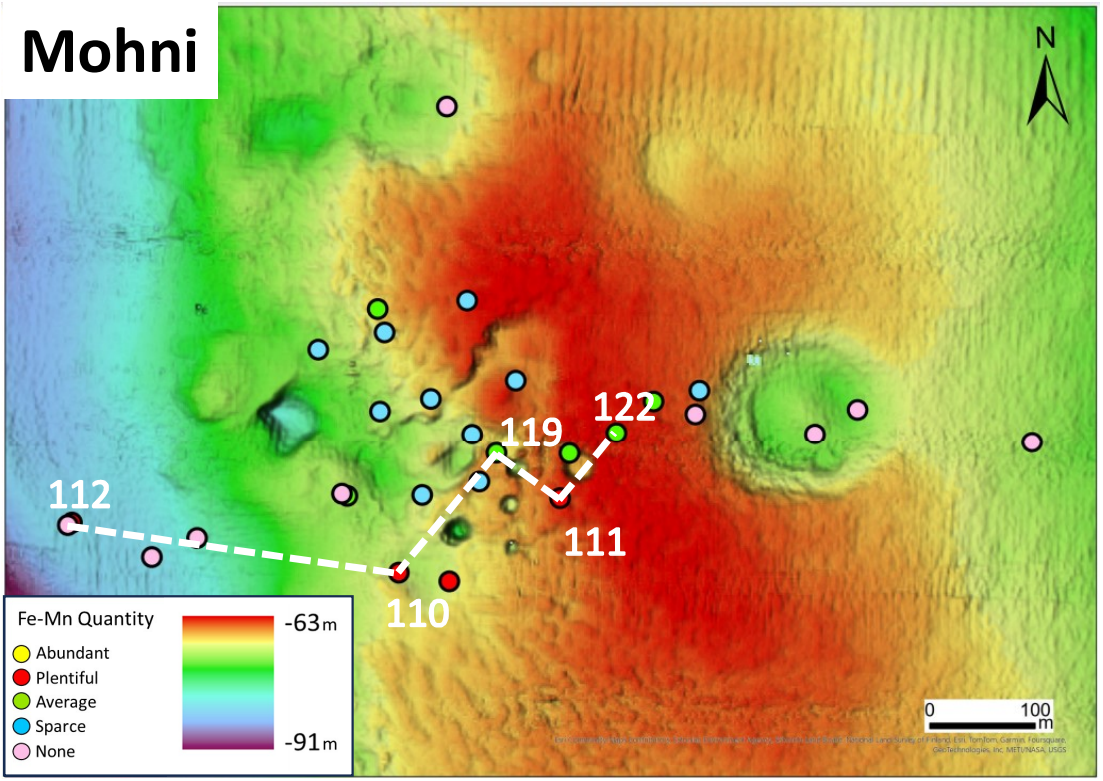



Sea of Åland
Archipelago Sea
GULF OF FINLAND
Northern Baltic Proper
Western Gotland Basin
Gulf of Riga
Eastern Gotland Basin
BALTIC SEA
KATTEGAT
Bornholm Basin
Gdańsk Bay
Arkona Basin

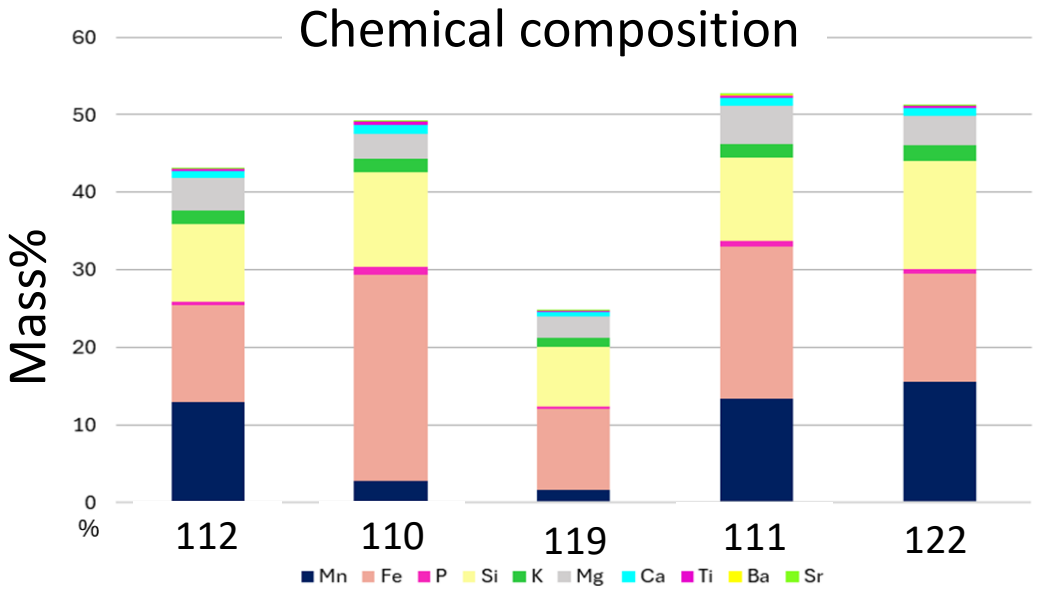

N
7
Km

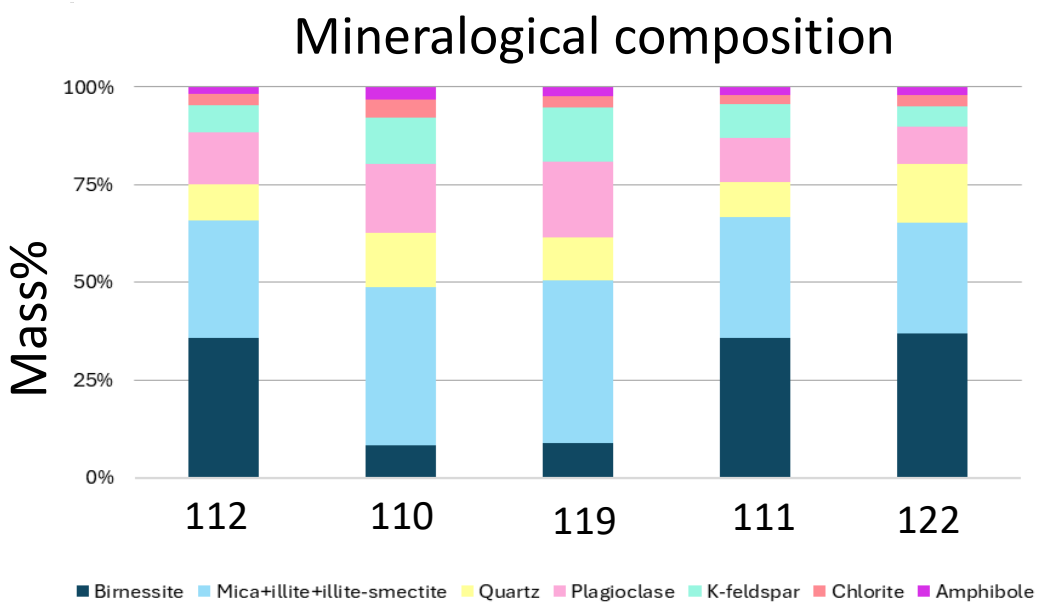

AURLab
ArcticSGD-GoF2023
SW
261 W
AH
260.70
NW
ROV #100K
NTNU
Topside power
12
UTM 32
N 6756565.35
E 1457473.2
Winch Meters
77
0.0
Turn
1
Depth
57.6
11:50:45
18.08.23

Mohni

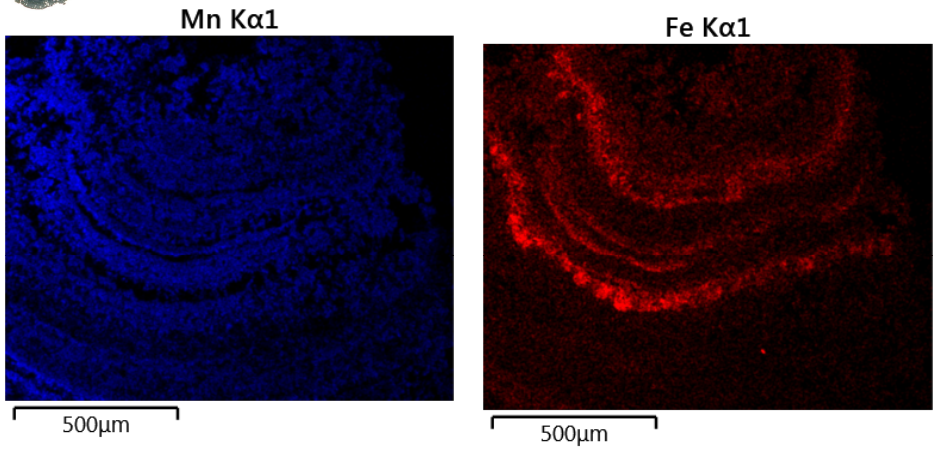


- Hydrous Mn-oxide, Birnessite
- Fe amorphous

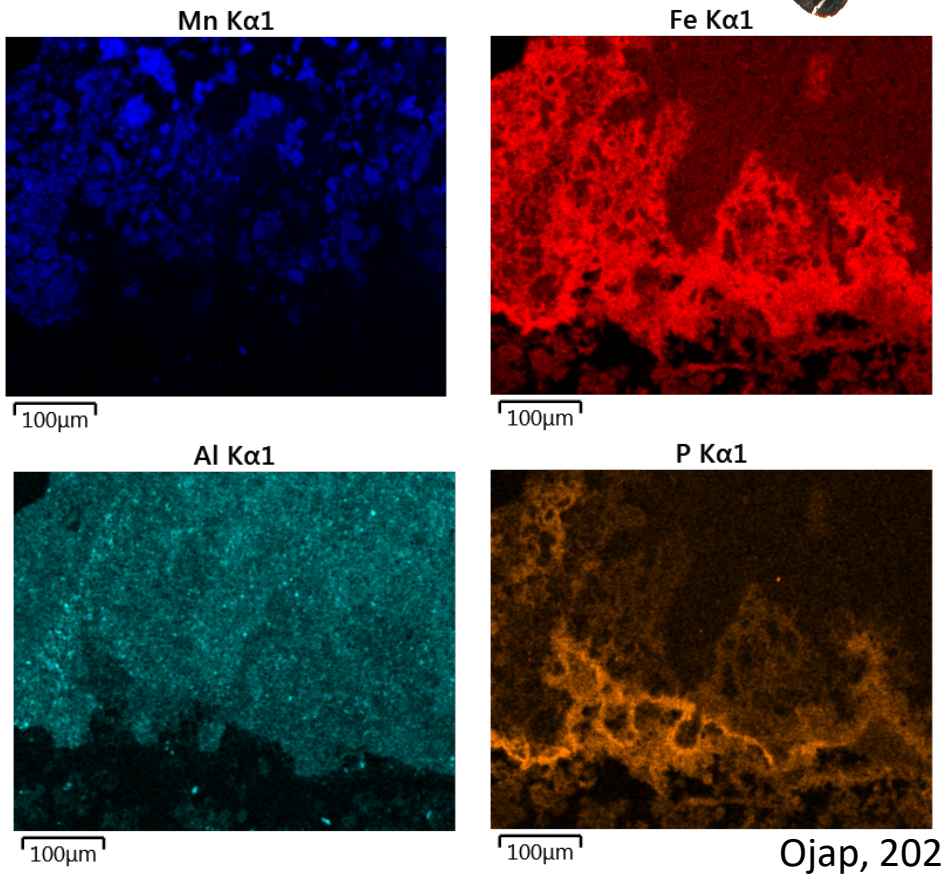




Nodule type

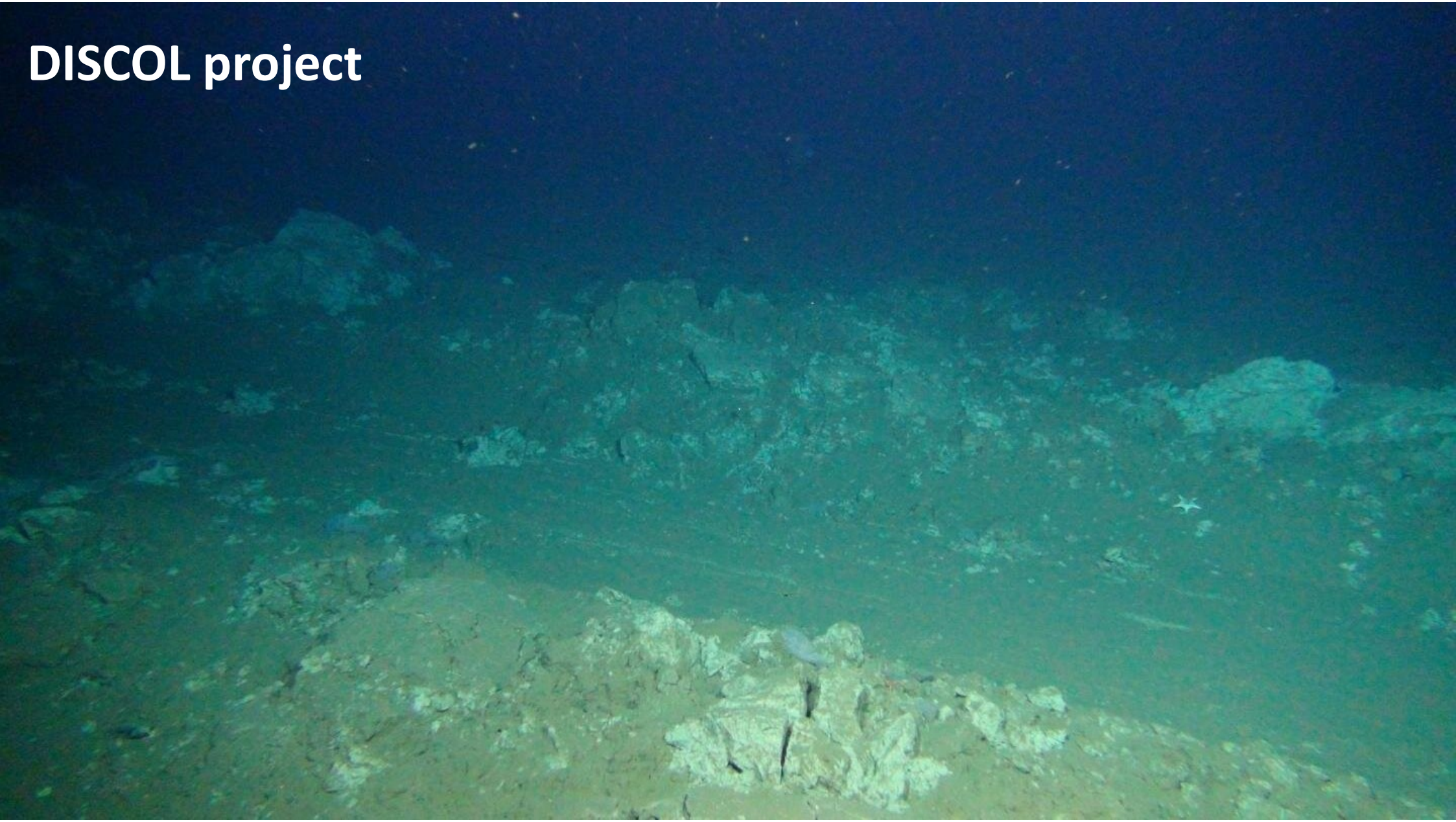


Crust type



Ojap, 2022

DISCOL project



Conference on
Exploration and Exploitation
of Critical Raw Materials

Thank you!

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