



NORWEGIAN PETROLEUM  
DIRECTORATE

# Submarine fieldwork on the Jan Mayen Ridge; integrated seismic and ROV -sampling

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& Harald Brekke<sup>1</sup>

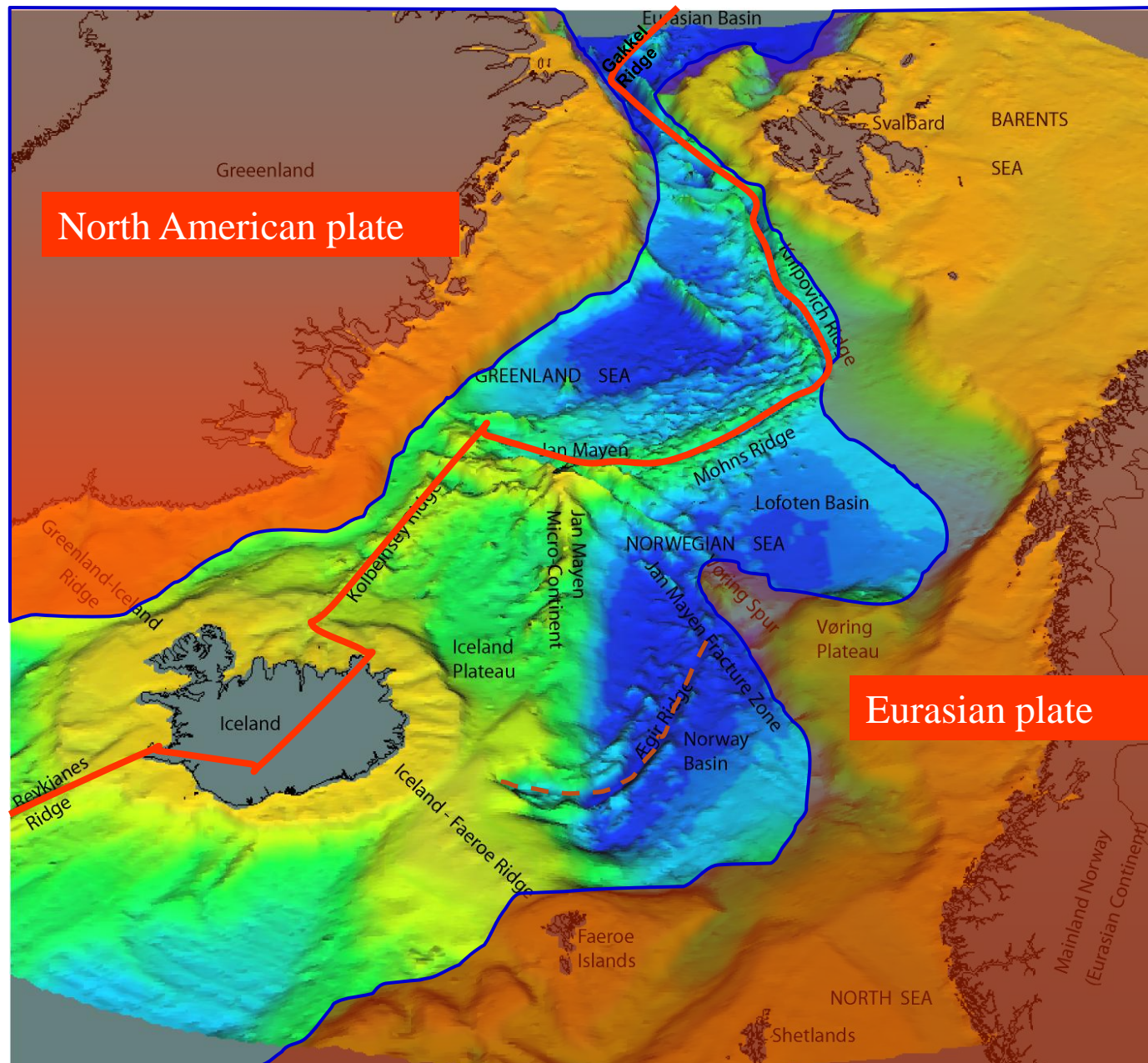
<sup>1</sup>Oljedirektoratet

<sup>2</sup>Universitetet i Bergen

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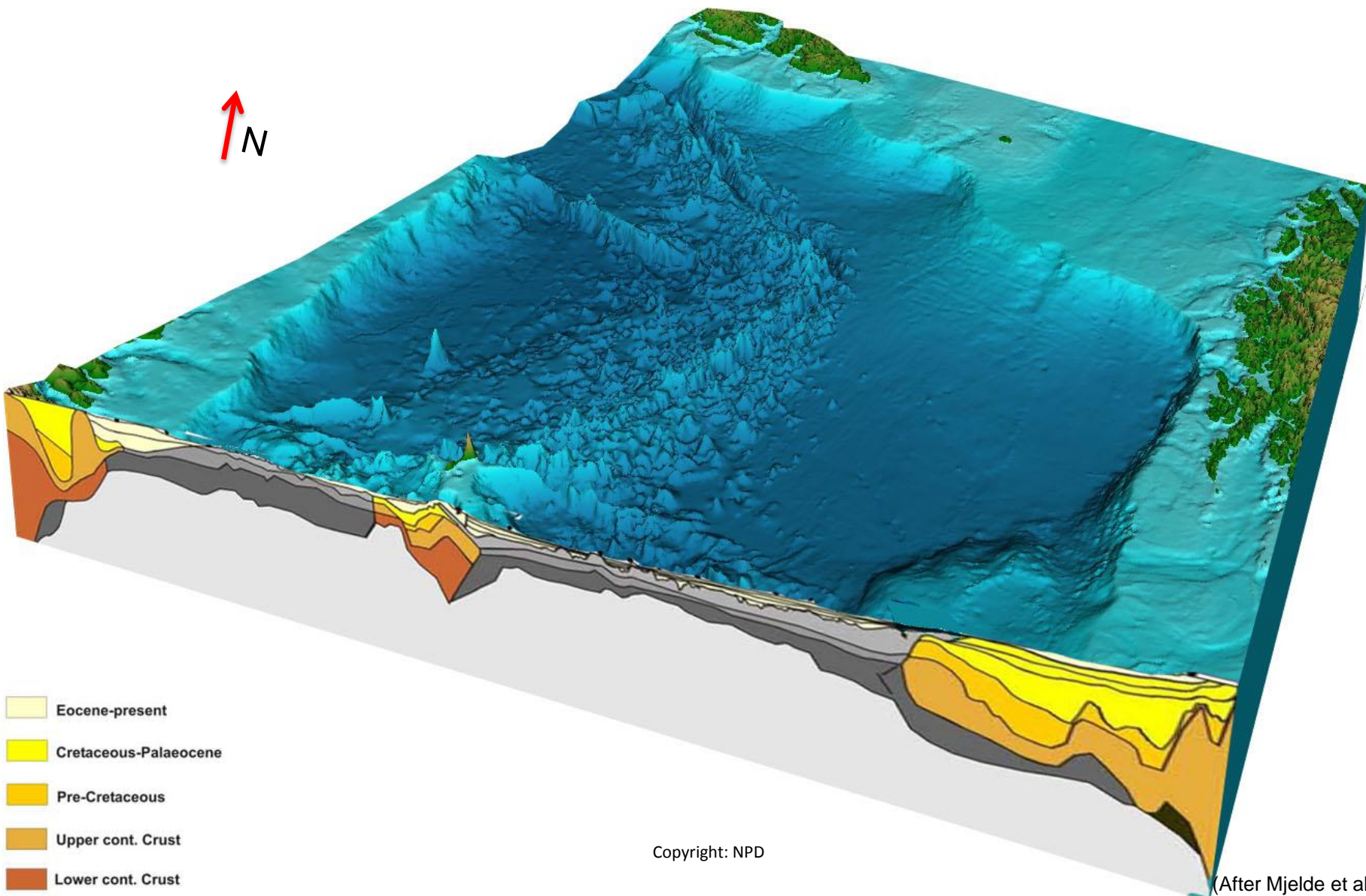
# Subject

- Geology
- ROV cruise
- Sampling
- Results
- Preliminary implications
- Summary





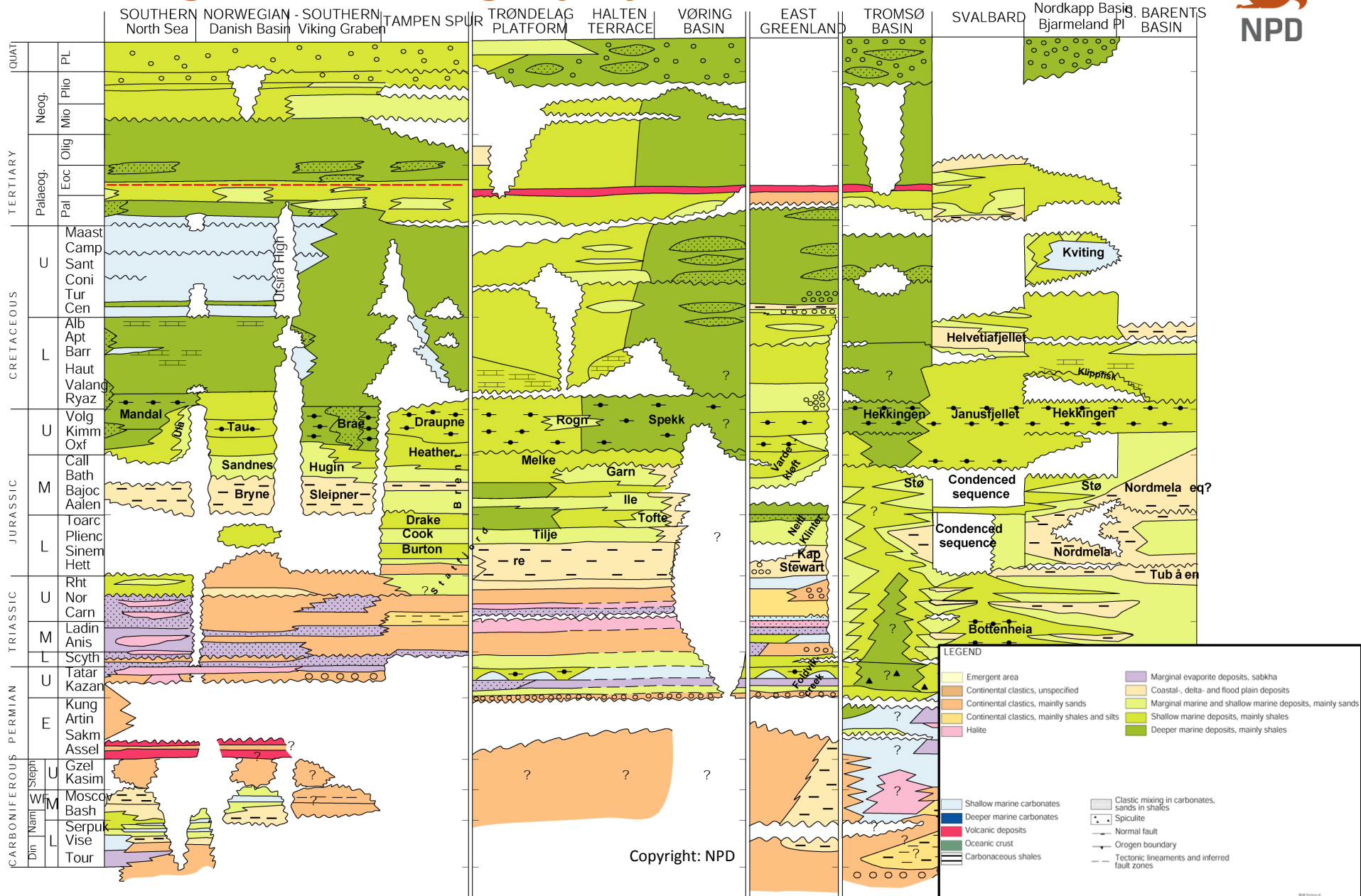
# Crustal Transect



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(After Mjelde et al 2008)

# Regional stratigraphy



# ROV cruise

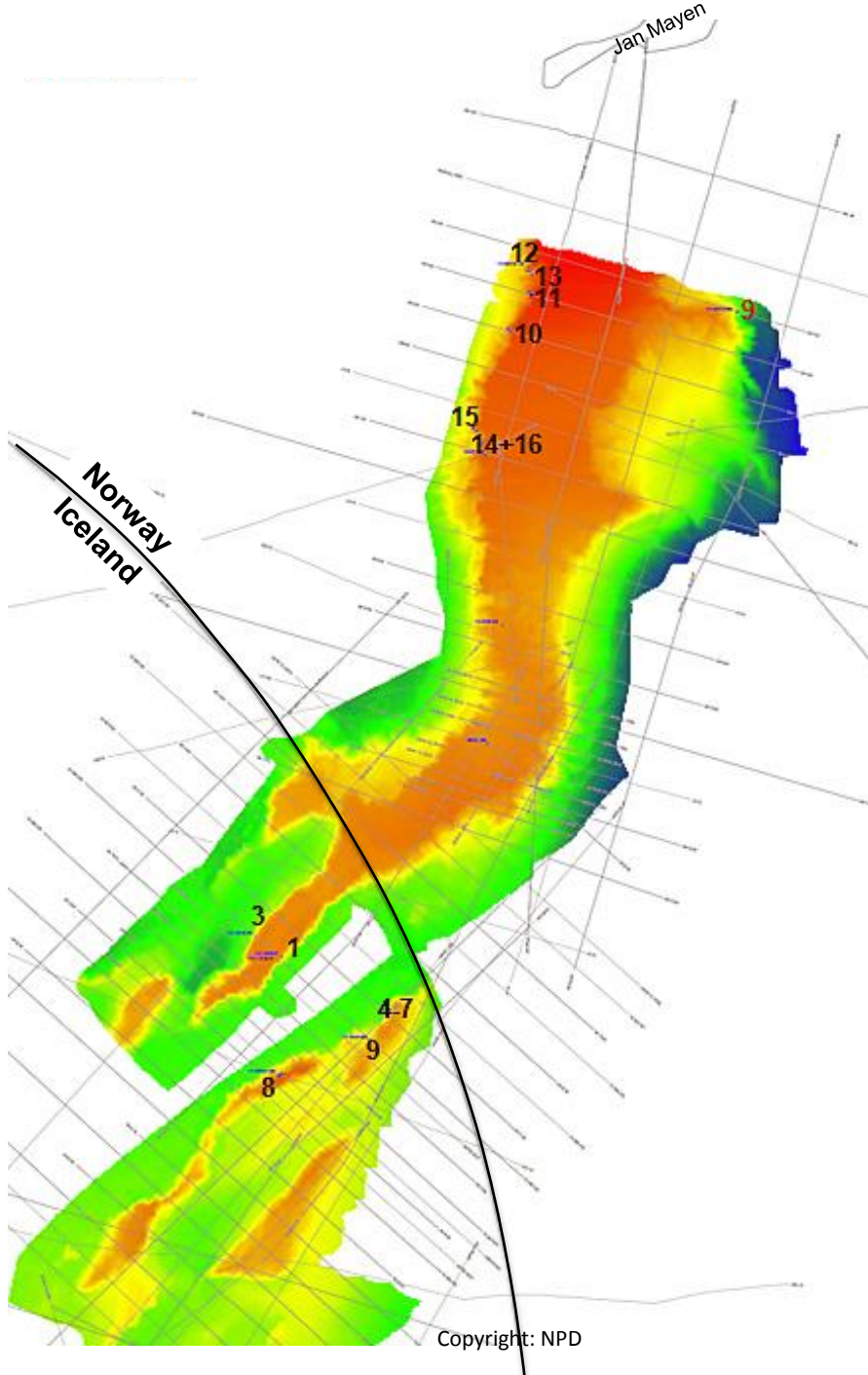
Collaboration with the University of Bergen



Biostrat analyses at the NPD  
Provenance and geochemical analyses at UiB

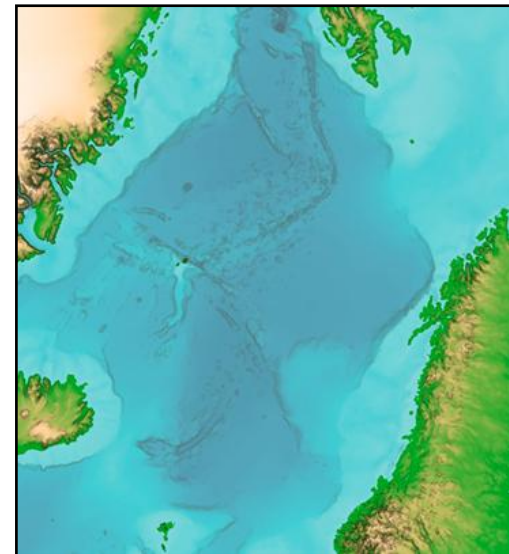


# Results



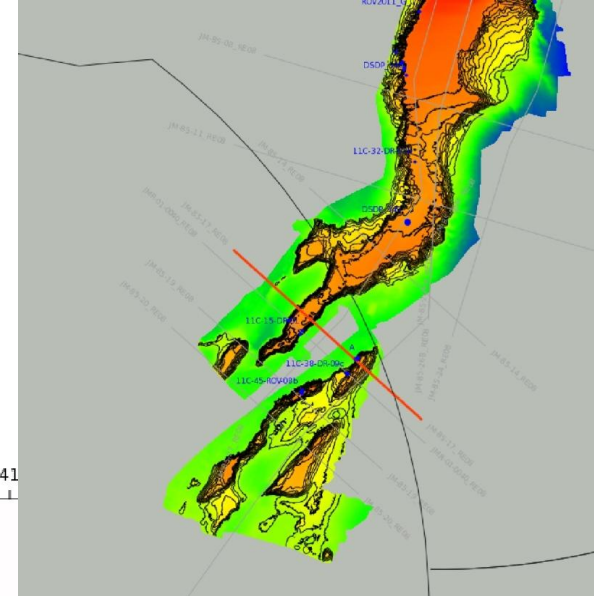
10 km

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# Iceland



CMP 10210 9530 8850 8170 7490 6810 6130 5450 4770 4090 341

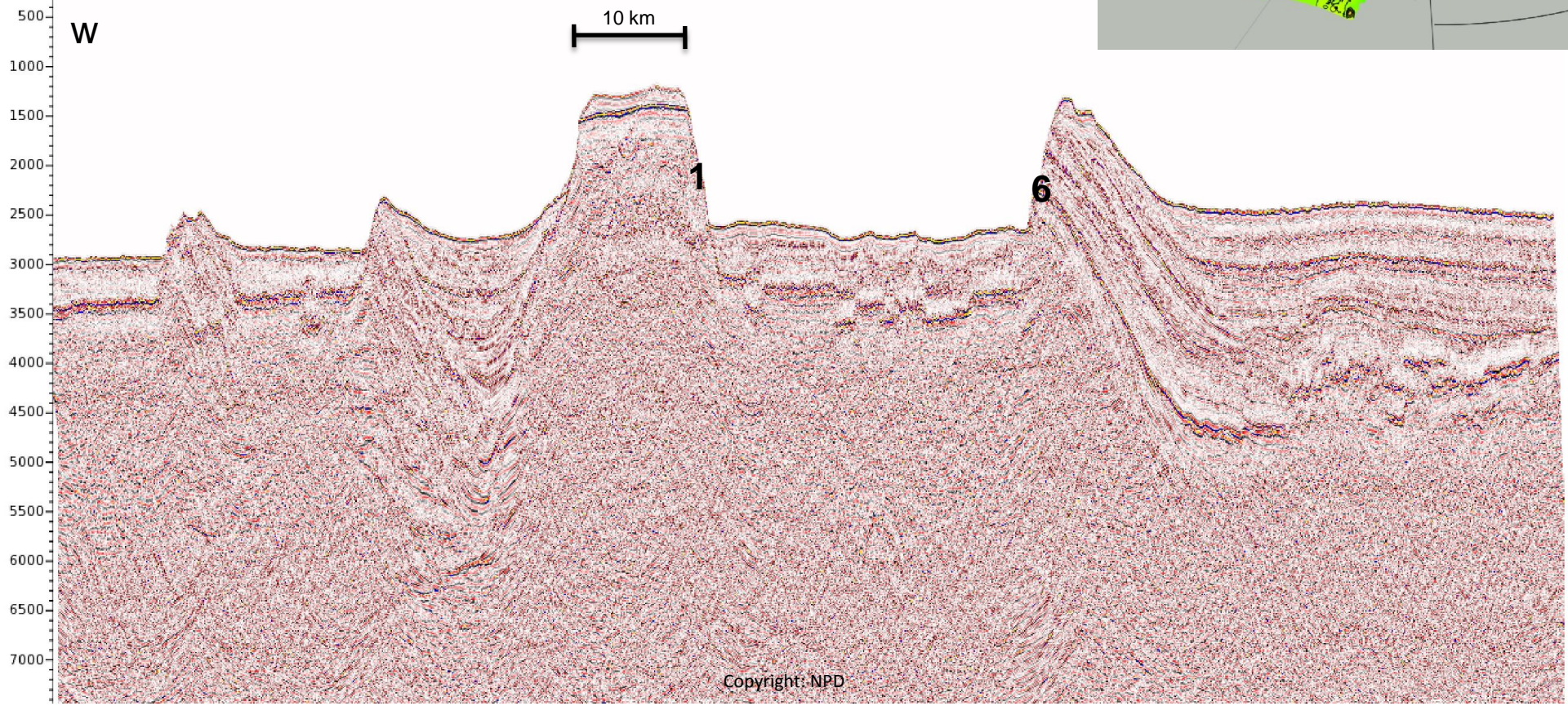
10 km

W

1

6

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## Outcropping strata, dive 13

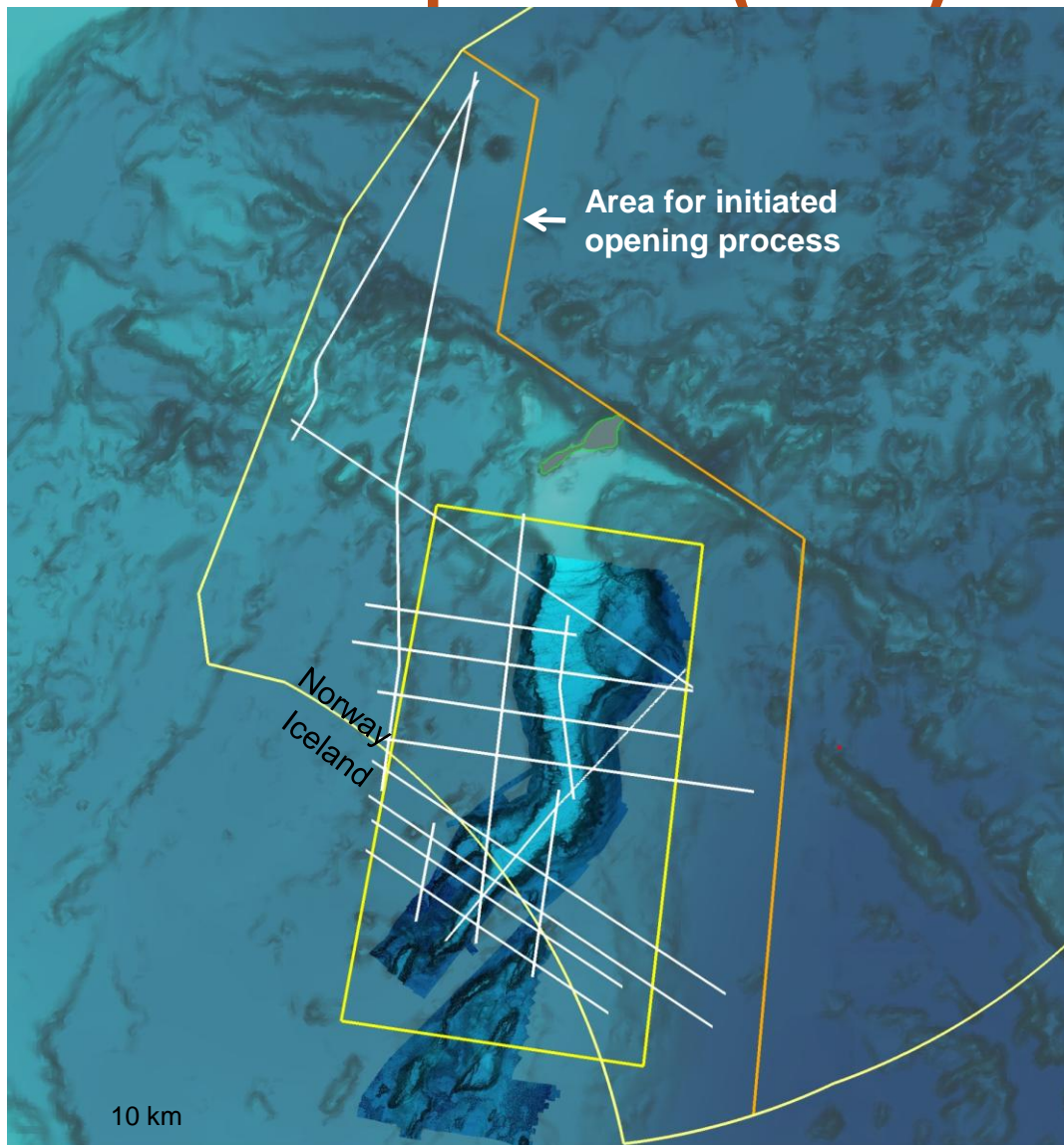


## Sampling, dive 6, sample 6.3

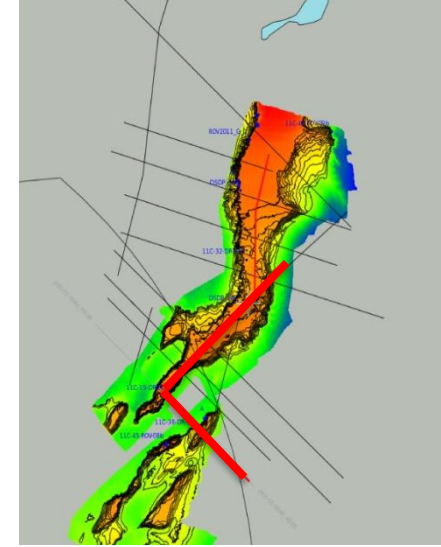




# NPD 2D seismic acquisition (2011)

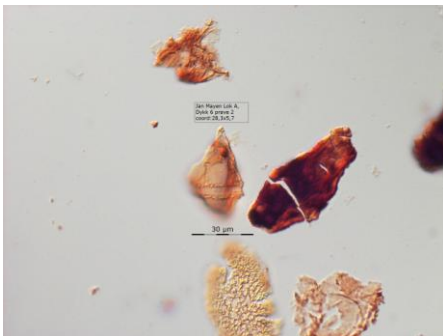
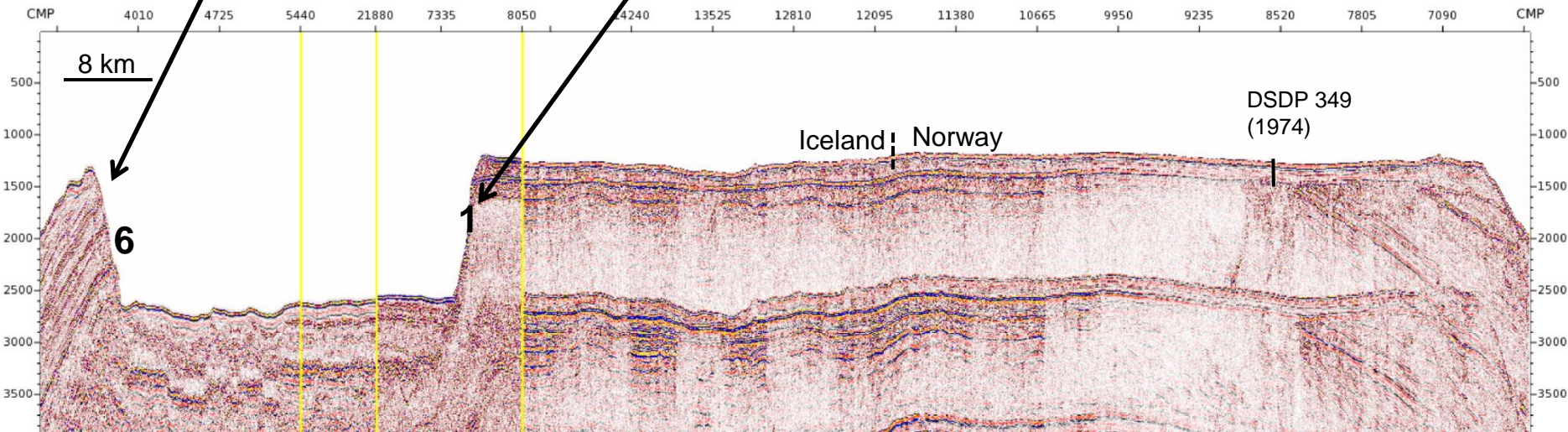


# ROV 2011, new and old seismic



Oligocene

Late Permian  
(260 Ma)



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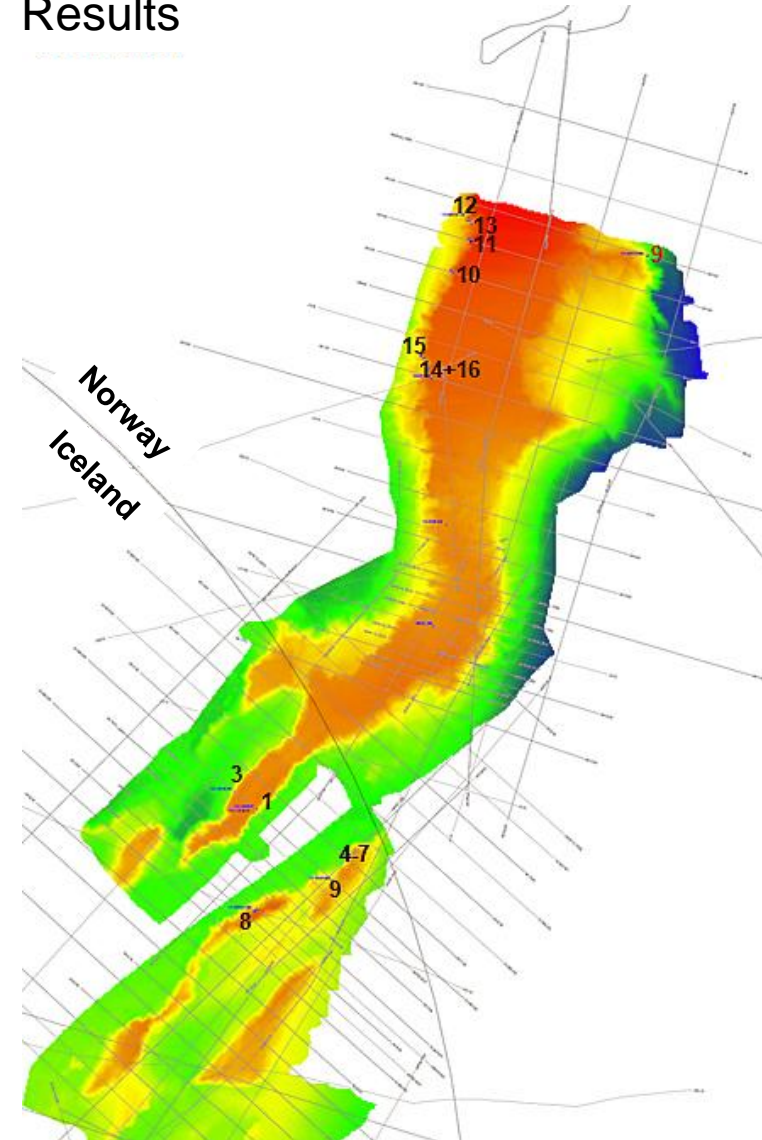
# NPD results



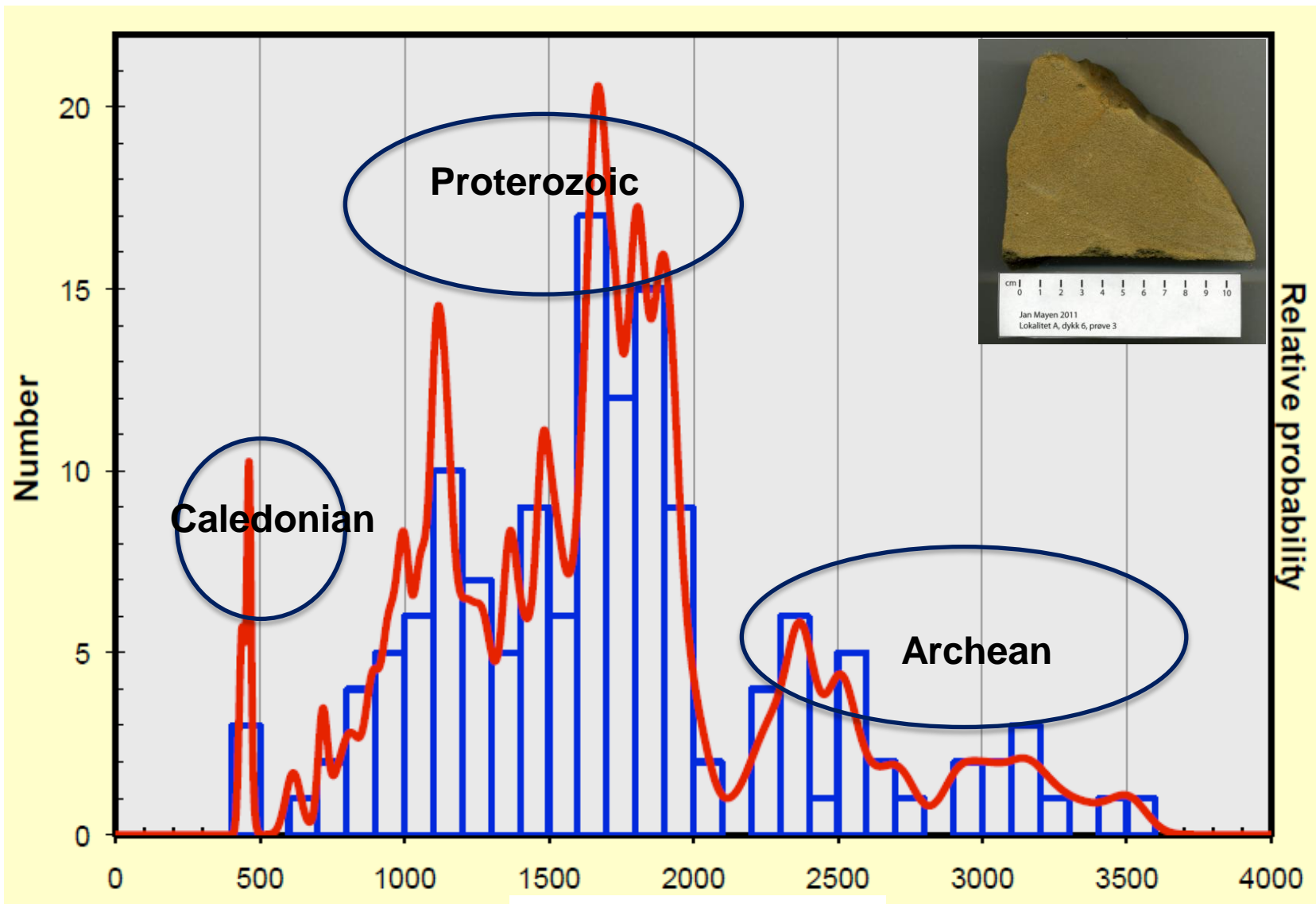
Sample	Description	Age
1-6	Limestone	Late Permian / Early Triassic (260 -245 ma)
4-1	Limestone	Early Cretaceous (140-136 ma)
6-2	Siltstone	<b>Oligocene</b> (34-23 ma)
	Sandstone	
11.3	Limestone	<b>Late Eocene</b>
11.6	Limestone	Early Cretaceous
13.5	Claystone	<b>Eocene (46-48 ma)</b>
13.6	Claystone	<b>Eocene/Oligocene</b>
14.4	Silt-limestone	Early Cretaceous
14.7	Limestone	Early Cretaceous
15.1	Siltstone	<b>Eocene-Oligocene (50-25 ma)</b>
15.4	Siltstone	<b>Oligocene- Miocene (33-22 ma)</b>

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## Results

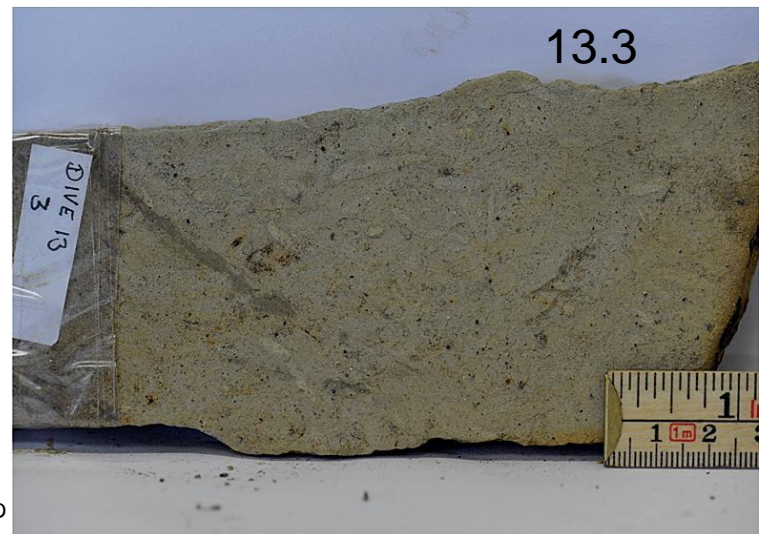
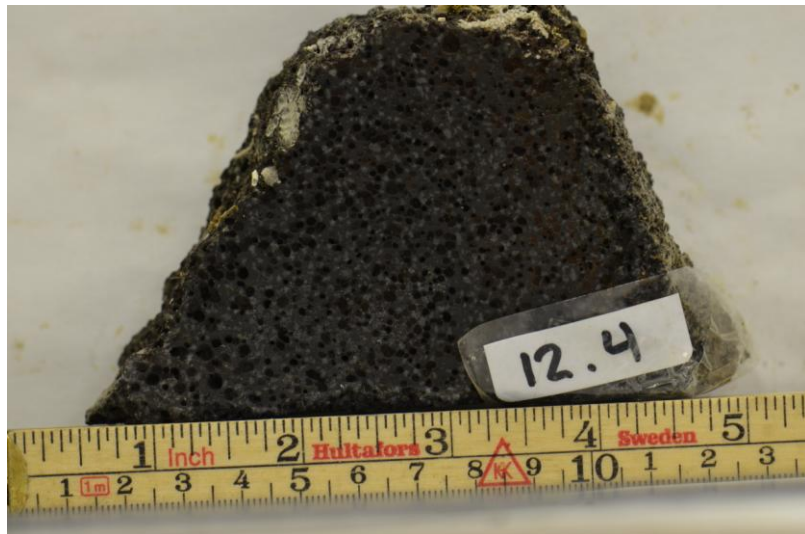
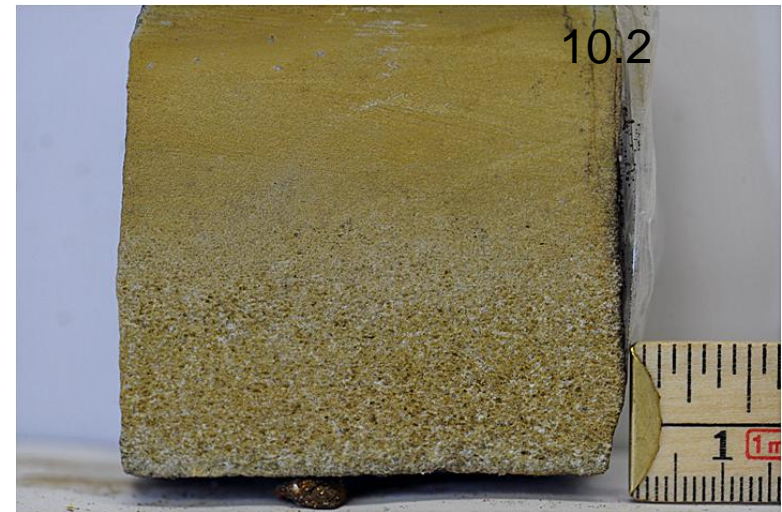
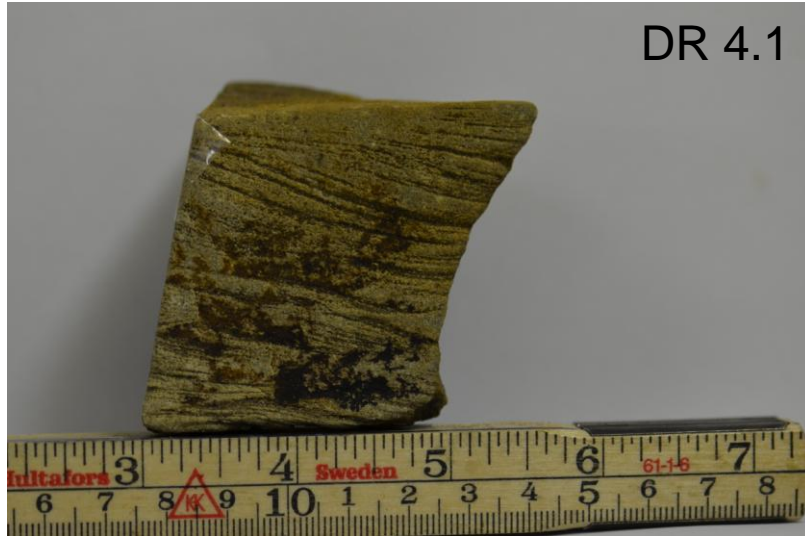


# Provenance, zircons sample 6.3 (UiB)

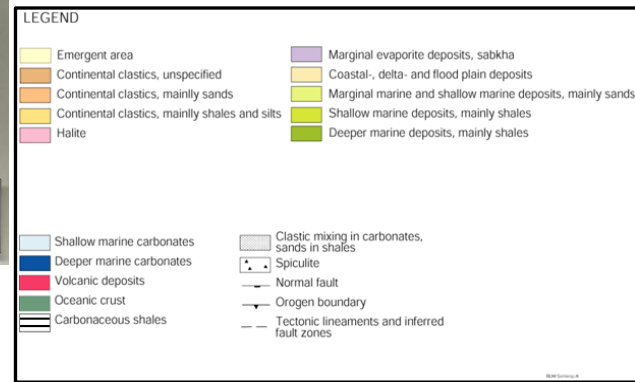
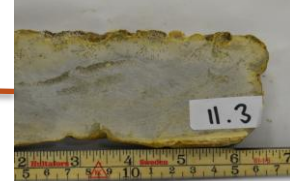
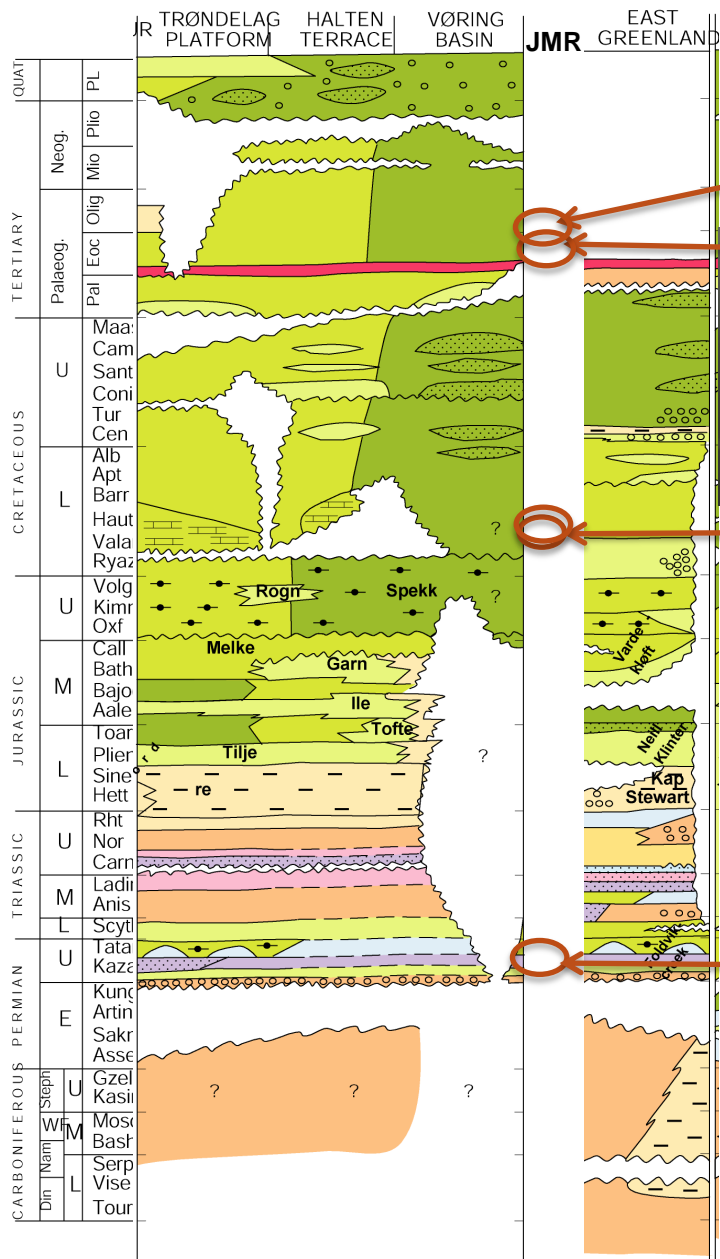




# Rock samples



# Preliminary implications





# Summary

- Use of ROV has resulted in new knowledge about the Jan Mayen Ridge
- Analyses performed at UiB and NPD
- Results will be part of the geological analysis of the area
- Microfossils show little influence of heating
- In porous materials the microfossils appear to be affected by long term exposure to seawater
- Analyses indicate presence of parts of Paleozoic, Mesozoic and Cenozoic sedimentary sequences