



Expedition 381 Corinth Active Rift Development: Mission Specific Platform October-December 2017

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Expedition 381_four main themes



Structural Evolution

how does the rift actually evolve and grow and over what timescale?
How does the activity on faults change with time?

Surface Processes

how does the development of the rift and movement on the faults modify the drainage of sediments into the rift? How does the landscape respond to tectonic and climatic changes?

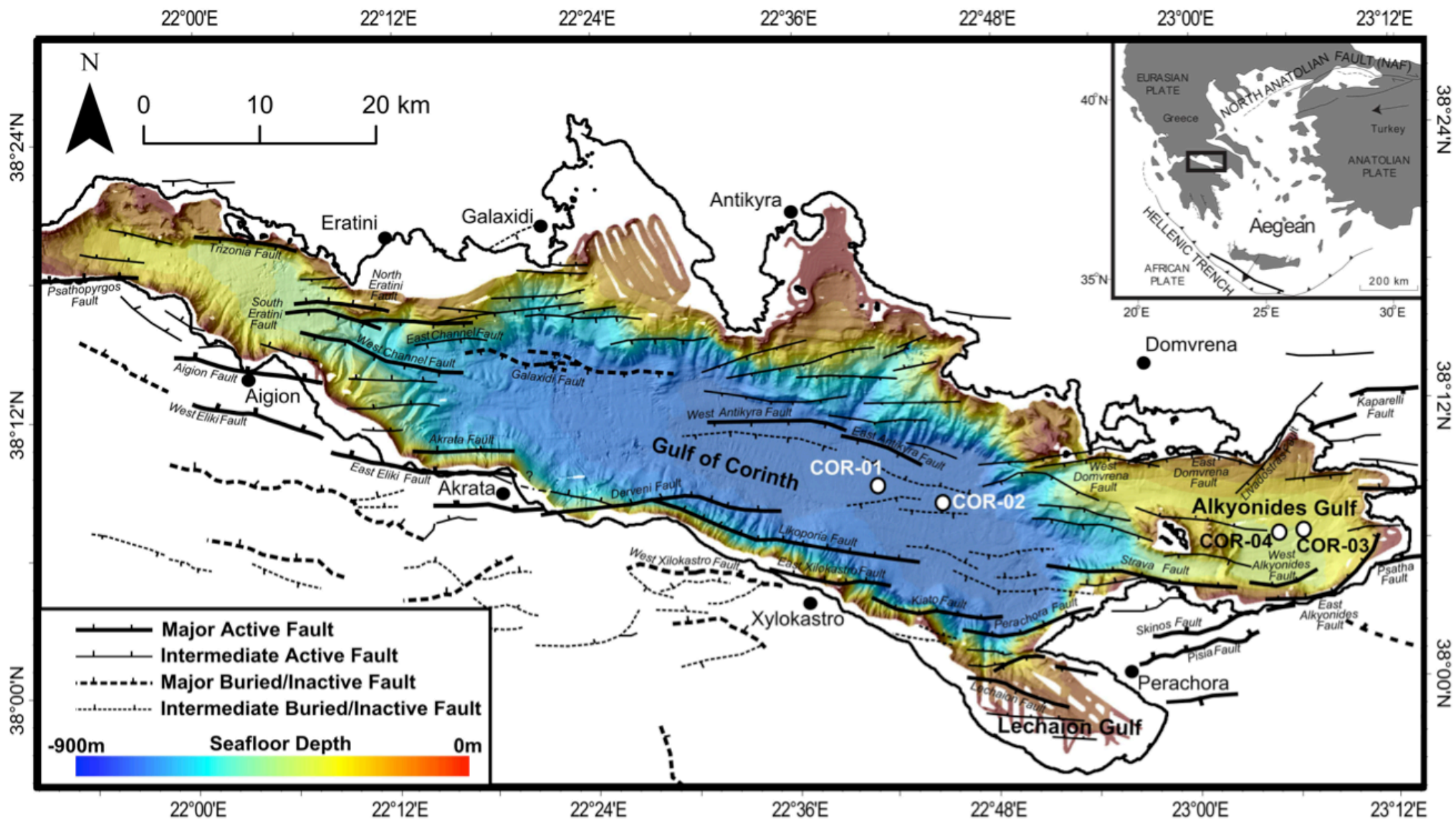
Natural Hazards

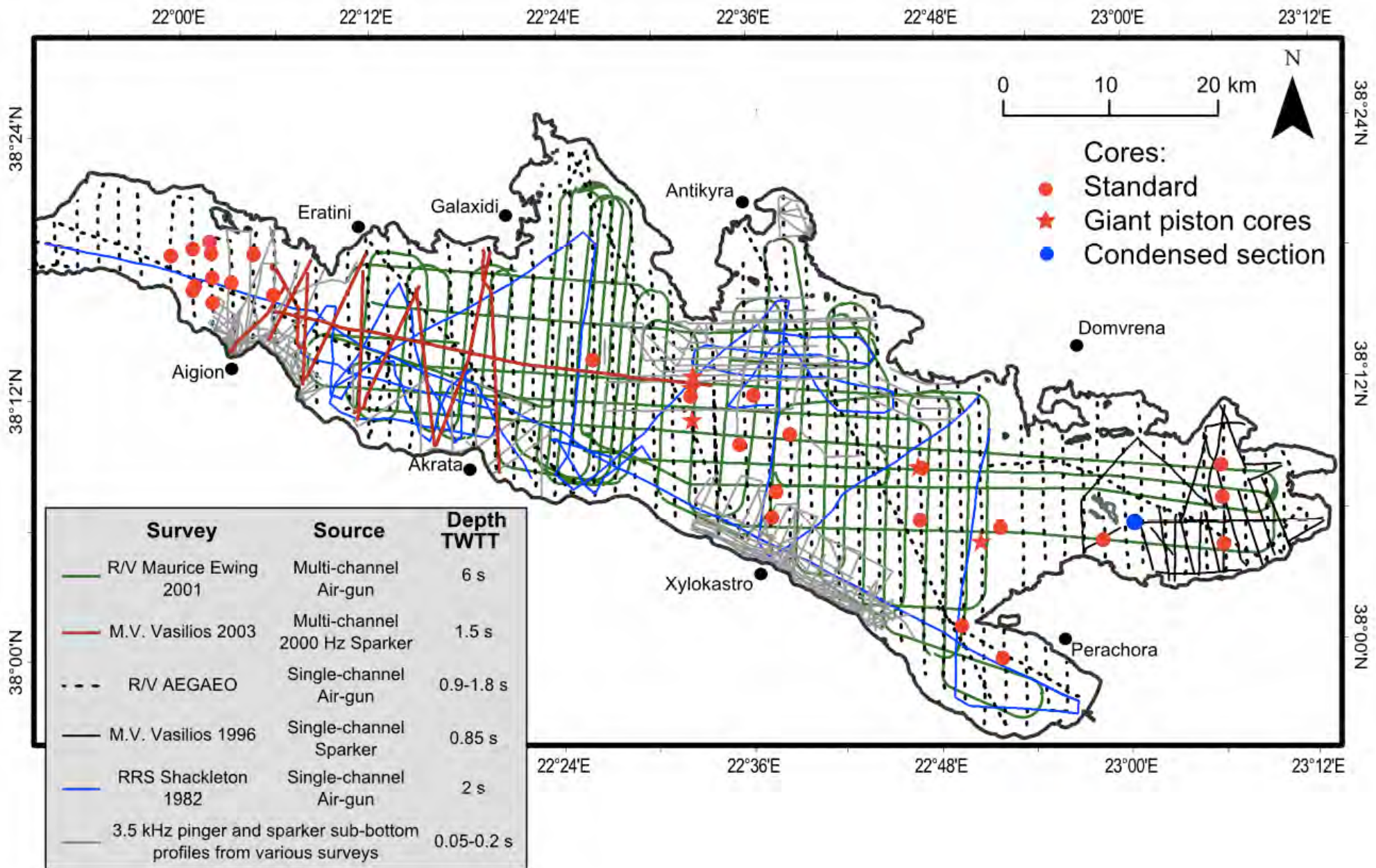
as one of the most seismically active areas in Europe, what are the implications for earthquake activity in a developing rift?

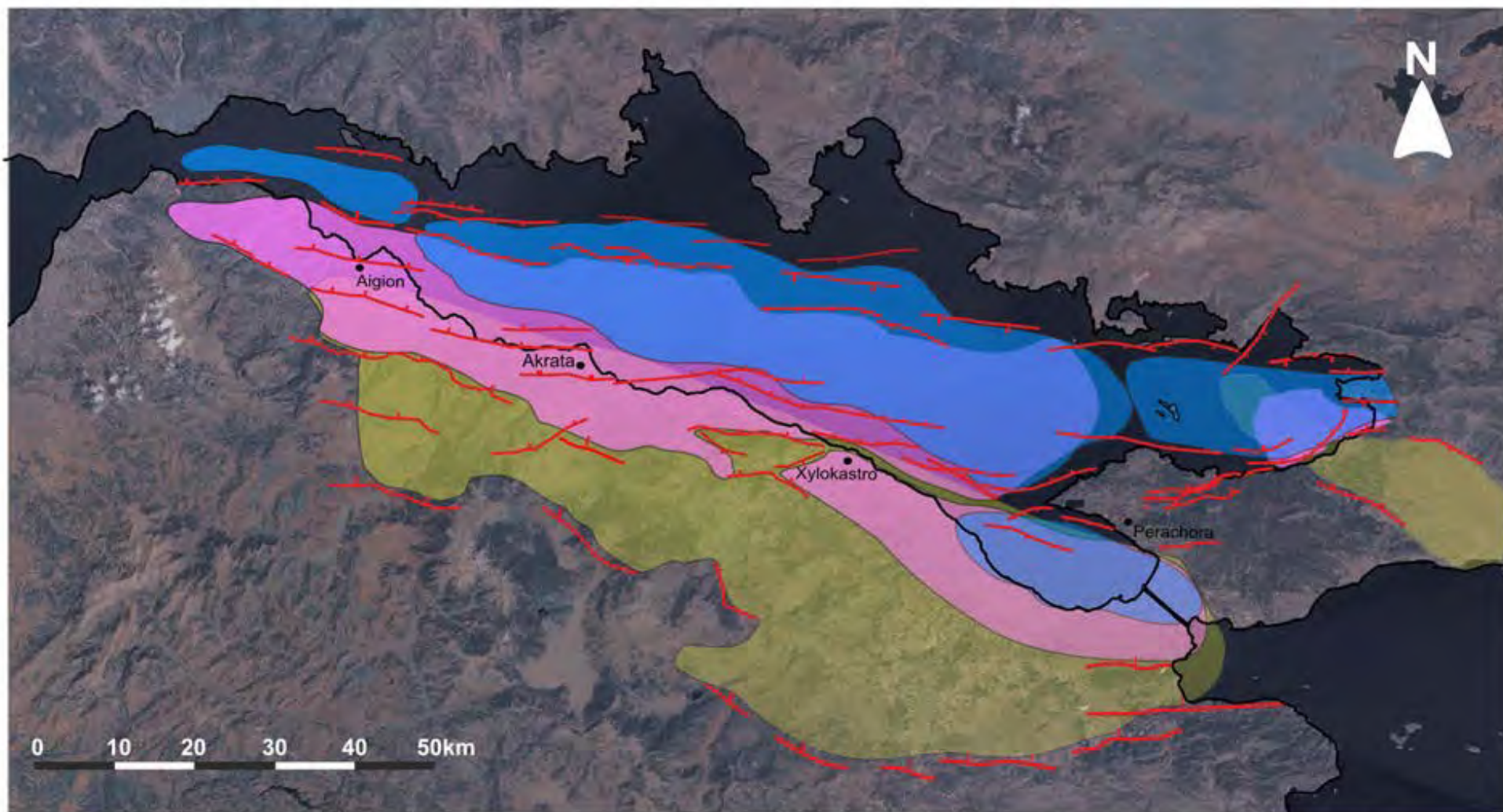
Paleoclimate Reconstruction


what was the climate like in the Eastern Mediterranean in the past?
Can we reconstruct high-resolution records for past environments and climates from the sediments deposited within the rift?

The scientific team aimed to core in three different locations, up to a depth of 750m below the seabed




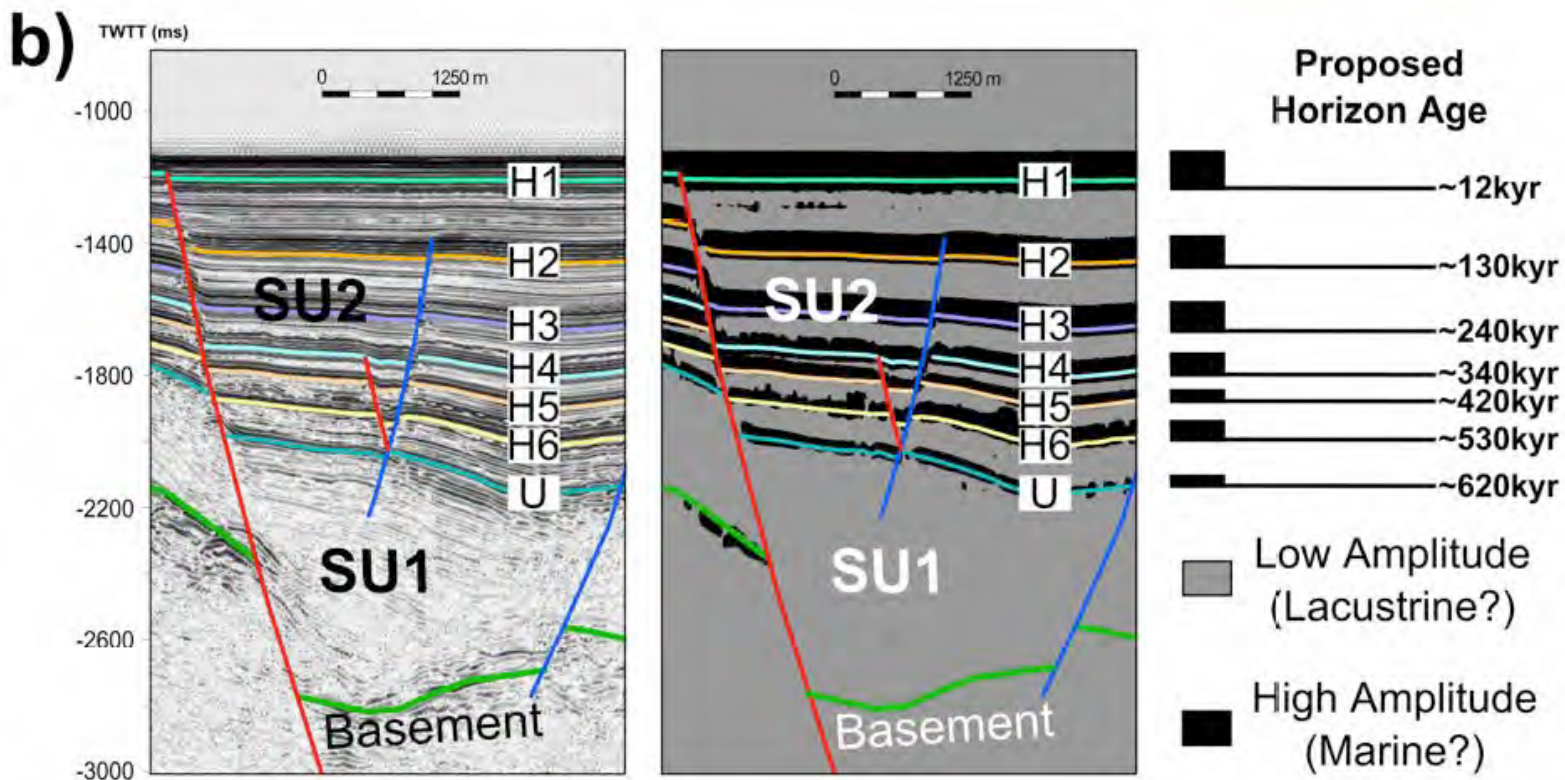
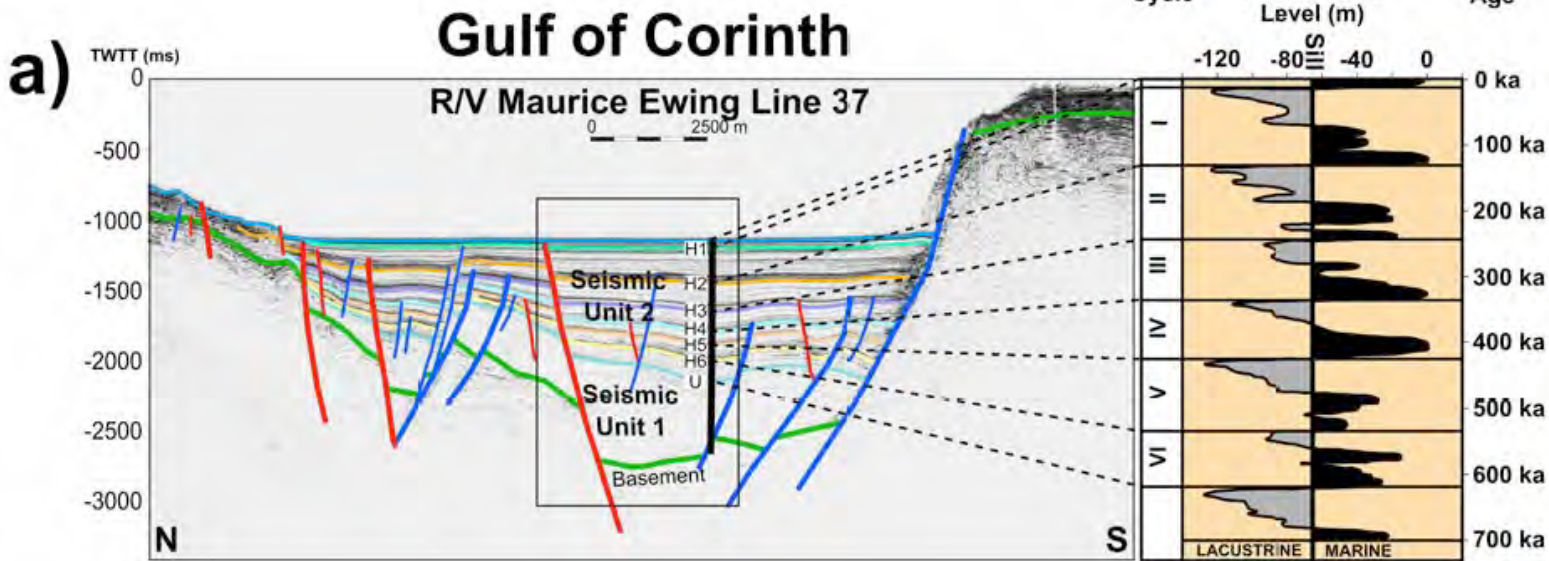


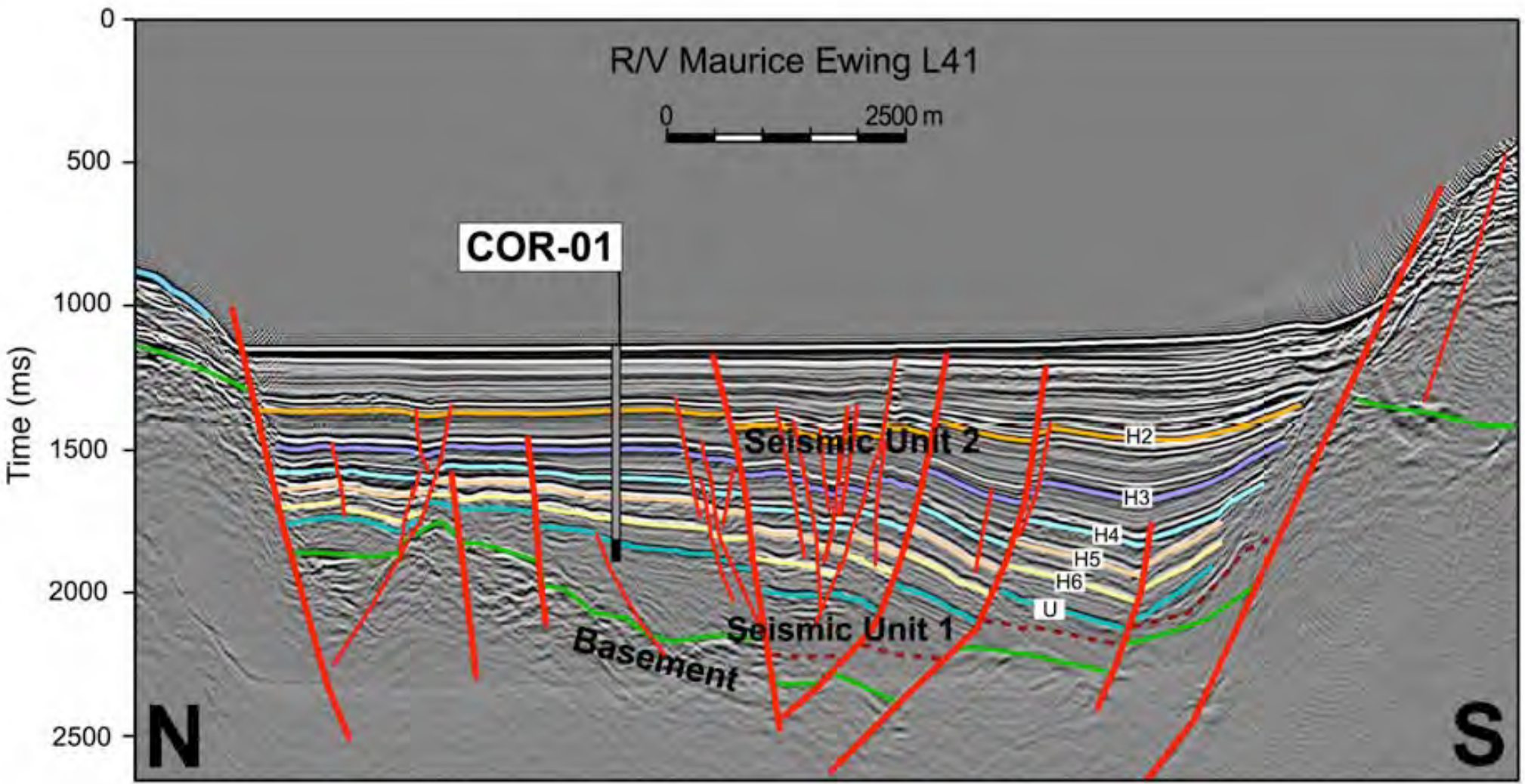


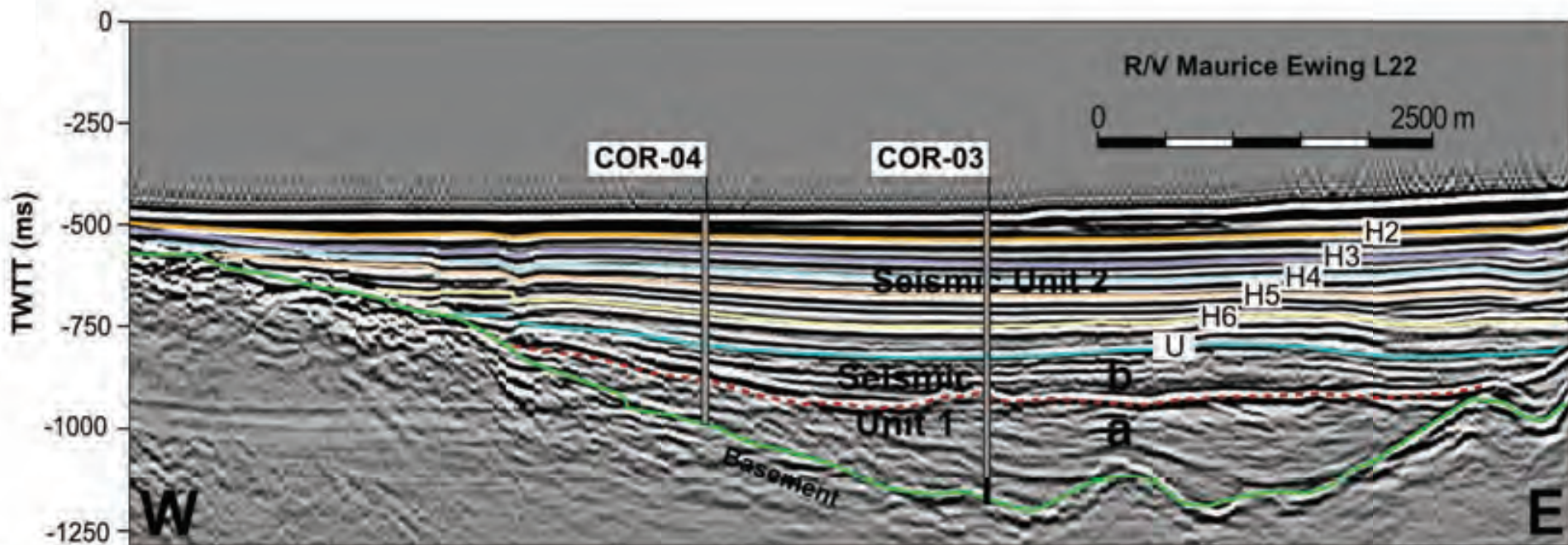
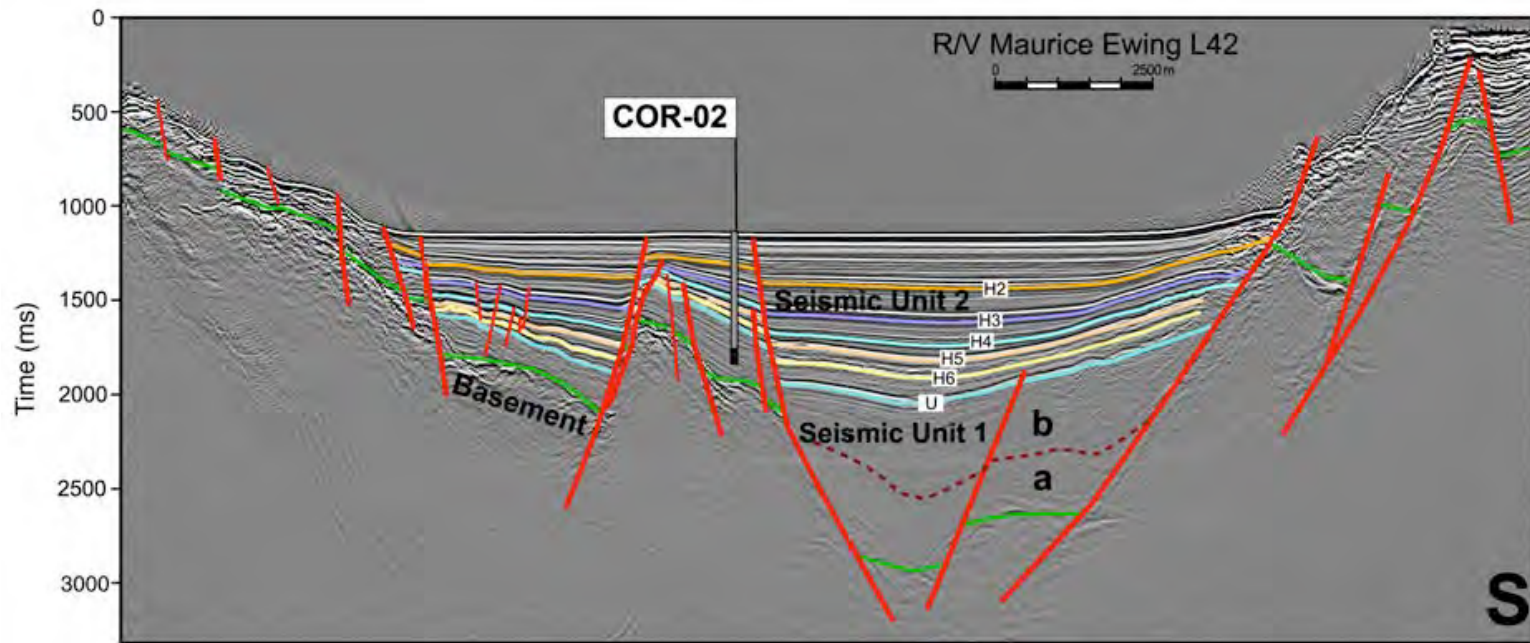
 **Lower Group**
Pliocene-Early
Pleistocene
(>2.5-1.5 Ma)

 **Middle Group**
Early Pleistocene-
Late Pleistocene
(~2.5-1.5 to ~0.6 Ma)

 **Upper Group**
Late Quaternary
(~0.6 Ma to Present)







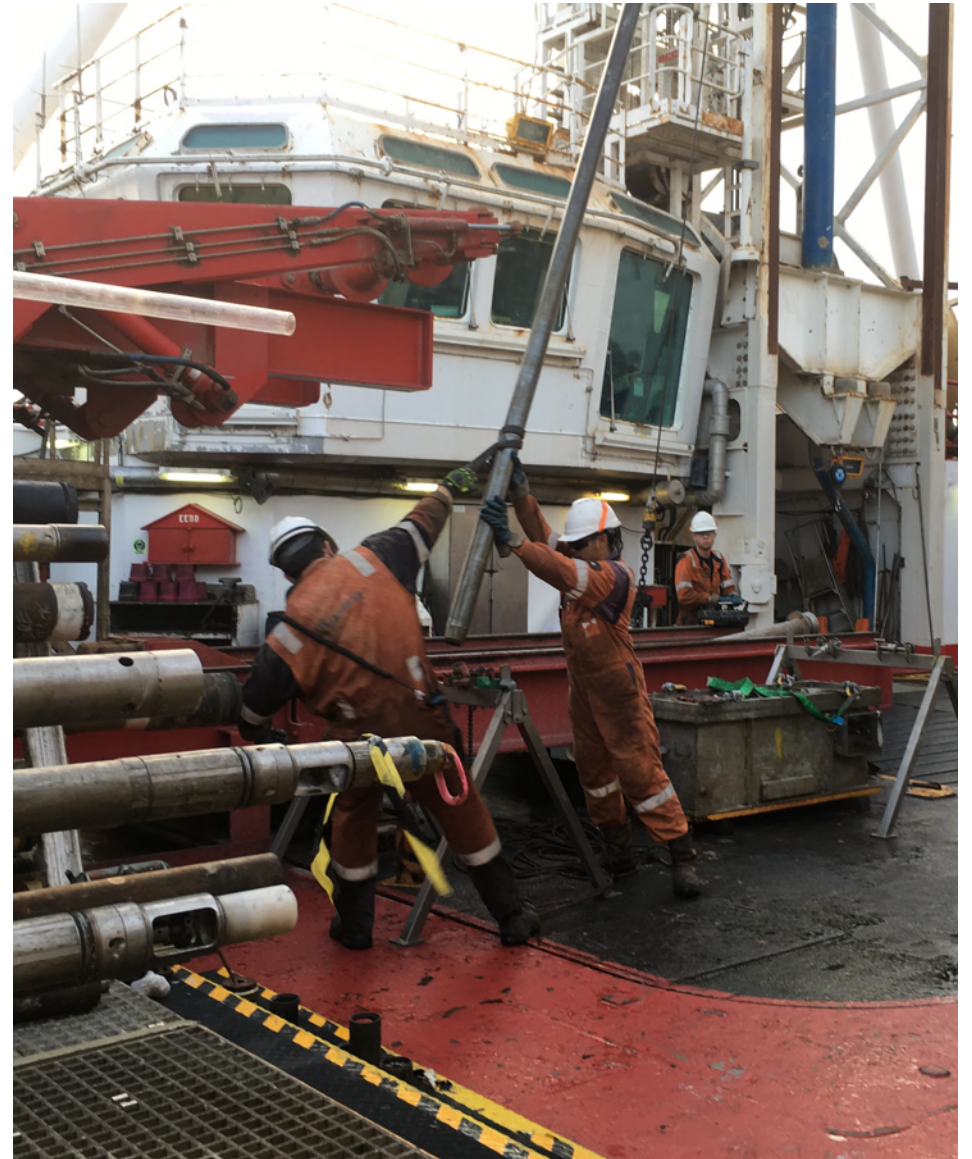
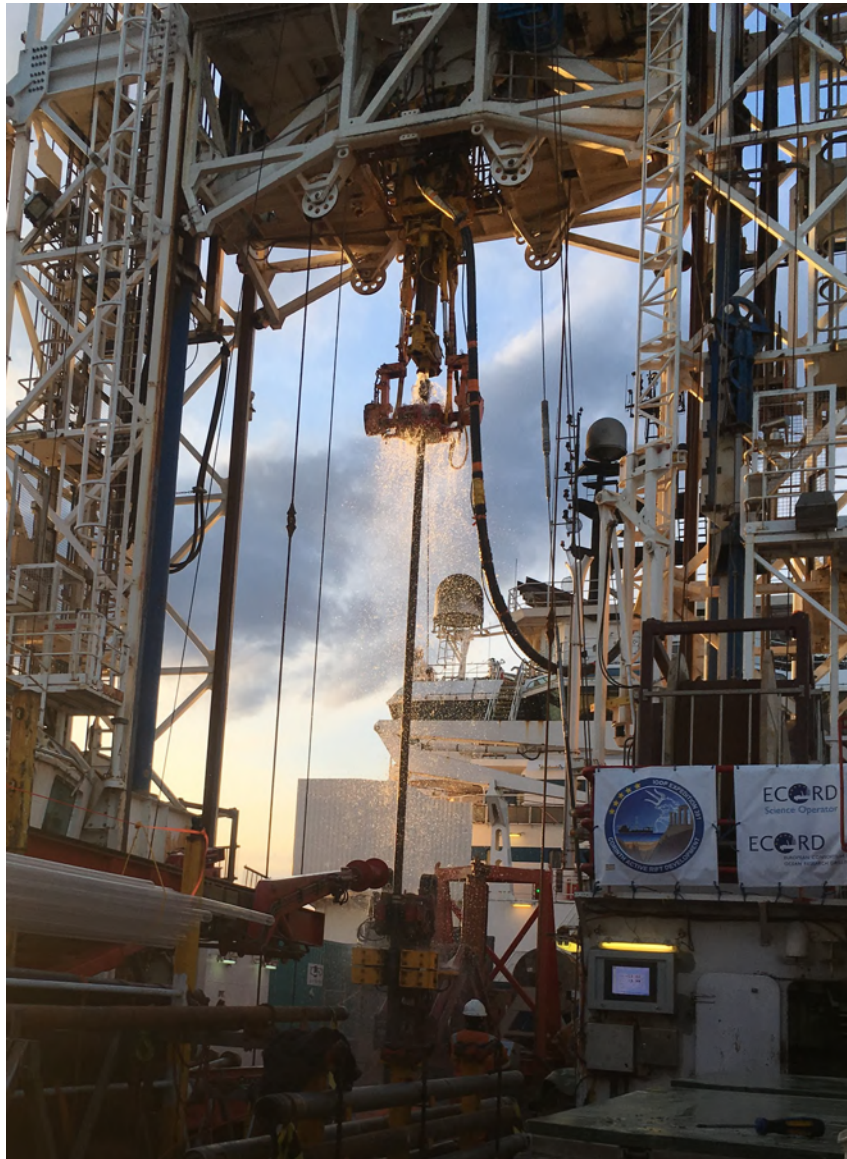


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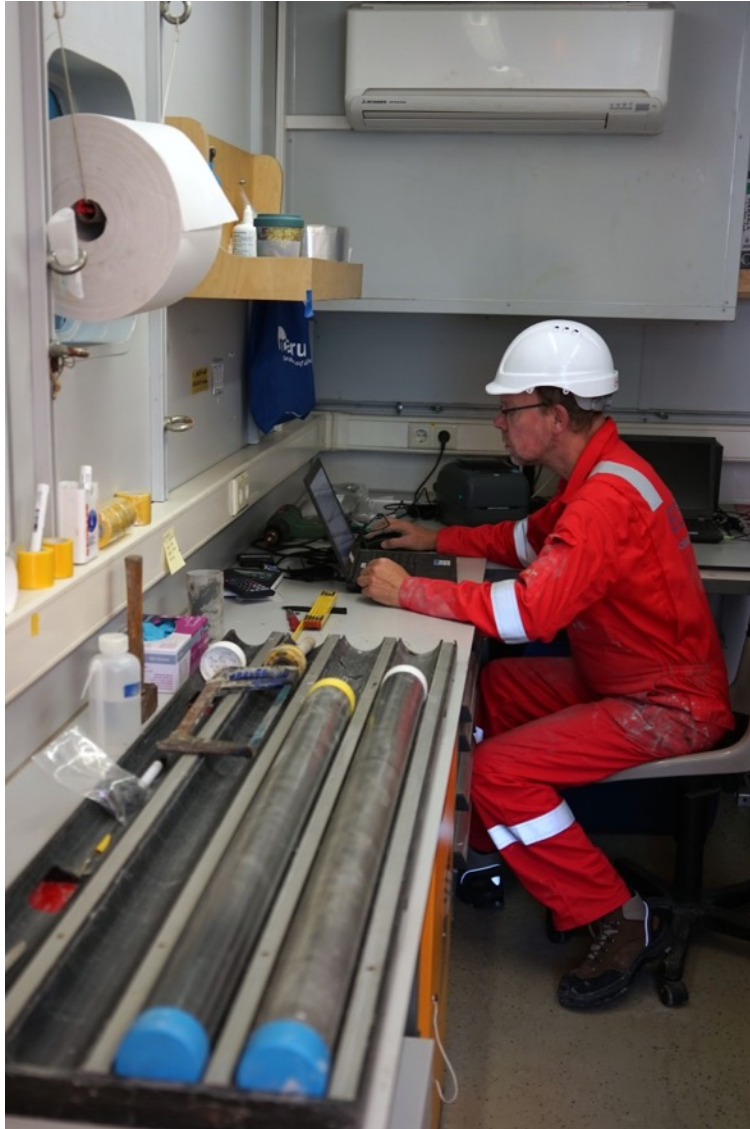
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Coring operations onboard



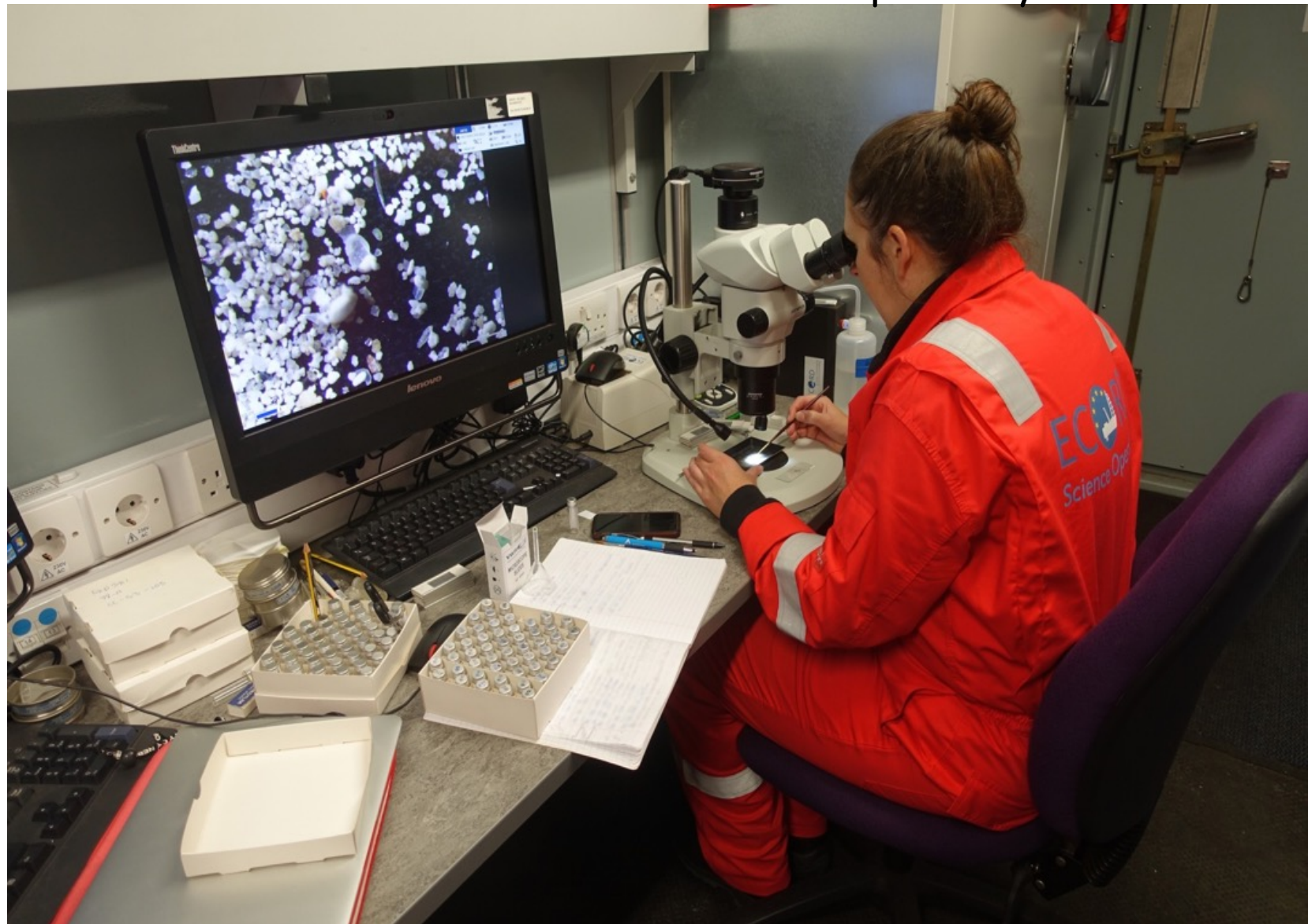
Sediment cores during a MSP - cores are not split offshore, therefore initial offshore sedimentology analysis is through core liner, from core catcher samples and occasional split pore water whole rounds





Cores run through multi-sensor core logger onboard (measuring magnetic susceptibility, gamma ray, P-wave velocity, density, resistivity)

Initial microfossil analysis (diatoms, nannofossils, forams)
onboard from core catcher samples only



Example split part of a core from Site M0079, Gulf of Corinth
Whole round taken for pore-water geochemistry analysis



Laminated fine grained sediments plus sand/silt sediment gravity flow deposits

Example split part of a core from Site M0079, Gulf of Corinth



organic-rich layers

Basal conglomerate (basement clasts) at base of rift sequence at Site M0080



The full science party will convene at the MARUM - Center for Marine Environmental Sciences at the University of Bremen, Germany, in February 2018 to split the cores and perform full analysis and sampling



"At that time, we will see the full splendour of the core contents and be able to work as a larger group for the first time!"

Prof. Lisa McNeill, Co-Chief of the expedition