

Figure 1: Location map for the five shallow boreholes showing the relationship to the main structural elements in the region

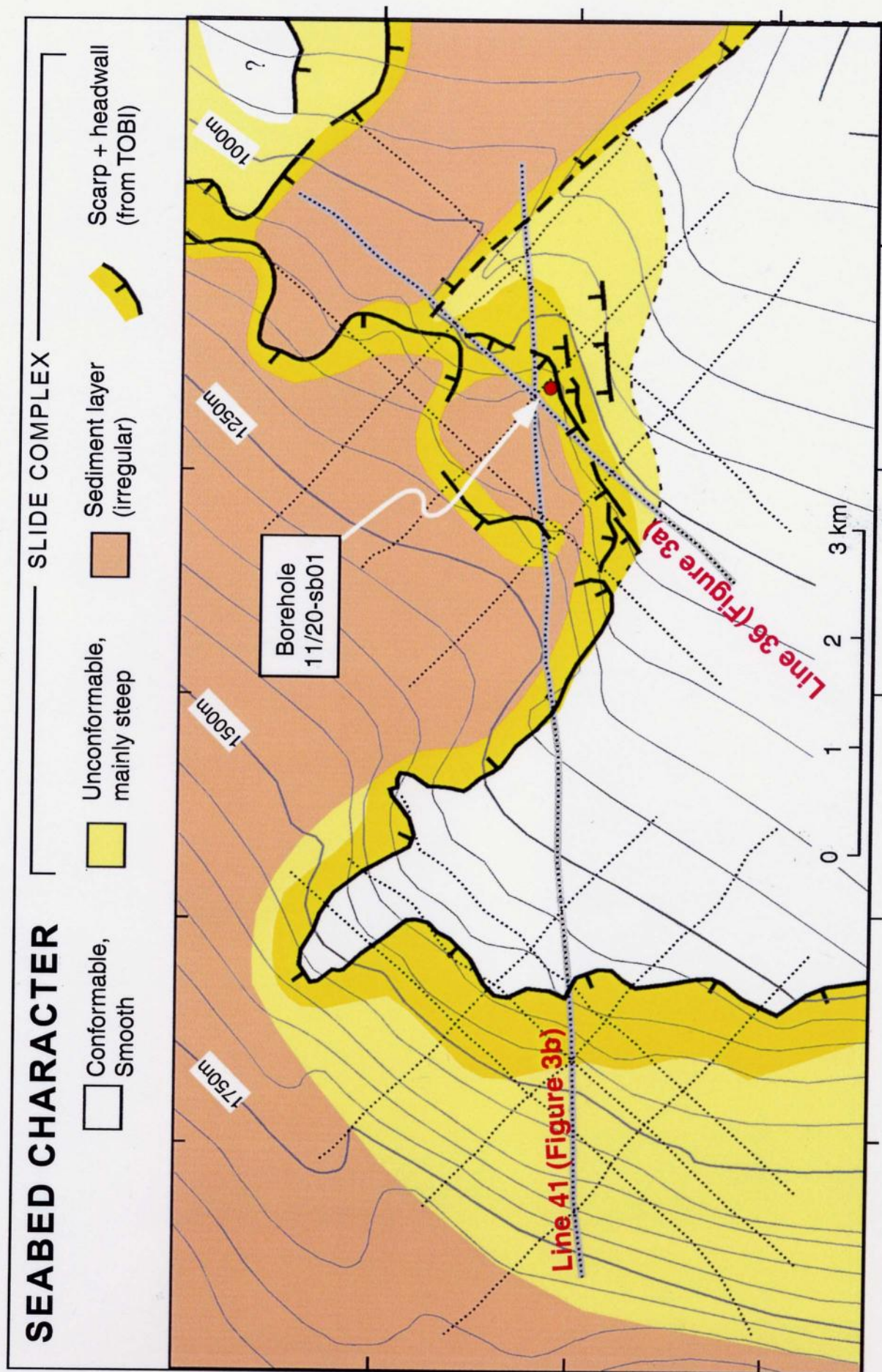
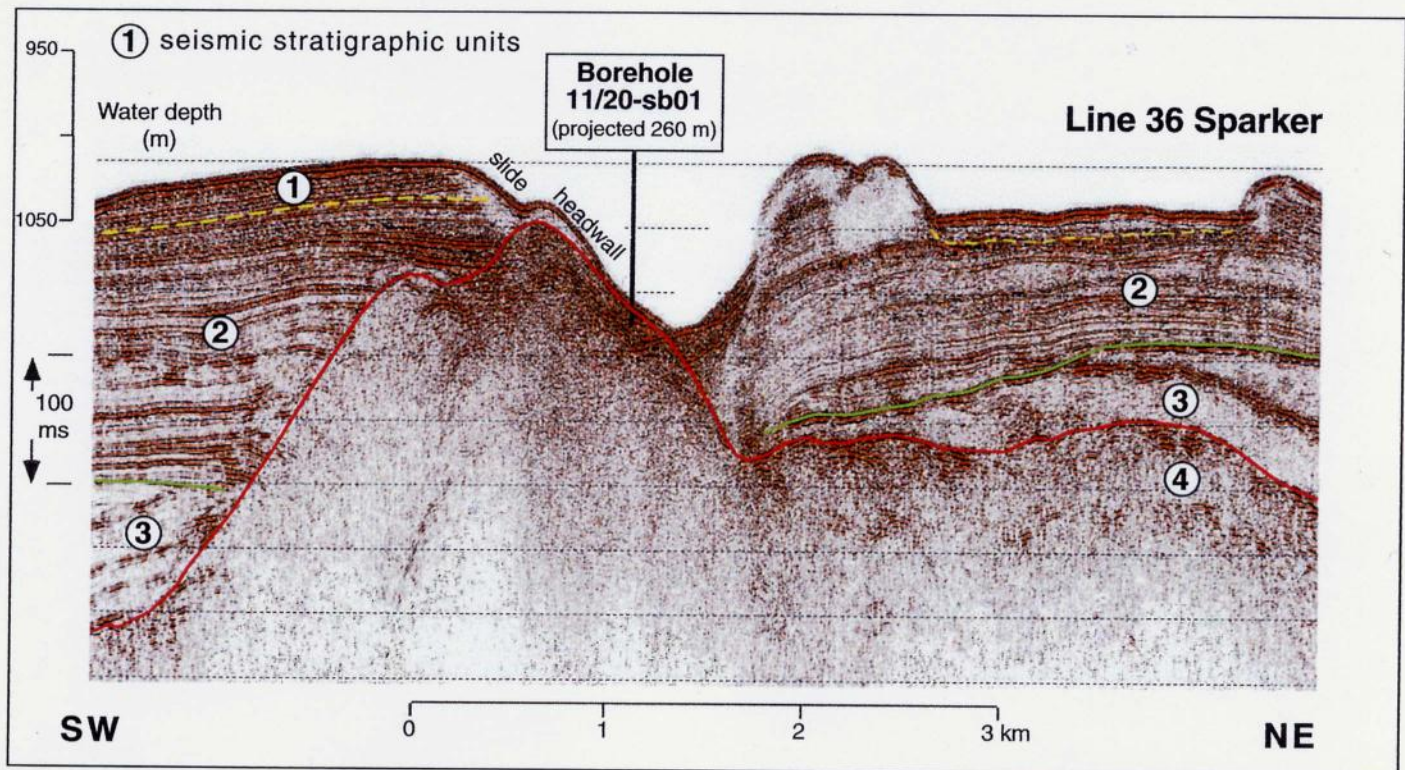


Figure 2: Location of 11/20-sb01 borehole in relation to bathymetry, seabed morphology and position of shallow site survey seismic lines.

(a)



(b)

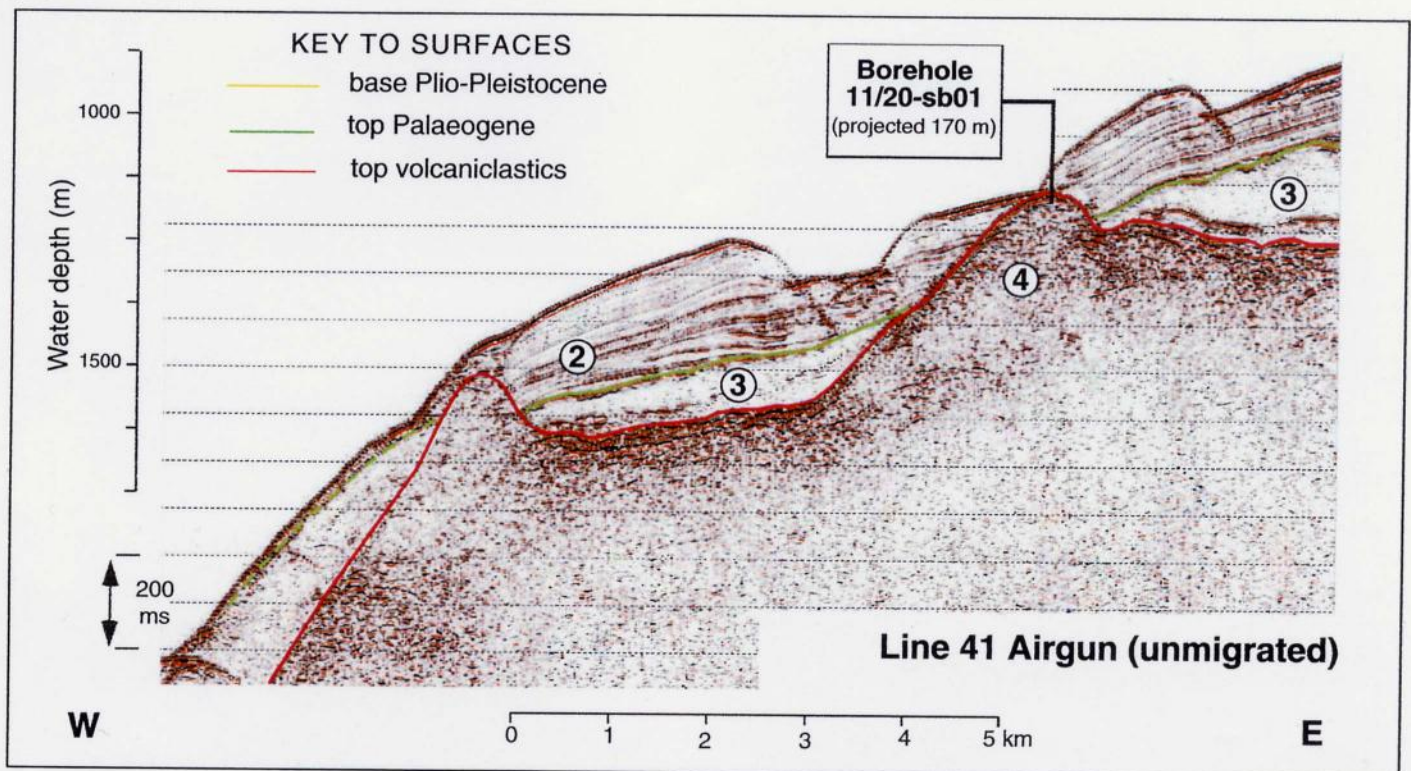
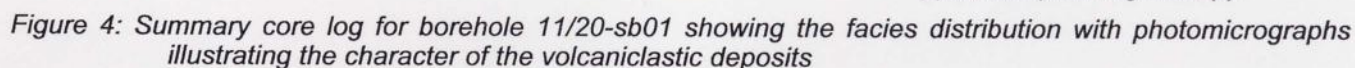


Figure 3: Location of 11/20-sb01 borehole projected onto (a) site survey Sparker line 36 and (b) Airgun line 41 with main seismic stratigraphic packages indicated (modified from Praeg & Shannon 2000).



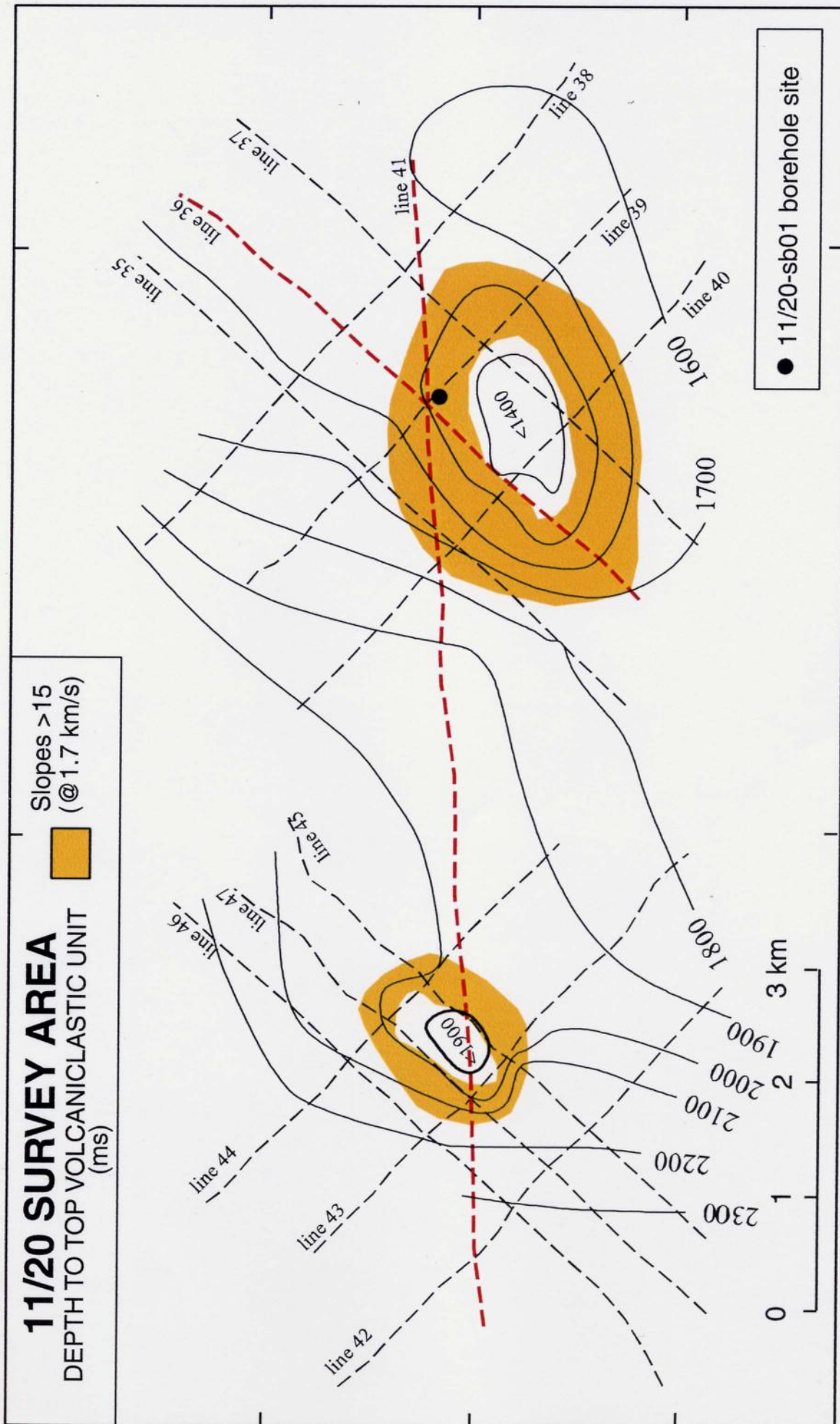
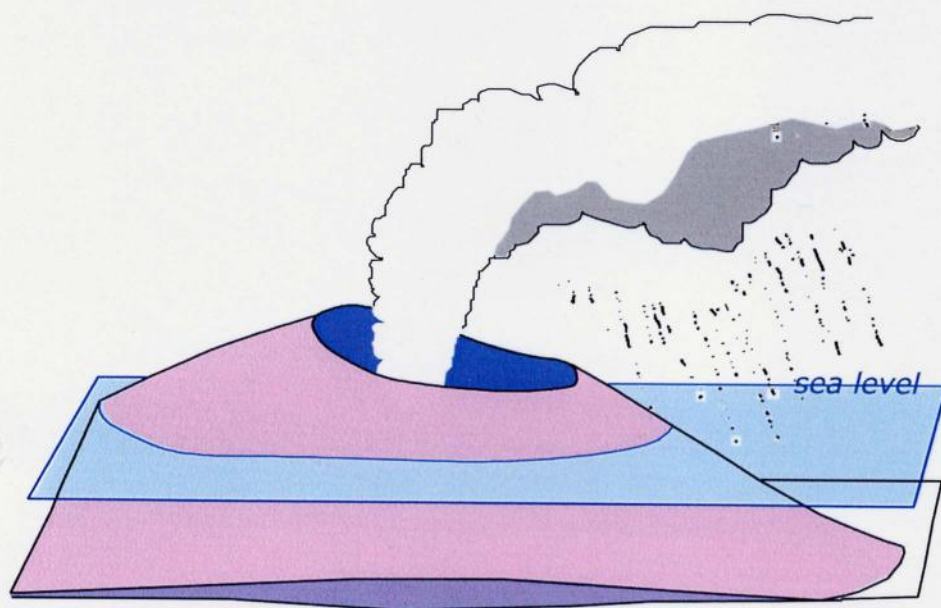
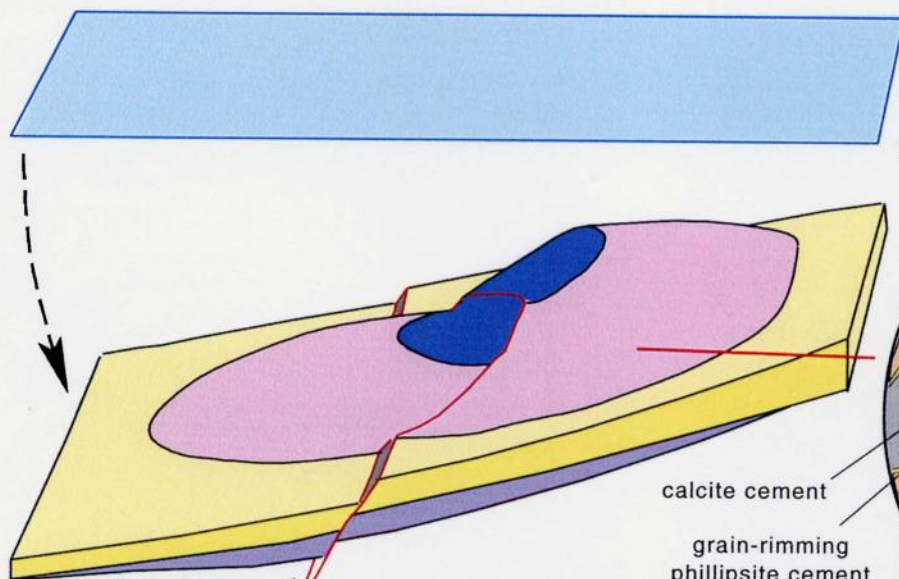


Figure 5: Isochrons (100 ms interval) drawn on a strong reflection marking acoustic basement and identifying a pair of cone-shaped highs, the more easterly of which is cored in the 11/20-sb01 borehole (from Praeg & Shannon 2000)



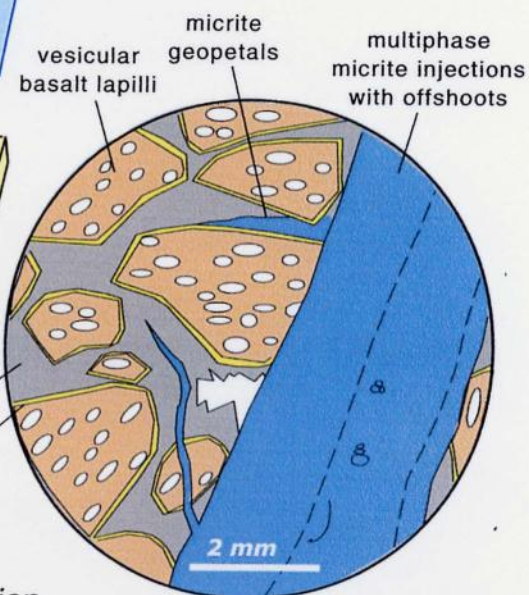
① Basaltic eruption in shallow water to build a tuff cone



② Slope rotation, rapid submergence, destabilisation and sediment injection

Figure 6:

Cartoon illustrating the initial growth of a shallow marine tuff cone with syn-eruption tuff deposition and local marine reworking of the volcano flanks. The eruption was followed by rapid foundering (to preserve the cone morphology intact) and draping by Unit 3 (micritic carbonates?). Progressive westward tilting ultimately induced instability and fracturing, with hydraulic pumping of soft carbonate sediment (sourced from Unit 3?) into fractures as they opened. In thin section, basaltic lapilli are rimmed by early zeolite cement which is overlain by pore-filling calcite spar. The micrite locally invades fracture-adjacent pores prior to calcite cementation, forming geopetals.



THIN SECTION

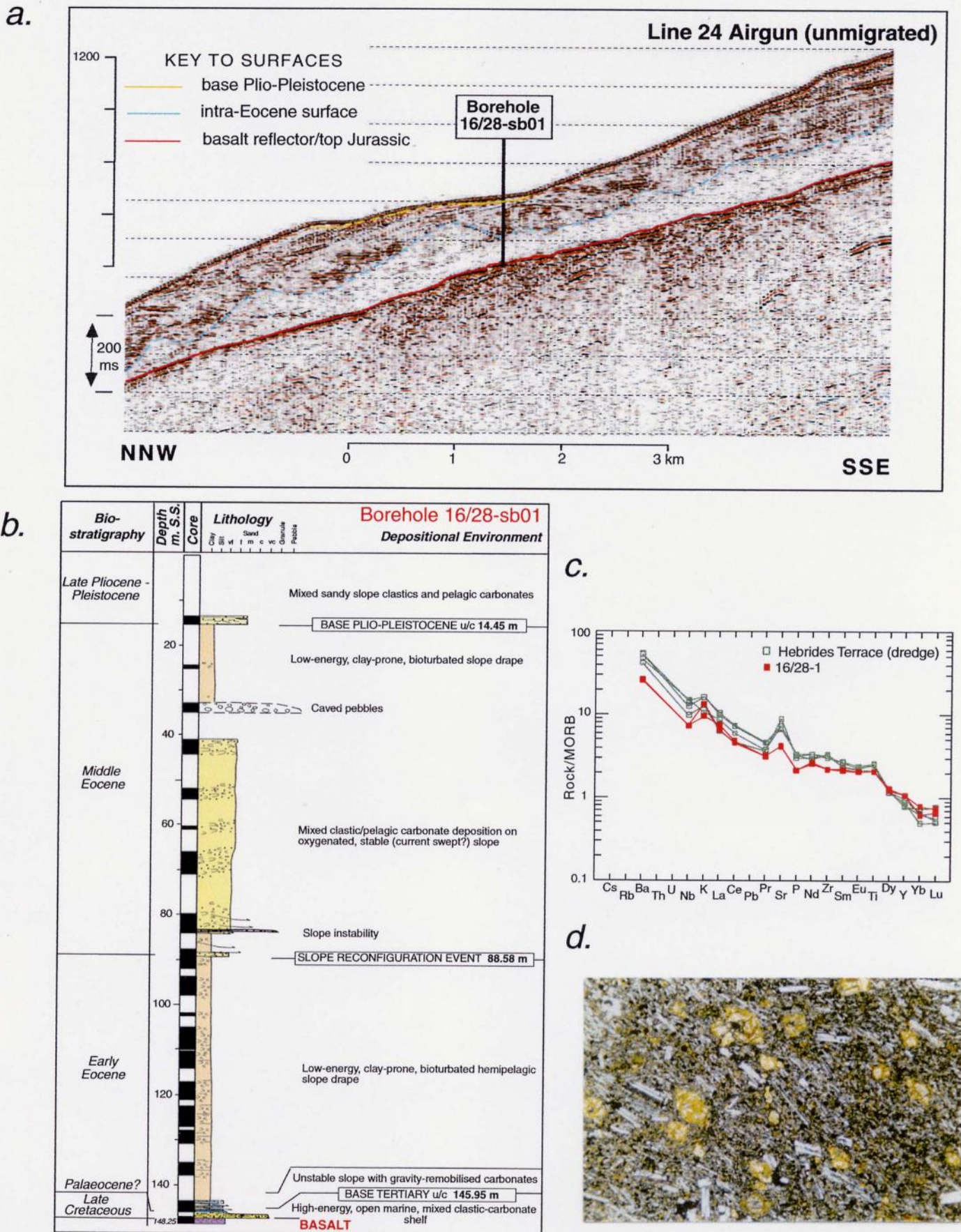


Figure 7:

(a) Site survey airgun line (unmigrated) showing context of succession cored in borehole 16/28-sb01 north of Porcupine Bank. (b) Summary of cored succession in borehole 16/28-sb01. (c) MORB-normalized element variation diagram showing the similarity of the 16/28-1 basalt with dredged basalts from Hebrides Terrace (normalizing values from Sun & McDonough 1989). (d) TS photomicrograph (XPL) of basalt from borehole 16/29-sb01 showing flow aligned plagioclase phenocrysts and abundant olivine pseudomorphs.

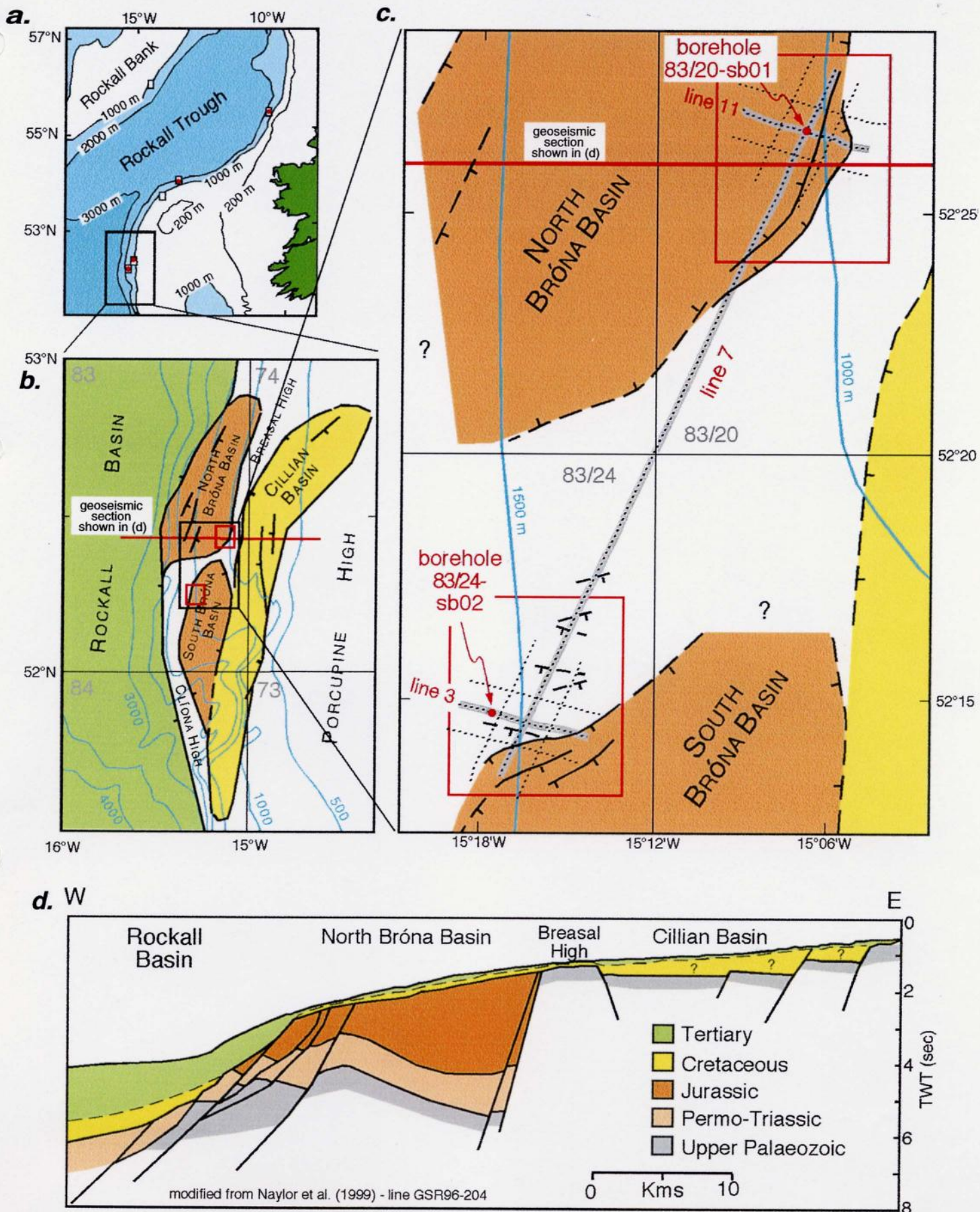


Figure 8: Location maps (a,b,c) for the shallow boreholes on the western flank of the Porcupine Bank showing their position in relation to the main basins and highs in the region, and the seismic lines used to constrain the depositional and structural evolution. The inferred basin ages are coloured according to the key in (d) which is part of industry reflection line GSR96-204, modified from Naylor et al. (1999).

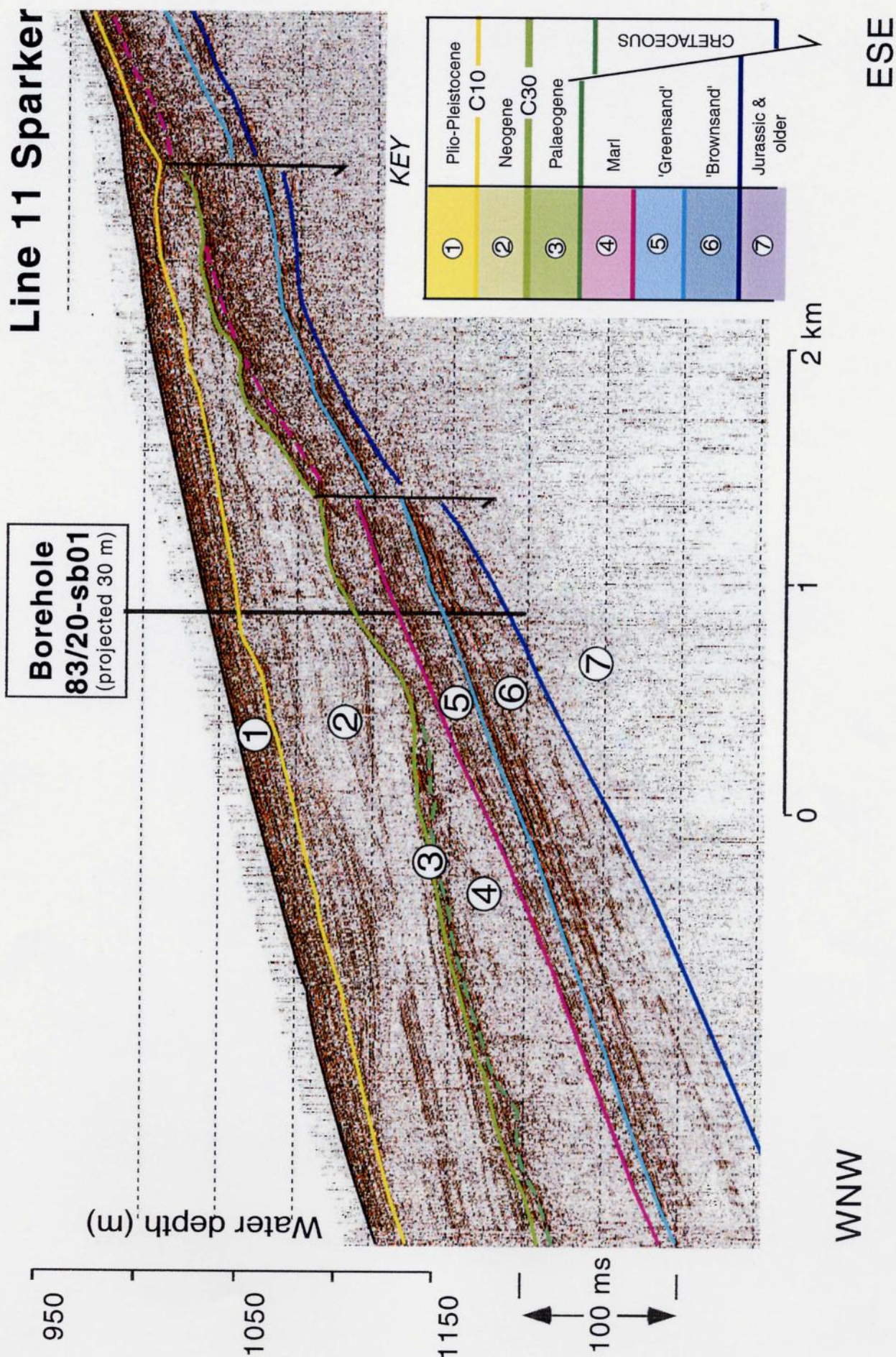


Figure 9: Interpreted sparker profile (Line 11) across borehole site 83/20-sb01. See Figure 8 for location.

BOREHOLE - 83/20-sb01

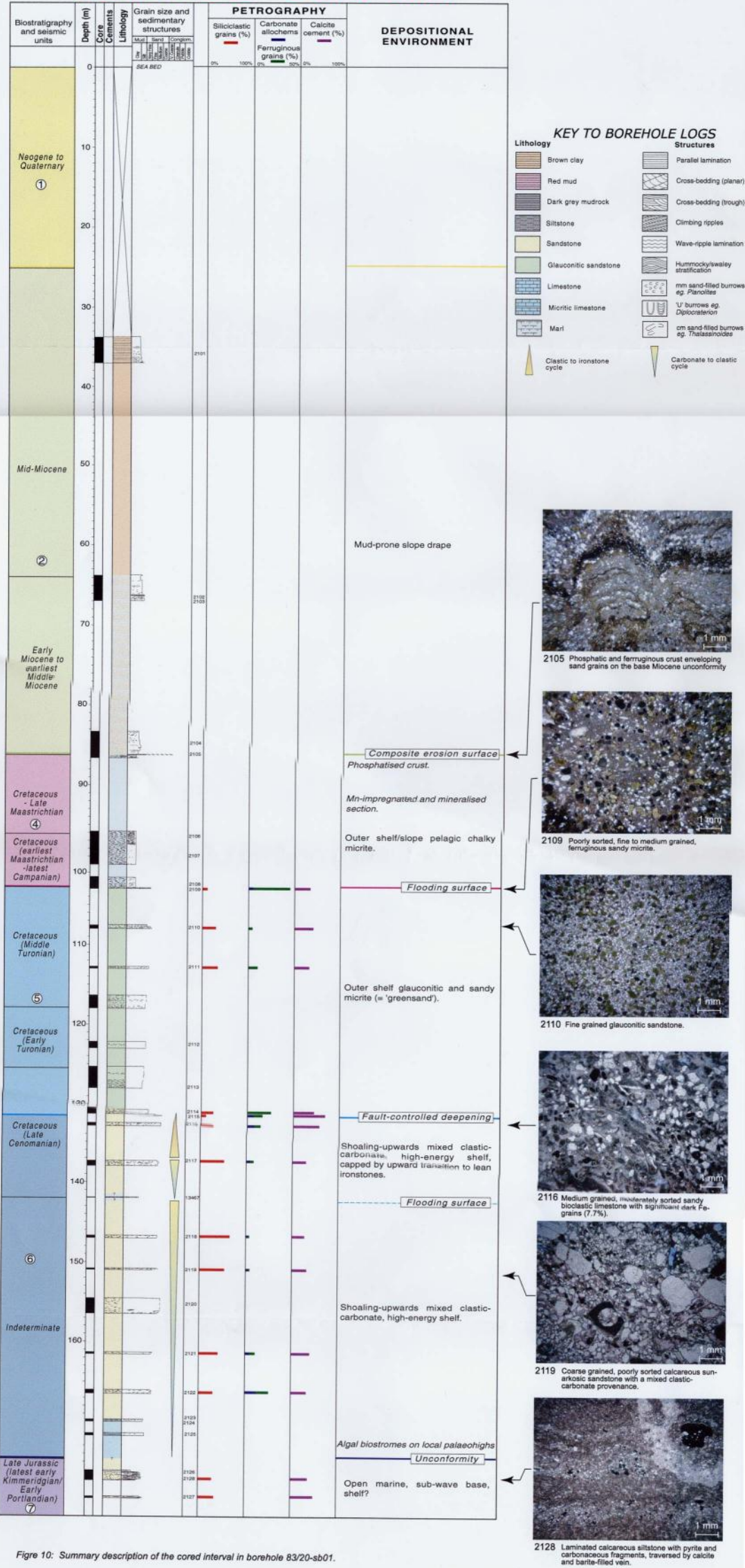


Figure 10: Summary description of the cored interval in borehole 83/20-sb01.

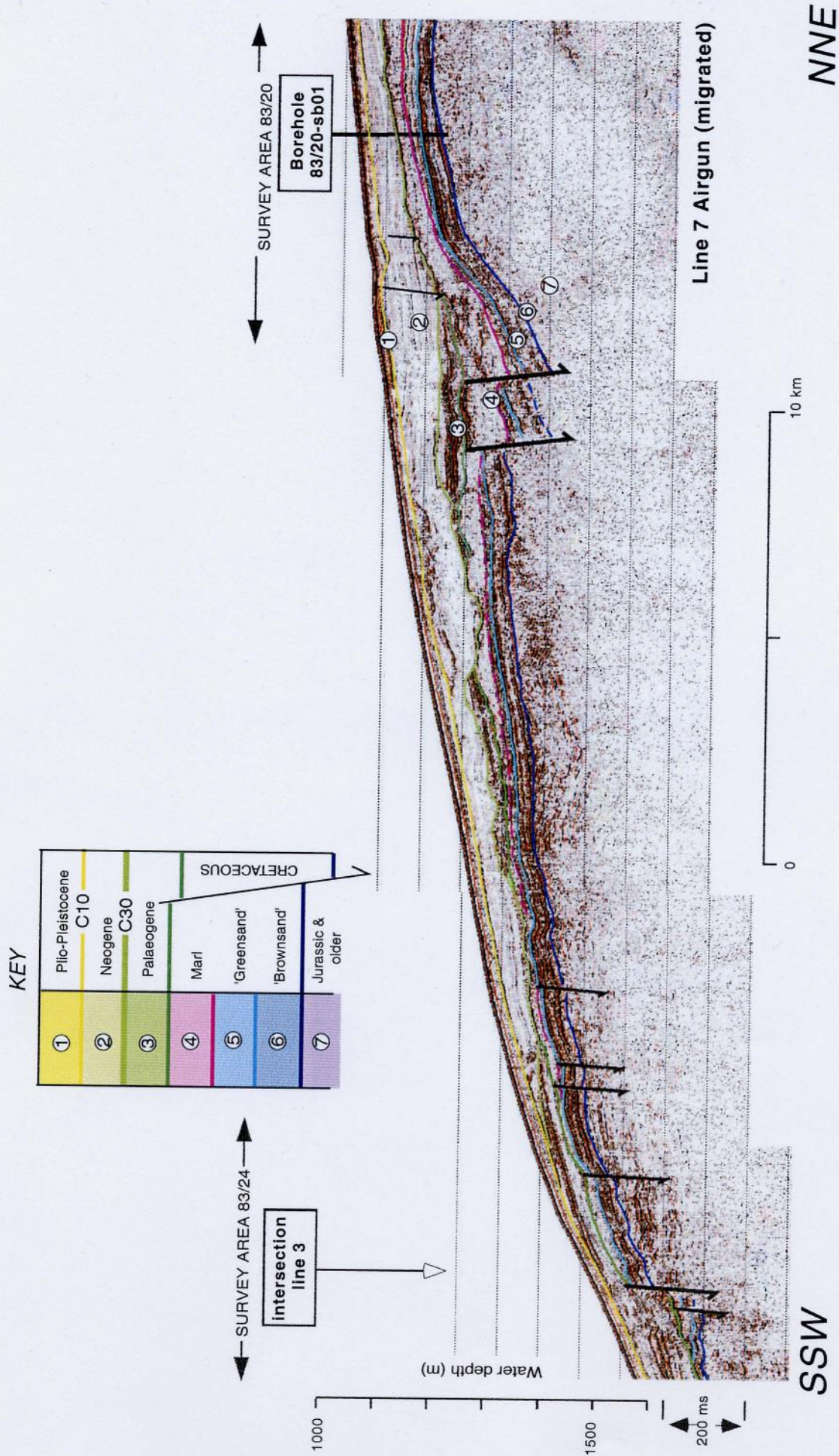


Figure 11: Interpreted airgun profile (Line 7) showing the continuity of stratigraphy between survey sites 83/24 and 83/20. See Figure 8 for location.

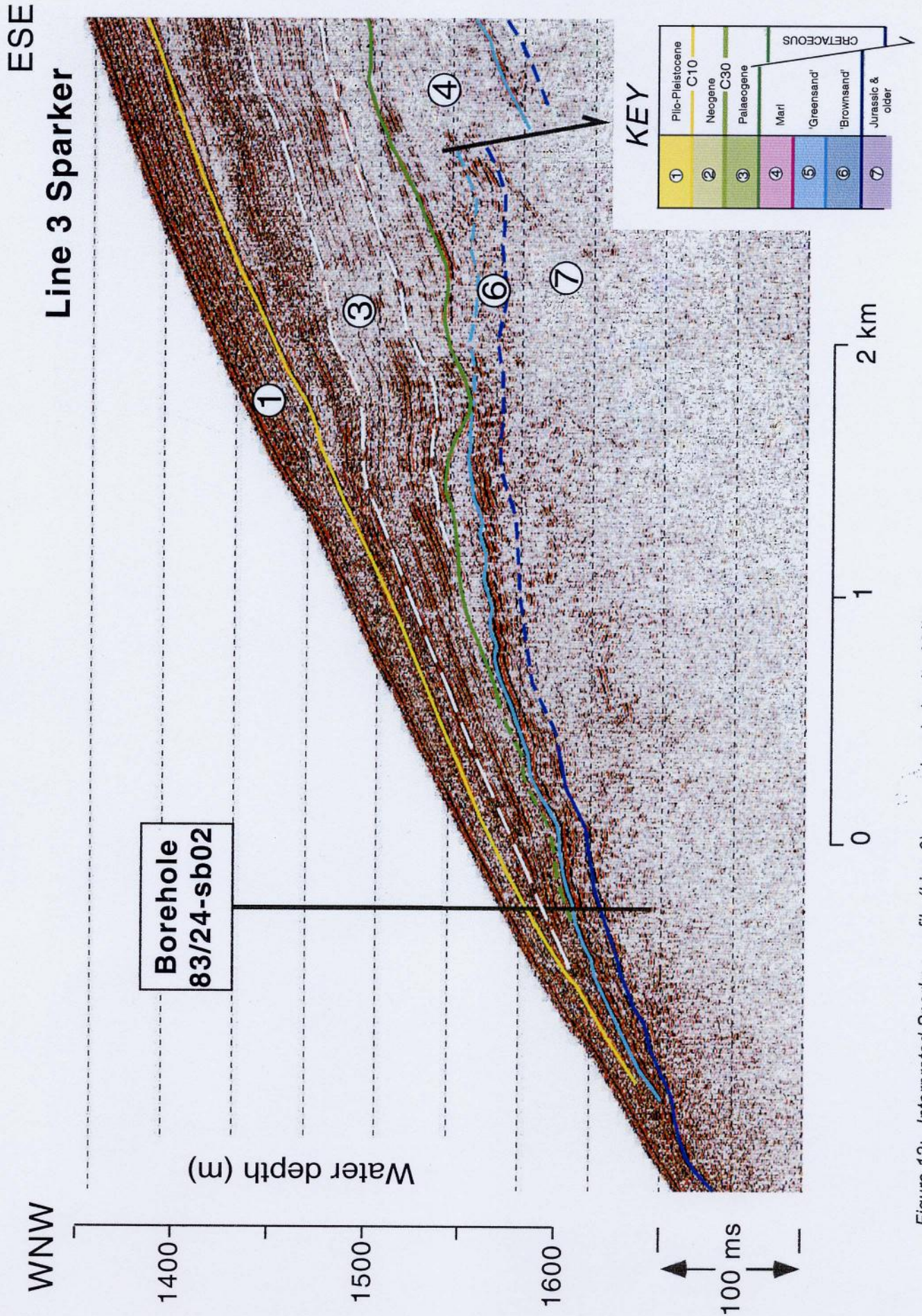


Figure 12: Interpreted Sparker profile (Line 3) across borehole site 83/24-sb02. See Figure 8 for location.

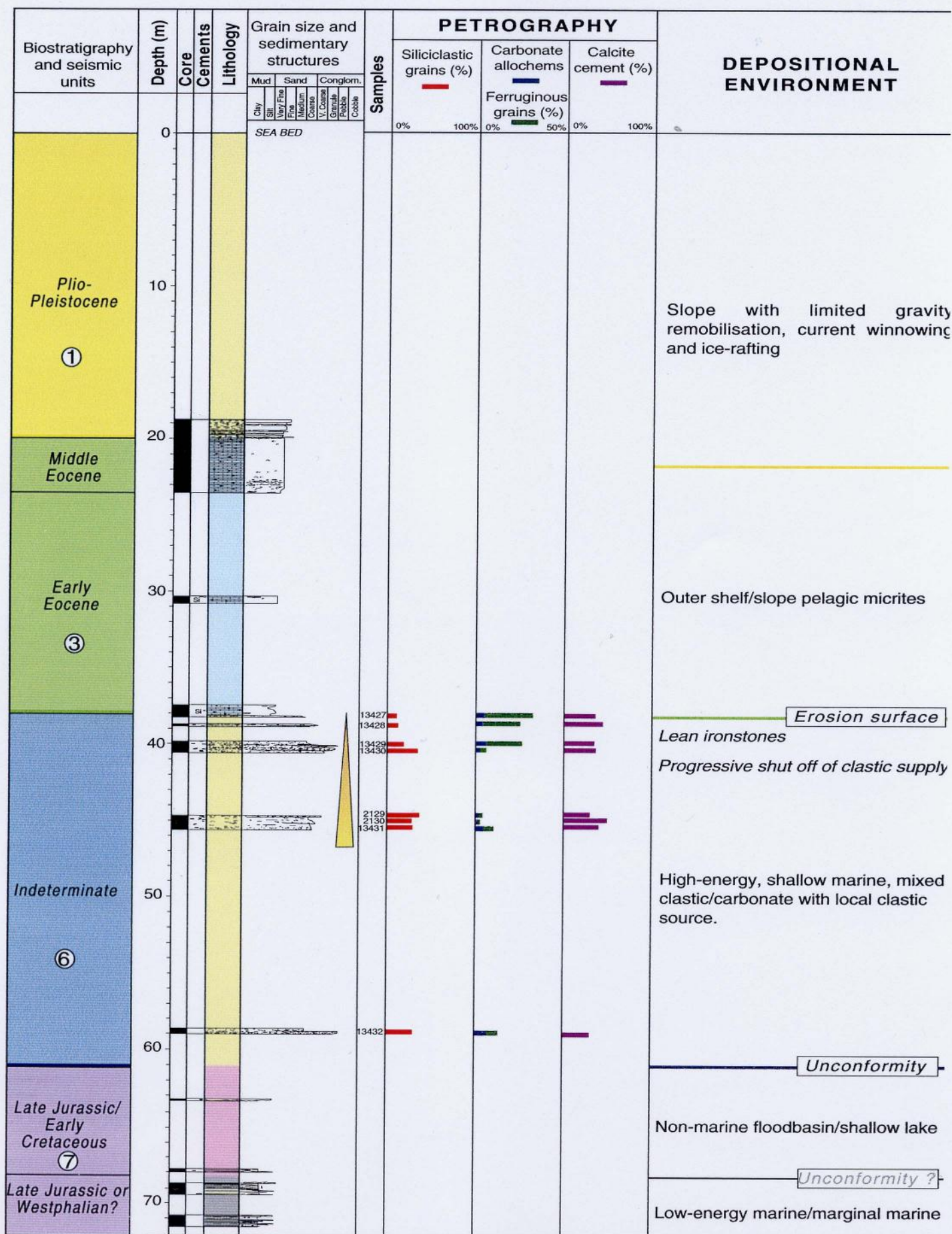








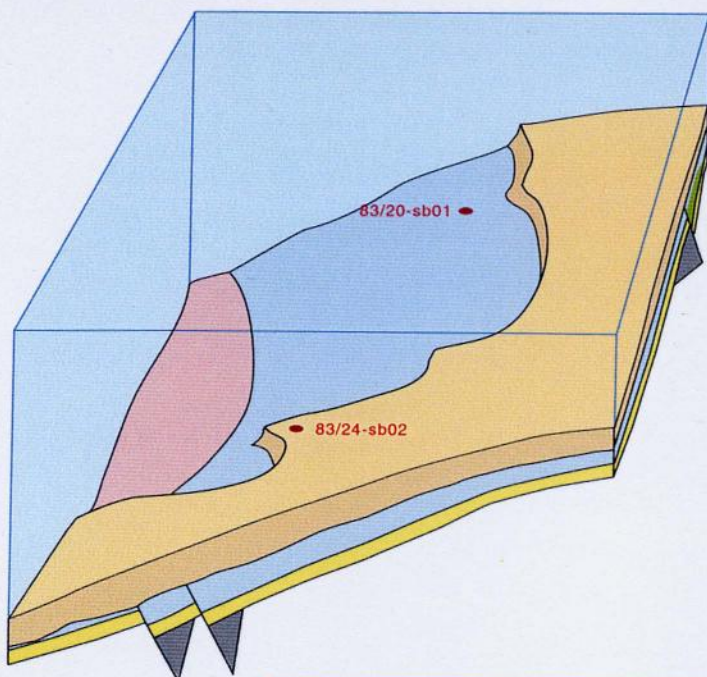


Figure 13: Summary description of the cored section in 83/24-sb02.

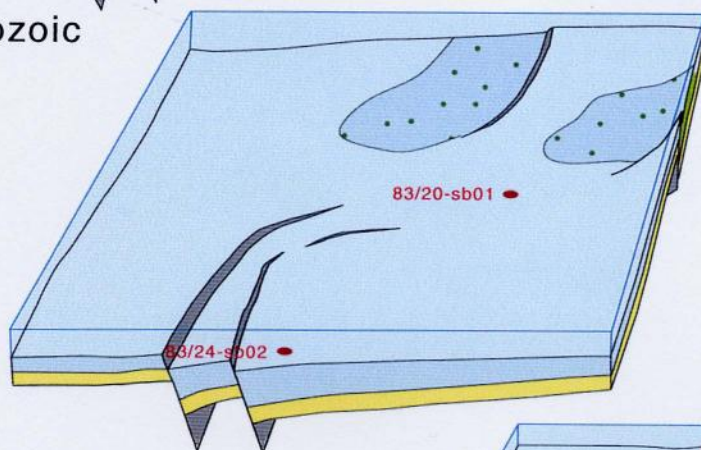
KEY

	Miocene
	Palaeogene
	Cretaceous chalky marl
	Cretaceous greensand
	Cretaceous mixed clastic-carbonates(= 'brownsands')
	Cretaceous lean ironstones
	Jurassic and older Mesozoic
	Basement (=Variscan?)

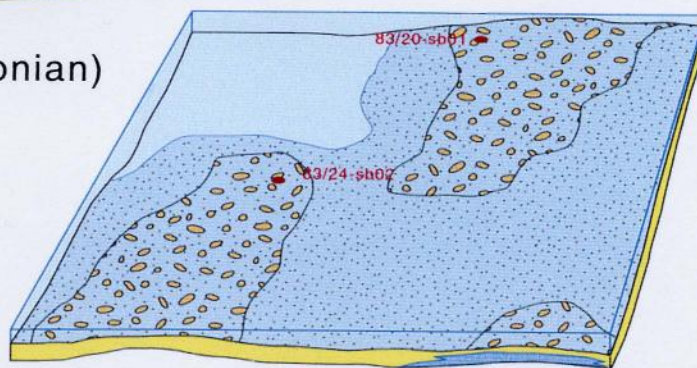
④ Cenozoic



③ Cretaceous (Turonian)



② Cretaceous (Late Cenomanian)



① Cretaceous (Cenomanian)

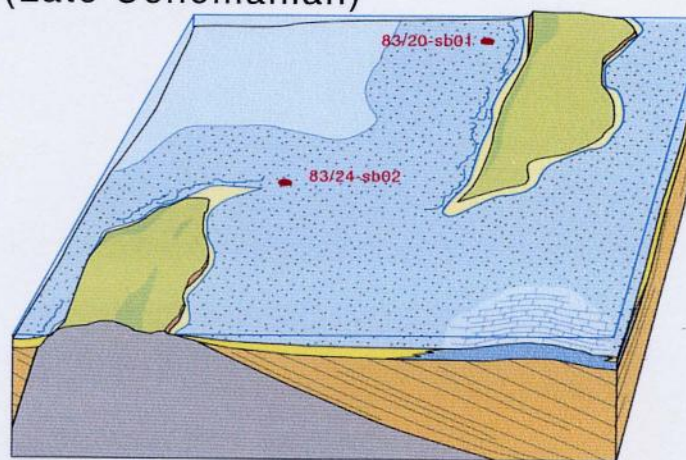


Figure 14: Integrated depositional evolution for the 83/20-sb01 and 83/24-sb02 sites. See text for discussion.

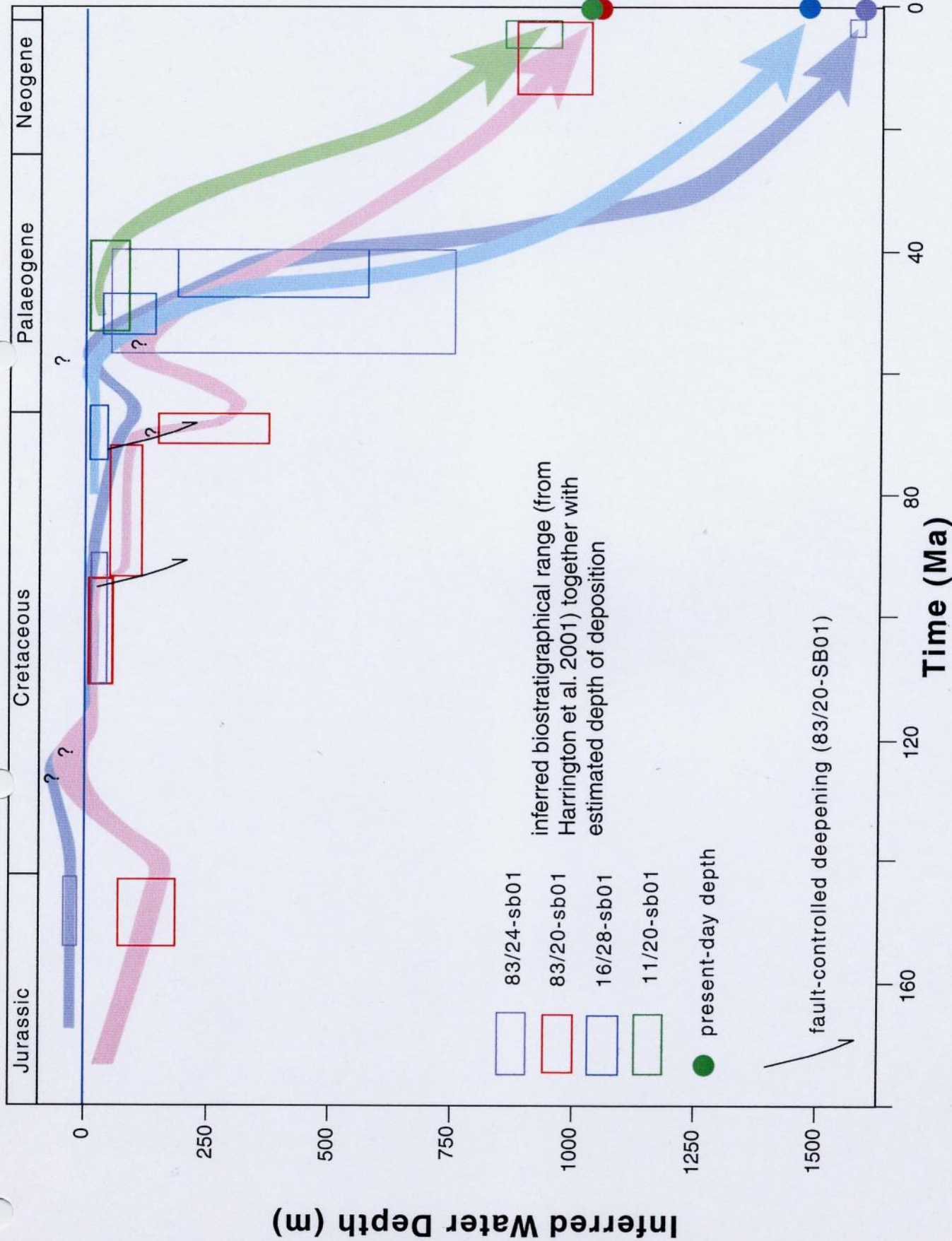


Figure 15: Speculative palaeobathymetric evolution of the eastern Rockall Basin flanks based on core data discussed in this report. Boxes indicate possible range of depths inferred on the basis of the sedimentology and palaeontology. See report for discussion and uncertainties.