

A honeycomb seafloor morphology in carbonate sediment of the Carnegie Ridge (offshore Ecuador): Formation and potential geodynamic significance

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Depressions characteristics along the seismic profiles					
Seismic Profile Depression number	Depth (m)	Width (km)	Polygonal form	Basement irregularity	Filled by sediments
124S					
1	150	3.9	No	Yes	No
124N-126					
1	475	5.2	No	Yes	No
2	80	1.0	No	No	No
3	30	1.0	Yes	No	No
4	125	0.8	Yes	Yes	No
5	175	0.85	Yes	Yes	No
6	200	1.1	Yes	Yes	Partially
7	200	1.5	Yes	Yes	No
8	250	1.6	Yes	Yes	Partially
9	75	0.8	Yes	Yes	No
10	200	2.0	Yes	Yes	No
11	250	1.2	No	No	No
12	175	1.4	No	Yes	No
13	200	1.3	No	Yes	Partially
130-129					
1	300	3.1	No	Yes	No
2	50	1.2	No	Yes	No
3	“150”	“2”	Unknown	No	Yes
4	“150”	“1”	Unknown	No	Yes
5	“225”	“2”	Unknown	Yes	Yes
131					
1	75	2	No	Yes	No
2	250	3.5	No	No	Partially
3	375	3.0	No	No	No
4	475	3.8	No	Yes	No
128					
1	“275”	“4”	Unknown	Yes	Yes
2	250	4.3	No	Yes	No
3	300	2.0	No	Yes	No
4	125	2.0	No	No	Partially
5	150	1.1	No	Yes	Partially
6	250	1.5	No	Yes	Partially
	30 m to 475m	0.8 km to 5.2 km		73% of depressions related to a basement irregularity	62 % of the depression unfilled

Table DR1: Depressions characteristics along the seismic profiles. The numbers correspond to the depressions along the seismic profiles and located on Figure 2,3, 4 and S1). Semi-quantitative estimation based on all seismic lines crossing the depressions that we have acquired in the area (figure 2 for line location). Some statistic is done about 1) the link between the basement roughness and the depression location (73% of depressions are related to a basement irregularity); and 2) about the sedimentary filling (38% of the depression are filled by u2 sedimentary unit).

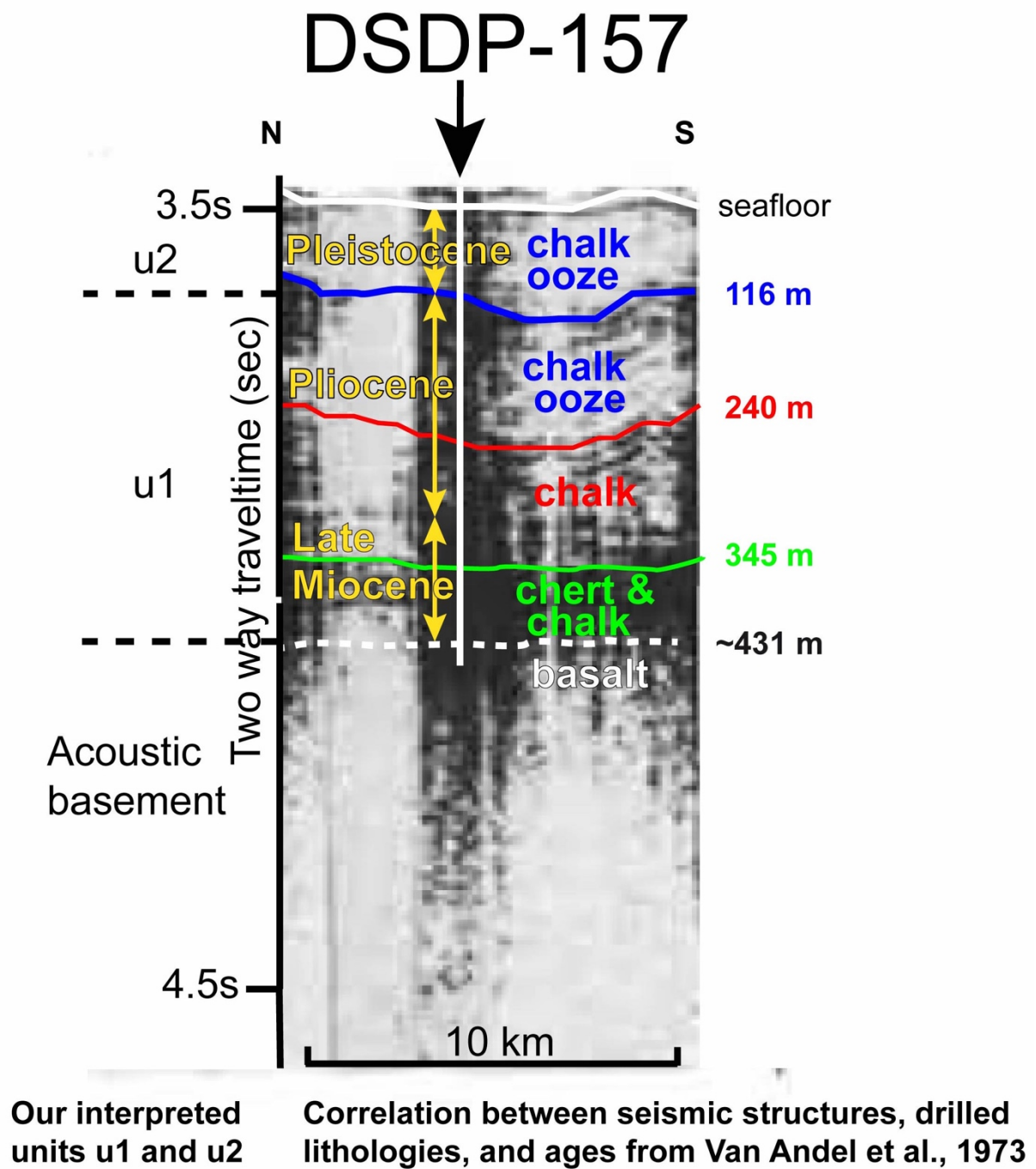


Figure DR1: Correlation between our seismic units (u1, u2, acoustic basement) with a seismic line, drilled lithology and age from the DSDP 157 (from Van Andel et al., 1973).

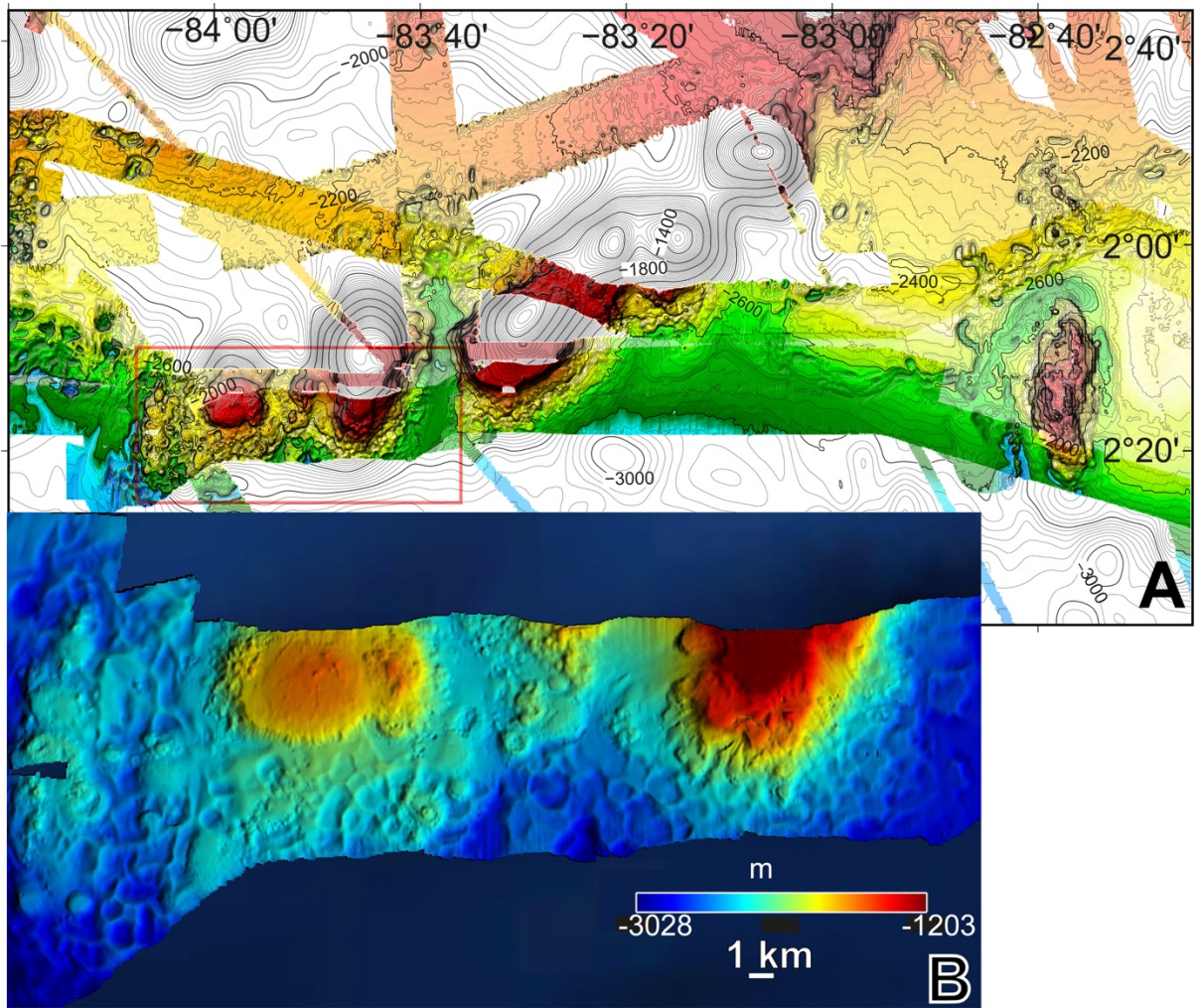


Figure DR2: A) Bathymetric map southeast of the studied area along the southern flank of the Carnegie ridge where high resolution multibeam were recorded during the Atacames cruise (same color scale as that in Fig. 1B and 2). In pale color the multibeam before the Atacames cruise (grid size 150m). In dark shade, multibeam from the Atacames cruise (grid size 50m). Iso-contours=25m. B) 3D zoom high resolution multibeam showing honeycomb pattern around the seamounts (location in Fig S2 A). Vertical exaggeration x3. Northward vertical view.

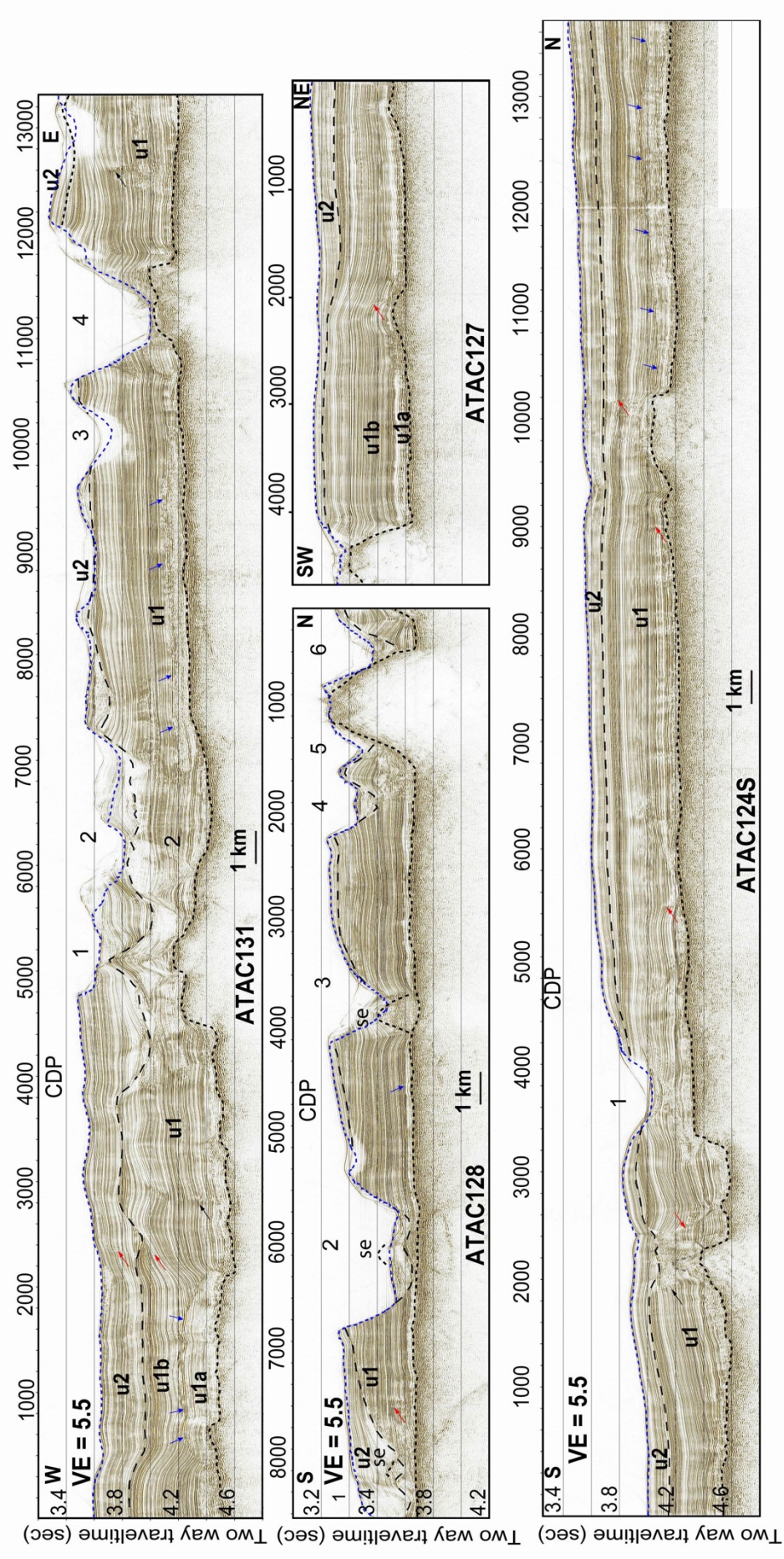


Figure DR3: Interpretation of the available seismic profiles (ATAC 131, ATAC 127 and ATAC 124S, location on Figure 2) in the study area in addition to the seismic profiles of Figure 4. With this additional figure, all available seismic units; blue arrows=inferred upper limit of diagenesis and lithification; red rectangle=location of the zooms; u1=lower unit (u1a=poorly reflective; u1b = sub parallel continuous reflectors); u2=upper unit. Se = Side echo related to possible irregularities of the basement. Numbers correspond to the depressions considered in the table 1. Dotted blue line = seafloor depth EM122 vertical beam allows to discriminate side echoes figured above the seafloor.

