METEOR-Berichte

South American Hydrological Balance and Paleoceanography during the Late Pleistocene and Holocene (SAMBA)

Cruise No. M125

March 21 – April 15, 2016
Rio de Janeiro (Brazil) – Fortaleza (Brazil)

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1 Summary

R/V METEOR expedition M125 ("SAMBA") focused on the influence of paleoceanographic changes off NE Brazil on the continental hydrological cycle. For this purpose, we obtained 202 m of gravity (24 stations) and piston cores (9) at seven sections on the shelf and continental slope close to river mouths from Cabo Frio in the south to the Rio Sao Francisco in the north. Coring stations were determined after intensive echosounder surveys (total: 1221 NM). On-board foraminiferal biostratigraphy, as well as color and XRF-scanning already provided first stratigraphic constraints, indicating the preservation of different regional paleoclimatic signals at the respective sections. Based on the preliminary stratigraphy, we retrieved high-resolution archives, covering Holocene sediments on the shelf and late Pleistocene sediments on the slope. These high-resolution archives are complemented by long-term records covering up to 900 ka of continuous sedimentation at deeper sites at smaller rivers. For proxy-calibration and the study of present-day sedimentation dynamics and biogeochemical processes, surface sediments were sampled via multicorer (47), Van Veen Grab (6) and box corer (3). Water samples for determination of the water chemistry (trace elements, stable and radiogenic isotopes) and nutrient composition were retrieved by 55 CTD/Rosette casts. In addition, we run multinet-hauls at seven stations to investigate the planktonic foraminiferal communities in the water column down to 700 m water depth, complemented by filtering water from the ship's pump twice a day.

Zusammenfassung

Im Rahmen der FS METEOR Expedition M125 ("SAMBA") sollte der Einfluss von paläozeanographischen Veränderungen vor NE Brasilien auf den kontinentalen hydrologischen Kreislauf untersucht werden. Hierzu wurden insgesamt 202 m Sedimentkern mittels Schwerelot (24 Stationen) und via Kolbenlot (9) entlang von sieben Sektionen auf dem Schelf und Schelfhang in der Nähe von Flussmündungen zwischen Cabo Frio im Süden und dem Rio Sao Francisco im Norden gewonnen. Kernstationen wurden nach intensiven geophysikalischen Voruntersuchungen ausgesucht (Gesamtlänge der Profilfahrten: 1221 NM). Bereits an Bord konnten mittels Foraminiferen-Biostratigraphie sowie durch Farb- und XRF-Scans der Kerne erste Stratigraphien entwickelt werden. Diese zeigen, dass unterschiedliche klimatische Signale in den einzelnen Sektionen archiviert sind. Bei den abgedeckten Zeitintervallen handelt es sich zum einen um hochauflösende Datensätze des Holozäns und Spätpleistozäns, zum anderen um kontinuierliche Klimaarchive, die bei geringerer Sedimentationsraten bis zu 900 ka abdecken. Für die Kalibration von Proxys und das Studium rezenter sedimentärer und biogeochemischer Prozesse wurden Sedimente mittels Multicorer (47), Van Veen Greifer (6) und Kastengreifer (3) gewonnen. Zur Bestimmung der Wasserchemie (Spurenelemente, stabile und radiogene Isotope) und Nährstoff-Zusammensetzung wurden 55 mal die CTD mit Kranzwasserschöpfer eingesetzt. Zusätzlich wurden an sieben Stationen Planktonfänge mit dem Multischließnetz bis in Tiefen von 700 m durchgeführt, sowie zweimal täglich Meerwasser-Filtrate aus der Schiffspumpe entnommen.

2 Participants

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3 Research Program

(A. Bahr)

The main scientific objective of R/V METEOR cruise M125 was to investigate the influence of changes in ocean circulation and insolation on the continental climate in eastern Brazil. The hydrological cycle in this region strongly depends on the intensity of the South American Summer Monsoon and the latitudinal migration of the Intertropical Convergence Zone. Especially in NE Brazil, precipitation is extremely seasonal with a long (8 months) drought season and a short rainy season. The long dry season make this region highly sensitive to changes in rainfall amount with potentially severe effects on terrestrial ecosystems, agriculture and energy supply (90% of Brazil's energy derives from water power). Considering that NE Brazil currently experiences historic droughts, the paleoclimatic insights that will be gathered from the material retrieved during the M125 cruise will give insights into the potential impacts of future climate change and help to constrain the natural climatic variability.

Earlier studies demonstrated that orbitally forced modulation of solar irradiation and changes in the mode of oceanic circulation lead to abrupt shifts in the regional distribution of precipitation (Arz et al., 1998; Stríkis et al., 2011; Wang et al., 2004). This is evident for the Holocene (Stríkis et al., 2011), and is expressed by large-scale fluctuations during the late Pleistocene (Cheng et al., 2009; Cruz et al., 2009). For the scope of our project, the influence of changes in the configuration and ocean-current strength on continental climate are a central aspect. While there is ample evidence for the North Atlantic ocean mitigating climate change in South America (Arz et al., 1999b; Jaeschke et al., 2007), the degree of this northern-hemisphere impact varies strongly between different records. To investigate the origin of different responses to climate forcing on millennial and orbital time scales is the main target of the M125 expedition. Specifically, we focused on three major aspects and research questions:

Topic 1: The sensitivity of the hydrological cycle and environment in Eastern Brazil to external forcing

- What are the regional-scale differences in rain-fall variability over the geologic past?

- To what extent do northern hemisphere climatic changes influence E-Brazilian climate?
- Do thresholds, leads and lags cause a strong non-linearity in the hydrological system and ecosystem variations?

Topic 2: Paleoceanography

- What drives the variability of the Brazil Current, especially with regard to the North Atlantic influence?
- How is the surface current variability related to reconfigurations of intermediate and deep water masses at the Brazilian Margin?

Topic 3: Sedimentary processes on the Eastern Brazilian shelf and slope

- How are strong bottom currents on the Eastern Brazilian slope influencing sediment transport, and what drives their variability?

Within the framework of expedition M125, we aimed to integrate climatic proxies of terrestrial and marine origin from the same material to develop a comprehensive picture of the climate dynamics in E-Brazil. For this purpose, sediment cores from the shelf and continental slope off eastern Brazil (10°S – 23°S) have been taken. We focused on seven research areas that were distributed on the shelf and slope adjacent to the debouchments of the Paraiba do Sul, Rio Doce, Rio Jequitinhonha, Rio de Contas and Rio Sao Francisco. The particular location close to river mouths allows for obtaining terrestrial signals in marine sediment cores, while the N-S extension covered by all sites will provide insights into the spatial variability of past climate change. Additionally, a comprehensive surface sediment, water and plankton sampling program was conducted for a precise local proxy calibration.

Strategy of the cruise:

The work programme for each working area comprised:

- hydroacoustic surveys to identify suitable coring sites with continuous muddy sediment cover;
- CTD/Rosette casts for water sampling down to approx. 2000 m water depth; as the demand for water sampling was quite high for REE and organic biomarker filtration, double casts were run at selected stations; shallow stations close to river mouths were sampled with a purpose-made bucket;
- multicorer (MUC) and box corer (BC) deployment for surface sediment sampling, intended especially for proxy calibration studies and geochemical analyses of the upper sea floor sediments and interstitial water; in areas with suspected hardground/gravel cover a Van Veen grab was deployed prior to MUC or BC;
- gravity and piston coring to retrieve long, continuous sedimentary archives;
- plankton studies were carried out via multiple opening/closing net casts and filtering of water derived from the ship's pump.

Sedimentary material from piston and gravity cores will be sampled onshore based on the shipboard stratigraphies developed from core logging data and biostratigraphy. This approach allows for targeting specific intervals in appropriate sample resolution, securing an effective treatment of the M125 sample material.

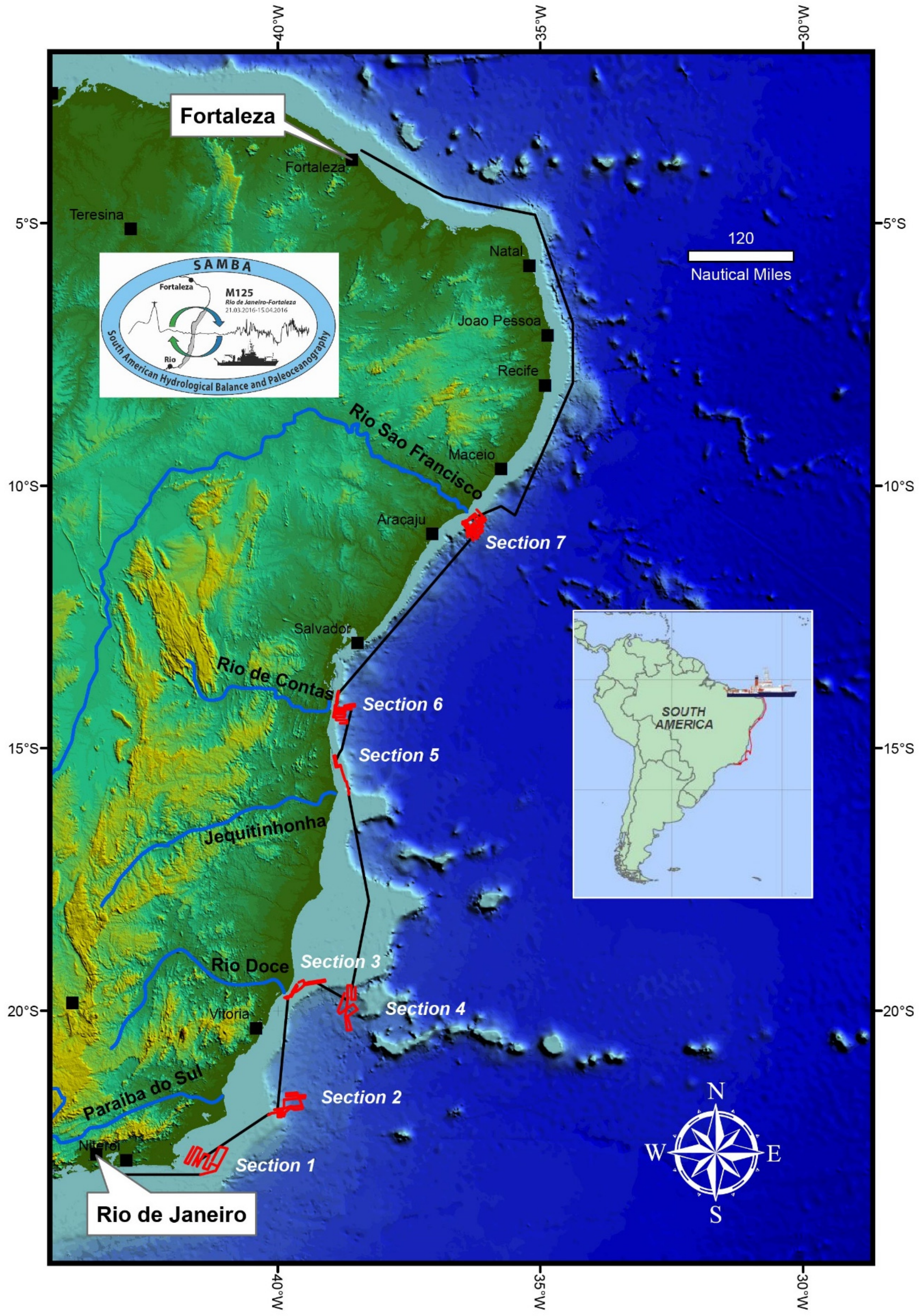

Fig. 3.1 Track chart of R/V METEOR Cruise M125. The seven main working areas (Sections 1-7) are indicated.

The cruise plan and work programme was followed as proposed (Fig. 3.1), aided by the excellent weather conditions. Only the work off the Rio Doce was shortened by one day, as sediment and water from this river suffered severe pollution due to a mining incident in November 2015. Here, the sampling programme was conducted under strict security measures to avoid any health risks.

The deployment of tools largely comprised routine sampling and surveys at designated locations, with most analytical work to be conducted post-cruise. Nevertheless, new discoveries and unexpected observations were made onboard which will generate a high impact on the scientific community. In particular, previously known cold-water corals were found to form extended mound provinces on the slope off the Paraiba do Sul in approx. 850 to 950 m depth. Core logging further provided the firm evidence that we retrieved excellent climate archives enabling the study of late Pleistocene/Holocene climate variability in high-resolution as well as for the long-term reconstruction of the South American monsoonal dynamics over the last approx. 900 kyr.

4 Narrative of the Cruise

On the 21st March 2016 the R/V Meteor left the port of Rio de Janeiro on time at 9 am, heading eastward over a calm sea to the first research area on the shelf off Cabo Frio. The first station (M125-1) was reached at 18:30 ship time where we deployed a shallow CTD. We routinely conducted echosounder pre-site surveys during the night in search of accumulations of muddy sediments of Holocene age as a coring target. During the night of 21st/22nd March we concentrated on the outer shelf, during the 22nd/23rd March on the inner shelf, and during the 23rd/24th on the middle shelf to achieve a full coverage of the seismic and sedimentary facies on the entire shelf. Subbottom profiling indicates that the shelf is dominated by coastal dune-like and channel-fill deposits likely of Pleistocene age with a thin (approx. 2-4 m) Holocene veneer of muddy-sandy sediments. Due to the supposedly sandy to gravelly nature of the surface sediments, we first deployed a Van Veen Grab (VVG) to judge if the sediment was suitable for multicorer (MUC) sampling. It turned out that at least the upper 15 cm of the sediment were soft enough to allow for using the MUC, which we successfully did at all 9 stations over the three days we occupied the area off Cabo Frio. This material provided a sound data set of surface samples, to be used for a variety of purposes (e.g. proxy calibration). Although MUC deployment worked well, penetration by gravity coring of in total 9 attempts never exceeded 1.40 m, and cores were severely disturbed. Apparently, the low recovery is likely due to the indurated and coarse grained-sediment texture. In addition to sediment sampling, 10 CTD casts were used to get insights into the water column structure and to sample water. As during the following days until the end of the voyage, we routinely took samples from the ship's pump for plankton filtering twice a day, between 8–10 am and 5–7 pm. We finally finished work in the area off Cabo Frio at 11:15 on the 24th March and steamed with 11 kn to the next working area, the slope E off the Rio Paraiba do Sul (Section 2).

At 20:30 on the 24th March, we started a downslope echosounder transect at Section 2. As confirmed by the mulitbeam/parasound (MBPS) over the next 3 days, the sea floor morphology comprises a complex channel system. Aside of channel/levee systems and drapes of hemipelagic sediments, we found mound-like structures concentrated in a patch in about 850 to 870 m water depth, with occasional strong backscatter on the top. We targeted two of these structures as it was suspected that they represented deep-water coral mounds, related to the presence of the Antarctic Intermediate Water (AAIW). Box coring confirmed the presence of dead corals at Site (M125-24) where we took a gravity core. The opened core demonstrated that the corals only inhabited the top few centimeters, but were absent below. A second Site (M125-34) targeted the top of a pinnacle in about 870 m water depth, within the AAIW. Box coring retrieved large but mostly dead specimens of deep water corals. Gravity coring retrieved 5.83 m of sediment at the same site. Further, we took 3 gravity cores within different water depths (429 m, 961 m and 2020 m) in order to reconstruct the variability of the different bottom water masses at the Brazilian upper and middle slope. The cores retrieved a maximum of 6.86 m of sediment via gravity coring; unfortunately deployment of the piston corer failed due to technical problems. Aside of gravity coring we deployed the MUC at 4 locations, a total of 7 CTD casts and one multinet. After completing the last station the vessel begun with the 12 h transit to the third research area, the shelf close to the mouth of the Rio Doce (Sections 3 and 4).

On the 28th March at 7 am we entered the area on the shelf south of the Doce River mouth (Section 3). Our target here was to retrieve a succession of Holocene sediment delivered by the river as an archive of climate variability in the hinterland. A PARASOUND survey conducted in the morning until noon parallel to the coast indicated a blanket of up to 8 m of Holocene sediments. We deployed the gravity corer very proximal to the river mouth (M125-38 in 18 m water depth) within the suspension-loaded river plume retrieving 4.70 m of sediment at station M125-43. In addition, we took four MUC and CTD casts in varying distances to the river mouth. Surface samples close to the river mouth clearly showed the presence of reddish clay on top (maximum thickness: 4 cm) relating to an environmental disaster occurring in November 2015, when the collapse of a dam of an ore mine in the upper reaches of the Rio Doce led to the discharge of enormous amounts of heavy metal-enriched sediment and water downstream into the sea. During the night of 28th/29th March, an MBPS survey was run in E-W direction towards the inner shelf. The geophysical data clearly showed an elongated lens of muddy material north of the present-day river mouth, reaching approximately 5 km into the inner shelf. Here we placed four MUC and CTD casts in an E-W transect along the muddy patch, including a gravity core (M125-43) in 38 m water depth which brought up 2.30 m of stiff muddy to slightly sandy sediment. Due to the polluted nature of the river sediment, strict measures were taken to avoid health and contamination risks during the entire station work at the Rio Doce area.

After we finished station work on the shelf at 11:15 am on the 29th March, we steamed 35 NM to the 4th working area, the southern slope of the Abrolhos Bank east off the Rio Doce (Section 4). Station work started at 5:15 pm on the same day with CTD and multinet casts. At 9 pm a MBPS survey started, continued until 8 am in the morning of 30 March. The survey covered the slope between 100 and 1000 m to identify potential coring opportunities on the shallow slope. Four sites were targeted, the first being M125-48 in 258 m water depth located on an otherwise erosive terrace with a package of apparently non-eroded strata. However, as the MUC deployment evidenced the presence of relatively coarse sandy material we did non deploy the gravity core as originally planned. The second coring station (M125-49) was situated in 450 m water depth and yielded 7.00 m of sandy material. The third site (M125-50) at 900 m locates within the proximity of a channel, however, not within the reaches of its levee system. Via piston core we retrieved 13.16 m of muddy sediment. At the fourth station (M125-52; 650 m), a gravity core of 8.46 m length was taken. After station work, a MBPS survey between 1000 and 2000 m water depth was conducted until 07:45 am in the next morning (31.03.).

One station at 1966 m water depth (M125-55) was selected at a morphological high situated within the Rio Doce canyon system. After deployment of CTD and four multinet casts, a multicorer and a piston corer were retrieved. After finishing the station work at 6:20 pm, the METEOR steamed to the starting point of the 65 nm overnight-survey focusing on the middle and upper slope in water depth between 900-1700 m. The objective here was to find suitable locations for two core sites located in approx. 1300 and 1600 m water depth. This survey was completed at 7 am in the next morning (01.04.2016). Two sites for water/sediment sampling via MUC and piston coring were selected. The first one (M125-59, 8 m recovery) in 1769 m water depth situates on a morphological high, with no indication of active deposition from down-slope transport. A second site (M125-61, 1337 m depth, 10.17 m recovery) was located on a less steep morphology on the slope of the Bernard Bank with presumably low input of terrigenous material. Next to the 6 gravity/piston cores, we deployed 7 MUCs and 10 CTD/rosette and 2 multinets.

After finishing work on the intermediate-depth sites, we steamed to the shelf off the Rio Jequitinhonha (Section 5) where we started with a MBPS survey parallel to the coast-line at 8:50 pm (2nd March), until the next day (3rd March) at 7:15 am. The shelf morphology was characterized by a flat surface with only very thin to absent Holocene sediments of coarse (sandy) nature, cut by a very steep and deep (500 m) channel close to the present-day river mouth. An exception was an infilling of a trough-like structure over a rough subsurface morphology presumably of late Pleistocene age. Here (station M125-67), we took water samples by means of a CTD, and sampled sediment by MUC and gravity coring. The sediment turned out to be soft mud and core recovery was 4.97 m with a 5 m core barrel. After this successful attempt, we left Section 5 and steamed to Section 6 on the shelf and slope off the Rio de Contas.

In the evening of the 3rd April, we started work on Section 6 with CTD casts in 2000 m water depth combined with multinet catches, followed by a MBPS survey on the slope until the next morning. The survey was completed at 7 am on the next morning (4th April). The outer shelf appeared to have only a limited recent sediment cover with no suitable coring target. The steep slope down to 1600 m water depth was, at least in the surveyed area, dominated by channel-levee systems with no suitable coring sites above this interval. Below, the PARASOUND profiles revealed intervals with draping reflections down to 1850 m. We chose one location (M125-72) with a well-developed drape at 1743 m water depth. The piston core had an excellent recovery with 13.43 m of sediment, however, one 5 m plastic liner was complete broken length-wise. We stabilized the liner with tape and another liner, but did not open the liner onboard as its halves would not fit into D-tubes. Further downslope we targeted one location (M125-73) at 2100 m water depth. Station work finished at 7:30 pm with the successful retrieval of the piston core with 12.49 cm recovery. Both cores showed quite regular interbedding of lighter and darker brownish intervals, reminiscent of core M125-55 from the Rio Doce slope, but with a generally higher carbonate content. We steamed to the start of the MBPS track which began at 8:30 pm and lasted until 7 am the next morning (5th April). The track focused on the upper slope between 400 to 1500 m water depth. We identified three potential coring targets that, based on the subbottom and multibeam data, were outside the influence of the extensive and active canyon systems. The deepest site (M125-77) was located in 1401 m water depth on top of a ridge extending downslope. Site M125-78 was located on a slope section with well-defined draping sediments in 850 m water depth, within the AAIW. The shallowest Site (M125-80) in 427 m was located on a high as well.

Coring was successful at all Sites, retrieving up to 13.86 cm of sediment at station M125-78. After completing station work we continued with a MBPS survey from 8:45 pm to 7 am the next day (6th April). Here, we focused on the shelf, which we explored in a N-S transect in search of a suitable coring position. However, similar to the shelf off Cabo Frio, the shelf off the Rio de Contas was sediment-starved. A more or less continuous blanket of Holocene deposits with a maximum thickness of only 2 m could be found. We occupied six stations for water and surface sediment sampling (via MUC), retrieving muddy sediment. Gravity coring brought 2.50 m of sediment. We finished station work at the Rio de Contas Area at 13:30 with in total 12 CTDs, 10 MUCs, 3 gravity corers, 3 piston corers, and 1 multinet station.

After steaming for 22 h, we arrived at the first station on the slope at 2157 m water depth off the Rio Sao Francisco at 11:50 am on the 7th April, starting with CTD and multinet runs, followed by slope-shelf echosounder transects until 7 am (8th April). The results show a shelf covered with 10 m of Holocene sediment, but a highly dynamic slope which is deeply cut by channels. Therefore, identification of suitable coring sites on the slope was problematic. As coring sites we selected M125-93 and -95 (960 m and 1901 m water depth, respectively), on elevated positions. After CTD and multinet deployment, a MBPS survey was conducted during the night of 8th/9th April on the upper slope and shelf. Similar to the previous survey, a deeply incised slope at which we could only locate one potential coring target at 1201 m water depth (M125-102). In addition, we sampled water and surface sediment on the shelf, close to the Rio Sao Francisco debouchment.

During the night of the 10thApril, we continued the MBPS survey on the shallow to intermediate depth slope (1500 – 500 m). On a NW-SE trending ridge between deeply incised channels, we identified a position with potential cold-water mounds on top of a pinnacle (927 m) with high backscatter. This site (M125-107) was probed with a box corer, however, without retrieving coral specimens. One reason for the failure to retrieve corals might be that the required exact positioning of the tool at sea bottom was impeded by strong bottom currents and a non-functioning POSIDONIA transponder. In addition, we deployed a gravity core in 704 m water depth (M125-108) and a piston core in 1072 m (M125-106) on the ridge, with the hope to find sediment less affected by down-slope transport than on the previous sites off the Rio Sao Francisco. The station work on the 10th April has been concluded by multinet catches. On the night 10th/11th April we continued with a MBPS survey on the shelf, mapping the Holocene sediment cover proximal to the coast. Three sites forming an along-shore transect have been chosen for surface and sediment sampling, including one coring station (M125-115), the last station of M125. Here, we obtained 7.77 m of very soft, muddy sediment, close to the mouth of the Rio Sao Francisco. After finishing station work we started with steaming to Fortaleza at 12:30 am on the 11th April. We arrived at Fortaleza in the morning of the 14th April, and after one day on anchorage, entered the harbor at 8:30 am on the 15th April.

5 Methods

5.1 Hydrographic Measurements and Water Sampling

(A. Osborne, A. L. Albuquerque, S. Kusch, E. Niedermeyer, N. Ardenghi)

Conductivity-Temperature-Depth (CTD) casts were performed at each station. The objectives of the CTD casts were to characterize the water masses present in the seven working areas, including river water dispersal, and to produce sound-velocity profiles for the Multi-Beam and PARASOUND hydroacoustic data processing.

M125 used the METEOR's own Seabird SBE 9 CTD device, which is fitted with two temperature sensors, two conductivity sensors, a pressure sensor, an oxygen sensor and a fluorometer. The deck unit SBE 11plus V5.2 communicated with the underwater device. Additionally, a small RBR XR-620 CTD was deployed for selected shallow stations and the multi-net stations and recorded conductivity, temperature and pressure. Both the ship and the small CTD were deployed at stations M125-1-1 and M125-69-4 in order to calibrate the small CTD to the ship's CTD.

A bbe Moldaenke FluoroProbe was used to determine the concentration of total chlorophyll, green algae, blue- green algae, diatoms, cryptophytes, and indifferent yellow substances by spectral fluorometry. The sampling rate was 2 seconds. The FluoroProbe was mounted to the Multinet on each plankton station, time synchronized and operated with 0.5 m/s.

Water samples were taken with the shipboard Rosette, equipped with twenty-four 10-L Niskin bottles. The objectives of the water sampling were to characterize the water masses present, and to calibrate and develop paleoproxies. The types of samples and the depths at which they were taken varied between stations according to each research objective (Table 5.1).

Surface water was collected in the shelf area of Sections 6 and 7 using a 25 L plastic canister, lowered on a rope. Bottom water samples were also taken from selected MUC stations in all sections.

Table 5.1 Types and amount of water samples taken.

Researcher	**Analyses**	**Purpose of water sampling**	**Volume**
Raddatz, Albuquerque	$\delta^{18}O$, $\delta^{13}C$	Calibration of paleoproxies, water mass identification	0.1 L
Albuquerque	Nitrogen, nutrients	$\delta^{15}N\_NO_3$, $\delta^{18}O\_NO_3$ and $\delta^{15}N$_particulate proxy calibration	5 L
Albuquerque	Transcriptonics	Verifying active genes related to the nitrogen cycle	6 L
Voigt	Lithium	Calibration of paleoproxies, indication of weathering input	0.02 L
Niedermeyer	Biomarkers	Calibration of paleoproxies	10-90 L
Osborne	Trace and Rare Earth Element	Calibration of paleoproxies, behavior in estuaries and shelf, continental input	1 L
Osborne, Bahr	Trace and Rare Earth Elements (0.2 µm filtered at rosette)	Calibration of paleoproxies, behavior in estuaries and shelf, continental input	0.125 L
Osborne	Nd and Ba isotopes (0.2 µm filtered at rosette)	Calibration of paleoproxies, water mass identification	10 L
---	Salinity	Instrument calibration (CTD)	0.25 L

5.2 Pore Water Analysis

(R. Díaz)

Pore water was extracted by using the rhizon technique (Seeberg-Elverfeldt et al., 2005) in multicores from 15 stations. The rhizons were inserted directly into the sediment through pre-

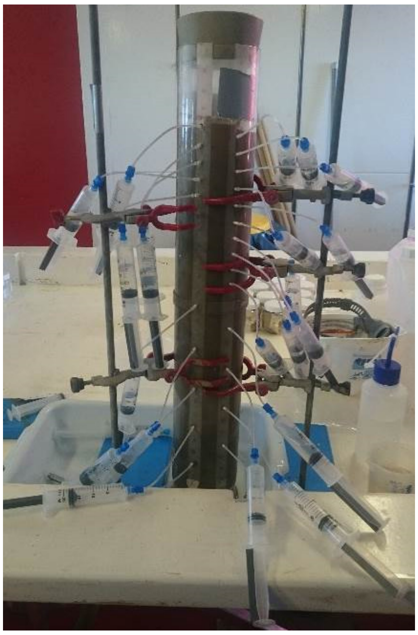

Fig. 5.2 Pore water extraction using the rhizon technique.

drilled holes along the tube (Fig. 5.2). In order to prevent oxidation during handling, all pore water samples for were processed within a N_2-filled glove bag. The samples will be analyzed for sulfate (SO_4^{2-}) and sulfur isotopic composition ($\delta^{34}S_{SO_4^{2-}}$), sulfide (H_2S), carbon isotopic composition of dissolve inorganic carbon ($\delta^{13}C_{DIC}$), oxygen isotopic composition ($\delta^{18}O$), trace elements, iron II (Fe^{2+}), nitrate (NO_3^-), nitrite (NO_2^-), ammonium (NH_4^+), phosphate (PO_4^{3-}), and dissolved silica (DSi). In the glove-bag, 1 mL of each water sample was placed in 2 mL Eppendorf tubes (conditioned with 100 µL 1% HNO_3 Merck PA) for trace metals analyses. Another sub-sample of 1 mL was stored in a 2 mL Eppendorf tube containing 100 µL of a 5% Zn-acetate solution (Merck PA) for ΣH_2S analysis. Sub- samples of 1 mL for Fe (II) analyses were stored in 2 mL Eppendorf tubes (conditioned with 10 µL HCl 5 M). All these samples were stored at 4°C. Another sub-sample of 1 mL was stored and frozen in 5 mL amber vials with 10 µL HCl for PO_4^{3-} analysis. For DSi analyses, 0.5 mL sample was stored and frozen in 2 mL Eppendorf tubes. For nitrate (NO_3^-, NO_2^- and NH_4^+ analyses, 4.5 mL sub-samples were kept frozen into 5 mL amber vials. For the $\delta^{18}O$ analyses, 2 mL of sample was stored in a glass vial of 2 mL and for the $\delta^{13}C_{DIC}$ analyses 2 mL of pore water sample was filtered and stored in 2 mL amber vials, both fractions were stored at 4°C.

5.3 Plankton Sampling

5.3.1 Plankton Net

(M. Bayer, P. Munz)

Planktic foraminifera were collected for population analyses and geochemical proxy calibration, using stratified vertical net hauls with a Hydrobios MultiNet Midi multiple opening-closing net with an inlet size of 50 x 50 cm and a mesh size of 0.1 mm. Vertical opening depths were monitored with an integrated pressure sensor and divided into nine standard depth intervals. Shallow casts sampled the uppermost 100 m of the water column in 20 m-intervals, deep casts the uppermost 700 m in the intervals 700–500 m, 500–300 m, 300–200 m, 200–100 m and 100–0 m (Table 5.2). Slacking and hoisting was done at 0.5 m/s. After each haul, the net bags were carefully washed with sea water from the ship's pump and the cups' mesh cloth was washed and rinsed with filtered sea water. Each station was run with double hauls. The samples of the first set for later faunal analyses onshore were decanted, transferred to 50 ml Kautex bottles and preserved with 95 % Ethanol to a concentration of ~50 %. Samples for geochemical analyses were picked on board using a stereo dissecting microscope. Planktic foraminiferal individuals were determined to species level according to the taxonomy of (Hemleben et al., 1989), transferred to Eppendorf vials and preserved with 95 % ethanol.

Table 5.2 Station list of shallow and deep stratified vertical plankton net casts.

Station M125-	Date	Time (UTC)	Latitude	Longitude	Water depth
29-2 (shallow)	26.03.2016	13:17	21°48.760' S	039°32.020' W	2017 m
29-3 (deep)	26.03.2016	13:34	21°48.760' S	039°32.020' W	2017 m
29-5 (shallow)	26.03.2016	16:19	21°48.760' S	039°32.020' W	2018 m
29-6 (deep)	26.03.2016	16:34	21°48.740' S	039°32.070' W	2018 m
45-1 (shallow)	29.03.2016	20:57	19°47.356' S	038°40.389' W	1031 m
45-2 (deep)	29.03.2016	21:15	19°47.356' S	038°40.389' W	1031 m
45-4 (shallow)	29.03.2016	23:13	19°47.356' S	038°40.389' W	1032 m
45-5 (deep)	29.03.2016	23:29	19°47.356' S	038°40.389' W	1033 m
55-2 (shallow)	31.03.2016	13:24	20°21.808' S	038°37.387' W	1960 m
55-3 (deep)	31.03.2016	13:32	20°21.808' S	038°37.388' W	1961 m
55-5 (shallow)	31.03.2016	16:16	20°21.808' S	038°37.388' W	1960 m
55-6 (deep)	31.03.2016	16:32	20°21.808' S	038°37.386' W	1960 m
69-2 (shallow)	03.04.2016	20:36	14°15.447' S	038°36.060' W	1859 m
69-3 (deep)	03.04.2016	20:51	14°15.447' S	038°36.060' W	1858 m
69-5 (shallow)	03.04.2016	22:33	14°15.447' S	038°36.060' W	1858 m
69-6 (deep)	03.04.2016	22:49	14°15.446' S	038°36.061' W	1859 m
90-2 (shallow)	07.04.2016	16:36	10°57.918' S	036°17.622' W	2032 m
90-3 (deep)	07.04.2016	16:49	10°57.810' S	036°17.610' W	2089 m
90-5 (shallow)	07.04.2016	18:56	10°57.787' S	036°17.431' W	2136 m
90-6 (deep)	07.04.2016	19:12	10°57.583' S	036°17.354' W	2137 m
97-1 (shallow)	08.04.2016	21:45	10°56.720' S	036°11.355' W	2078 m
97-2 (deep)	08.04.2016	22:00	10°56.720' S	036°11.355' W	2076 m
97-4 (shallow)	08.04.2016	23:56	10°57.130' S	036°11.659' W	2014 m
97-5 (deep)	09.04.2016	00:10	10°57.130' S	036°11.611' W	2071 m
110-1 (shallow)	10.04.2016	21:25	10°41.840' S	036°09.809' W	1009 m
110-2 (deep)	10.04.2016	21:41	10°41.859' S	036°09.849' W	1015 m
110-3 (shallow)	10.04.2016	22:41	10°41.488' S	036°09.467' W	956 m
110-4 (deep)	10.04.2016	22:58	10°41.568' S	036°09.582' W	967 m

5.3.2 Plankton and Seawater Samples from Ship's Pump

(B. Hennrich, A. Osborne)

Plankton samples were taken from the ship's seawater membrane pump every morning (8–10 am) and afternoon (5–7 pm) from 22.03.2016 until 11.04.2016 (am only). No samples were taken during Section 3 (28-29.03.16) because of the risk of contamination from the Rio Doce. The ship's pump is located at the front of the ship at 3.5 m water depth. Before sampling the date, time, position (latitude/longitude), temperature and salinity (from the vessel's thermosalinograph), water meter reading (precise to ±1 L) and whether the vessel was on station or transit was recorded. For stable isotope analysis samples for $\delta^{18}O$ and $\delta^{13}C$ were taken, the latter was poisoned with 25 mg $CuSO_4$ powder. Afterwards 1 m^3 of seawater was run through a sieve with 63 µm mesh size. At the end of the sampling the above mentioned parameters were recorded again. The plankton in the sieve was then transferred into a Kautex bottle, filled up with 1/3 seawater and 1/3 ethanol and stored at room temperature. In total 37 plankton samples were taken.

5.4 Hydroacoustics

(A. Conforti, S. J. Batenburg and K. Hatsukano)

5.4.1 Technical Description of the EM122 and EM710 Multibeam Sounders

During the M125 cruise, two hull-mounted echosounder systems were used for bathymetric mapping; the Kongsberg Simrad EM 122, which is designed for use in middle and deep water depths and the Kongsberg Simrad EM 710 for bathymetric mapping in shallow water depths.

The EM122 system provides a tool for accurate bathymetric mapping down to full ocean depth. Basic components of the system are two linear transducer arrays in a Mills Cross configuration with separate units for transmitting and receiving. The nominal sonar frequency is 12 kHz with an angular coverage sector of up to 150° and 432 soundings per swath. The emission cone is 150° wide across the track, and 1° wide in the along-track direction. Reception is obtained from 288 beams, with widths of 2° across track and 20° along track. Thus, the actual footprint of each beam has a dimension of 1° by 2°. The achievable swath width on a flat seafloor will usually be up to 6 times the water depth dependent on the roughness of the seafloor. The angular coverage sector and beam pointing angles may be set to vary automatically with depth to obtain maximum coverage. Using the high-density mode, which creates 432 soundings from 288 beams, and the dual swath mode (2 swaths per ping), 864 isolated equidistant depth values are obtained, perpendicular to the track for each ping. Using the detected two-way travel time and the beam angle known for each beam, and taking into account ray bending due to refraction in the water column, depending on sound speed variations, depth is calculated for each beam. A combination of amplitude (central beams) and phase (slant beams) is used to provide measurement accuracy, practically independent of the beam pointing angle. Besides the depth values, the EM122 also provides backscatter information, pseudo-side-scan images, as well as backscatter from within the water column.

The EM710 multibeam echo sounder is a high- to very-high-resolution seabed mapping system. The minimum acquisition depth is less than 3 m below its transducers, and the maximum acquisition depth is specified at 2,000 m water depth. However, the quality of the EM710 data degrades significantly in water depths greater than 600 m. The across-track coverage (swath width) can reach up to 5 times the water depth. The EM710 operates at sonar frequencies in the range of 70 to 100 kHz. The transmit fan is divided into three sectors to maximize range capability but also to suppress interference from multiples of strong bottom echoes. The sectors are transmitted sequentially within each ping, and use distinct frequencies or waveforms. The along-track beam width of the system installed on RV METEOR is 1 degree. A ping rate of up to 25 pings per second is possible, and the transmit fan is electronically stabilized for roll, pitch and yaw. Like the EM122, the EM710 has a reception beam width of 1°. The number of beams is 256, or 400 in high-resolution mode, and the beam spacing may be set to equiangular or equidistant. The received beams are electronically stabilized for roll. A combination of phase and amplitude bottom detection algorithms is used to provide soundings with the best possible accuracy. Additionally, an integrated seabed acoustic imaging capability and a real-time display window for water-column backscatter are provided.

5.4.2 Multibeam Data-Processing

For the purpose of the cruise, the data acquired during each night's survey had to be available for the planning of station work in the morning. Therefore, a first extraction of bathymetric data of both systems was performed without any processing (Figs. 5.5–5.8).

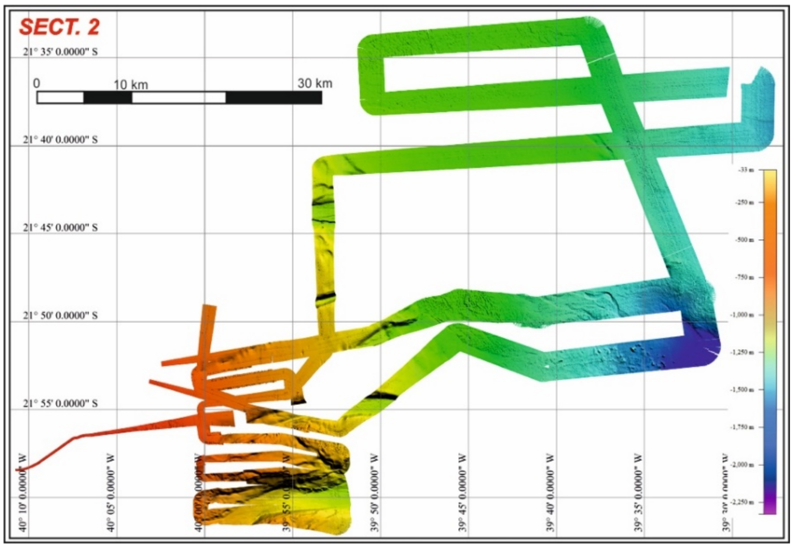

Fig 5.5 Digital elevation model of Section 2.

Data extraction and post-processing were performed using the open-source software package MB-Systems available in Poseidon Linux on board. For initial plotting, the data were gridded at a lateral resolution of 50 or 25 m for EM122 and 10 or 5 m for EM710, depending on the depth range. Additionally, grids of 25 or 15 m for EM122 and 5 or 2 m for EM710 were applied. In some specific areas of major interest, bathymetric data from both the EM710 and the EM122 have been post-processed, applying some degree of filtering and removal of spikes. These procedures were performed with the Mb-edit, Mb-editviz and Mb-grdviz tools, available in the MB-System package. A tide gauge correction has been applied only on selected data during post processing, using a tide prediction model for each acquisition section, on the base of a regional model of barotropic tide (Egbert and Erofeeva, 2002). The tide prediction model was developed on shore prior to the cruise by Giovanni Quattrocchi (IAMC CNR, Oristano, Italy).

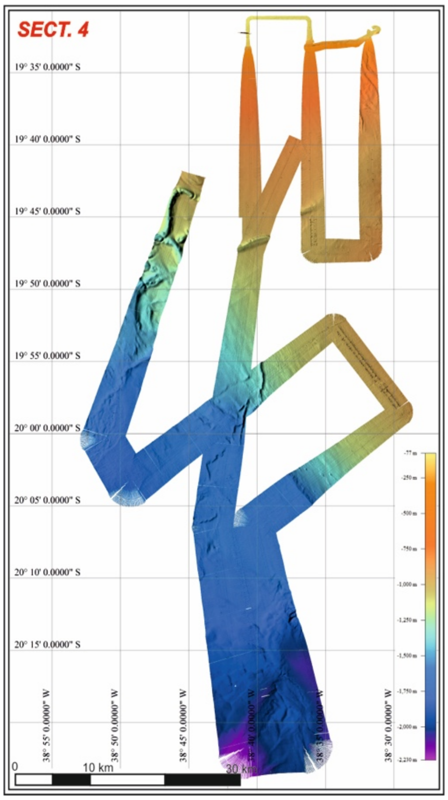

Fig 5.6 Digital elevation model of Section 4.

A quality control of EM710 data was also performed on shore, by Alessandro Bosman (IGAG-CNR, Rome Italy), on a sample dataset. It was found that the acquired raw data were of good quality, apart from one problem, which was related to a roll compensation error, estimated to be about ±15 cm. To correct this, it is advised to perform manual retracing on the data during post-processing.

In some selected areas, backscatter data have been processed to support the morpho-bathymetric and seismic interpretation. This processing has been performed with MB-System tools (mbbackangle, mbfilter, mbgrid etc).

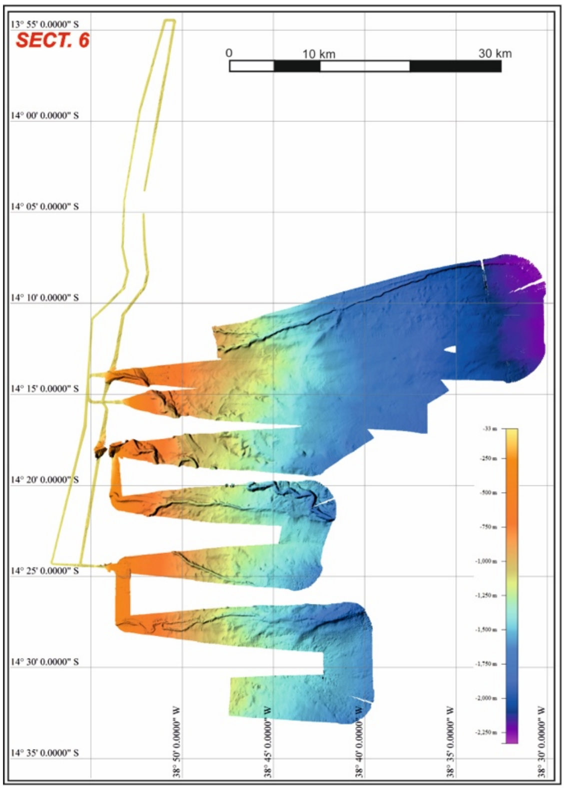

Fig 5.7 Digital elevation model of Section 6.

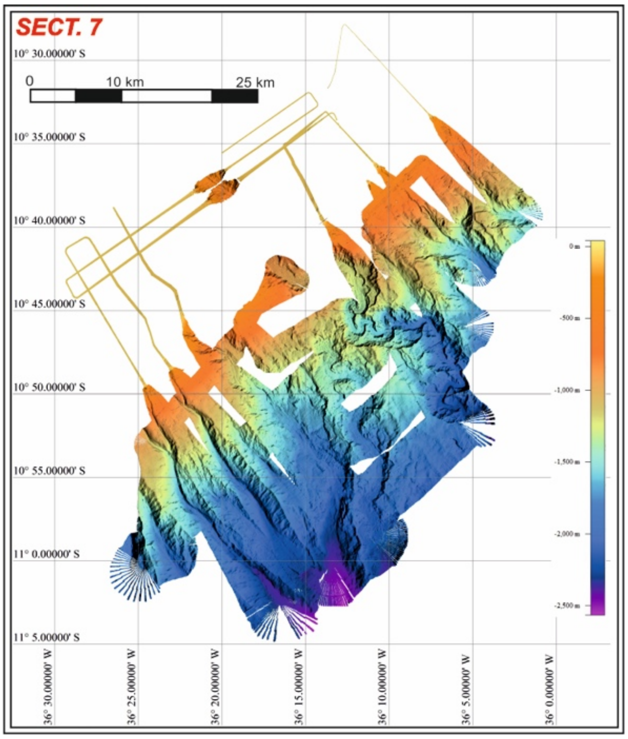

Fig 5.8 Digital elevation model of Section 7.

5.4.3 Technical Description of the Sub-bottom Echosounder (Atlas PARASOUND)

During cruise M125, the sub-bottom echo sounder system PARASOUND P70 (Atlas Hydrographic) was used to obtain information from the shallow subsurface to aid the identification of suitable coring localities. The PARASOUND P70 system uses the parametric effect, which occurs when very high (finite) amplitude sound waves are generated. If two waves of nearby frequencies are generated simultaneously, also the sum and the difference of the two primary frequencies are emitted. The PARASOUND P70 has a range of 18–33 kHz for the first primary high frequency (PHF). The second PHF can be produced in the range of 18.5–39 kHz, leading to a frequency range of 0.5–6 kHz with a beam width of 4.5° for the parametric secondary low frequency (SLF). Additionally, also the sum of the primary frequencies and the secondary high frequency (SHF), can be recorded. Theoretically, SLF data can achieve a vertical resolution of down to <15 cm and a maximum penetration of 100 m below seafloor. The sediment penetration is strongly dependent on local seabed conditions, stratigraphy and grain size of the sediment. During this cruise, a maximum penetration depth of 50 m was achieved in muddy sediments. The PHF is used to calculate water depth with the aim to adapt ping rates automatically and to visualize backscatter in the water column. The Atlas PARASOUND P70 provides 3 different modes of signal transmission, one of which is the 'Single Pulse Mode', used if the full water column has to be recorded. In contrast, using the 'Quasi Equidistant' or the 'Train Pulse' transmission mode leads to a higher horizontal resolution. During M125, the PARASOUND P70 system was exclusively used in 'Quasi Equidistant' mode, with a wavelet designed to contain a single period. The desired SLF was set to 3.5 kHz with a desired PHF of 18 kHz. However, the resulting frequencies tend to vary slightly due to technical restraints during signal generation. SHF was recorded to be available for later comparison. The emitted signals where amplified maximally to reach optimal penetration.

The acquisition software HYDROMAP CONTROL applies a receiver gain on the data, which varies automatically depending on the strength of the received signal. The data acquired were stored as RAW files in ASD format and in PS3 and SEGY format. Whilst storing lines in SEGY format, the applied delay is not recorded by the Parastore software. A separate log of applied delays was kept to correct the delay afterwards, file-by-file, during processing.

5.4.4 Processing of Subbottom Data

Initial focus was on the secondary low frequency (SLF) data, as these accurately record the stratigraphic variation in the investigated sedimentary successions. All the acquired SLF data were processed with a fast procedure using SEISPHRO LCL 2.0 (Gasperini and Stanghellini, 2009). This software is ideal for onboard sub-seafloor investigation, as it enables the processing of data in less than 2 min after the acquisition of a line.

The data processing was performed on SEGY files and consisted of a few rapid steps: 1) signal normalization of selected data within a 16 bit dynamic range, 2) application of linear gain on selected data, 3) optionally, performed in some cases: muting of the water column depth and application of time variant gain control, 4) optionally, performed in few cases: deconvolution of spikes, 5) in very few cases, where swell correction was not applied due to a malfunction of PARASOUND sensors: the application of the Seisphro swell filter on data during post-processing.

The processing operations were not stored separately, as the processing flow can be applied instantly on the original SEGY files.

5.5 Sediment Sampling

5.5.1 Devices and Operations

(J. Raddatz)

The Veen-Grab was primarily used for ground-truthing to decide for further coring actions. The Van Veen-Grab was deployed at 6 stations. If sediments appeared to be undisturbed, surface samples were taken from 0-2 cm. The grab was lowered with 0.5-0.7 m/s and subsequently heaved with 1.0 m/s.

At locations where the sediment surface appeared to be of rather larger grain size, the giant box corer was used. This tool is able to penetrate an undisturbed sediment body up to 60 cm deep with a sediment surface area of 50x50 cm. The giant box corer was only applied 3 times, especially at sites with cold-water coral appearances.

The multicorer (MUC) was deployed 49 times in total during M125. The MUC was lowered with varying speed between 0.3 and 1.0 m/s depending on water depth which varied roughly between 20–2000 m. Over the final 20–50 m the MUC was lowered with a speed of ~0.5 m/s until seafloor contact, monitored through cable tension. The multicorer was left on the seafloor for a few seconds and then pulled out with a speed of 0.5 m/s to guarantee rapid closure of the tubes. Finally, the MUC was heaved on deck with a speed of 1 m/s.

On M125 two different gravity core devices were deployed. The small gravity corer applied has a core diameter of 12.5 cm and a barrel of ~1.3 tons and used for 5 m long cores. It was lowered with 1 m/s to the seafloor and was then pulled out with a speed of 0.3 m/s. Heave velocity was 1.0 m/s. For longer cores the piston corer (2.8 tons) was used as a gravity corer with core length of up to 10 m. In total both were deployed 27 times.

The GEOMAR piston corer with split piston developed by Fa. Marinetechnik Kawohl can be fitted with a core barrel up to 30 m in length (in 5 m increments). The core diameter is 12.5 cm. On R/V METEOR, the piston corer was deployed with an 18 mm steel cable attached to the ship´s deep-sea winch. The piston corer was lowered with an average speed of 1.0 m/s to ca. 50 m above seafloor, where it was stopped for ca. 2 minutes and subsequently lowered with a speed of 0.3 m/s until the pilot trigger core hit the seafloor. Contact with the seafloor was monitored through cable tension. When the pilot core reached the seafloor, the piston corer was released, free falling by ca. 5 m. The device remained at the seafloor for about 30 seconds after piston release in order to allow for deep penetration, then pulled out with a speed of 0.3 m/s, and further heaved with a speed of 1.0 m/s. The piston corer was applied 12 times.

5.5.2 Core Sampling

5.5.2.1 Gravity/Piston Cores

(S. Voigt)

The core recovery was good for most of the stations where gravity or piston coring was performed and was in average between 6–7 m for gravity cores and 10–13 m for piston cores, respectively (see Tables 5.3 and 5.4). In total, we retrieved 202 m of sediment (see Appendix for a complete list with core descriptions).

All cores, except M125-34-2, were cut in 1 m-segments and opened on deck. Afterwards, the 1 m-segments were cut lengthways in halves, where the working halve was used for sediment sampling and visual core description, and the archive half was used for the non-destructive logging tools of color spectrophotometry and XRF spectroscopy. The core description yields information about the lithology, sediment structures, color (Munsell), and micro- and macrofossil content, and is documented by graphic visualization. Sediment sampling was performed using cut-off 10 ml syringes. Samples were taken for shipboard biostratigraphy every 50 cm and for radiocarbon dating at 3.0 m depth for each core. After sampling and logging, the core halves were separately stored in D-tubes at 4°C. The core of station M125-34-2 was stored unopened at 4°C.

According to the cooperation agreement with Brazil, cores from the following stations will remain in Brazil for further scientific work: M125-24-3 (6.86 m), M125-35-3 (4.25 m), M125-49-3 (7.16 m), M125-95-3 (10.4 m), and M125-108.3 (3.87 m).

Table 5.3 List of Gravity cores performed during METEOR Cruise M125.

Station	Location	Date	Time	Coordinates at Depth			Recovery
M125-			(UTC)	Lat. (S)	Long. (W)	Depth (m)	(m)
4-4	off Cabo Frio	22/03/16	14:47	22°51.546'	041°05.983	79.1	1.00
6-3	off Cabo Frio	22/03/16	21:44	23°06.204'	041°26.782'	79.8	-
6-4	off Cabo Frio	22/03/16	20:53	23°06.204'	041°26.781'	79.9	-
11-3	off Cabo Frio	23/03/16	13:48	22°37.314'	041°27.945'	47.4	-

11-4	off Cabo Frio	23/03/16	14:16	22°37.315'	041°27.944'	48.2	-
14-3	off Cabo Frio	23/03/16	17:25	22°44.729'	041°31.078'	55.0	-
16-3	off Cabo Frio	24/03/16	09:57	22°54.930'	041°17.228'	69.0	1.40
18-2	off Cabo Frio	24/03/16	11:08	22°50.545'	041°21.337	60.5	-
19-3	off Cabo Frio	24/03/16	13:20	22°49.263'	041°27.735'	58.3	-
24-3	off Paraiba do Sul	25/03/16	15:45	21°55.930'	039°54.097	867.3	6.86
25-4	off Paraiba do Sul	25/03/16	21:38	21°51.534'	039°53.065'	960.1	6.52
29-8	off Paraiba do Sul	26/03/16	19:45	21°48.732'	039°32.031'	2019.4	6.82
34-2	off Paraiba do Sul	27/03/16	15:22	21°56.959'	039°56.112'	873.4	5.83
35-3	off Paraiba do Sul	27/03/16	18:33	21°53.605'	040°00.281'	430.4	4.25
35-4	off Paraiba do Sul	27/03/16	19:32	21°53.610'	040°00.281'	429.1	-
38-3	Rio Doce area	28/03/16	19:06	19°44.282'	039°50.737'	17.2	4.72
43-3	Rio Doce area	29/03/16	14:07	19°27.990'	039°26.332'	38.3	2.66
43-4	Rio Doce area	29/03/16	14:46	19°27.990'	039°26.333'	38.4	1.71
49-3	Slope E off Rio Doce	30/03/16	15:04	19°34.314'	038°40.544'	448.3	7.00
52-3	Slope E off Rio Doce98	30/03/16	23:18	19°35.946'	038°36.062'	644.2	8.41
67-4	Rio Jequitinhonha	03/04/16	12:34	15°16.965'	038°54.801'	29.0	4.97
77-3	Rio de Contas	05/04/16	14:12	14°23.200'	038°43.551'	1393.9	6.00
80-2	Rio de Contas	05/04/16	20:52	14°24.559'	038°53.307'	421.5	8.55
87-3	Rio de Contas	06/04/16	17:50	13°58.646'	038°52.116'	47.0	2.63
93-3	Slope off Rio Sao Francisco	08/04/17	14:01	10°52.414'	036°22.934'	955.20	6.56
95-3	Slope off Rio Sao Francisco	09/04/16	19:49	10°56.700'	036°12.342'	1896.6	10.40
102-4	Slope off Rio Sao Francisco	08/04/17	15:18	10°41.297'	036°26.540'	47.0	7.76

Table 5.4 List of Piston cores retrieved during METEOR Cruise M125.

Station	**Location**	**Date**	**Time**	**Coordinates at Depth**			**Recovery**
M125-			**(UTC)**	**Lat. (S)**	**Long. (W)**	**Depth (m)**	**(m)**
25-3	off Paraiba do Sul	25/03/16	n/a	n/a	n/a	n/a	-
29-7	off Paraiba do Sul	26/03/16	n/a	n/a	n/a	n/a	-
50-3	Slope E off Rio Doce	30/03/16	19:15	19°42.620'	038°35.979'	903.7	13.16
55-7	Slope E off Rio Doce	31/03/16	18:49	20°21.807'	038°37.387'	1960.8	11.75
59-3	Slope E off Rio Doce	01/04/16	15:20	20°01.044'	038°50.859'	1763.1	7.99
61-2	Slope E off Rio Doce	01/04/16	20:00	20°02.372'	038°34.797'	1329.0	10.17
72-3	Rio de Contas	04/04/16	14:54	14°12.775'	038°38.529'	1738.4	13.43
73-3	Rio de Contas	04/04/16	21:12	14°10.608'	038°32.178'	2108.8	12.49
78-3	Rio de Contas	05/04/16	18:23	14°24.356'	038°50.068'	843.0	13.86
95-3	Slope off Rio Sao Francisco	08/04/16	19:49	10°56.700'	036°12.342'	1025.3	10.40
106-3	Slope off Rio Sao Francisco	10/04/16	15:22	10°42.605'	036°08.310'	1896.6	4.75

5.5.2.2 Van Veen Grab, Multicorer and Box Corer

(S. Voigt, E. Niedermeyer, S. Kusch, A. L. Albuquerque, B. Dias)

The Van Veen Grab (VVG) was used at Sections 1 at 4 stations and at Sections 5 and 7 at one station as a pilot survey at the shallow sites to test whether the sediment allowed for the operation of the multicorer (MUC). Surface samples from the VVG were taken to determine living (stained) benthic foraminifera, stable isotopes of living (stained) benthic foraminifera, total assemblage of planktic and benthic foraminifera, sedimentology, bulk sediment analyses, trace element geochemistry, and anthropogenic biomarkers.

The box corer (BC) was used at stations for which the MBPS indicated the presence of hardgrounds, where the deployment of the MUC might lead to damage of the gear. Sediments of each box corer were sampled with one or two liners and stored at 4 °C. In addition surface samples were taken to determine living (stained) benthic foraminifera, stable isotopes of living (stained) benthic foraminifera, total assemblage of planktic and benthic foraminifera, sedimentology, bulk analyses, metals and trace elements geochemistry, and anthropogenic biomarkers.

Surface sampling was performed at 49 stations with the MUC equipped with 12 coring tubes (Table 5.5). Four tubes were completely sampled in 1 cm intervals for geochemical proxies in foraminifera (tube #1), for major, minor and trace element geochemistry, radiogenic isotopes and XRD analyses of the sediment (tube #2), for sediment petrography (grain size, magnetic properties) and heavy mineral composition (tube #3), and for biomarker analyses (tube #4).

Sediment surfaces (0-4 cm) were sampled from Tubes #9, #11, and #12 for purposes to-be-defined.

Tube #5 was destined to pore waters extraction by rhizones (stations M125-25-2, 31-2, 35-2, 39-2, 49-2, 50-2, 55-8, 67-3, 73-2, 77-2, 78-2, 82-3, 93-2, 100-4, 108-2) and remained sediments sliced in 1 cm intervals for analyses of stable isotopes in benthic foraminifera. When the recovery of sediments was not adequate for pore water analyses, the tube was completely sampled in 1 cm intervals and samples were destined for anthropogenic biomarker analyses (stations M125-5-4, 38-2, 48-2, 67-3, 83-2, 100-4, 112-3). Tubes #6 (^{210}Pb analyses) and #8 (living stained forams) were also sliced completely in 1 cm intervals (stations M125-5-4, 25-2, 29-9, 35-2, 38-2, 39-2, 48-2, 49-2, 50-2, 52-2, 55-8, 59-2, 61-3, 67-3, 72-2, 73-2, 77-2, 78-2, 80-3, 82-3, 93-2, 95-2, 102-2, 108-2, 112-3).

Tube #7 was sampled for compound-specific radiocarbon analysis of co-occurring terrestrial and marine biomarkers aiming at deciphering the timescales of organic matter deposition from land into the ocean (terrestrial residence time) and subsequent across-shelf transport.

Tube # 10 was sampled for the uppermost 4 cm for palynology and all other tubes were sampled for surface sediments by collecting the uppermost 2 cm. All samples, except for tube #7 were collected in Petri dishes and stored at 4 °C (tubes #1, 2, 3, 9, 10, 11, 12) or at -20°C (tube #4), respectively.

Samples from tubes #5, #6, and #8 were collected in plastic bags and stored at 4°C, except the uppermost 10 cm from tube #8 where samples were stored in plastic bottles with buffered Bengal Rose solution (1g/L, 4% formaldehyde). Tube #7 was sampled in 0-4 cm and 4-8 cm slices, transferred into pre-combusted glass jars, and stored frozen at -20°C.

Table 5.5 List of Multicores performed during METEOR Cruise M125.

Station	**Location**	**Date**	**Time**	**Coordinates at Depth**			**filled**
M125-			**(UTC)**	**Lat. (S)**	**Long. (W)**	**Depth (m)**	**tubes**
4-3	off Cabo Frio	22/03/16	12:51	22°51.549'	041°05.583'	79.5	11
5-4	off Cabo Frio	22/03/16	18:14	23°04.771'	041°21.380'	80.6	12
6-2	off Cabo Frio	22/03/16	19:45	23°06.204'	041°26.781'	80.8	12
11-2	off Cabo Frio	23/03/16	13:09	22°37.315'	041°27.945'	47.8	11
12-2	off Cabo Frio	23/03/16	15:40	22°42.397'	041°29.650'	52.7	12
14-2	off Cabo Frio	23/03/16	16:43	22°44.726'	041°31.078'	55.2	12
16-2	off Cabo Frio	24/03/16	09:20	22°54.932'	041°17.233'	69.3	12
18-3	off Cabo Frio	24/03/16	11:41	22°50.545'	041°21.339'	60.5	12

19-2	off Cabo Frio	24/03/16	12:44	22°49.261'	041°27.240'	57.9	11
25-2	off Paraiba do Sul	25/03/16	18:25	21°51.533'	039°53.066'	959.9	11
29-9	off Paraiba do Sul	26/03/16	21:24	21°48.730'	039°32.031'	2019	9
31-2	off Paraiba do Sul	27/03/16	01:10	21°49.327'	039°41.860'	1875.1	9
35-2	off Paraiba do Sul	27/03/16	17:36	21°53.607'	040°00.282'	430.1	10
38-2	Rio Doce area	28/03/16	17:18	19°44,285'	039°50,737'	17.6	8
39-2	Rio Doce area	28/03/16	20:41	19°42,059'	039°45,776'	24	12
40-2	Rio Doce area	28/03/16	22:03	19°35,224'	039°41,706'	22.5	11
42-3	Rio Doce area	29/03/16	11:34	19°28.277'	039°37.712'	17.7	12
43-2	Rio Doce area	29/03/16	13:21	19°27.988'	039°26.332'	37.5	9
44-2	Rio Doce area	29/03/16	16:21	19°26.368'	039°17.210'	49.8	12
48-2	Slope E off Rio Doce	30/03/16	12:32	19°33.068'	038°36.159'	262.6	11
49-2	Slope E off Rio Doce	30/03/16	14:16	19°34.313'	038°40.577'	447.9	12
50-2	Slope E off Rio Doce	30/03/16	17:43	19°42.620'	038°35.978'	903.8	12
52-2	Slope E off Rio Doce	30/03/16	22:14	19°35.946'	038°36.062'	643.4	12
55-8	Slope E off Rio Doce	31/03/16	20:44	20°21.809'	038°37.387'	1960.2	12
59-2	Slope E off Rio Doce	01/04/16	13:27	20°01.042'	038°50.859'	1763.4	12
61-3	Slope E off Rio Doce	01/04/16	21:38	20°02.373'	038°34.798'	1332	12
67-3	Rio Jequitinhonha	03/04/16	11:54	15°16.965'	038°54.801'	28.2	12
72-2	Rio de Contas	04/04/16	13:01	14°12.774'	038°36.528'	1738.1	12
73-2	Rio de Contas	04/04/16	19:07	14°10.608'	038°32.187'	2108.7	7
77-2	Rio de Contas	05/04/16	12:55	14°23.200'	038°43.551'	1394.4	8
78-2	Rio de Contas	05/04/16	16:44	14°24.356'	038°50.070'	845.2	8
80-3	Rio de Contas	05/04/16	21:35	14°24.559'	038°53.307'	421.6	12
82-3	Rio de Contas	06/04/16	12:56	14°17.516'	038°55.510'	61.1	12
83-2	Rio de Contas	06/04/16	11:21	14°24.285'	038°57.026'	38	11
85-3	Rio de Contas	06/04/16	14:29	14°10.633'	038°54.534'	42.6	11
86-3	Rio de Contas	06/04/16	15:51	14°04.757'	038°53.187'	39.9	11
87-2	Rio de Contas	06/04/16	17:03	13°58.646'	038°52.115'	46.6	11
93-2	Slope off Rio Sao Francisco	08/04/16	12:59	10°52.840'	036°23.840'	954,6	12
95-2	Slope off Rio Sao Francisco	08/04/16	17:57	10°56.728'	036°12.348'	1900,7	10
100-4	Slope off Rio Sao Francisco	09/04/16	12:41	10°34.937'	036°16.020'	55.4	9
101-3	Slope off Rio Sao Francisco	09/04/16	14:18	10°34.620'	036°14.967'	73	2
102-2	Slope off Rio Sao Francisco	09/04/16	17:35	10°40.980'	036°03.334'	1291.9	0
102-3	Slope off Rio Sao Francisco	09/04/16	18:40	10°40.964'	036°03.313'	1295.5	1
102-5	Slope off Rio Sao Francisco	09/04/16	21:06	10°40.032'	036°02.953'	1255	12
106-2	Slope off Rio Sao Francisco	10/04/16	13:44	10°42.594'	036°08.306'	1023.4	6
108-2	Slope off Rio Sao Francisco	10/04/16	19:24	10°39.817'	036°10.680'	695.7	12
112-3	Slope off Rio Sao Francisco	11/04/16	11:15	10°36.063'	036°19.203'	59.3	12
114-3	Slope off Rio Sao Francisco	11/04/16	12:29	10°38.952'	036°23.202'	55	12
115-3	Slope off Rio Sao Francisco	11/04/16	14:29	10°41.300'	036°26.608'	47.5	12

5.5.3 Foraminifera Sampling

(J. Hoffmann, I. Venancio, N. Taniguchi)

A preliminary shipboard biostratigraphy analysis was performed on cores listed in Table 5.6. Samples were taken every 50 cm of each core that could contain long stratigraphy sequences. We choose to analyze the samples that were related to changes in the sediment properties shown by onboard color and X-ray fluorescence scanning. A volume of 10 ml of sediment were washed over a 150 µm sieve (except the cores M125-25-3, M125-29-8 and M-125-24-3 where we used 125 µm sieves), dried and analyzed. Stratigraphy was determined by qualitative and quantitative approaches. We observed the presence or absence of target planktonic foraminifera species and their relative abundance along the record (see chapter 6.5).

Table 5.6 Cores sampled for biostratigraphy.

Core (M125-)	**Lat. (S)**	**Long. (W)**	**Water depth (m)**	**Core depth (cm)**
24-3	21°55.932'	039°54.096'	870	25, 311, 561, 611, 661
25-4	21°51.534'	039°53.065'	961	25, 327, 577
29-8	21°48.730'	039°32.024'	552	75, 107, 257, 407, 457, 557, 657
35-3	21°53,605'	040°00.282'	429	15, 50, 150, 205, 400
49-3	19°34.314'	038°40.577'	448.4	25, 185, 375, 470, 675
50-3	19°42.620'	038°35.978'	904.6	8, 21, 591, 791, 838, 941, 1041, 1141, 1291
52-3	19°35.945'	038°36.062'	643.3	5, 366, 511, 566, 616, 816
55-7	20:21.808'	038°37.388'	1959.9	30, 80, 220, 270, 320, 370, 453, 490, 520, 570, 591, 675, 725, 825, 925, 975, 1025, 1075, 1175
59-3	20°01.045'	038°50.859'	1762.9	20, 110, 325, 370, 475, 625, 675, 775
61-2	20°02.372'	038°34.798'	1328.9	42, 197, 242, 297, 397, 597, 692, 742, 792, 892, 992
72-3	14°12.775'	038°38.529'	1738.4	50, 197, 311
73-3	14°10.608'	038°32.178'	2106.1	25, 369, 399, 428, 524, 724, 924, 974, 1024, 1224
77-3	14°23.200'	038°43.550'	1393.1	25, 125, 175, 325, 375, 575
78-3	14°24.357'	038°50.070'	841.6	25, 125, 275, 401, 451, 611, 761, 815, 961, 1066, 111, 1211, 1321
80-2	14°24.559'	038°53.306'	420.5	25, 75, 175, 325, 480, 580, 630, 780
93-3	10°52.619'	036°23.031'	946.5	25, 181, 281, 381, 481, 581, 631
95-3	10°56.875'	036°12.554'	1967.5	25, 215, 415, 615, 715, 815, 965,
102-4	10°41.080'	036°03.649'	1308.5	27, 181, 281, 431, 531, 631
106-3	10°42.791'	036°08.413'	1099.1	25, 150, 250, 350, 450
108-3	10°40.001'	036°10.865'	691.8	25, 125, 225, 325, 350

Foraminifera sampling for radiocarbon dating was performed onboard on cores presented in Table 5.7. Samples were taken from gravity and piston cores at 300 cm depth, if possible, or close by, depending on the core length. A whole sediment slice was taken to ensure the availability of enough material for foraminifera sampling. The sediments were washed over a 125 µm sieve, dried overnight at 40°C and picked under the microscope. To provide enough material for radiocarbon dating, mixed planktic foraminifera species were used (*Globigerinoides ruber* (pink), *Globigerinoides ruber* (white) and *Globigerinoides sacculifer*). The foraminiferal size >400 µm was favoured for picking, in cases of insufficient sampling material, the size fractions >355 µm, >315 µm and >125 µm were additionally picked (Table 5.7). At some of the shallow water cores, no foraminifera were available, therefore we sampled mollusc shells for radiocarbon dating.

Table 5.7 Mixed planktonic foraminifera sampling for ^{14}C-dating.

Core (M125-)	**Depth (cm)**	**>400 µm**	**>355 µm**	**>315 µm**	**>125 µm**	**total**	**Specimens**	**Comments**
24-3	300					567	*G. ruber*; *G. sacculifer*	
25-4	300	490	0	0	0	490	*G. ruber*; *G. sacculifer*	
29-8	300	925	0	0	0	925	*G. ruber*; *G. sacculifer*	
35-3	300	0	8	9	121	138	*G. ruber*; *G. sacculifer*	abundant pyrite
38-3	352	-	-	-	-	-	-	no foraminifera
49-3	303-304	8	30	60	1108	1208	*G. ruber*; *G. sacculifer*	
50-3	303-304	684	0	0	0	684	*G. ruber*; *G. sacculifer*	
52-3	300	83	137	227	1484	1921	*G. ruber*; *G. sacculifer*	
55-7	305-306	727	0	0	0	727	*G. ruber*; *G. sacculifer*	

59-3	303-304	974	0	0	0	974	*G. ruber*; *G. sacculifer*	
61-2	220	482	434	0	0	916	*G. ruber*; *G. sacculifer*	
67-4	-	-	-	-	-	-	-	Mollusc shells at: 75cm, 194cm, 234cm, 297cm, 417cm
72-3	300	902	0	0	0	902	*G. ruber*; *G. sacculifer*	
73-3	300	908	0	0	0	908	*G. ruber*; *G. sacculifer*	
77-3	303-304	743	0	0	0	743	*G. ruber*; *G. sacculifer*	
78-3	303	492	470	0	0	962	*G. ruber*; *G. sacculifer*	
80-2	303-304	29	71	99	1742	1941	*G. ruber*; *G. sacculifer*	
87-3	-	-	-	-	-	-	-	Gastropod shells at: 114 cm, 168 cm, 170 cm
93-3	300	606	213	0	0	819	*G. ruber*; *G. sacculifer*	
95-3	300	73	131	206	1053	1463	*G. ruber*; *G. sacculifer*	
102-4	300	28	47	96	0	171	*G. ruber*; *G. sacculifer*	
106-3	303	316	714	0	0	1030	*G. ruber*; *G. sacculifer*	
108-3	303	42	67	94	0	203	*G. ruber*; *G. sacculifer*	

5.5.4 Core Scanning

5.5.4.1 Color Scanning

(L. M. Egger)

A MINOLTA CM-700d hand-held spectrophotometer was used to measure the light reflectance of the sediment. The sediment surface of the archive half was covered air-bubble-free with polyethylene foil. Spectral reflectance is measured over a wavelength spectrum from 400 to 700 nm. Routine measurements were made at 1 cm intervals and the color coordinates L*, a*, and b* were calculated by the SPECTRAMAGICTM NX color software v.2.03. Core horizons with coarse sediments and/or disturbed sediment surface were not measured to avoid erroneous outliers. The L* and a* values were used together with the XRF scanning results to develop preliminary stratigraphies (see chapter 6.5).

5.5.4.2 XRF Scanning

(S. Voigt)

The elemental composition of the sediments was measured with a handheld X-ray Fluorescence (XRF) spectrometer (Delta Professional by Olympus NDT). XRF scanning allows non-destructive determination of major and minor elements at the core surface and was performed at the archive half through a SPEX 3525 Ultralene® thin film. Data collection was achieved every 5 cm over a 1 cm^2 area using two beams with 20s count time at 40kV and 50s count time at 10kV, respectively. Raw element concentrations of Si, Ca, Ti, Fe, Rb, Sr, and Zr are given in percentage calculated by the internal software using the mode for rock geochemistry. These data are uncorrected for porosity and the water content of the core, wherefore only relative variations are considered for stratigraphic purposes. The relative standard deviation of repeated standard measurements was less than 5%.

6 Preliminary Results

6.1 Hydrography

(A. Osborne, A. L. Albuquerque, S. Kusch, E. Niedermeyer, N. Ardenghi)

A temperature-salinity-density scatter plot of all stations (Fig. 6.1) depicts the different water masses in the M125 study area and corresponds closely to the WOCE (World Ocean Circulation Experiment) meridional section A17 that runs ~600 km to the east of the continental slope (Mémery et al., 2000). Upper North Atlantic Deep Water (UNADW) is the deepest water mass encountered during M125, distinguishable by elevated O_2 concentrations >5 ml/L and present below ~1300 m. Overlying the UNADW is Antarctic Intermediate Water (AAIW), with a strongly expressed minimum salinity inflection point at ~34.4 psu, usually at ~800 m. Higher salinities above ~600 m mark the presence of South Atlantic Central Water. Salinity-Maximum Water (SMW), which forms by excess evaporation in the tropics (Worthington, 1976) and reaches salinities of up to 37.4 psu in the study area, occupies the upper 200 m of the water column. In shelf areas the SMW is modified by local inputs of freshwater from the rivers and these lower salinity waters are termed Subtropical Shelf Water (SSW) (Piola et al., 2000; Venancio et al., 2014). There is a trend towards deepening chlorophyll-maxima, from ~50 m on the upper slope to ~110 m in offshore stations.

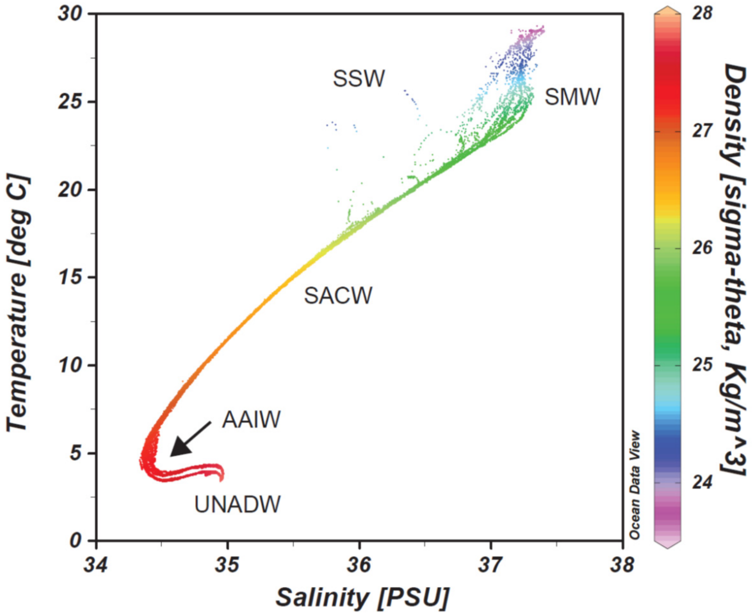

Fig. 6.1 Temperature-salinity-density plot of all M125 stations showing the main water masses: Subtropical Shelf Water (SSW), Salinity Maximum Water (SMW), South Atlantic Central Water (SACW), Antarctic Intermediate Water (AAIW) and Upper North Atlantic Deep Water (UNADW).

A particularly interesting hydrographic feature is the presence of upwelling in the Cabo Frio section, as indicated by fluorescence concentrations >5 mg/m^3, low salinities (<36 psu) and low temperatures (<20 ºC) in the upper 100 m (Fig. 6.2). This upwelling is caused by a combination of an abrupt change in coastline geometry and strong NE trade winds acting to destabilize the southward flowing Brazil Current and pump underlying SACW onto the shelf (Venancio et al. 2014 and reference therein).

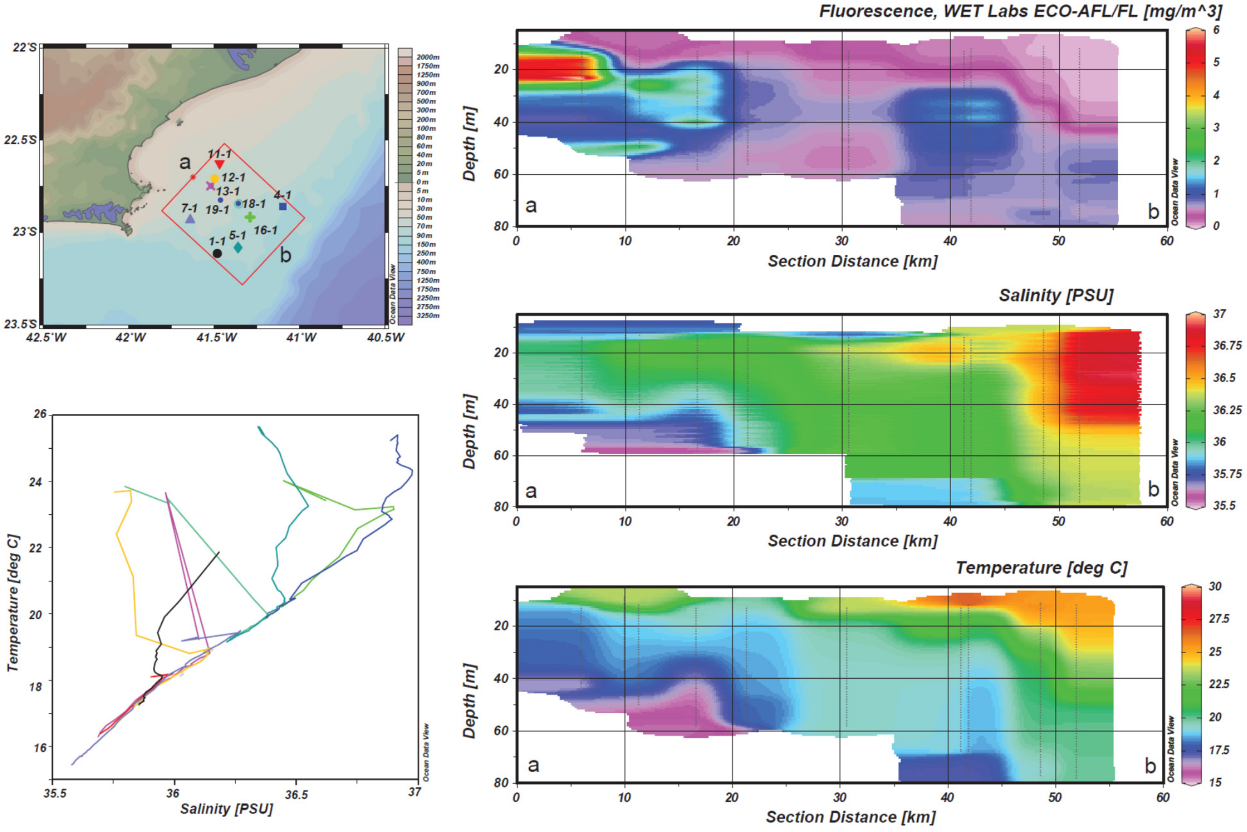

Fig. 6.2 Results of CTD casts in the Cabo Frio area showing high fluorescence, low salinity and low temperature on the shelf.

Another interesting hydrographic feature is the influence of the Rio Doce and local bathymetry on sub-surface salinities in Section 4. The salinity of waters between 20 and 300 m at Stations M125-49-1, 45-3 and 61-1 are as much as 0.5 psu lower than the same depths in Stations M125-48-1, 50-1, 52-1 and 55-1 (Fig. 6.3 a). Although no low salinities were recorded in the surface waters, this bifurcation is inferred to be the influence of freshwater discharge from the Rio Doce. Stations M125-48-1, 50-1 and 52-1 are closer to the river mouth than Stations M125-45-3 and 61-1 but it appears that the sub-surface is more strongly influenced by higher salinity waters transported through the channel proximal to these Stations (Fig. 6.3 b).

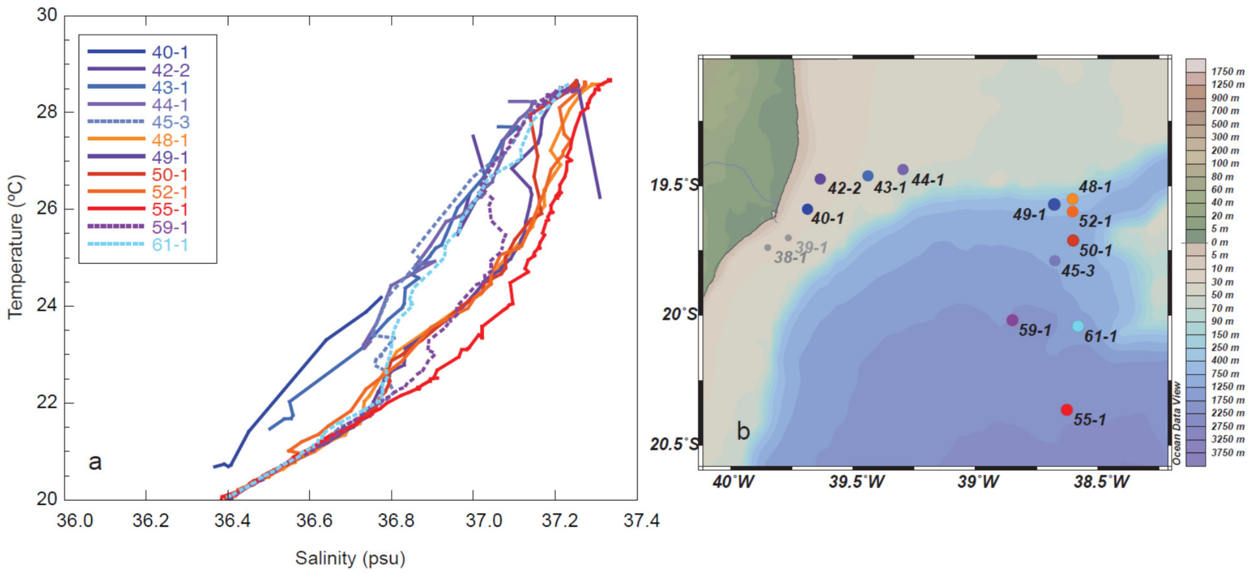

Fig. 6.3 a) Temperature-Salinity plot for selected stations in Sections 3 and 4. b) Map of Stations in Sections 3 and 4, colors match the corresponding curves in a).

6.2 Planktic Foraminifera

(M. Bayer, P. Munz)

The total number of living planktic foraminifera collected during shallow and deep casts was relatively small at all stations and ranges from 56 individuals at stations M125-29-2/3 off the Paraiba do Sul to 132 individuals at stations M125-110-3/4 off the Rio Sao Francisco. At the southernmost stations M125-29-2/3, the living planktic foraminiferal faunal assemblage was dominated by *Globorotalia menardii* and the deep-dwelling species *Hastigerina pelagica* and *Globorotalia inflata*, with moderate abundances of *Globigerinoides ruber* (pink) and *Neogloboquadrina incompta*. High abundances of *Candeina nitida* and *G. inflata* were found at the stations off the Rio de Contas (M125-69-5/6); other northward stations were dominated by the white and pink forms of *G. ruber* with moderate abundances of *G. glutinata*, *G. inflata* and *N. dutertrei*. More generally, the numbers of living forms of *G. inflata* and *G. menardii* decrease from south to north, whereas *G. glutinata* steadily increases.

6.3 Hydracoustics

(A. Conforti, S. J. Batenburg and K. Hatsukano)

In total, more than 2300 km of multibeam and PARASOUND profiles have been acquired. The surveyed Sections were divided in shelf areas and slope areas. Every investigated section has particular stratigraphic features due to local environmental conditions with several seismic stratigraphic features of specific interest.

Section 1 was located on a broad shelf area offshore Cabo Frio, characterized by a flat morphology. The sediment drape encountered was thin (maximum 5-7 m) with a medium to high reflectivity. Below the recent drape, a sharp erosional surface was recognized, overlying several seismic units that can be interpreted as coastal barrier - lagoon systems and river channel patterns (Fig. 6.4).

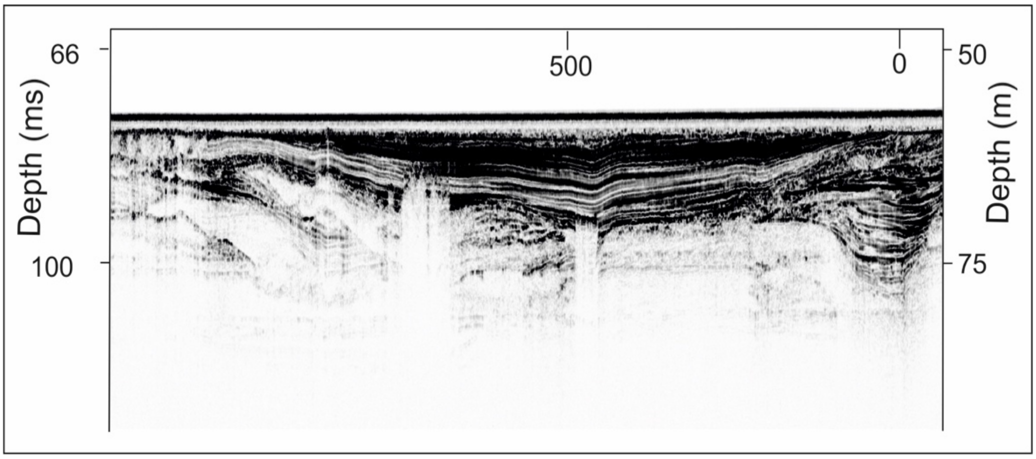

Fig 6.4 PARASOUND subbottom profile acquired in Section 1. Below the thin recent sediment drape, buried channelization can be recognized, which is filled by subsequent phases of sedimentation.

Section 2, located further offshore on the slope off the Paraiba do Sul, was characterized by a slope dominated by a canyon system formed by two main channels and well-developed levee and overbank deposits. In between the two channels, in a depth range from 750-900 m, a coral mound system was recognized (Fig. 6.5). The overlaying of DTM backscatter and the combination with seismic data allowed us to locate two successful coring stations.

Section 3 was located on the shelf area offshore the Rio Doce river mouth. The area was similar to Section 1 and characterized by a thin drape of highly reflective deposits. The shallower areas located close to the river mouth were characterized by a drape of low-reflective sediments.

Section 4 was located on the Rio Doce slope area and was characterized by a constant slope that reaches 2200 m of depth, on which a few channels were identified. An isolated relief in the deepest part of the survey was chosen as sample station and revealed a condensed section of hemipelagic deposits (Fig. 6.6).

Section 5 was located offshore of Jequitinhonha river and is characterized by a very narrow continental shelf with a thin drape of highly reflective sediments and several acoustic basement outcrops. In this area, a similar channelization pattern was recognized as in Section 1, filled by low-reflective sediments.

Section 6, located offshore the Rio de Contas, is characterized by a very narrow continental shelf, like the previous section, with a thin drape of highly reflective sediments and several acoustic basement outcrops. The northern part of the area is characterized by similar buried channelization, filled by low-reflective sediments. The deeper part of this area is characterized by a steep slope, especially down to 600 m, and several canyon systems that deeply cut the slope, both with meandering and straight channelization patterns.

Section 7 was located offshore the Rio Sao Francisco river mouth where the shelf area is exceedingly narrow and a canyon head deeply cuts the continental shelf, reaching up to only a few km from the river mouth. The shelf break is characterized by several outcrops of acoustic basement with a thin drape of sediments; the shallow part of shelf is characterized by a succession of low-reflective sediments with a thickness that increases in the center of the shelf towards the canyon head edges. The slope is characterized by a well-developed network of active channels and canyons with several meandering patterns and ridges that separate canyons.

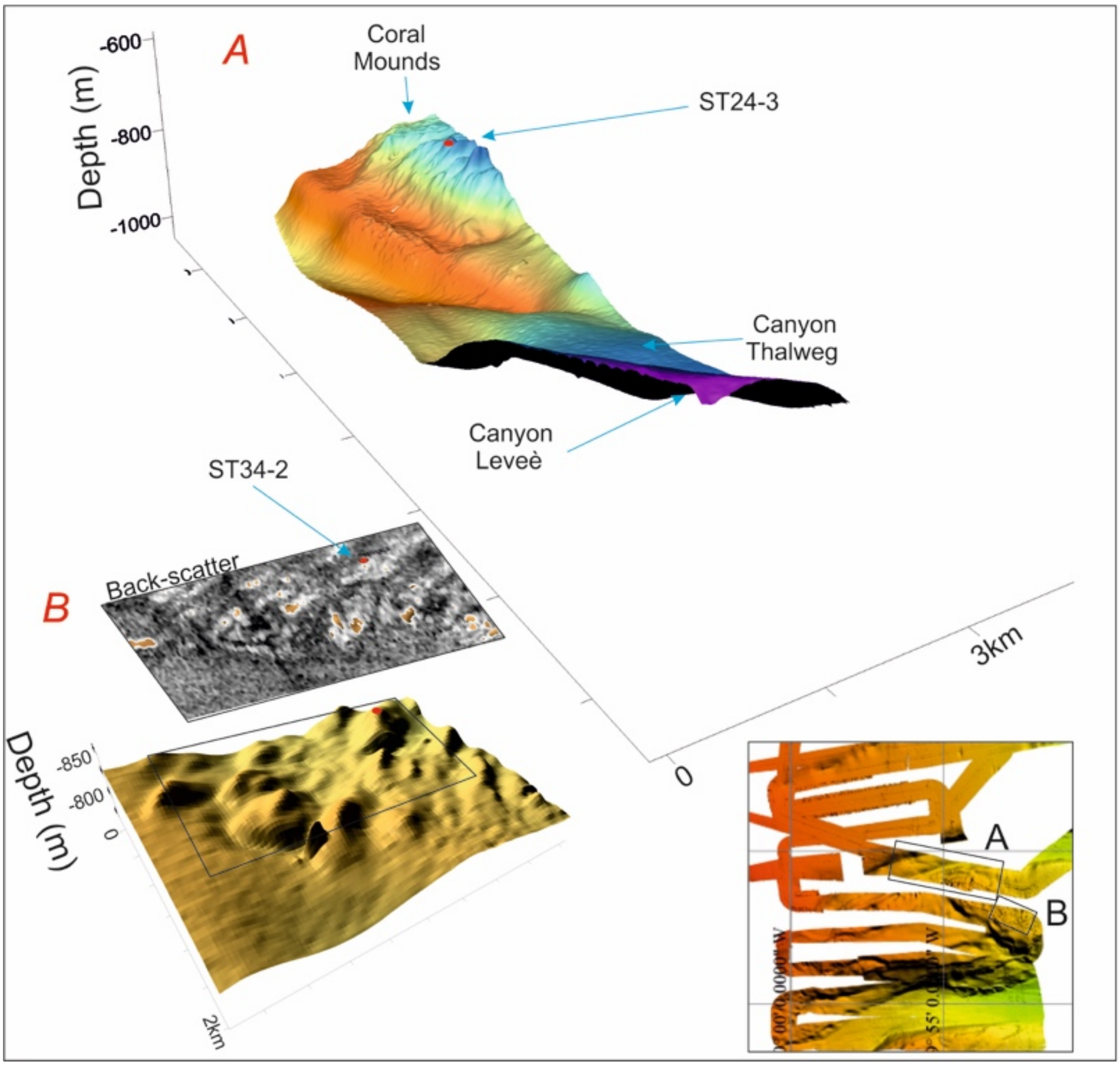

Fig 6.5 The figure shows two 3D blocks of the coral mound-field located in Section 2: block A is the highest part of the field; block B, in 3D, shows details of the mound field. The core station was chosen by overlaying morpho-bathymetric data with backscatter data.

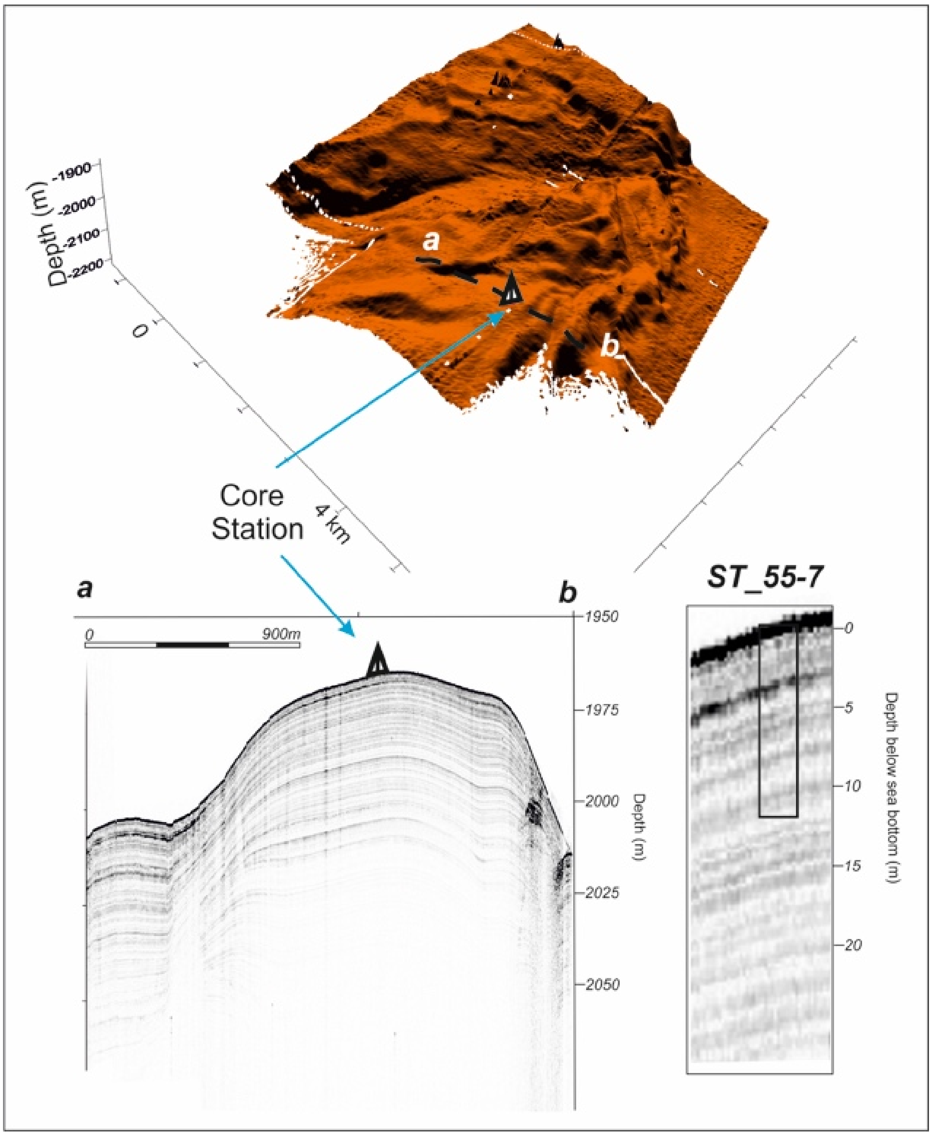

Fig 6.6 Upper panel: 3D view of an isolated morphological high identified the deeper part of Section 4 (about 2100 m, station M125-55); the core location was chosen in the highest part of relief where PARASOUND data show a continuous succession of low-reflective strata, formed by a condensed section of hemipelagic sediments (lower panel).

In conclusion, the research area along the Brazilian coast is characterized by a narrow shelf and a steep slope, often sediment starved and deeply cut by intricate canyon patterns. Nonetheless, suitable core locations were identified by the use of PARASOUND and multibeam sounders that enabled us to investigate the subsurface and relief of the sea floor. Fast processing software was invaluable to obtain a first interpretation of the bathymetry and stratigraphy, and greatly aided the decision-making process.

6.4 Sedimentology

(S. Voigt)

Section 1 – Cabo Frio area

The sediments on the shelf off Cabo Frio consist of coarse to fine calcareous sands with subordinate contents of clay and silt and yield a diverse fauna of gastropods, sponges, bryozoans, serpulids, polychaets, shrimps, encrusting red algae and mussels. The network of surface stations exposes a spatial gradient in grain size with the coarser sediments situated at the outer shelf positions of M125-5 and 6. The gravity corer was not able to penetrate the sediment at each of the nine stations because of the predominantly sandy lithology.

Section 2 off Paraiba do Sul

Surface samples comprise reddish to beige calcareous silt rich in sand-sized biogenic components. Box corer stations were placed at potential sites for the growth of cold-water coral (CWC) mounds (stations M125-24 and 34). Both sites expose a surface covered with dead framework-building and solitary CWCs of remarkable diversity at Site M125-34 (*Lophelia pertusa*, *Solenosmelia variabilis*, *Madrepora oculata*, *Desmophyullum* spp. among others; Fig. 6.7). The corals occur in the upper 10 to 20 cm of both box corers where they cover a light-grey calcareous clay.

Fig. 6.7 Sediment surface at Station 34 covered with a diverse population of Scleractinian corals.

Sediments recovered at the shallower Site M125-35 in 428 m water depths consists of 2 m of fine to medium-grained sized sand that erosively overlies a greenish clay smelling for H_2S and rich in greigite indicative of dysoxic conditions. Further downslope at 867 m (M125-24 and 34) we surveyed potential sites for CWC mounds. Site M125-34 was successful in coring a 5.8 m succession of CWC mound growth. Corals occur throughout the succession interlayering with coral-free clay beds. Site M125-24 recovered corals only at the surface, while the remaining sediment consisted of grey clay of the marginal mound facies.

The deeper sites at 960 m (M125-25) and at 2019 m water depths (M125- 29) expose a twofold lithology, sandy sediments rich in pteropods and other biogenic components erosively overlay bioturbated calcareous clay with abundant shell beds mostly of pteropods and repeated color changes in 60 to 80 cm intervals, likely reflecting climatic cycles.

Sections 3 and 4 - Rio Doce shelf and slope

Surface sediments on the shelf were recovered from six multicorer stations comprising predominantly beige-colored silt to medium-sized calcareous sand rich in quartz, mica and heavy minerals as well as shell debris. The grain-size distribution shows a clear coarsening trend northwards off the Doce river mouth. The surface of three stations (M125-38, 39 and 40), closest to the Doce river mouth, is blanketed by reddish silt that pinches out northwards (decrease in thickness from 4 cm to 1 cm), presumably deposited from suspension load delivered by the dam leakage in November 2015. One gravity core at Station M125-38 expose 4.80 m of silty clay rich in siliciclastic and in mica. Distinct bedding of dark and light layers indicate individual fluvial outflows and deposition of suspended material.

Surface sediments on the slope in water depths above 500 m (M125-49) consist of coarse-grained bioclastic sands enriched in heavy minerals. Below 500 m, the grain size decreases to silty clay covered by pteropods. All sites expose a bedding plane at 30 cm depth below seafloor that separates an upper beige-colored from a lower reddish colored calcareous clay. The transition is also recovered by gravity and piston coring.

Coarser grain sizes from silt to fine sands are also abundant downcore at station M125-49 reflecting strong siliciclastic input mixed with abundant clusters of biogenic components mostly consisting of pteropods. A silty fine to medium sand between 4 and 7 m below seafloor can be traced downslope to station M125-52 at 644 m water depths.

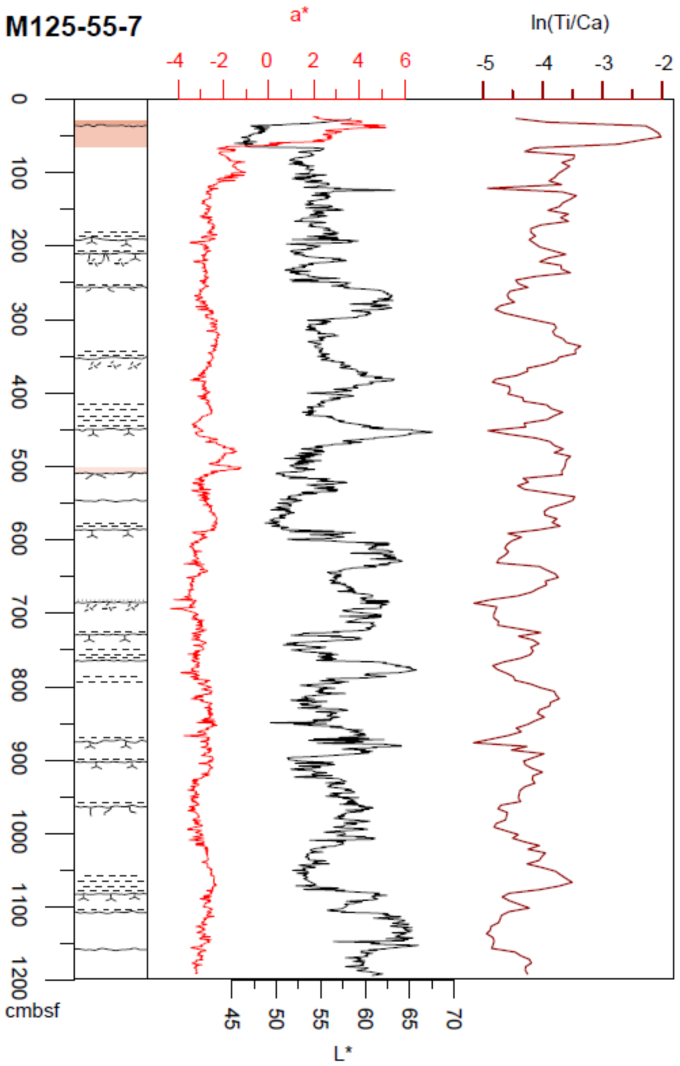

Fig. 6.8 Lithology, lightness and the ln(Ti/Ca) ratio of station M125-55-7 showing cyclic alternations by variable amounts of terrigenous input.

At greater water depths between 903 m and 1960 m, we recovered four 8 to 13 m long piston cores, which are characterized by a very distinct cyclic bedding of lighter and darker grey-greenish calcareous clays. The transition between the individual beds is marked by intense bioturbation with *Thalassinoides* and *Chondrites*. Particularly well developed are these cycles at station M125-55 in the lightness as well as in the ln(Ti/Ca) ratio (Fig. 6.8).

Section 5 – off Rio Jequitinhonha

Sediments of Station M125-67, at the shelf off the Rio Jequitinhonha comprise a Holocene succession of brownish bioturbated clay with abundant mussels and shell fragments.

Section 6 – Rio de Contas

Surface samples from Section 6 show a distinct downward dilution of terrigenous input. While the shallower stations at 421.9 m (M125-80) and 845.2 m (M125-78) comprise beige colored sand above grey-brownish clay with patches of biogenic components, the deeper stations below 1000 m water depth expose light-beige calcareous ooze and marls. The cores from the upper slope expose marly sediment with abundant arenitic layers of biogenic components. Some intervals are more clay-rich resulting in distinct variations in the lightness and elemental composition, which can be correlated among the different sites (see chapter 6.5). The deeper sites consist entirely of an alternation of bioturbated marls and more calcareous marls with distinct color changes between light-grey to brownish-olive-grey. Sharper bedding planes are developed where light-colored marls overlay darker horizons, which are burrowed by *Thalassinoides* and *Chondrites* tubes. The pattern is most pronounced developed at Station M125-73.

The comparison of lightness values with the lithology of deep slope successions at Rio Doce and Rio de Contas allow for a first preliminary identification of MIS 5e. The MIS 5e interval at all sites is characterized by coarser more calcareous sediments rich in biogenic components (Fig. 6.9). Some sites expose a weak omission surface (e.g. M125-55). Although this cyclicity is particularly well expressed at MIS 5e, similar cycles occur downwards arguing for a climatic driven pattern of terrigenous supply by fluvial input. A potential correlation of the lightness record of Site M125-73 with the LR05 stack is provided in chapter 6.5.

The subsequently performed shelf survey allowed only the recovery of surface samples. The predominantly silty and sandy deposits, rich in shell fragments and gastropods prevented successful gravity coring. The longest core recovery was limited to 2.55 m (M125-87-3).

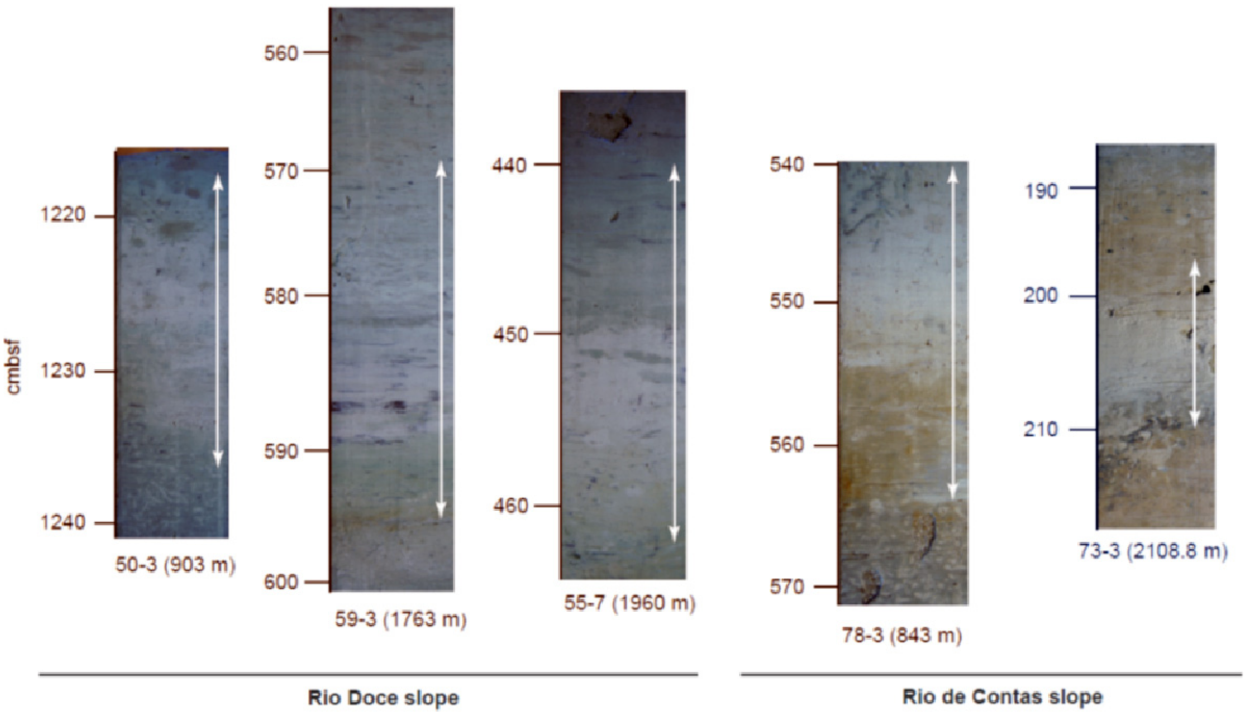

Fig. 6.9 Lithology of the MIS 5e interval at the Rio Doce and Rio de Contas slopes respectively. Thicknesses vary between 12 and 26 cm (white arrows). Stage MIS 5e is characterized at each site by a light grey interval, intensely burrowed and rich in medium-sand-sized biogenic components referring to a period of reduced terrigenous fluvial input.

Section 7 – Rio de Sao Francisco

Surface samples obtained by multicoring at ten sites show little spatial variability and consisted of ochre bioturbated calcareous clays rich in biogenic components.

The shallow gravity core situated at 47 m water depth on the shelf (M125-115-4) recovered a 7.76 m-thick succession of Holocene sediments consisting of calcareous silty clay with sand-sized biogenic components, which increased in abundance downcore. Sediments recovered from the slope are remarkably poor in their carbonate content. The longest (10 m) record recovered from Station M125-95-3 was comprised of predominantly dark greenish clay rich in pyrite and organic carbon with weakly developed cyclic color changes between darker and less darker horizons. The transition between Holocene and Pleistocene sediments appears as a color change from brownish, more calcareous to dark greenish carbonate-poor clays at several stations (M125-95-3,102-4, and 106-3). Station M125-93-3 exposed a major hiatus at 4.56 m, consisting of a consolidated surface covered by a graded coarse-to-medium grained sand indicative of gravity mass movements.

6.5 Preliminary Stratigraphy and Correlation

(A. Bahr, S. Batenburg, I. Venancio, S. Voigt)

To aid the identification of suitable material for further studies on current and past land-ocean interaction, preliminary stratigraphies were established already during expedition M125. For the construction of shipboard stratigraphies we used time constraints provided by biostratigraphy after (Ericson and Wollin, 1968). Our target planktonic foraminifera species were *Globorotalia truncatulinoides*, *Globorotalia menardii* plexus and *Pulleniatina obliquiloculata*. We establish a quantitative analysis by picking 200-300 specimens of planktonic foraminifera and counting our target species in order to generate relative frequencies of each one. An indication of glacial/interglacial stratigraphy could be established following Pflaumann (1975) and the Quaternary zone divisions were defined following Ericson and Wollin (1956). The interglacials were marked by the presence and relative high abundances of *G. menardii* plexus. The disappearance of *P. obliquiloculata* at 40 ka and the occurrence of *G. truncatulinoides* along the record were other stratigraphic markers used.

For inter-site correlation and further refinement of stratigraphies we used color and XRF-scanning data. In some cases, the tuning to reference curves already provides excellent age control on long time scales (e.g. in the case of M125-73-3). Based on the available data, most cores from slope areas could be assigned to Marine Isotope Stages (MIS), albeit tentatively. For the presumed Holocene/late Pleistocene deposits, samples were prepared for AMS-^{14}C dating, which will provide useful tie-points for the construction of a basic chronostratigraphic framework. As the Holocene sections require further analyses to obtain time-constraints, we will concentrate in the following on the cores from slope transects.

Paraiba do Sul (Section 2)

Four gravity cores have been obtained from section 2 (Fig. 6.10). Based on the foraminifera stratigraphy, the cores contain extended sections of MIS 2-3, with the Holocene spanning less than 1 m. MIS 5 might be fully recovered by M125-25-4, and MIS 5a is reached in M125-24-3. Tentative distinctions of MIS 2-3 and 2-4 might be made in M125-35-4 and MIS125-29-8, respectively, as the L* variations resemble the typical fluctuations of late glacial variability as preserved in Pleistocene reference records from both hemispheres as ice cores from Greenland (NGRIP-Members, 2004). Aside from that, the color reflectance and elemental composition variations do not contain tunable features that would allow for more detailed inter-site correlation.

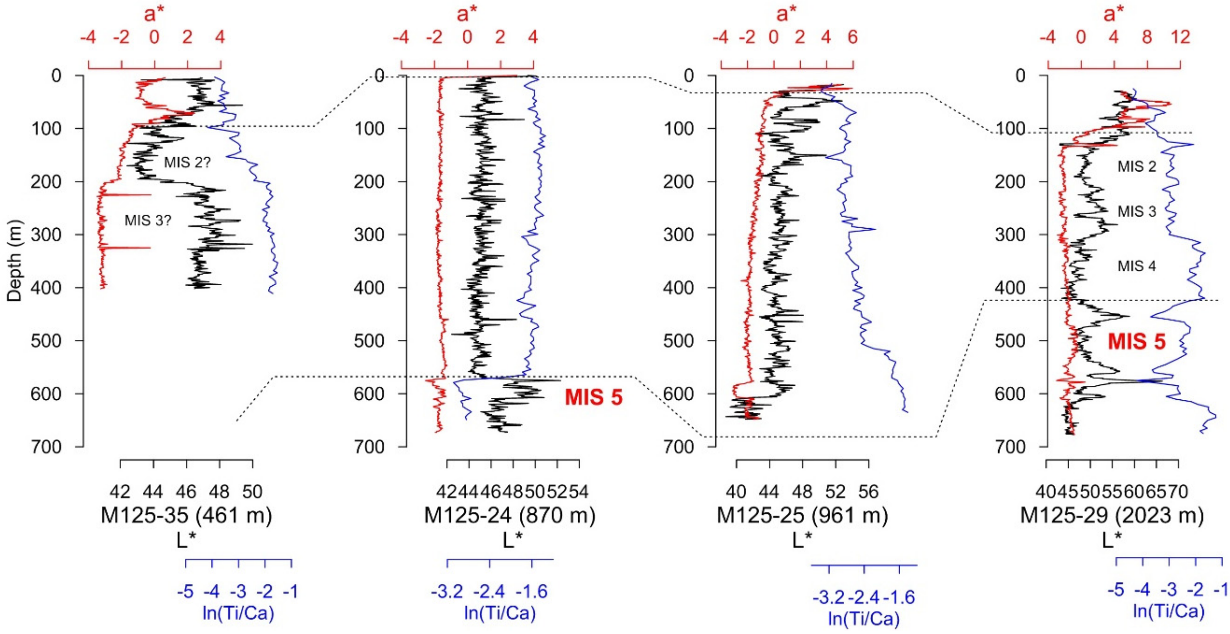

Fig. 6.10 Correlation of cores from the slope off the Paraiba do Sul, based on color reflectance (L* - black, a* - red) and Ti/Ca ratios (blue) from XRF scanning. The assignment of MIS 5 is based on biostratigraphy, which shows a first increase in *G. menardii* (not shown). The tentative correlation of MIS 2–4 is based on the general trends in lightness (L*).

Rio Doce (Sections 3+4)

At the Rio Doce section, six cores have been retrieved from the continental slope (Fig. 6.11). Compared to section 2 offshore the Paraiba do Sul, sedimentation rates appear reduced with less extensive coverage of glacial deposits. Sediment lightness records can be correlated with great confidence between the shallow- to intermediate-depth sites M125-49-3 (450 m water depth), 52-3 (644 m), and 50-3 (904 m), indicating that variations in sedimentation rate between these sites were minor. M125-50-3 is the longest of these sites, and appears to include Termination II at its base, as indicated by a sharp drop in lightness. In contrast, sedimentation rates at the deeper sites M125-55-7 (1959 m), 59-3 (1763 m) and 61-2 (1328 m) are lower, demonstrated by less expanded sedimentary expressions of MIS 5.

While the three spikes, interpreted to represent MIS 5 (supported by the higher abundance of *G. menardii*), can be correlated well between the latter three sites, the subsequent correlation of the older part of the records of M125-61-2 and 55-7 is less evident. A common feature of all cores is a reddish-brownish horizon at the top, up to 2 m thick in M125-49-3, presumably representing Holocene/deglacial deposits. A well-oxidized, brownish layer is a common feature in all cores retrieved from slopes during M125, but the intensive reddish color is best developed in cores from the Rio Doce section.

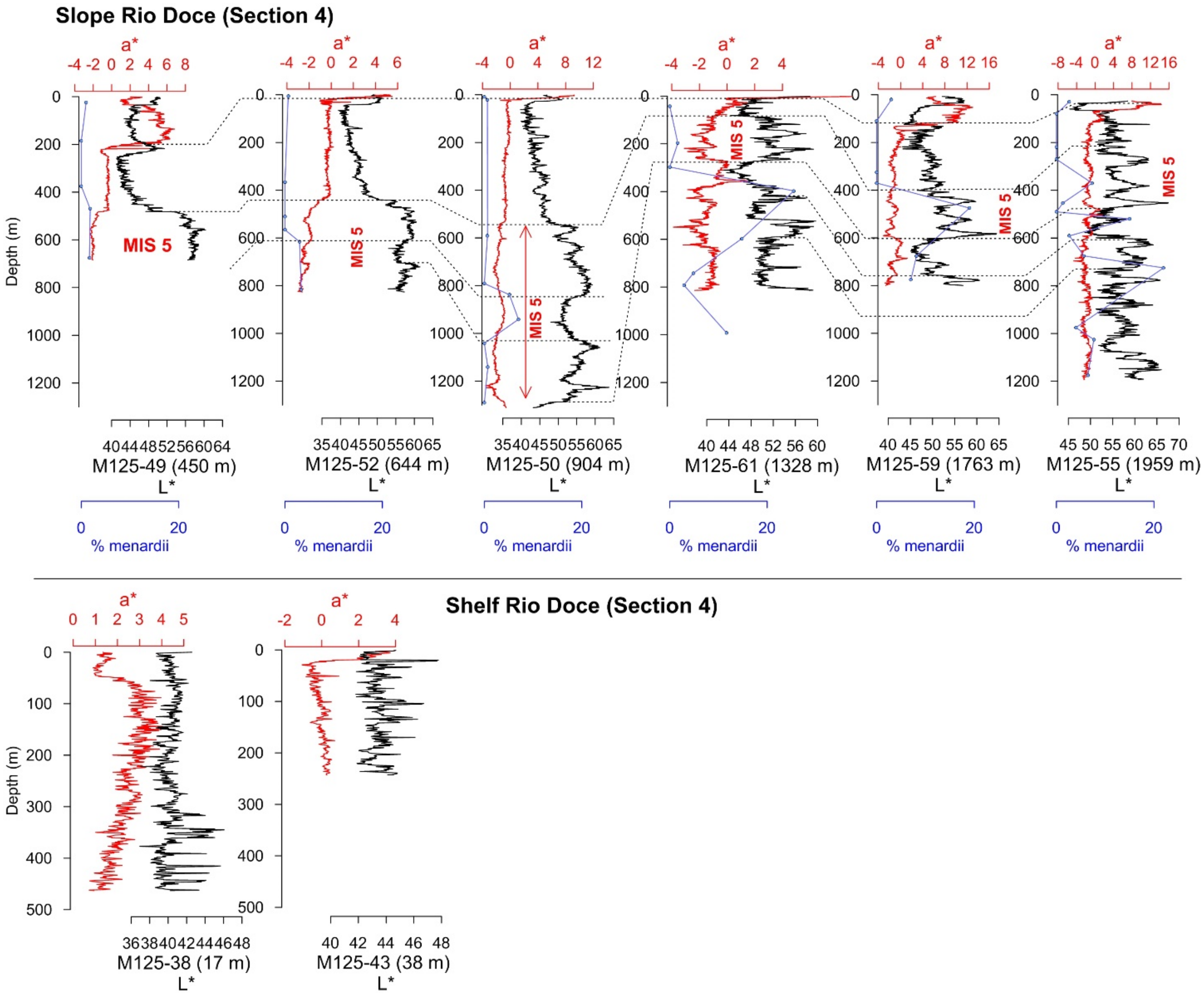

Fig. 6.11 Upper panel: Correlation of cores from the slope off the Rio Doce, based on color reflectance (L* - black and a* - red) and biostratigraphy (abundance of *G. menardii*, blue). The assignment of MIS 5 is based on foraminiferal counts showing the first increase in *G. menardii*. Lower panel: L* and a* variations of the cores retrieved on the shelf close to the Rio Doce debouchment.

Rio de Contas (Section 6)

The five cores obtained at the slope off the Rio de Contas exhibit the lowest sedimentation rates of all sites studied (Fig 6.12). In particular, the deepest stations (M125-72-3 and 73-3) display distinct variations in lightness, which, in the case of M125-73-3, can be readily tuned to the LR04 benthic stack (Lisiecki and Raymo, 2005). Although the mid part of M125-72-3 has not been scanned due to a broken liner, the lower part of the records bears great resemblance to M125-73-3. If we follow the tuned age model, both cores encompass MIS 21 and cover a time period of up to 900 kyrs. The lightness record of Core M125-77 displays even more frequent variations in the depth domain, although tuning to the other records and to LR04 is not straightforward.

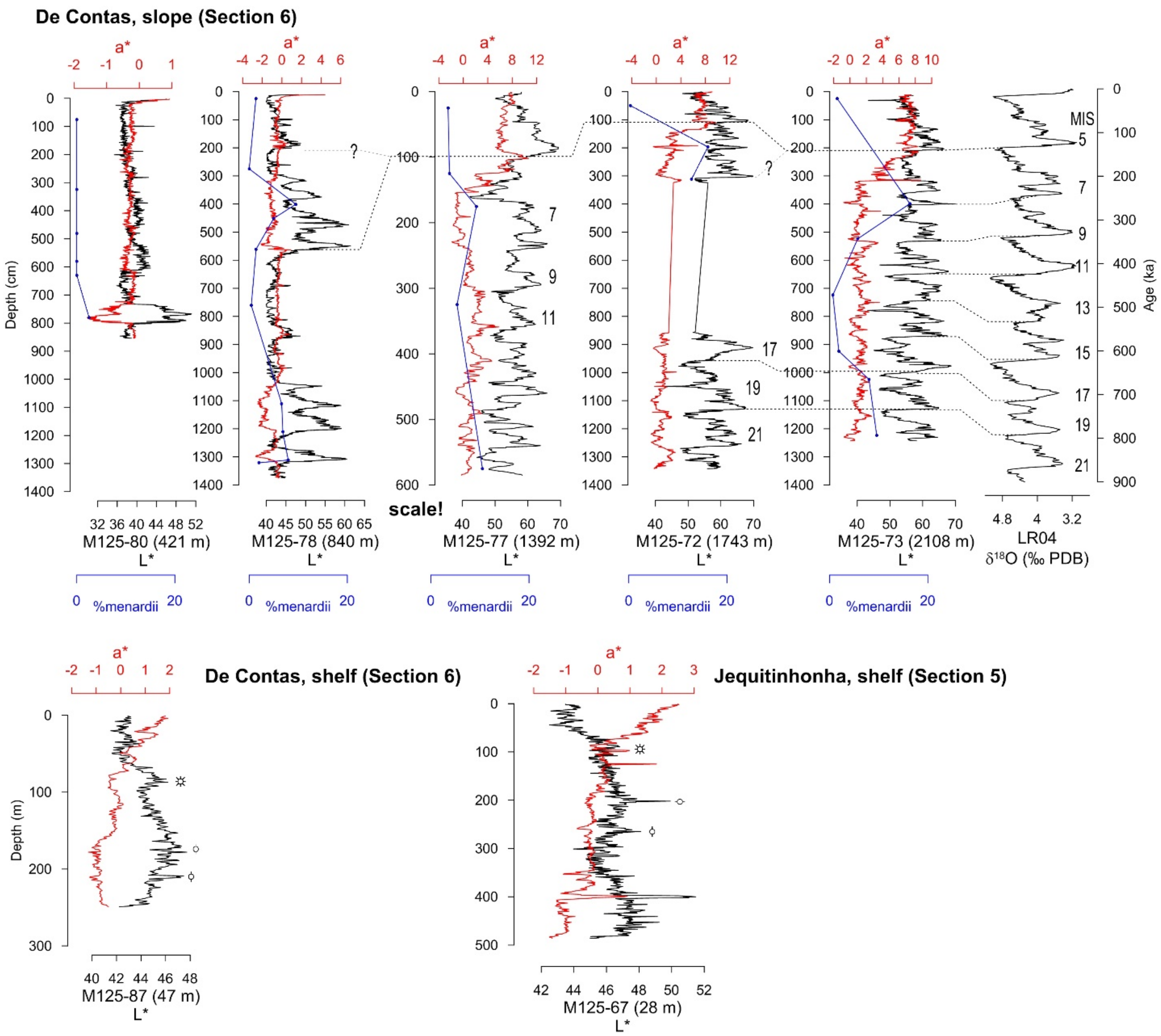

Fig. 6.12 Upper panel: Inter-site correlation of cores from the slope off the Rio de Contas based on color reflectance (L* - black and a* - red) and biostratigraphy (abundance of *G. menardii*, blue), tentatively tied to the LR04 benthic stack (Lisiecki and Raymo, 2005) with Marine Isotope Stages (MIS) assigned. Note the different depth scale of M125-77. Lower panel: Color reflectance of cores obtained on the shelf off the Rio de Contas and Jequitinhonha, both exhibiting a similar downcore pattern in L* and a* (note particular features marked with symbols next to respective curves).

Interestingly, core M125-87 from the shelf displays a similar downcore pattern in terms of color reflectance (Fig. 6.12) as the core from close to the Rio Jequitinhonha (M125-67), pointing at similar forcing acting on both rivers during the mid to late Holocene.

Rio Sao Francisco (Section 7)

Near the river mouth of the Rio Sao Francisco, five cores were recovered from intermediate to deep water depths (694-1869 m). Due to the large amount of sediment transported by the Rio Sao Francisco, sedimentation rates are decisively higher at Section 7 than at the slopes of the Rio Doce and the Rio de Contas. Based on the biostratigraphic results, the cores appear to cover an extensive part of the last glacial, but do not reach MIS 5 (Fig. 6.13). Elevated abundances of *G. menardii* near the bottom of M125-106-3 and at 8 m depth at M125-95-3 might indicate a warm interval.

The frequent occurrence of signs of reworking, such as abundant quartz grains and lithic fragments, hints at a potential allochthonous origin of the foraminiferal assemblages, especially at site M125-93-3. Notably, this site includes a major hiatus at 4.77 m, where relatively soft mud is underlain by very stiff clay, separated by an erosive surface. Apart from the topmost brownish interval, likely representing the Holocene, the lower part of M125-93-3 does not contain sufficiently distinctive features to allow for a confident inter-site correlation over all sections. Interestingly, M125-102-4 and to a lesser extent, M125-95-3 display peaks in Ti/Ca ratios, reminiscent of sharp Ti/Ca peaks found in cores from the northeast Brazilian margin (Arz et al., 1998; Arz et al., 1999a). These peaks were interpreted to be contemporaneous with Heinrich Events in the North Atlantic, suggesting a similar forcing of climatic variations observed at the M125 sites from the slope off the Rio Sao Francisco.

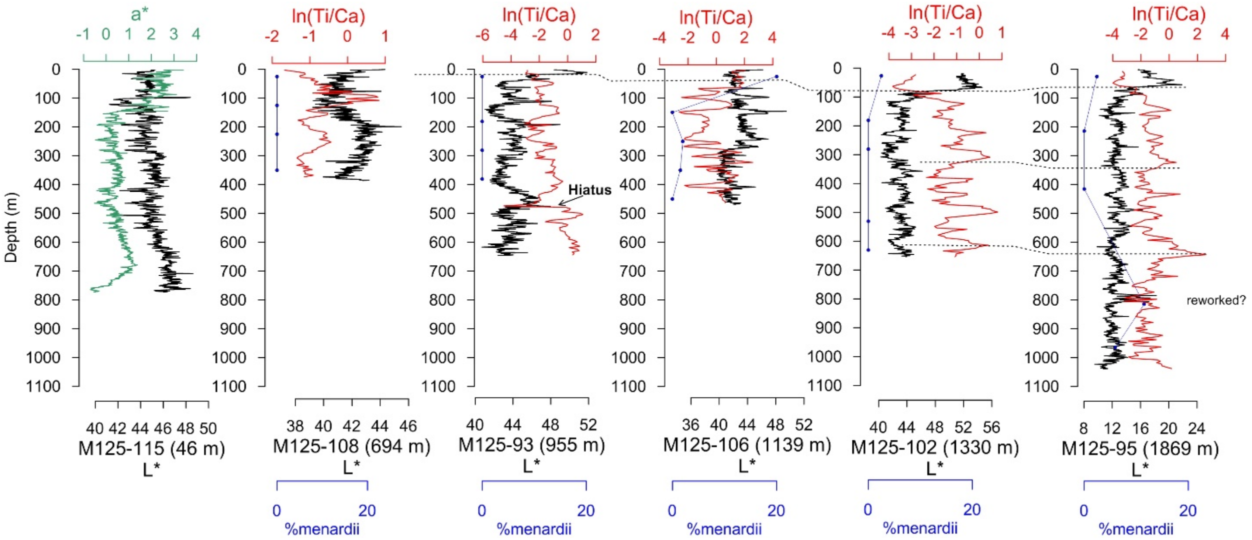

Fig. 6.13 Inter-site correlation of cores from the slope off the Rio Sao Francisco based on color reflectance (L* - black) and XRF Ti/Ca (red) and biostratigraphy (abundance of *G. menardii*, blue), including the shelf core M125-115 with color reflectance parameter a* (green) instead of XRF Ti/Ca (this core has not been XRF-scanned).

In summary, the preliminary stratigraphies from the recovered cores reveal different patterns and rates of variation along a wide latitudinal transect, as well as over regional depth transects. These features likely reflect the complex interplay of oceanographic and hydrological processes that dominate the current and past climate of eastern South America.

7 Ship's Meteorological Station

(A. Raeke)

On 21st of March 2016 at about 09:00 local time, RV Meteor left the harbor of Rio de Janeiro for research trip M125.

At first the cruising area was under the influence of a weak high pressure system. This resulted in sunny conditions with weak easterly winds and temperatures hovering around 25°C. On the 22nd of March while reaching the first working area to the east of Cabo Frio the station work started under fine conditions. A northerly wind of strength 4 to 5 Bft with a significant wave height of about 1.5 m was experienced. During the course of the 23rd the wind shifted to the southeast due to a low to the south of Rio de Janeiro pushing warmer and humid air into higher levels of the working area. Therefore on the night to the 24th with the passage of a cold front the visibility deteriorated, showers and thunderstorms with some sheet lightning were experienced. A thundery gust of 38 knots was measured. In the wake of the front only a little drier air invaded the area while almost stalling in the research area. Until the 25th the changeable showery weather persisted with light variable winds and a significant wave height between 0.5 to 1 m. Only a little relief of the shower activity was experienced as a ridge of an extensive high across the south Atlantic pushed into the area. From the 26th northerly winds set in and increased to 4 to 5 Bft. From the 28th close to the north of Rio de Janeiro various weak low pressure systems developed. Humid air pushed into higher levels close to the coast producing showers in working area 3. With the low tracking to the east a weak pressure gradient developed as the working area was located along the northwestern edge of an almost stationary high pressure ridge. Except for the swell of 0.5 to 1 m the weak wind generated almost a flat sea. On the 28th close to the coast a land/sea circulation set in.

In working area 4 to 6 the good working conditions persisted well into the 6th.At times a freshening land /sea circulation set in, wind of 3 to 4 Bft was experienced with a sea about 1m. Local showers occurred mostly in the morning hours. From the 7th in the northernmost working area (Section 7) along the southern fringe of the tropical low pressure trough a mostly dry easterly trade wind of 3 to 4 Bft blew. From the 10th the wind increased by one Beaufort with the shower activity abating. On the next day while on transit to Fortaleza the sea increased to 1.5 to 2m at first. The wind continued to blow from the east to southeast with strength 4 to 5 Bft. Along the southern edge of the ITC humid tropical air pushed into the cruising area causing showers to develop on the 12th. On the 13th the wind shifted to the east and increased at times 5 to 6 Bft with the sea dropping to a significant height of about 1.5 m.

On the 14th of April 2016, RV Meteor reached Fortaleza and on the 15th of April 2016 the port of Fortaleza.

8 Station List M125

Station No.		Date	Gear	Time	Latitude	Longitude	Water Depth	Remarks/Recovery
METEOR (M125_)	Internal (M125-)			[UTC]	[N]	[W]	[m]	
Off Cabo Frio								
403-1	1-1	21/03/16	CTD	21:49	23°06.704'	041°28.719'	80.1	9 bottles
404-1	2-1	21/03/16-22/03/16	MBPS	10:05	22°51.084'	041°15.002'	70.0	first file: SLF1603212202, last file: SLF1603220933
	3-1	22/03/16	Pump	14:49	22°51.546'	041°05.583'	79.0	
406-1	4-1	22/03/16	CTD	11:28	22°51.345'	041°05.585'	78.4	7 bottles
406-2	4-2	22/03/16	VVG	11:53	22°51.546'	041°05.584'	79.2	samples: forams, trace elements, biomarker; fauna on sediment surface
406-3	4-3	22/03/16	MUC	12.54	22°51.545'	041°05.585'	79.6	number of filled tubes:11
406-4	4-4	22/03/16	GC	14:50	22°51.546'	041°05.583'	79.5	liner length: 5m; recovery: 1m
407-1	5-1	22/03/16	CTD	n/a	n/a	n/a	n/a	14 bottles
407-2	5-2	22/03/16	VVG	17:30	23°04.774'	041°21.378'	80.9	EMPTY
407-3	5-3	22/03/16	VVG	17.45	23°04.774'	041°21.377'	80.6	stopped at 61 m rope length; samples: trace elements, forams, biomarker, forams (Munz, test sample)
407-4	5-4	22/03/16	MUC	18:18	23°04.773'	041°21.379'	81.0	number of filled tubes:12

408-1	6-1	22/03/16	VVG	19:27	23°06.204'	041°26.780'	80.7	samples: biomarker, forams, trace elements, forams (Munz)
408-2	6-2	22/03/16	MUC	19:49	23°06.204'	041°26.781'	80.5	number of filled tubes: 12
408-3	6-3	22/03/16	GC	21:48	23°06.204'	041°26.782'	79.8	no recovery
408-4	6-4	22/03/16	GC	20:57	23°06.204'	041°26.780'	79.8	no recovery
	7-1	22/03/16	Pump	20:08	23°06.204'	041°26.780'	81.5	
409-1	8-1	22/03/16	CTD	23:42	22°55.972‘	041°38.287‘	62.7	4 bottles
410-1	9-1	22/03/16-23/03/16	MBPS	11:45	22°54.116'	041°16.500'	85.0	first Parasound file SLF163222353; last Parasound file SLF163221145
	10-1	23/03/16	Pump	13:17	22°37.315'	041°27.945'	47.6	
411-1	11-1	23/03/16	CTD	12:56	22°37.317'	041°27.944'	46.2	4 bottles
411-2	11-2	23/03/16	MUC	13:11	22°37.314'	041°27.945'	46.6	number of filled tubes: 11
411-3	11-3	23/03/16	GC	13:50	22°37.314	041°27.945'	46.9	no reovery
411-4	11-4	23/03/16	GC	14:18	22°37.315'	041°27.944'	48.2	no reovery
412-1	12-1	23/03/16	CTD	15:25	22°42.399'	041°29.642'	52.8	
412-2	12-2	23/03/16	MUC	15:42	22°42.395'	041°29.651'	52.4	number of filled tubes: 12
	13-1	23/03/16	Pump	20:14	22°44.730'	041°31.077'	54.7	
413-1	14-1	23/03/16	CTD	16:20	22°44.731'	041°31.077'	54.7	no samples
413-2	14-2	23/03/16	MUC	16:46	22°44.728	041°31.078'	55.7	number of filled tubes: 12
413-3	14-3	23/03/16	GC	17:28	22°44.729'	041°31.078'	55.9	no recovery
414-1	15-1	23/03/16-24/03/16	MBPS	07:52	22°57.713'	041°08.533'	90.0	first Parasound file: SLF1603232147; last Parasound file: SLF1603240733
416-1	16-1	24/03/16	CTD	09:06	22°54.932'	041°17.234'	69.6	6 bottles
416-2	16-2	24/03/16	MUC	09:22	22°54.932'	041°17.233'	69.4	number of filled tubes: 12
416-3	16-3	24/03/16	GC	10:02	22°54.930	041°17.228	69.2	core length: 1.4m
	17-1	24/03/06	Pump	13:35	22°49.263'	041°27.739'	58.2	
417-1	18-1	24/03/16	CTD	10:56	22°50.544	041°21.340'	60.5	2 bottles
417-2	18-2	24/03/16	GC	11:15	22°50.544'	041°21.341'	60.8	no recovery
417-3	18-3	24/03/16	MUC	11:43	22°50.545'	041°21.340'	60.1	number of filled tubes: 12
418-1	19-1	24/03/16	CTD	12:36	22°49.261'	041°27.738'	58.5	2 bottles
418-2	19-2	24/03/16	MUC	12:47	22°49.263'	041°27.739'	58.6	number of filled tubes: 11
418-3	19-3	24/03/16	GC	13:23	22°49.263'	041°27.735'	58.3	no recovery
Off Paraiba do Sul								
	20-1	24/03/16	Pump	20:36	22°10.484'	040°30.475'	63.0	
419-1	21-1	24/03/16	CTD	23:18	21°58.375'	040°11.130'	64.0	
420-1	22-1	24/03/16-25/03/16	MBPS	11:37	21°53.170'	040°04.00	605.0	first file: SLF160324329; last file: SLF1603251124
	23-1	24/03/16	Pump	13:25	21°55.927'	039°54.122'	870.7	
421-1	24-1	25/03/16	CTD	13:25	21°55.927'	039°54.122'	870.0	12 bottles
421-2	24-2	25/03/16	BC	14:24	21°55.927'	039°54.121'	871.2	samples: 3x surface samples Brazil, 2x surface samples Munz, 2x Liner Raddatz
421-3	24-3	25/03/16	GC	16:04	21°55.930'	039°54.097'	869.3	core length: 6.86m
422-1	25-1	25/03/16	CTD	17:43	21°51.461'	039°53.181'	954.4	13 bottles
422-2	25-2	25/03/16	MUC	18:44	21°51.533'	039°53.065'	961.0	number of filled tubes: 11
422-3	25-3	25/03/16	PC	20:28	21°51.533'	039°53.065'	961.3	tool not deployed due to technical failure
422-4	25-4	25/03/16	GC	21:57	21°51.534'	039°53.064'	959.3	core length: 6.52m
	26-1	25/03/16	Pump	20:51	21°51.534'	039°53.065'	958.5	
423-1	27-1	25/03/16-26/03/16	MBPS	09:39	21°33.440'	039°38.295'	n/a	first file: SLF1603252337, last file: SLF1603260939
	28-1	26/03/16	Pump	13:11	21°48.764'	039°32.025'	2018.1	
424-1	29-1	26/93/16	CTD	12:38	21°48.763'	039°32.024'	2017.7	24 bottles
424-2	29-2	26/03/16	MN	13:27	21°48.760'	039°32.020'	2017.0	shallow cast: 100-80m, 80-60m, 60-40m, 40-20m, 20-0m; samples to be stored in Tübingen; preserved with ethanol
424-3	29-3	26/03/16	MN	14:24	21°48.760'	039°32.020'	2017.0	deep cast: 700-500m, 500-300m, 300-200m, 200-100m, 100-0m; samples to be stored

								in Tübingen; preserved with ethanol
424-4	29-4	26/03/16	CTD	16:04	21°48.761'	039°32.024'	2018.0	16 bottles
424-5	29-5	26/03/16	MN	16:29	21°48.760'	039°32.020'	2018.0	shallow cast: 100-80m, 80-60m, 60-40m, 40-20m, 20-0m; samples to be stored in Kiel; preserved with ethanol
424-6	29-6	26/03/16	MN	17:26	21°48.740'	039°32.070'	2018.0	deep cast: 700-500m, 500-300m, 300-200m, 200-100m, 100-0m; samples to be stored in Kiel; preserved with ethanol
424-7	29-7	26/03/16	PC	18:34	21°48.729'	039°32.029'	2020.7	tool not deployed due to technical failure
424-8	29-8	26/03/16	GC	20:16	21°48.732'	039°32.030'	2019.0	length <5.52 m
424-9	29-9	26/03/16	MUC	21:59	21°48.731'	039°32.029'	2023.8	number of filled tubes: 9
	30-1	26/03/16	Pump	20:12	21°48.732'	039°32.030'	2019.2	
425-1	31-1	26/03/16	CTD	n/a	n/a	n/a	n/a	9 bottles
425-2	31-2	27/03/16	MUC	01:43	21°49.328'	039°41.861'	1875.1	number of filled tubes: 9
426-1	32-1	26/03/16-27/03/16	MBPS	13:05	21°51.464'	039°52.920'	30.0	
	33-1	27/03/16	Pump	13:18	21°59.955'	039°52.653'	1329.9	
427-1	34-1	27/03/16	BC	14:32	21°56.959'	039°53.113'	873.5	samples: 3x coral samples (Raddatz), 2x Liner, 3x surface samples Brazil, 1x surface sample Munz, 1x surface sample Niedermeyer
427-2	34-2	27/03/16	GC	15:40	21°56.957'	039°53.117'	866.3	core length: 5.83m; no samples (corals)
428-1	35-1	27/03/16	CTD	n/a	n/a	n/a	n/a	7 bottles
428-2	35-2	27/03/16	MUC	17:46	21°53.607'	040°00.281'	429.4	number of filled tubes: 10
428-3	35-3	27/03/16	GC	18:42	21°53.606'	040°00.279'	430.6	core length: 4.25m
428-4	35-4	27/03/16	GC	19:41	21°53.610'	040°00.280'	429.4	no recovery
	36-1	27/03/16	Pump	20:15	21°50.733'	039°59.920'	540.6	
Off Rio Doce (Shelf)								
429-1	37-1	28/03/16	MBPS	16:24	19°46.575'	039°48.677'	n/a	depth range: 20/35m; first file: SLF1603280902, last file: SLF1603281622
431-1	38-1	28/03/16	CTD	17:02	19°44.277'	039°50.756'	17.2	2 bottles
431-2	38-2	28/03/16	MUC	17:20	19°44.284'	039°50.738'	16.7	number of filled tubes: 8
431-3	38-3	28/03/16	GC	19:07	19°44.283'	039°50.738'	17.5	core length: 4.72m
432-1	39-1	28/03/16	CTD	20:25	19°42.058'	039°45.776'	23.6	1 bottle
432-2	39-2	28/03/16	MUC	20:43	19°42.050'	039°45.775'	23.6	number of filled tubes: 12
433-1	40-1	28/03/16	CTD	21:55	19°35.224'	039°41.706'	21.7	3 bottles
433-2	40-2	28/03/16	MUC	22:05	19°35.226'	039°41.706'	22.7	number of filled tubes: 11
434-1	41-1	28/03/16-29/03/16	MBPS	10:13	19°25.454'	039°34.230'	46.0	first file: SLF1603290058, last file: SLF1602191012
435-2	42-1	29/03/16	CTD	11:09	19°28.308'	039°37.759'	16.7	0 bottles
	42-2	29/03/16	CTD	11:29	19°28.280'	039°37.717'	17.3	1 bottle
435-3	42-3	29/03/16	MUC	11:36	19°28.276'	039°37.711'	16.7	number of filled tubes: 12
436-1	43-1	29/03/16	CTD	13:12	19°27.994'	039°26.374'	38.2	2 bottles
436-2	43-2	29/03/16	MUC	13:23	19°27.987'	039°26.332'	37.5	number of filled tubes: 9
436-3	43-3	29/03/16	GC	14:09	19°27.990'	039°26.332'	37.6	no recovery
436-4	43-4	29/03/16	GC	14:47	19°27.989'	039°26.333'	38.2	core length: 1.71m
437-1	44-1	29/03/16	CTD	16:11	19°26.376'	039°17.211'	48.7	3 bottles
437-2	44-2	29/03/16	MUC	16:23	19°26.691'	039°17.210'	48.6	number of filled tubes: 12
Off Rio Doce (Slope)								
438-1	45-1	29/03/16	MN	21:07	19°47.356'	038°40.389'	1031.2	shallow cast
438-2	45-2	29/03/16	MN	22:08	19°47.356'	038°40.389'	1031.0	deep cast
438-3	45-3	29/03/16	CTD	22:49	19°47.356'	038°40.389'	1032.1	24 bottles
438-4	45-4	29/03/16	MN	23:20	19°47.356'	038°40.389'	1032.3	shallow cast
438-5	45-5	29/03/16	MN	00:16	19°47.356'	038°40.389'	1033.2	deep cast
438-6	45-6	29/03/16	CTD	01:22	19°47.356'	038°40.390'	1029.0	24 bottles
439-1	46-1	29/03/16-30/03/16	MBPS	11:07	19°32.327'	038°31.824'	200.0	first file: SLF1603300139, last file: SLF1603301105
	47-1	30/03/16	Pump	13:39	19°34.314'	038°40.576'	448.0	

440-1	48-1	30/03/16	CTD	12:14	19°33.068'	038°36.160'	263.2	9 bottles
440-2	48-2	30/03/16	MUC	12:38	19°33.068'	038°36.159'	264.2	number of filled tubes: 11
441-1	49-1	30/03/16	CTD	13:54	19°34.313'	038°40.576'	447.6	4 bottles
441-2	49-2	30/03/16	MUC	14:25	19°34.313'	038°40.577'	447.6	number of filled tubes: 12
441-3	49-3	30/03/16	GC	15:13	19°34.315'	038°40.577'	448.4	core length: 7.16m
442-1	50-1	30/03/16	CTD	17:12	19°42.620'	038°35.987'	903.2	17 bottles
442-2	50-2	30/03/16	MUC	17:59	19°42.620'	038°35.979'	903.7	number of filled tubes: 12
442-3	50-3	30/03/16	PC	19:32	19°42.621'	038°35.978'	902.7	core length: 13.16m
	51-1	30/03/16	Pump	20:01	19°42.622'	038°35.978'	902.5	
443-1	52-1	30/03/16	CTD	21:34	19°35.946'	038°36.062'	644.7	18 bottles
443-2	52-2	30/03/16	MUC	22:18	19°35.946'	038°36.062'	643.9	number of filled tubes: 12; pore water: backup
443-3	52-3	30/03/16	GC	23:30	19°35.946'	038°36.062'	644.8	core lengh: 8.42m
444-1	53-1	30/03/16-31/03/16	MBPS	10:19	20°06.169'	038°40.313'	1300.0	
	54-1	31/03/16	Pump	13:26	20°21.807'	038°37.386'	1960.5	
445-1	55-1	31/03/16	CTD	13:12	20°21.808'	038°37.387'	1960.4	19 bottles
445-2	55-2	31/03/16	MN	13:32	20°21.808'	038°37.387'	1960.3	shallow cast
445-3	55-3	31/03/16	MN	14:27	20°21.808'	038°37.388'	1960.8	deep cast
445-4	55-4	31/03/16	CTD	16:02	20°21.808'	038°37.388'	1959.7	15 bottles
445-5	55-5	31/03/16	MN	16:24	20°21.808'	038°37.388'	1960.3	shallow cast
445-6	55-6	31/03/16	MN	17:17	20°21.808'	038°37.386'	1960.0	deep cast
445-7	55-7	31/03/16	PC	19:35	20°21.808'	038°37.387'	1960.1	core length: 11.75m
445-8	55-8	31/03/16	MUC	21:19	20°21.808'	038°37.389'	1961.2	number of filled tubes: 12
	56-1	31/03/16	Pump	20:09	20°21.808'	038°37.388'	1962.2	
446-1	57-1	31/03/16-01/04/16	MBPS	09:32	19°42.032'	038°44.606'	1100.0	first file: SLF1603312317, last file: SLF1604010924
	58-1	01/04/16	Pump	13:46	20°01.043'	038°50.859'	1763.5	
447-1	59-1	01/04/16	CTD	12:44	20°01.044'	038°50.858'	1763.0	8 bottles
447-2	59-2	01/04/16	MUC	13:57	20°01.046'	038°50.859'	1763.5	number of filled tubes: 12
447-3	59-3	01/04/16	PC	15:51	20°01.044'	038°50.858'	1762.9	
	60-1	01/04/16	Pump	21:10	20°02.373'	038°34.798'	1328.2	
448-1	61-1	01/04/16	CTD	19:05	20°02.371'	038°34.789'	1328.5	22 bottles
448-2	61-2	01/04/16	PC	20:40	20°02.372'	038°34.748'	1328.7	core length: 10.17m
448-3	61-3	01/04/16	MUC	22:02	20°02.372'	038°34.798'	1328.9	
	62-1	02/04/16	Pump	13:21	17°20.355'	038°23.700'	1181.5	
	63-1	02/04/16	Pump	20:18	16°03.334'	038°37.412'	24.8	
Rio Jequitinhonha								
449-1	64-1	02/04/16	CTD	21:25	15°52.965'	038°39.208'	30.5	no bottles fired; sound velocity profile only
450-1	65-1	02/04/16-03/04/16	MBPS	09:32	15°19.308'	038°46.696'	50.0	first file: SLF1604022140, last file: SLF1604030959
	66-1	03/04/16	Pump	13:25	15°11.345'	038°52.394'	29.6	
451-1	67-1	03/04/16	CTD	11:20	15°16.965'	038°54.800'	27.7	11 bottles
451-2	67-2	03/04/16	VVG	11:38	15°16.965'	038°54.801'	28.4	3x surface samples Brazil, 1x surface samples Munz, 1x organic Niedermeyer
451-3	67-3	03/04/16	MUC	11:56	15°16.964'	038°54.801'	28.4	number of filled tubes: 12
451-4	67-4	03/04/16	GC	12:37	15°16.965'	038°54.801'	28.3	core length 4.97m
Off Rio de Contas								
	68-1	03/04/16	Pump	20:15	14°15.445'	038°36.061'	1860.6	
452-1	69-1	03/04/16	CTD	20:27	14°15.447'	038°36.061'	1858.3	24 bottles
452-2	69-2	03/04/16	MN	20:44	14°15.447'	038°36.061'	1859.2	shallow cast
452-3	69-3	03/04/16	MN	21:40	14°15.445'	038°36.060'	1859.3	deep cast
452-4	69-4	03/04/16	CTD	n/a	n/a	n/a	n/a	24 bottles
452-5	69-5	03/04/16	MN	22:42	14°15.446'	038°36.061'	1859.3	shallow cast
452-6	69-6	03/04/16	MN	23:38	14°15.446'	038°36.061'	1860.1	deep cast
453-1	70-1	03/04/16-04/03/16	MBPS	10:07	14°12.134'	038°48.137'	1022.0	first file: SLF1604032358, last file: SLF1604041003
	71-1	04/04/16	Pump	13:39	14°12.774'	038°38.530'	1737.3	
454-1	72-1	04/04/16	CTD	12:19	14°12.775'	038°38.530'	1735.6	24 bottles
454-2	72-2	04/04/16	MUC	13:30	14°12.774'	038°38.529'	1738.6	number of filled tubes: 12
454-3	72-3	04/04/16	PC	15:24	14°12.776'	038°38.529'	1738.1	core length 13.43m
455-1	73-1	04/04/16	CTD	18:18	14°10.605'	038°32.176'	2111.0	21 bottles
455-2	73-2	04/04/16	MUC	19:44	14°10.607'	038°32.178'	2107.6	number of filled tubes: 7
455-3	73-3	04/04/16	PC	21:50	14°10.608'	038°21.178'	2106.9	core length 12.49m

	74-1	04/04/16	Pump	21:13	14°10.608'	038°32.178'	2107.6	
456-1	75-1	04/04/16- 05/04/16	MBPS	10:09	14°14.553'	038°48.130'	1099.0	
	76-1	05/04/16	Pump	13:31	14°23.200'	038°43.551'	1393.9	
457-1	77-1	05/04/16	CTD	12:22	14°23.200'	038°43.551'	1393.1	24 bottles
457-2	77-2	05/04/16	MUC	13:19	14°23.200'	038°43.551'	1393.0	number of filled tubes: 8
457-3	77-3	05/04/16	GC	14:36	14°23.201'	038°43.551'	1394.4	core length 6.00m
458-1	78-1	05/04/16	CTD	16:20	14°24.359'	038°50.067'	842.8	24 bottles
458-2	78-2	05/04/16	MUC	17:05	14°24.356'	038°50.070'	842.9	number of filled tubes: 8
458-3	78-3	05/04/16	PC	18:39	14°24.357'	038°50.068'	840.5	core length 13.86m
	79-1	05/04/16	Pump	20:23	14°24.560'	038°53.367'	421.9	
459-1	80-1	05/04/16	CTD	20:28	14°24.559'	038°53.307'	422.4	24 bottles
459-2	80-2	05/04/16	GC	21:07	14°24.559'	038°53.307'	421.3	core length 8.55m
459-3	80-3	05/04/16	MUC	21:44	14°24.559'	038°53.307'	420.5	number of filled tubes: 12
460-1	81-1	05/04/16- 06/04/16	MBPS	10:18	14°29.238'	038°56.423'	50.0	first file: SLF1604052222, last file: SLF1604060957
	82-1	06/04/16	Pump	13:26	14°15.708'	038°55.278'	52.5	
461-1	82-2	06/04/16	CTD	12:46	14°17.517'	038°55.509'	58.9	12 bottles
461-2	82-3	06/04/16	MUC	12:59	14°17.516'	038°55.511'	59.0	number of filled tubes: 12
462-1	83-1	06/04/16	CTD	11:11	14°24.285'	038°57.024'	38.0	11 bottles
462-2	83-2	06/04/16	MUC	11:23	14°24.284'	038°57.024'	37.0	number of filled tubes: 11; surface samples
	84-1	06/04/16	Bucket	12:32	14°17.517'	038°55.514'	59.3	114-2
	85-1	06/04/16	Bucket	14:08	14°10.631'	038°54.536'	42.3	
463-1	85-2	06/04/16	CTD	14:21	14°10.633'	038°54.534'	42.2	10 bottles
463-2	85-3	06/04/16	MUC	14:32	14°10.633'	038°54.534'	n/a	number of filled tubes: 11; surface samples
	86-1	06/04/16	Bucket	15:30	14°04.766'	038°53.195'	34.8	
464-1	86-2	06/04/16	CTD	15:43	14°04.757'	038°53.190'	36.1	10 bottles
464-2	86-3	06/04/16	MUC	15:53	14°04.756'	038°53.187'	34.9	number of filled tubes: 11; surface samples
465-1	87-1	06/04/16	CTD	16:50	13°58.647'	038°52.116'	46.4	8 bottles
465-2	87-2	06/04/16	MUC	17:05	13°58.646'	038°52.115'	47.0	number of filled tubes: 12
465-3	87-3	06/04/16	GC	17:55	13°58.646'	038°52.116'	47.0	core length: 2.55m
	88-1	06/04/16	Pump	20:16	13°38.037'	038°34.353'	597.2	
Off Rio Sao Francisco								
	89-1	07/04/16	Pump	13:55	11°08.733'	036°26.519'	2116.9	
466-1	90-1	07/04/16	CTD	16:21	10°57.520'	036°17.005'	2002.4	23 bottles
466-2	90-2	07/04/16	MN	16:42	10°57.848'	036°17.620'	2038.9	shallow cast
466-3	90-3	07/04/16	MN	17:35	10°57.100'	036°14.263'	2011.3	deep cast
466-4	90-4	07/04/16	CTD	18:39	10°57.098'	036°17.146'	1950.2	24 bottles
466-5	90-5	07/04/16	MN	19:05	10°57.687'	036°17.396'	2142.1	shallow cast
466-6	90-6	07/04/16	MN	20:02	10°56.562'	036°16.635'	1760.9	deep cast
	91-1	07/04/16	Pump	21:13	11°00.246'	036°18.156'	2223.3	
467-1	92-1	07/04/16	MBPS	10:05	10°38.820'	038°26.489'	40.0	first file: SLF1604072049, last file: SLF1604080949
468-1	93-1	08/04/16	CTD	12:16	10°51.786'	036°22.394'	949.2	23 bottles
468-2	93-2	08/04/16	MUC	13:17	10°52.117'	036°22.686'	952.7	number of filled tubes: 12
468-3	93-3	08/04/16	GC	14:18	10°52.122'	036°22.855'	939.1	core length: 6.56m
	94-1	08/04/16	Pump	13:23	10°52.054'	036°22.602'	954.5	
469-1	95-1	08/04/16	CTD	17:07	10°56.490'	036°12.234'	1916	
469-2	95-2	08/04/16	MUC	18:29	10°56.674'	036°12.324'	1906.8	number of filled tubes: 10
469-3	95-3	08/04/16	PC	20:23	10°56.465'	036°11.953'	1990.6	core length: 10.40m
	96-1	08/04/16	Pump	21:19	10°55.851'	036°10.858'	2012.2	
470-1	97-1	08/04/16	MN	21:53	10°56.720'	036°11.356'	2078.6	shallow cast
470-2	97-2	08/04/16	MN	22:51	10°56.060'	036°10.870'	2014.5	deep cast
470-3	97-3	08/04/16	CTD	23:44	10°57.145'	036°11.668'	2010.0	
470-4	97-4	08/04/16	MN	00:03	10°57.069'	036°11.630'	2051.6	shallow cast
470-5	97-5	09/04/16	MN	00:56	10°56.480'	036°11.201'	2045.2	deep cast
471-1	98-1	09/04/16	MBPS	10:59	10°27.865'	036°12.647'	25.0	first file: SLF1604090200, last file: SLF1604091050
	99-1	09/04/16	Pump	13:19	10°37.592'	036°15.036'	72.9	
	100-1	09/04/16	Bucket	11:54	10°34.975'	036°16.024'	54.8	
472-1	100-2	09/04/16	CTD	12:02	10°34.946'	036°16.021'	55.9	14 bottles
472-2	100-3	09/04/16	VVG	12:23	10°34.940'	036°16.020'	55.1	3x surface samples Brazil, 1x surface samples Munz

472-3	100-4	09/04/16	MUC	12:44	10°34.937'	036°16.020'	54.6	number of filled tubes: 9
473-1	101-1	09/04/16	CTD	13:40	10°37.643'	036°14.975'	74.2	10 bottles
473-2	101-2	09/04/16	MUC	13:53	10°37.637'	036°14.975'	73.6	no recovery; very soft sediment
473-3	101-3	09/04/16	MUC	14:21	10°37.619'	036°14.967'	71.9	number of filled tubes: 2; samples: forams (geochem), bulk geochem
474-1	102-1	09/04/16	CTD	16:48	10°40.394'	036°03.877'	1327.7	19 bottles
474-2	102-2	09/04/16	MUC	17:58	10°40.812'	036°03.193'	1296.1	no recovery
474-3	102-3	09/04/16	MUC	19:03	10°40.773'	036°03.145'	1310	number of filled tubes: 1; samples: forams (geochem)
474-4	102-4	09/04/16	GC	20:21	10°40.626'	036°03.161'	1285.1	core length: 6.56m
474-5	102-5	09/04/16	MUC	21:30	10°39.822'	036°02.771'	1355.1	number of filled tubes: n/a
	103-1	09/04/16	Pump	20:53	10°40.312'	036°03.188'	1212.3	
475-1	104-1	09/04/16-10/04/16	MBPS	09:34	11°00.125'	036°24.422'	1659.0	first file: SLF1604093254; last file: SLF1604100932
	105-1	10/04/16	Pump	14:13	10°42.614'	036°08.358'	1073.5	
476-1	106-1	10/04/16	CTD	12:51	10°41.990'	036°07.858'	1141.3	21 bottles
476-2	106-2	10/04/16	MUC	14:03	10°42.397'	036°08.199'	1039.2	number of filled tubes: 6; samples: forams (geochem.), bulk geochem., mineralogy/sedimentology, organics
476-3	106-3	10/04/16	PC	15:40	10°42.593'	036°08.305'	1022.6	core length: 4.75m
477-1	107-1	10/04/16	BC	17:36	10°41.643'	036°09.058'	957.6	2x surface sample, 1x liner (60cm)
478-1	108-1	10/04/16	CTD	18:56	10°39.702'	036°10.589'	691.2	21 bottles
478-2	108-2	10/04/16	MUC	19:38	10°39.670'	036°10.529'	692.9	number of filled tubes: 12
478-3	108-3	10/04/16	GC	20:39	10°39.699'	036°10.552'	694.1	core length: 3.87m
	109-1	10/04/16	Pump	20:32	10°39.767'	036°10.625'	695.2	
479-1	110-1	10/04/16	MN	21:32	10°41.779'	036°09.744'	1004.2	shallow cast
479-2	110-2	10/04/16	MN	22:30	10°41.310'	036°09.238'	943.6	deep cast
479-3	110-3	10/04/16	MN	22:49	10°41.440'	036°09.420'	938.5	shallow cast
479-4	110-4	10/04/16	MN	23:47	10°40.789'	036°09.096'	981.1	deep cast
480-1	111-1	11/04/16	MBPS	09:50	10°40.170'	036°26.115'	53.0	first file: SLF1604110052; last file: SLF1604110946
481-1	112-1	11/04/16	Bucket	10:47	10°36.060'	036°19.203'	59.7	
481-2	112-2	11/04/16	CTD	11:11	10°36.065'	036°19.204'	59.7	12 bottles
481-3	112-3	11/04/16	MUC	11:19	10°36.063'	036°19.202'	61.2	number of filled tubes: 12; surface samples
	113-1	11/04/16	Pump	14:15	10°41.301'	036°26.607'	47.2	
482-1	114-1	11/04/16	Bucket	12:07	10°38.952'	036°23.202'	58.0	
482-2	114-2	11/04/16	CTD	12:21	10°38.952'	036°23.201'	56.8	9 bottles
482-3	114-3	11/04/16	MUC	12:32	10°38.951'	036°23.202'	54.6	number of filled tubes: 12; surface samples
483-1	115-1	11/04/16	Bucket	14:05	10°41.296'	036°26.606'	46.7	
483-2	115-2	11/04/16	CTD	14:20	10°41.297'	036°26.606'	46.6	8 bottles
483-3	115-3	11/04/16	MUC	14:32	10°41.301'	036°26.608'	46.3	number of filled tubes: 12
483-4	115-4	11/04/16	GC	15:20	10°41.297'	036°26.590'	45.8	core length: 7.76m

9 Data and Sample Storage and Availability

Scientists outside the shipboard science party may request access to sediment, water and plankton samples as well as shipboard data via André Bahr (Heidelberg University; andre.bahr@geow.uni-heidelberg.de). Storage and curation of all samples with contact persons are specified in detail in Table 6.1. Shipboard data will be made available on the PANGAEA data server.

Table 6.1 Availability of data obtained on cruise M125.

Type	**Database/place of curation**	**Available**	**Free Access**	**Contact**
Raw data CTD, fluoroprobe	PANGAEA	June 2016	May 2019	aosborne@geomar.de
Raw data multibeam/parasound	track lines: PANGAEA	June 2016	May 2019	alessandro.conforti@gmail.com
Water samples (Rosette, bucket)	GEOMAR	June 2016	May 2019	aosborne@geomar.de
Water samples (interstitial water from MUCs)	UFF; Niteroi, Brazil	June 2016	May 2019	ana_albuquerque@id.uff.br
Sieved sediment samples	Heidelberg	June 2016	May 2019	andre.bahr@geow.uni-heidelberg.de
Cores, except: M125-24-3, M125-35-3, M125-49-3, M125-95-3, and M125-108-3	Heidelberg	June 2016	May 2019	andre.bahr@geow.uni-heidelberg.de
Cores M125-24-3, M125-35-3, M125-49-3, M125-95-3, and M125-108-3	UFF; Niteroi, Brazil	June 2016	May 2019	ana_albuquerque@id.uff.br
MUC (samples from tubes #1-4, 9-12)	Heidelberg	June 2016	May 2019	andre.bahr@geow.uni-heidelberg.de
MUC samples from tube #7 (^{14}C analyses)	Cologne	June 2016	May 2019	stephanie.kusch@uni-koeln.de
MUC (samples from tubes #5, 6, 8), Box corer, Van Veen Grab (anthropogenic biomarker, ^{210}Pb, and bengal rose-stained foraminifera)	UFF; Niteroi, Brazil	June 2016	May 2019	ana_albuquerque@id.uff.br
Plankton samples (multinet)	Tübingen	June 2016	May 2019	hartmut.schulz@uni-tuebingen.de
Ship's pump filtrates	GEOMAR	June 2016	May 2019	ehathorne@geomar.de
Water filtrates	Senckenberg, Frankfurt	June 2016	May 2019	eva.niedermeyer@senckenberg.de

Abbreviations

BC	box corer
GC	gravity corer
MBPS	multibeam/Parasound
MN	multi closure net
MUC	multicorer
PC	piston corer
Pump	ship's pump filtrate
VVG	Van Veen Grab

10 Acknowledgements

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LPL/Klaus Bohn, and Ira Weigert (Contiways) have provided great logistic and organizational support. We finally would like to thank the Brazilian authorities for their permissions to work in their national waters and the German Federal Foreign Office for paving the diplomatic ways for obtaining the research permissions and visa.

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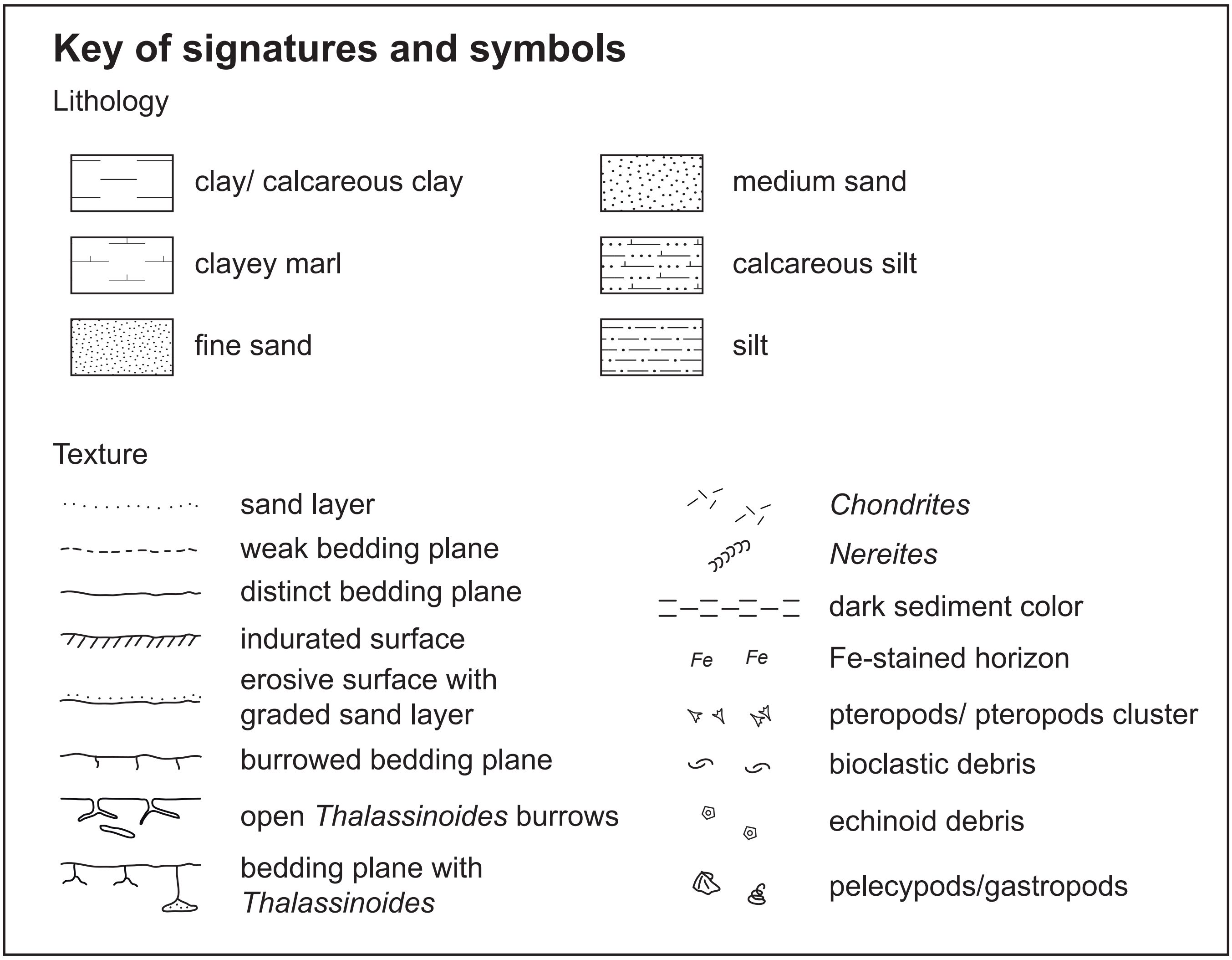
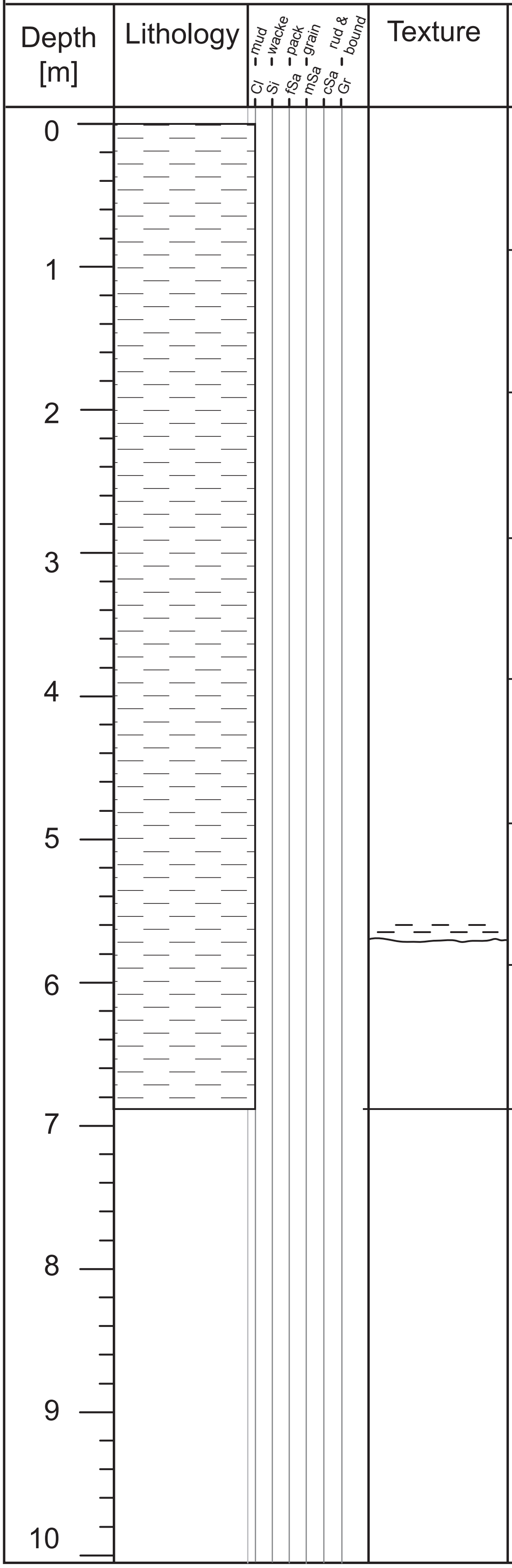
Key of signatures and symbols
Lithology
clay/ calcareous clay
medium sand
clayey marl
calcareous silt
fine sand
silt
Texture
sand layer
weak bedding plane
distinct bedding plane
indurated surface
erosive surface with graded sand layer
burrowed bedding plane
open *Thalassinoides* burrows
bedding plane with *Thalassinoides*
Chondrites
Nereites
dark sediment color
Fe Fe
Fe-stained horizon
pteropods/ pteropods cluster
bioclastic debris
echinoid debris
pelecypods/gastropods

M125-24-3 **Piston-/Gravitycore Archive** PC ☐ GC ☒

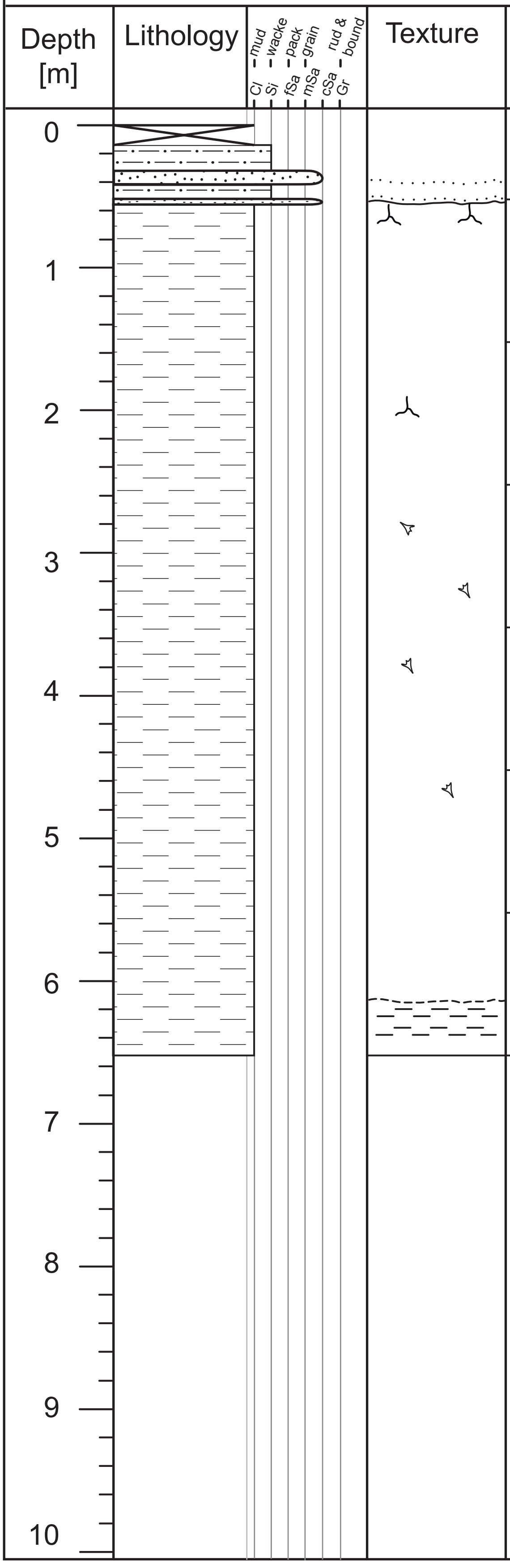
Position: 21° 55.930‘ S, 39° 54.097‘ W
Water Depth: 867.3 m
Recovery: 6.86 m
Analyst: U. Sebastian, S. Voigt
Date: 25.03.2016



Description	
0-100 cm, clay, weak silty, 0-3 cm: light olive brown, 2.5Y5/1, 3-100 cm: GLEY, 4/10Y	0-86 cm
0-100 cm, clay, dark greenish grey, GLEY1, 4/10Y	86-186 cm
0-100 cm, clay, weak silty with organic spots, dark greenish grey, GLEY1, 4/10Y	186-286 cm
0-100 cm, clay, weak silty dark greenish grey, GLEY1, 4/5GY	286-386 cm
0-100 cm, clay, weak silty very dark greenish grey, GLEY1, 3/5GY	386-486 cm
0-100 cm, clay, weak silty very dark greenish grey, GLEY1, 3/5GY 88 cm distinct color change	486-586 cm
0-100 cm, clay, weak silty, with mm-sized organic mottles, greenish grey, 10BG 5/1	586-686 cm
EOS	

M125-25-4 **Piston-/Gravitycore Archive** PC ☐ GC ☒

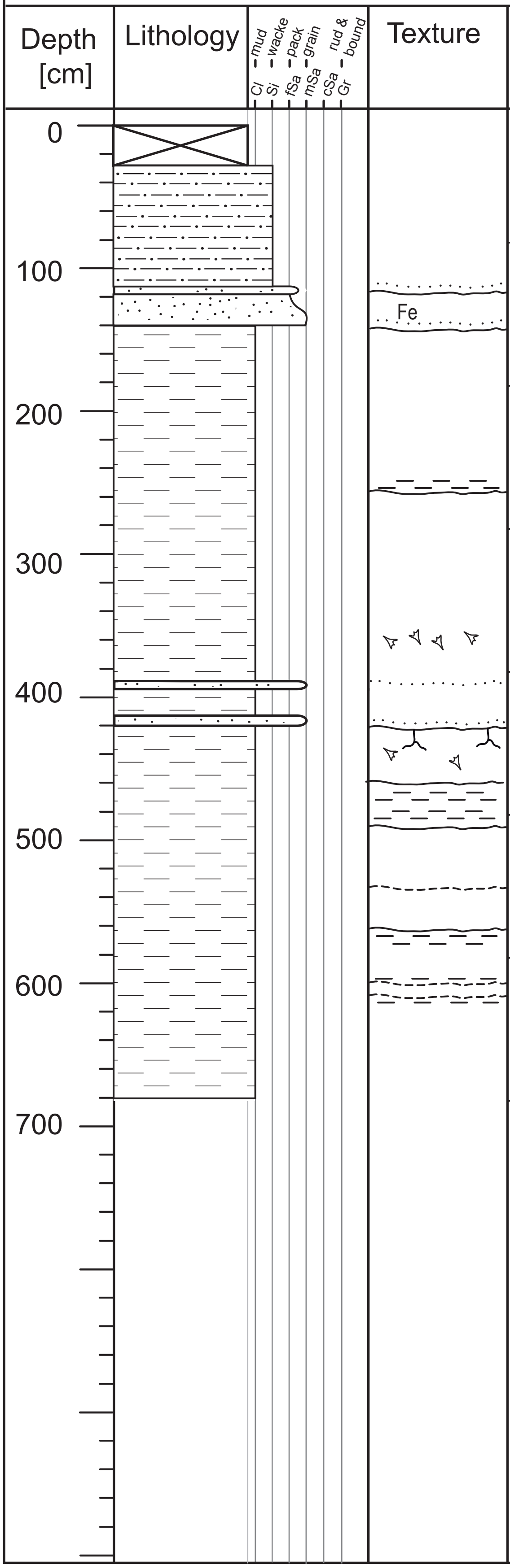
Position: 21°51.534‘ S, 39°53.065‘ W Water Depth: 960.1 m
Recovery: 6.52 m
Analyst: S. Voigt Date: 26.03.2016



Description	
0-14 cm, no recovery, 14-27 cm, silt, fine-medium sandy, bedded, 10YR6/4, beige 27-42 cm, coarse-medium sand, bioclastic, 5Y5/1, grey 42-52 cm, silt, sandy, mm-sized bioclasts (benthic forams, pteropods), 5Y5/2	0-52 cm
0-3 cm, as above, basal surface with bioclastic sand 3-100 cm, clay, silty, bioturbated and mottled with mm-sized organics, 50-80 cm - max mottling, 92 cm - end of mottling, GLEY1,4/10Y, dark greenish grey	52 - 152 cm
0-100 cm, clay, silty, GLEY1,4/10Y, dark green. grey, 30-35 cm - burrow, 36-50 cm, org. mottles	152 - 252 cm
0-100 cm, clay, weak silty, few org. mottles, GLEY1,4/10Y, dark greenish grey, few mm-sized pteropods	252 - 352 cm
0-100 cm, clay, silty, with bioclastic debris (scaphopods, pteropods), GLEY1,4/5GY, dark greenish grey	352 - 452 cm
0-100 cm, clay, silty, with bioclasts (scaphopods....) 78-85 cm, trace fossils, few org. mottles, GLEY1,4/10Y, dark greenish grey	452 - 552 cm
0-58 cm, clay, silty, dark greenish grey, with bioclastics, org. matter, 0-28 cm: GLEY1,4/5GY, 28-58 cm: GLEY1,4/10GY 58-100 cm, clay, silty, heavily mottled with organics, (greigite?), GLEY1,3/19GY, very dark greenish grey	552 - 652 cm
EOS	

M125-29-8 **Piston-/Gravitycore Archive** PC ☐ GC ☒

Position: 21°48.732‘ S, 39°32.031‘ W Water Depth: 2019.4 m
Recovery: 6.82 m
Analyst: S. Voigt Date: 26.03.2016



Description	
0-28 cm, empty, 30-50 cm, bioclastic silt with pteropods, 10YR6/4, light yellowish brown 50-60 cm, silt, clayey reddish, speckled at bottom, 5YR6/6 62-82 cm, bioclastic silt with sand-sized particles, 10YR6/4, light yellowish brown	0 - 82 cm
0-8 cm, silt, clayey, fine sandy, bioclastic, org. mottles, 10YR6/4, light yellowish brown 8-18 cm, silt, clayey, fine sandy, 2.5Y6/4 light yellowish brown 18-35 cm, silt, sandy, org mottles, 2,5Y6/2, light brownish grey 35-37 cm, sand, 37-46 cm, sandy silt, 5Y5/2, olive grey 46-50 cm, medium sand, coarsening downw., erosive base, Fe-stained 50-100 cm, clay silty, bioclasts (pteropods), bioturbated, GLEY15/10Y greenish grey	82 - 182 cm
0-100 cm, clay, silty, bioclasts, bioturbated, org. mottles, 60 cm - color change, GLEY1,5/5GY, greenish grey, 86 cm - distinct color change, GLEY1,5/10Y	182 - 282 cm
0-100 cm, clay, weak silty, with bioclasts (pteropods), some org. mottles, GLEY1,4/5Y, drk green. grey 80-82 cm, pteropod shell bed, below 82 cm: GLEY1,5/5GY, greenish grey	282 - 382 cm
0-100 cm, clay, weak silty, bioturbated, with pteropods, GLEY1,4/10Y, sand layers at 7, 37-39 cm, 42 cm - erosive base, 46-59 cm, abundant pteropod debris, strong burrows, 82 cm - surface, 92 cm- greenish bed	382 - 482 cm
0-100 cm, clay, weak silty, bioturbated, with pteropods 8cm color change GLEY1,4/10Y to 5/10GY 57 cm weak color change, 57-80 - lighter grey, GLEY1,5/5GY, more debris, 80-92 cm darker, GLEY1,4/5GY 92-98 cm tricolore: grey, light grey, beige, 98-100 cm, clay silty	482 - 582 cm
0-20 cm, clay, silty, dark grey, upper 5 cm lighter, 20-28 cm, more mottles and debris, lighter, GLEY1,5/5GY 30-100 cm, clay, silty, dark grey, GLEY1,4/5GY	582 - 682 cm
EOS	

M125-34-42 **Piston-/Gravitycore Archive** PC ☐ GC ☒

Position: 21°56.959 S, 39°53.112' W Water Depth: 867.1 m

Recovery: 5.83 m

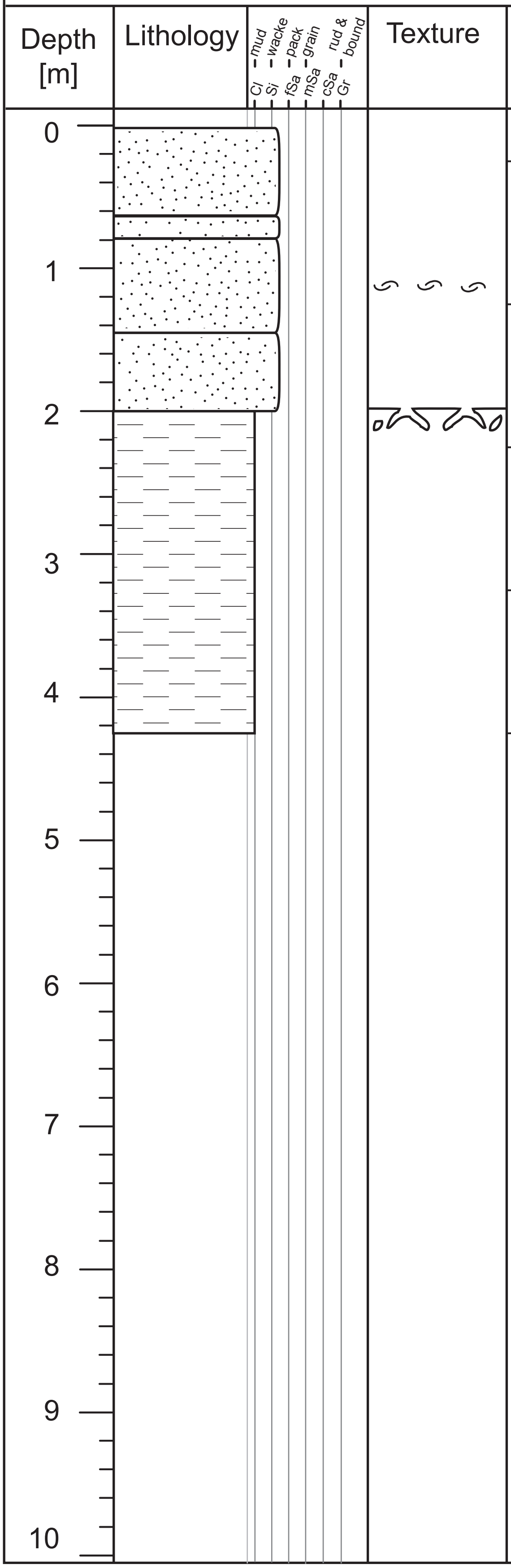
Analyst: S. Voigt Date: 27.03.2016

Depth [cm]	Lithology	Cl – mud Si – wacke fSa – pack mSa – grain cSa – rud & Gr – bound	Texture	Description
0				coral mound not describred/opened on deck storage in 1m segments
100				
200				
300				
400				
500				

Page: __/__

M125- 35-3 **Piston-/Gravitycore Archive** PC ☐ GC ☒

Position: 21° 53.606‘ S, 40° 00.281‘ W
Water Depth: 428.6 m
Recovery: 4.25 m
Analyst: S. Voigt
Date: 27. 3. 2016



Description	
0-5 cm, silty sand, 5Y5/2 10-20, fine sand, silty, bioclastic, pteropods etc., GLEY1,4/5GY	0-25
0-39 cm, fine sand, silty with pteropods, mica, quartz, GLEY1,4/10Y, 35-52 cm, as above, but reddish 10YR5/3 52-100 cm, fine to medium sand; 85-100 cm, layers of bioclastic shell debris, GLEY1,4/5GY	25-125 cm
0-33 cm, fine to medium sand, mica, quartz, pteropods, GLEY1,4/5GY 38-74 cm, fine sand, mica, quartz, pteropods, sharp burrowed base 74-100 cm, clay, very dark greenish grey, GLEY1,4/5G_/1, smells for H_2S	125-225 cm
0-100 cm, clay, weak silty, very few bioclastics, smells for H_2S, structureless, GLEY1,4/5G_/1	225-325 cm
0-100 cm, clay, weak silty, very few bioclastics, smells for H_2S, structureless, GLEY1,4/5G_/1	325-425 cm
EOS	

Page: 1/1

M125-38-3 Piston-/Gravitycore Archive

PC ☐ GC ☒

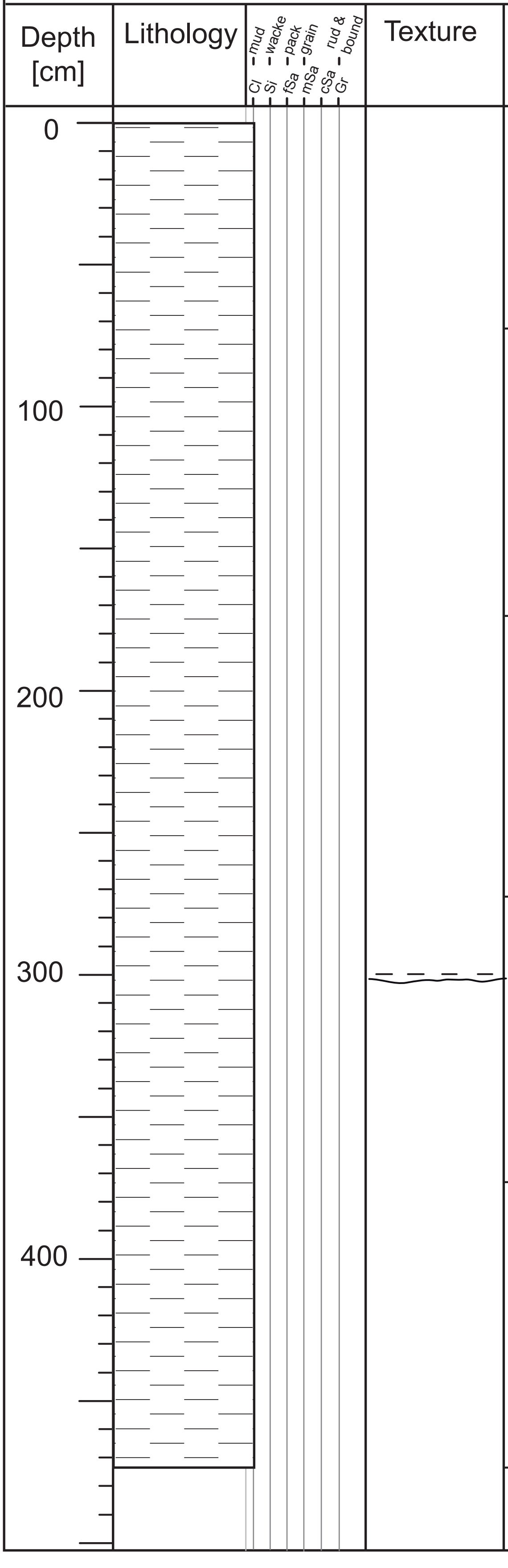
Position: 19°44.282´S, 39°50.737´W

Water Depth: 17.2 m

Recovery: 4.72 m

Analyst: S. Voigt

Date: 28.03.2016



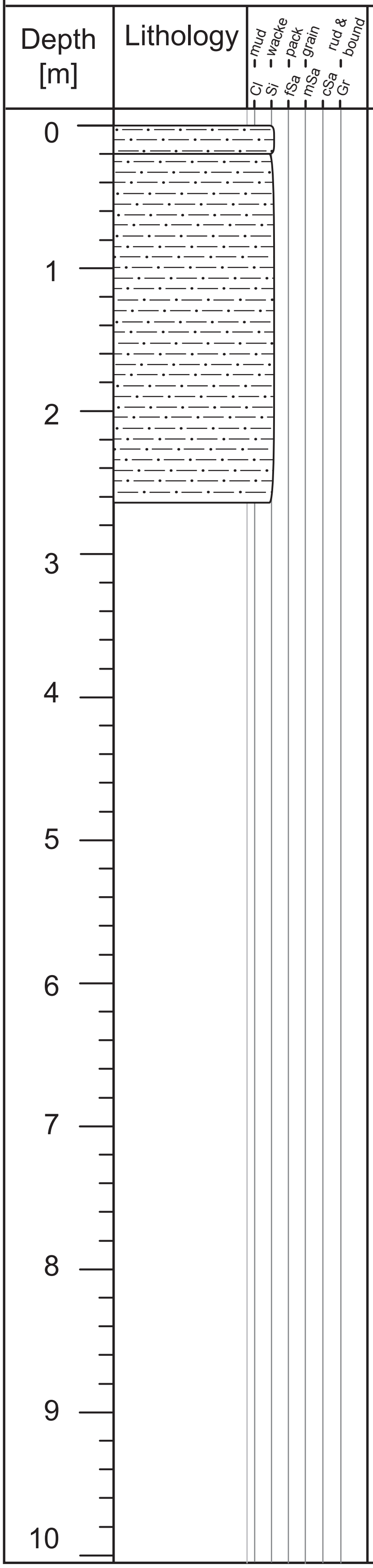
Description	
0-72 cm, clay, silty with org. mottles, bioturbated, brown, 7,5R5/4 and 7,5R5/3	0 - 72 cm
0-100 cm, clay, silty, with mica-rich layers, bedded by mica layers, shell clusters at 26 and 70 cm, brown, 7.5Y4/4	72 - 172 cm
0-100 cm, silty clay, rich in mica, bedded, brown, 7.5YR5/3 36 cm: mm-thick dark layer	172 - 272 cm
0-30 cm, silty clay, with mica, bedded, color change at 30 cm 30-72 cm, silty clay, with mica, intenser bioturbated 72-100 cm, silty clay, with mica, less bioturbated, bedded to laminated, 7,5YR5/3	272 - 372 cm
0-100 cm, silty clay with layers of mica, bedding of darker and lighter layers, brown, 7,5YR5/3	372 - 472 cm
EOS	

M125-43-3 **Piston-/Gravitycore Archive** PC ☐ GC ☒

Position: 19° 27.990‘ S, 39° 26.332‘ W Water Depth: 38.2 m

Recovery: 2.66 m

Analyst: S. Voigt Date: 29.03.2016

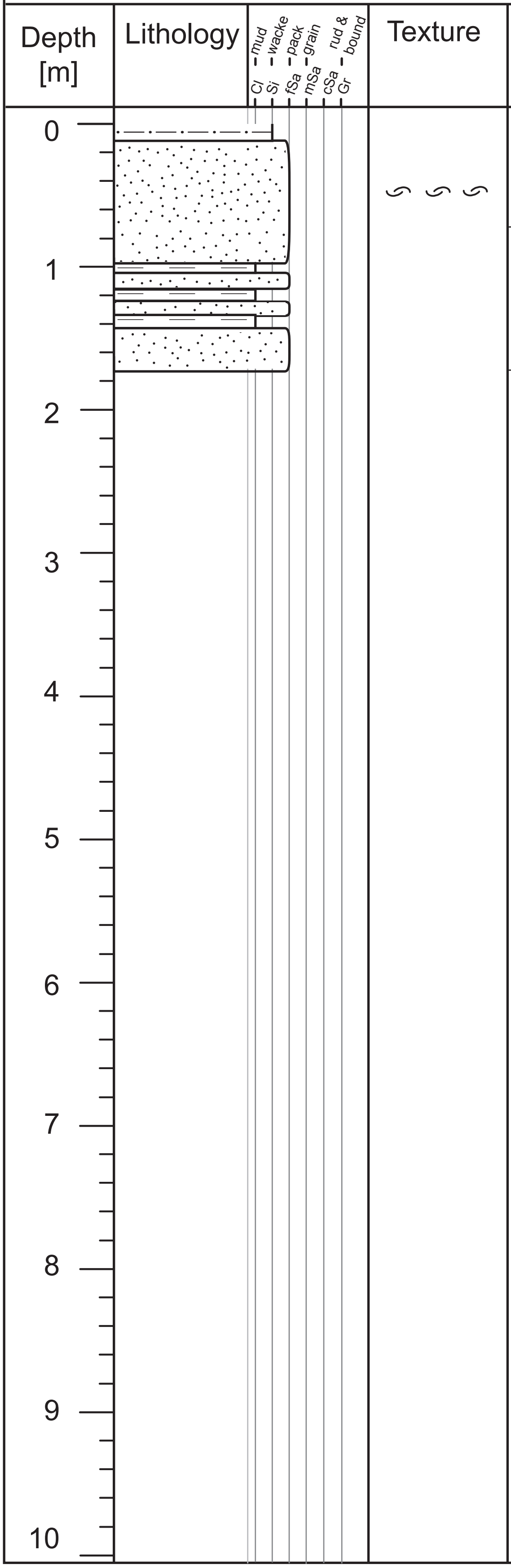


Description	
0-9 cm, sandy silt with clay, brown patches of clay, mica, siliciclastic 9-66 cm, alternation of silty sand & mud with mica, some bioclastic patches, GLEY1,4/10Y, dark greenish grey	0-66 cm
0-100 cm, fine sand, silty with spotty layers of clay, mica siliciclastic, GLEY1,4/10Y, dark greenish grey	66-166 cm
0-100 cm, fine sand, silty with spotty layers of clay, siliciclastic, much mica, GLEY1,4/10Y, dark greenish grey	166-266 cm
EOS comment: banana core	

M125-43-3 Piston-/Gravitycore Archive

PC ☐ GC ☒

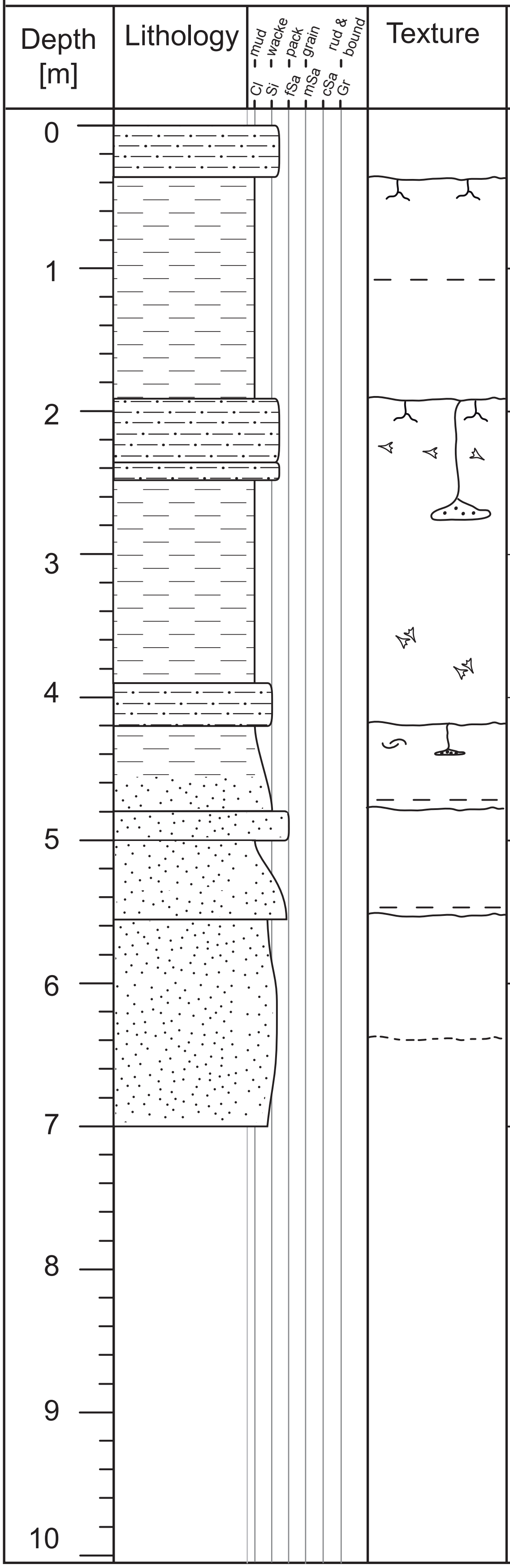
Position: 19°27.990‘ S, 39°26.333‘ W
Water Depth: 38.4 m
Recovery: 1.71 m
Analyst : S. Voigt
Date: 29.03.2016



Description	
0-16 cm, silt, sandy, clayey, siliciclastic with scaphopods bioturbated, 7.5YR5/3, brown 6-71: fine sand, silty, siliciclastic with mica, coarse bioclastic layer, colour change to GLEY1,4/10Y	0-71 cm
0-100 cm, fine sand, siliciclastic with mica, intercalated clay layers (1-2 cm sized) at 30-33, 49-50, 64-65, 73-74 cm, GLEY1,4/5GY, dark greenish grey	71-171 cm

M125-49-3 **Piston-/Gravitycore Archive** PC ☐ GC ☒

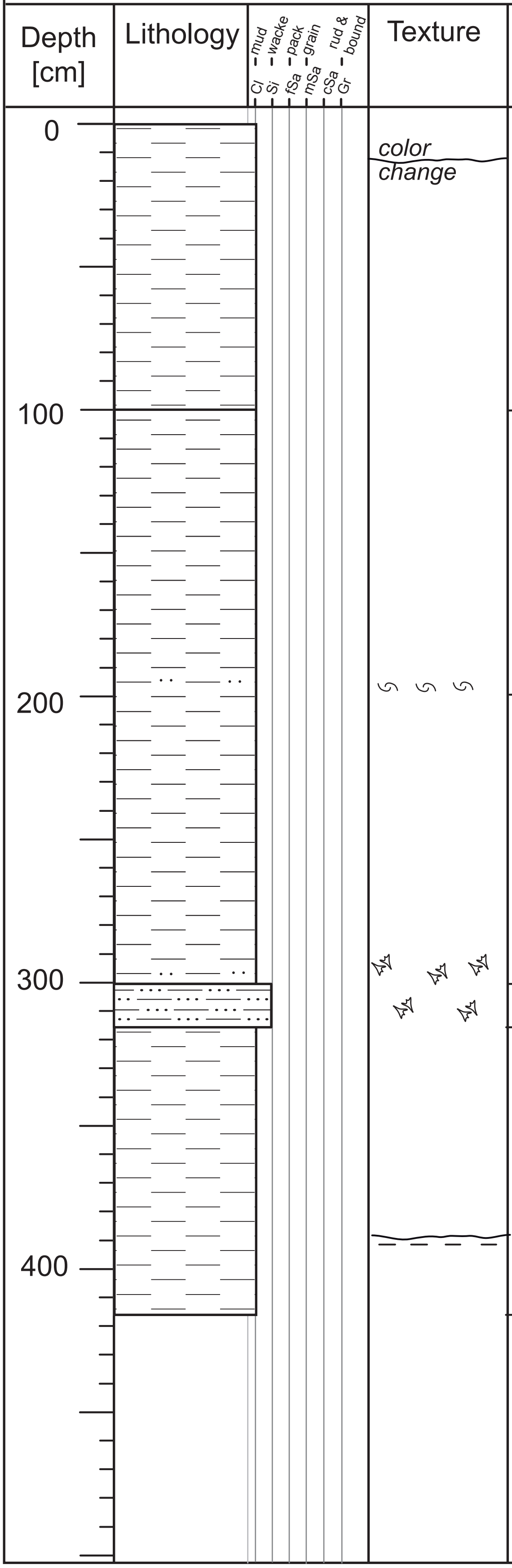
Position: 19°34.314‘ S, 38°40.577‘ W
Water Depth: 448.3 m
Recovery: 7.00 m
Analyst: S. Voigt
Date: 30.03.2016



Description	
0-36 cm: silt, fine sandy: Qz, heavy minerals, calc. constituents, bioturbated, 5Y5/2, olive grey 36-100 cm: clay, strong silty, burrows on top down to 74 cm, 10YR4/3 brown	0 - 100 cm
0-91 cm, clay, strong silty, fining down, organic mottles 10YR4/3 brown 91-100 cm, silt, fine sandy with pteropods, 5Y4/2 burrowed from the top	100 - 200 cm
0-35 cm, silt to fine sand, quartz, mica, heavy minerals, pteropods, filled burrows, 5Y5/2 to 5Y6/2 light olive grey 33-35 shell lag of pteropods 35-48: as above, darker & bioturbated 48-100 cm, clay, silty, mica, GLEY1,4/10Y dark greenish grey	200 - 300 cm
0-90 cm, silt, clayey, rich in mica & pteropods, 40 cm cluster of bioclastic debris, GLEY1, 4/5GY, 90 cm - increasing abundance of pteropods 90-100 cm, silt, fine sandy with sea urchin debris, GLEY1,4/5GY	300 - 400 cm
0-20 cm, silt, fine sandy with pteropods, heavy minerals, GLEY1,4/5GY 20-44 cm, clay, silty, bioturbated (burrows), 40-44 cm, large shell debris (sea urchins?) 44-80 cm, gradual increase in grain size to fine sand 80-100 cm, surface, color change, bioclast. fine- to medium sand, GLEY1, 6/10Y	400 - 500 cm
0-55 cm, fine to medium sand, bioturbated 55-100 cm, fine- to medium sand, finer, coarsening downwards GLEY1,6/10Y	500 - 600 cm
0-100 cm, silty fine sand, bioturbated, weak color change at 25 cm, GLEY1,6/10Y, greenish grey	600 - 700 cm
EOS	

M125-50-3	**Piston-/Gravitycore Archive**	PC ☒	GC ☐

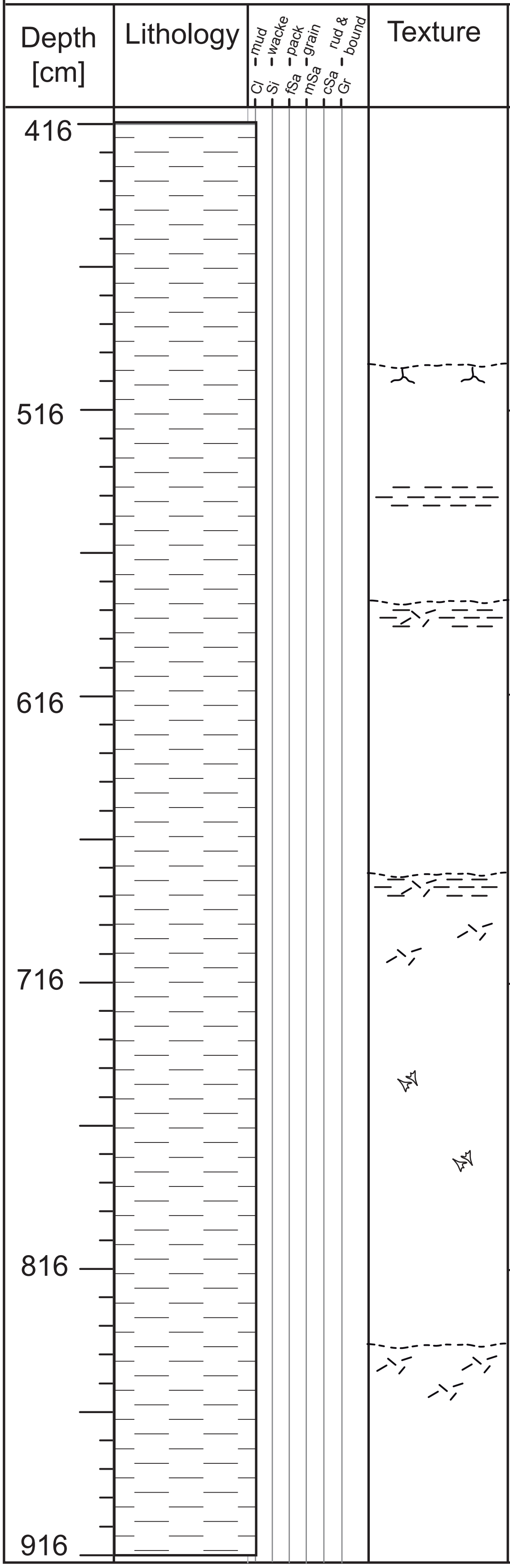
Position: 19°42.620´S, 38°35.979´W
Water Depth: 903.7 m
Recovery: 13.16 m
Analyst: S.Voigt
Date: 30.03.2016



Description	
0-12 cm, clay, reddish 7.5YR5/4 15-25 cm, clay, very weak silty, light olive grey, flasery bedded, 5Y6/2 25-100 cm, clay, spotty light burrows, org/sulf. impregn., GLEY1,4/10Y	0 - 100 cm
0-95 cm, clay, abundant org./sulf. impregnations, (greigite?) to 53 cm, GLEY1,5/10Y 95-100 cm, clay, bioclastic, shell debris	100 - 200 cm
0-95 cm, clay, silty, bioturbated, dark greenish grey GLEY1, 4/10Y 95-100 cm, pteropod shell bed	200 - 300 cm
0-16 cm, clay, silty, in part fine sandy with pteropod layers, mica	300-316
0-73 cm, clay, silty, bioturbated, org/sulf. impregn. (greigite), olive green grey 73-100 cm, clay, silty, bioturbated, somewhat darker, without greigite, GLEY1,4/10Y	316 - 416 cm
to be continued.....	

M125-50-3 **Piston-/Gravitycore Archive** PC ☒ GC ☐

Position: 19°42.620´S, 38°35.979´W Water Depth: 903.7 m
Recovery: 13.16 m
Analyst: S.Voigt Date: 30.03.2016



Description	
0-100 cm, clay, silty, bioturbated, dark olive green grey, GLEY1,4/10Y 84 cm: weak color change with burrows	416 - 516 cm
0-32 cm, clay, silty, org./sulf. impregn. 32-33 cm, diffuse color change GLEY1,4/6/10Y 32-68 cm, clay, silty, lighter, GLEY1,6/10Y 68-100 cm, clay, silty, bioturbated, *Chondrites*, darker, GLEY1,5/10Y	516 - 616 cm
0-62 cm, clay, silty, org/sulfid. impregn., GLEY1,6/10Y 62 cm weak surface, burrowed by *Chondrites* 62-100 cm, clay, silty, bioturbated, *Chondrites*, darker, GLEY1,5/10Y	616 - 716 cm
0-100 cm, clay, weak silty, org/sulf. impregnated, pteropod clusters, greenish grey, GLEY1,6/10Y	716 - 816 cm
0-27 cm, clay, silty, org/sulf. impregn., greenish grey, GLEY1,6/10Y 27-100 cm, clay, silty, org/sulf. impregn., upper 20 cm *Chondrites* to be continued.....	816 - 916 cm

M125-50-3 Piston-/Gravitycore Archive

PC ☒ GC ☐

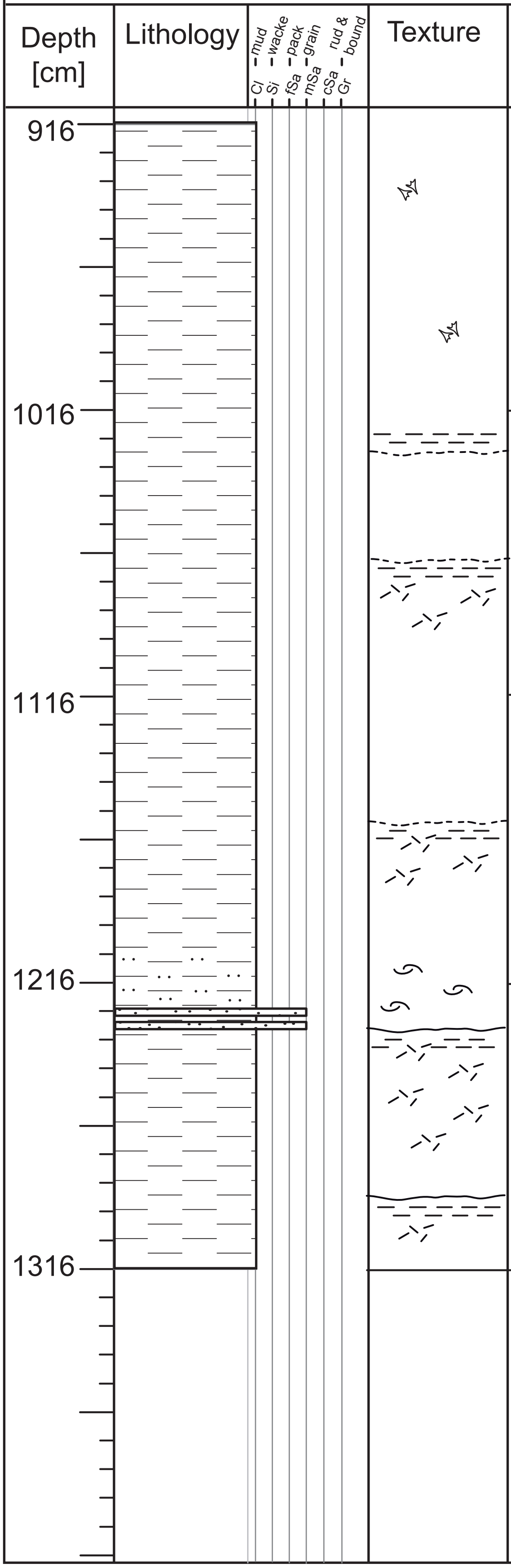
Position: 19°42.620´S, 38°35.979´W

Water Depth: 903.7 m

Recovery: 13.16 m

Analyst: S.Voigt

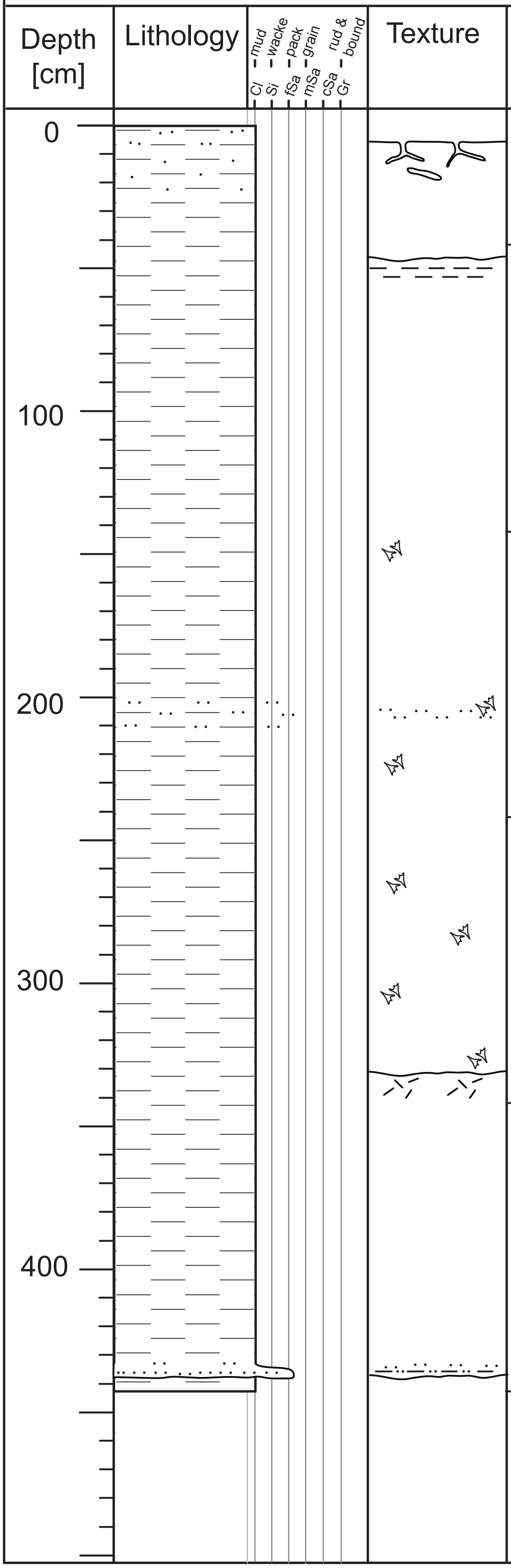
Date: 30.03.2016



Description	
0-100 cm, clay, silty, org./sulf. impregn., some pteropods, greenish grey, GLEY1,5/10Y	916 - 1016 cm
0-14 cm, clay, silty, org./sulf. impregn., greenish grey GLEY1,5/5GY 14-53 cm, clay, silty, as above, lighter, GLEY1,6/10Y 53-100 cm, clay, silty, burrowed from top by Chondrites (53-83 cm), GLEY1,5/5GY	1016 - 1116 cm
0-43 cm, clay, silty, org/sulf. impregn., greenish grey, GLEY1,5/5GY 43-95 cm, clay, silty, burrowed (*Chondrites*) from 43-63, darker, GLEY1,5/10Y 95-100 cm, shell detritel clay, more silty, GLEY1,5/5GY	1116 - 1216 cm
0-17 cm, shell detrital clay with 2 medium-sand layers (forams) at the bottom, GLEY1,6/5GY 17-74 cm, clay, silty, intensely burrowed, *Chondrites*, (18-60), GLEY1,5/5GY 74-100 cm, clay, burrowed (78-88), darker, GLEY1,4/5GY	1216 - 1316 cm
EOS	

M125-52-3 **Piston-/Gravitycore Archive** PC ☐ GC ☒

Position: 19°35.945´S, 38°36.062´W
Water Depth: 644.2 m
Recovery: 8.41 m
Analyst: S.Voigt
Date: 30.03.2016

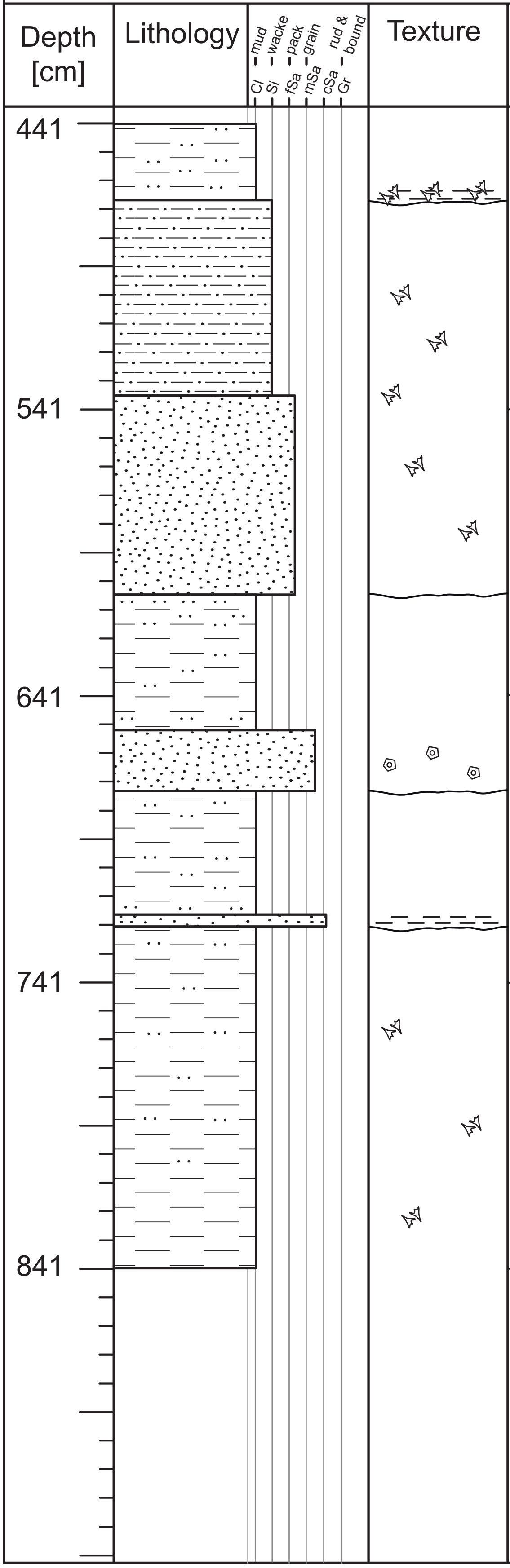


Description	
0-5 cm, clay, strong silty, reddish, 7,5YR5/3 5-41 cm, clay, silty with *Thalassinoides* from top (red filled), GLEY1,5/10Y	0 - 41 cm
0-6 cm, clay, silty, some pteropods, GLEY1,4/10Y 6-100 cm, clay, silty, burrows from top (6-30), bioturbated, some mica, GLEY1,3/10Y	41 - 141 cm
0-100 cm, clay, silty, with some clusters of pteropods (3, 63, 78 cm), bioclastic sand-sized components, GLEY1,3/10Y 60-65 cm, slightly more sandy	141 - 241 cm
0-90 cm, clay, weak silty, with sand-sized bioclastics, pteropod cluster at 25, 46, 66, 90 cm, GLEY1,4/10Y 90-100 cm, clay, weak silty, burrowed from top, *Chondrites*, no bioclastics, GLEY1,4/5GY	241 - 341 cm
0-18 cm, clay, weak silty, lsome mica 18-92 cm, clay, more silty, org/sulf. impregn., bioturbated, mica, GLEY1,4/10Y 92-98 cm, clay, silty, with bioclastic sand 98-100 cm, clay, silty, fine sandy, lighter, GLEY1,6/10Y	341 - 441 cm
to be continued.....	

M125-52-3 Piston-/Gravitycore Archive

PC ☐ GC ☒

Position: 19°35.945´S, 38°36.062´W
Water Depth: 644.2 m
Recovery: 8.41 m
Analyst: S. Voigt
Date: 30.03.2016

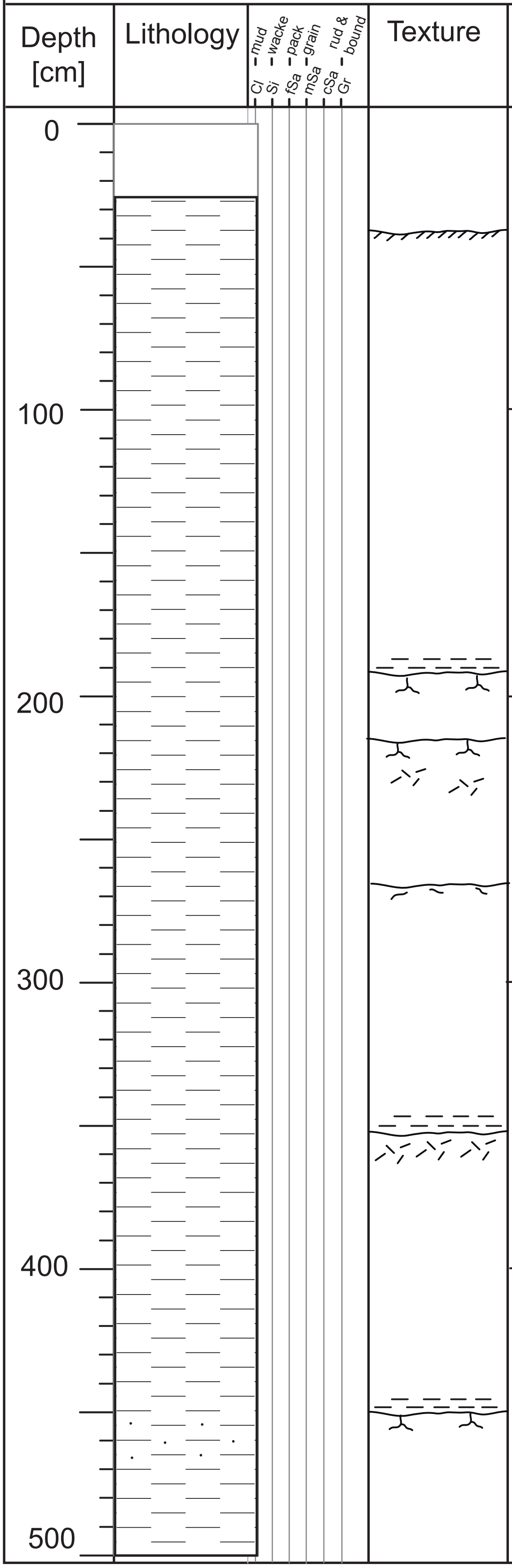


Description	
0-28 cm, clay, silty, fine sandy, 28-30 shell layer of pteropods, GLEY1,5/10Y 28-95 cm, clayey silt, abundant fine sand (forams), pteropod cluster (59, 78, 90 cm), GLEY1,6/10Y 95-100 cm, fine-medium sand, pteropods	441 - 541 cm
0-64 cm, fine sand, shells (pteropods), GLEY1,5/5GY 64-100 cm clay, silty, fine sandy, fining downwards, org/sul. impregn., pteropod cluster, GLEY1,5/5GY	541 - 641 cm
0-13 cm, clay, silty, fine sandy, GLEY1,5/5GY 13-34 cm, fine to medium sand, sea urchin shells 34-65 cm, clay, silty, fine sandy, 2-3 cm coarse layer at the bottom (medium sand) 65-100 cm, clay, silty to fine sandy, lighter, GLEY1,6/10Y	641 - 741 cm
0-100 cm, clay, silty to fine sandy, bioturbated, org/sulf. impregnated, pteropods, scaphopods, GLEY1,6/10Y to 6/5GY	741 - 841 cm
EOS	

M125-55-7 Piston-/Gravitycore Archive

PC ☒ GC ☐

Position: 20°21.807´S, 38°37.387´W
Water Depth: 1960.8 m
Recovery: 11.75 m
Analyst: S.Voigt
Date: 31.03.2016

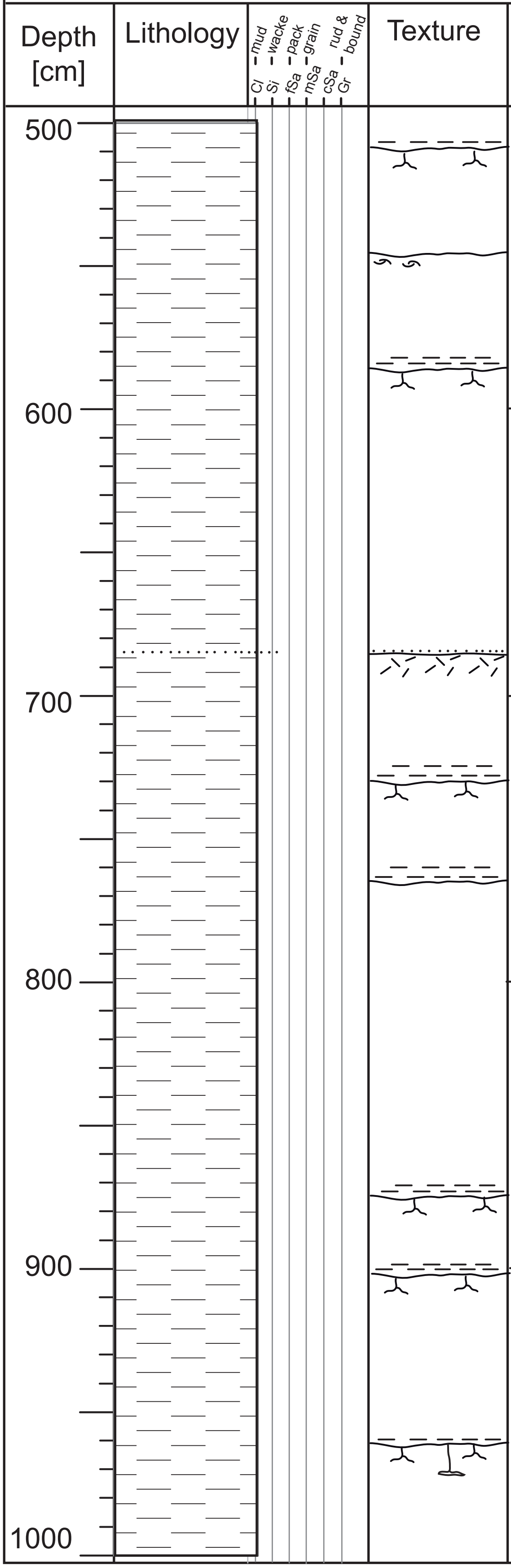


Description	
0-25 cm, no intact core 25-32 cm, clay, silty, beige with sand-sized particles, 10R6/4 32-38 cm, bioturbated clay with sand-sized particles 38-64 cm, clay, brown to brick-red, 2.5YR5/4, distinct base 63-66 cm, clay, dark grey, 10YR4/2 66-100 cm, clay, bioclastic, olive grey, 5Y5/2	0 - 100 cm
0-23 cm, clay, bioclasts, banded, grey-greenish, 5Y5/2 24 cm, white clay, 1cm 24-91 cm, clay, with bioclasts, pteropods, green bands at 43, 48, 52, 57 cm, bioturbated, 5Y6/2 91-100 cm, clay, lighter, color change, pteropods	100 - 200 cm
0-5 cm, clay, silty, bioturbated, greenish grey, GLEY1,5/10Y 15-24 cm, clay, silty, lighter, burrows on top, green bands (23-24) 24-34 cm, clay, silty, burrowed by *Chondrites*, GLEY1,5/10Y 34-57 cm, clay, weak silty, intense bioturbated, lighter, org./sulf. impregn., GLEY1,6/10Y 57-97 cm, clay, bioclasts, org./sulfid. impregn., bioturbated, GLEY1,6/5GY **only 97 cm long*	200 - 300 cm*
0-52 cm, clay, weak silty, abundant bioclasts (pteropods), GLEY1,5/10Y 52-102 cm, clay with bioclasts (pteropods), lighter, burrowed from top with Chondrites (55-62), org./sulf. impregn., greenish grey, GLEY1,6/5GY **102 cm long*	300 - 400 cm*
0-10 cm, clay, silty, light grey, with pteropods, GLEY1,6/10Y 10-29 cm, clay, silty, with pteroopds, darker, GLEY1,5/5GY 29-50 cm, clay, silty, abundant pteropods, greenish, GLEY1,5/5GY 50-66 cm, clay, sandy, burrowed from top, GLEY1,7/10Y, light grey, 63-69 cm: greenish bands 70-100 cm, clay, bioclastic, light olive grey, greenish bands, 5Y6/2	400 - 500 cm

to be continued.....

M125-55-7 **Piston-/Gravitycore Archive** PC ☒ GC ☐

Position: 20°21.807´S, 38°37.387´W Water Depth: 1960.8 m
Recovery: 11.75 m
Analyst: S.Voigt Date: 31.03.2016

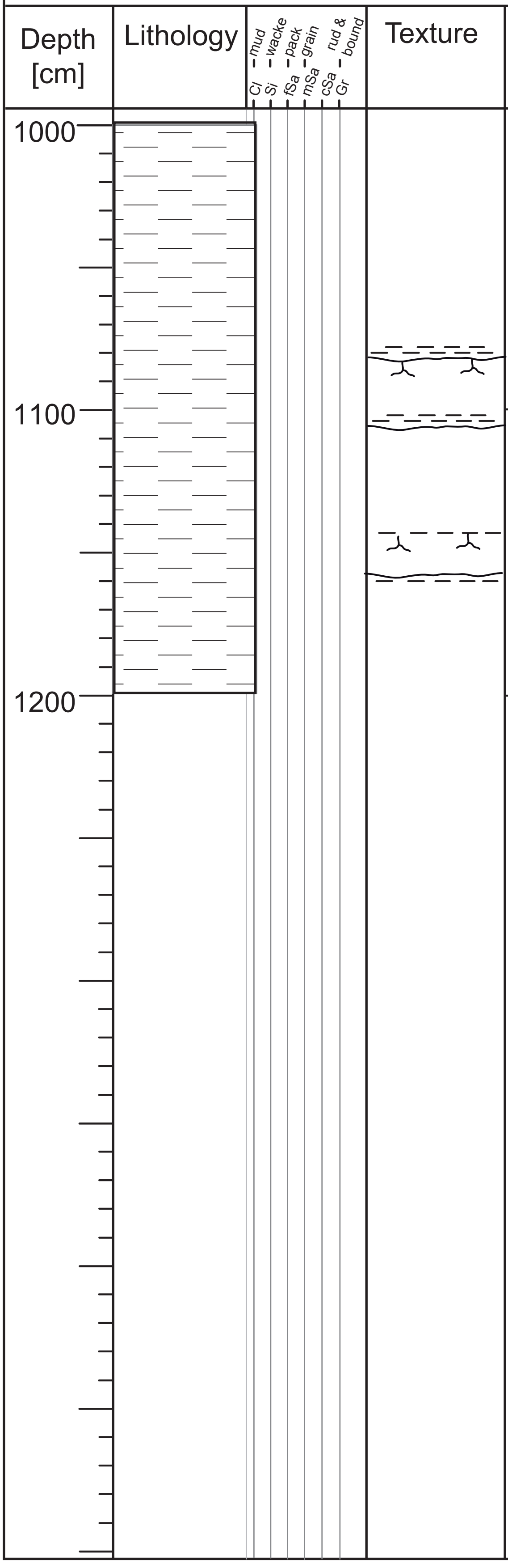


Description	
0-4 cm, as above 4-8 cm, clay with bioclasts, reddish, 7,5YR5/3 8-15 cm, clay, greenish with reddish burrows 15-45 cm, clay with bioclasts, speckled with greenish/brownish burrows, GLEY1,6/10Y 45-86 cm, clay with bioclasts, darker, org/sulf impregn., GLEY1,5/10Y 86-100 cm, clay, light grey, color change, GLEY1,6/10Y	500 - 600 cm
0-39 cm, bioclastic clay, burrowed from top (0-5 cm), org./sulf. impregn., GLEY1,6/10Y, greenish layer (34-35) 39-50 cm, bioclastic clay, darker, GLEY1,5/10Y 50-81 cm, bioclastic clay, org/sulf. impregn., 81-85 cm, Trikolore: light grey/ greenish/ beige with basal fine sand 85-97 cm, clay with bioclastics, bioturbated, *Chondrites*, org/sulf. impregn., GLEY1,6/5GY	600 - 700 cm
0-30 cm, clay, bioclastic, bioturbated, org/sulf. impregn., 26-30 gradational darker, GLEY1,6/5GY 30-38 cm, clay, bioclastic, lighter, darkening downwards 39-42 cm, olive green clay 43-48 cm, clay, light, burrowed, GLEY1,6/5GY 48-64 cm, clay, darker, bioturb., sharp base, GLEY1,5/5GY 64-84 cm, clay, lighter, abundant pteropods GLEY1,7/10Y 84-93 cm, clay, darker, green bands at 85, 90, 91, 93 cm 93-100 cm, clay, bioclastic, GLEY1,5/5GY	700 - 800 cm
0-11 cm, clay, bioturbated 11-18 cm, clay, bioturbated, greenish, GLEY1,5/5GY 18-50 cm, clay, bioturbated, greenish/grey/dark grey speckled 50-69 cm, clay, bioclastic, less burrows, greenish layer at 69 cm, GLEY1,6/10Y 69-75 cm, bioturbated clay, bioclastic 75-92 cm, clay, light grey grades to darker grey, bioturbated, GLEY1,7/10Y 92-100 cm, clay, dark, GLEY1,5/10Y	800 - 900 cm
0-2 cm, as above, sharp base 2-24 cm, clay, burrowed from top, org/sulf. impregn., GLEY1,5/10Y 24-37 cm, clay, abundant pteropods 37-61 cm, clay, lighter, spotty org/sulf. impregn., GLEY1,6/5GY 61-95 cm, light grey clay, org/sulf. impregn., 95-100 cm, clay, somewhat darker	900 - 1000 cm

to be continued.....

M125-55-7 **Piston-/Gravitycore Archive** PC ☒ GC ☐

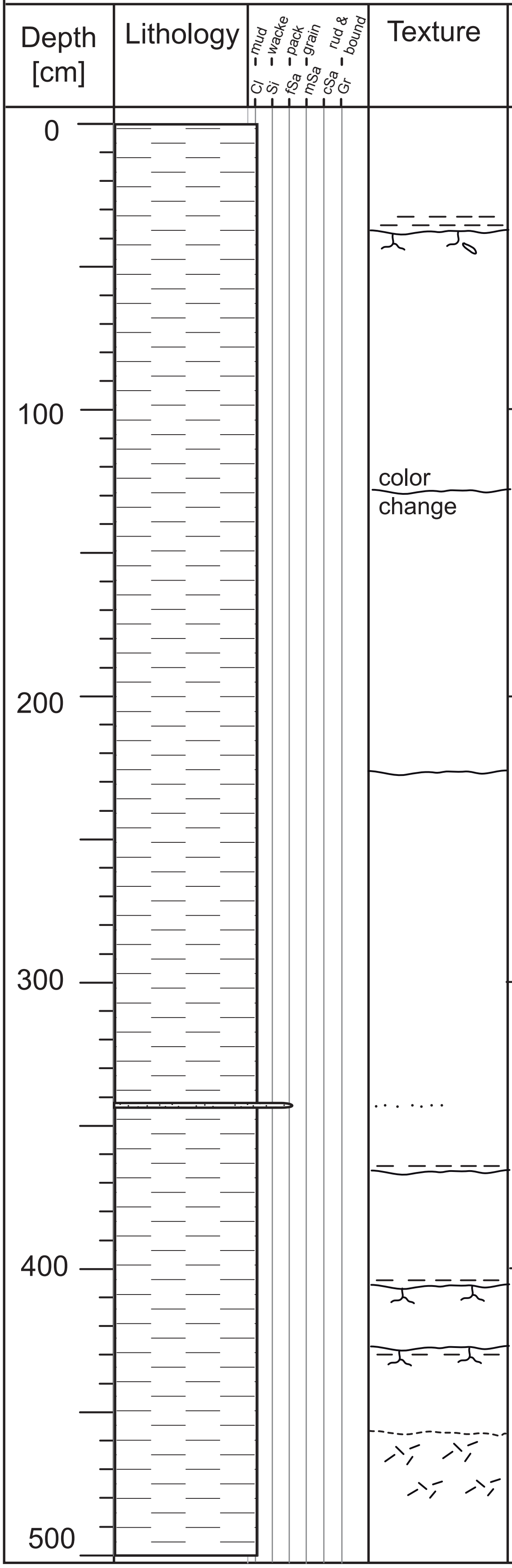
Position: 20°21.807´S, 38°37.387´W
Water Depth: 1960.8 m
Recovery: 11.75 m
Analyst: S.Voigt
Date: 31.03.2016



Description	
0-81 cm, clay, bioclastic, abundant pteroods, darker, intensely bioturbated, GLEY1,5/10Y 81-100 cm, clay, as above, lighter boundary, intensly bioturbated, burrows (81-89 cm), GLEY1,6/10Y	1000 - 1100 cm
0-8 cm, clay, bioclastic, org/sulf. impregn., darker, GLEY1,5/10Y 8-42 cm, clay, bioclastic, lighter, GLEY1,6/10Y 42-59 cm, clay, light grey, bioclastic, intensely bioturbated, grey filled burrows 59-100 cm, clay, bioclastic, more greenish, org/sulf. impregn., GLEY1,6/5GY	1100 - 1200 cm
EOS	

M125-59-3 Piston-/Gravitycore Archive PC ☒ GC ☐

Position: 20°01.044´S, 38°50.858´W
Water Depth: 1763.1 m
Recovery: 8.00 m
Analyst: S.Voigt / U. Sebastian
Date: 01.04.2016



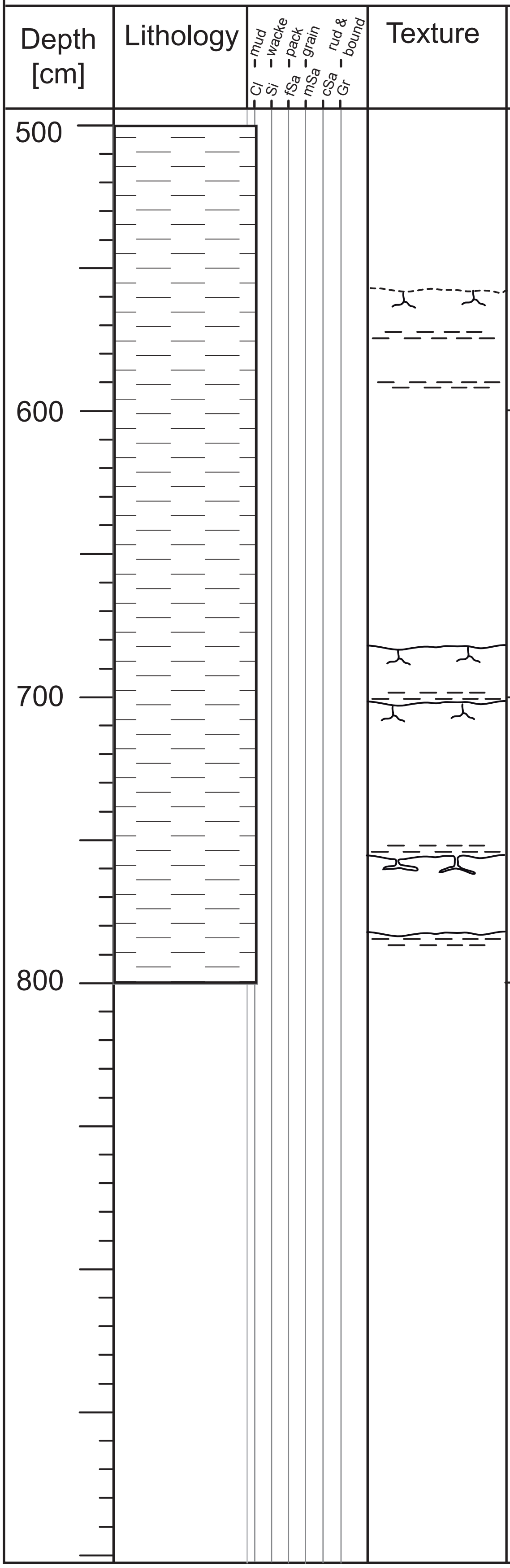
Description	
0-3 cm, no recovery 3-34 cm, clay, bioclastic, beige 34-38.5 cm, transition, dark bedded clay 38-100 cm, clay, reddish, darker layers at 77, 86, and 95, bioturbated from top, burrows filled with beige sediment	0 - 100 cm
0-18 cm, reddish clay, 10R5/6 18-23 cm, clay, darker, light grey burrows, 10R5/1 24-28 cm, clay, reddish, 2.5YR5/4 30-40 cm, clay, green, abundant org./sulf. impregn., GLEY1,5/5Y 40-48 cm, clay, greenish, GLEY1,5/5Y 48-50 cm, clay, bedded, reddish brown, 7,5YR5/8 50-80 cm, clay, bioclastic, bedded by brown layers, bioturbate, 2,5Y5/2 80-100 cm, clay, greenish, bioclastic, 2,5Y5/1	100 - 200 cm
0-27 cm, clay, grey, brownish at top, , cm-sized dark-gey spots, dark grey to black layers at the bottom, 2,5Y5/1 28-100 cm, clay, grey, banded by Fe-impregnated reddish beds, pteropods, 2,5Y6/1	200 - 300 cm
0-66 cm, clay, grey, slightly banded (dark grey), 5Y5/1, intercalations: 22cm - 1cm pteropod lense, 42 cm - 1-3 cm fine sand, silty, 48-54 cm - bioturbated 66-100 cm, clay, lighter grey with greenish and darker grey bands, 5Y6/2	300 - 400 cm
0-6 cm, clay, dark grey, silty, GLEY1,4/10Y 6-16, clay, medium grey, org./sulf. impregn., GLEY1,4/10Y 16-28 cm, clay, darker, sharp base 28-59 cm, clay, bioclastic, pteropods, light grey, GLEY1,6/5GY 58-100 cm, clay, darker, less bioclasts, bioturbated, *Chondrites* at two horizons: 60-67, 72-80, GLEY1,5/10Y	400 - 500 cm

to be continued.....

M125-59-3 Piston-/Gravitycore Archive

PC ☒ GC ☐

Position: 20°01.044´S, 38°50.858´W
Water Depth: 1763.1 m
Recovery: 8.00 m
Analyst: S.Voigt
Date: 01.04.2016

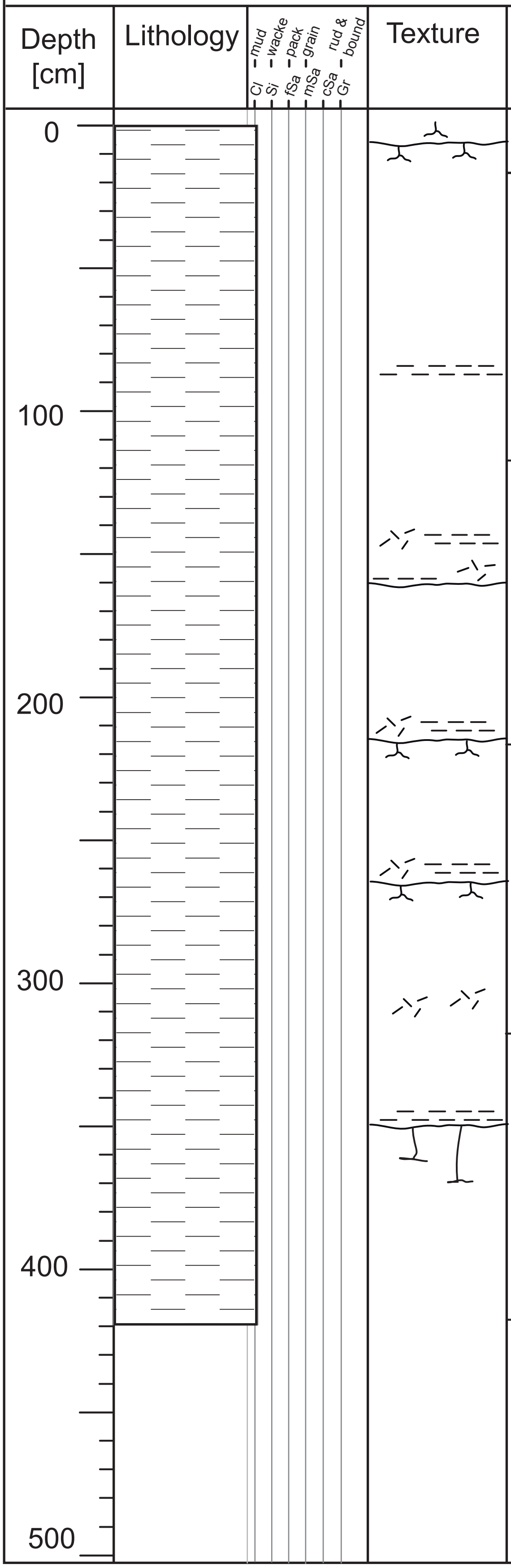


Description	
0-18 cm, clay, darker, bioturbated, GLEY1,5/10Y 18-22 cm, clay, bioclastic, lighter, GLEY1,6/10Y 22-58 cm, clay, olive grey, org./sulf. impregn., bioclastic, GLEY1,6/5GY 58-76 cm, clay, more greenish, burrowed from top 76-89 cm, clay, lighter, larger org./sulfid. impregn., GLEY1,7/10Y 89-95 cm, clay, greenish, speckled 95-100 cm, clay, olive green, GLEY1,5/5GY	500 - 600 cm
0-3 cm, as above 3-43 cm, clay, with greenish-brown bands, bioturbated, more brownish between 21-30 43-83 cm, clay, olive green, bioturbated, GLEY1,4/5GY, org./sulf. impregn., sharp base 83-92 cm, clay, brownish-reddish, burrowed, 2,5Y5/2 92-100 cm, clay, olive green with brownish bands	600 - 700 cm
0-2 cm, as above 2-26 cm, clay, bioclastic, lighter, gradational darkening downwards, burrows from top (2-12), GLEY1,5/10Y 26-56 cm, clay, olive green, darker, org./sulf. impregn., sharp base, GLEY1,4/10Y 56-66 cm, clay, lighter, burrowed from top, GLEY1,6/5GY 66-83 cm, clay, bioclastic, upper 3cm flasery bedded 83-100 cm, clay, darker, upper 5cm brownish, GLEY1,5/10Y	700 - 800 cm
EOS	

M125-61-2 __ Piston-/Gravitycore Archive

PC ☒ GC ☐

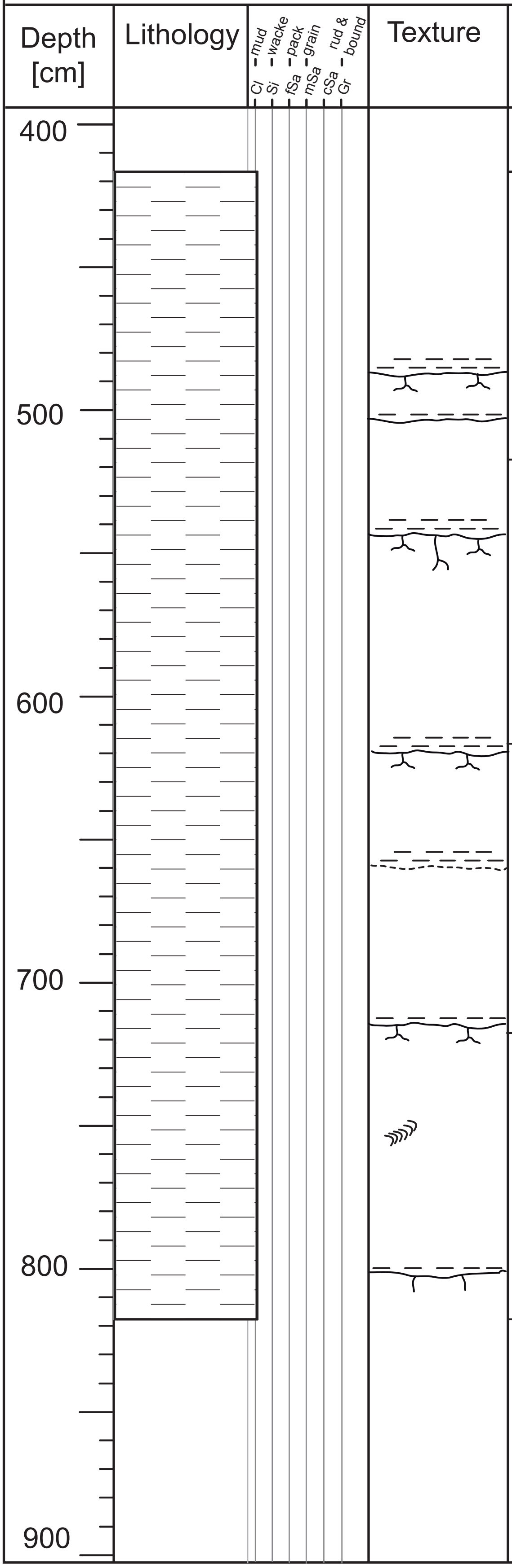
Position:20°02.372´S, 38°34.797´W
Water Depth: 1329 m
Recovery: 10.17 m
Analyst: S.Voigt
Date: 01.04.2016



Description	
0-6 cm, clay, bioclastic, beige-reddish, bioturbated, sandy layers, 10R6/4 6-17 cm, clay, green-yellowish, some bioclasts	0-17 cm
0-37 cm, clay, greenish, bedded by olive-brown stripes, 5Y4/2 37-73 cm, clay, grey-olive, some bioclasts, bioturbated, pteropod clusters, GLEY1,4/10Y 73-100 cm, clay, silty, lighter, 1-2 mm darker layers, darkening downwards, org./sulf. impregnated, GLEY1,5/10Y	17 - 117 cm
0-28 cm, clay, dark, org./sulfid. impregn., bioturbated, light *Chondrites*, 5Y5/2 28-44 cm, clay, grading from light to darker grey downwards, sharp base, dark part with light burrows, GLEY1,5/10Y 44-73 cm, clay, light, some bioclasts, org./sulf. impregn., gradational transition to 73-99 cm, clay, dark, bioturbated, *Chondrites*, 5Y5/1 99 cm, sharp base, GLEY1,6/10Y	117 - 217 cm
0-39 cm, clay, light grey, darkening downwards (30-39), there with *Chondrites*, bioturbated, pteropod cluster at 27 cm, sharp base, GLEY1, 5/10Y 39-49 cm, burrowed clay grades into yellowish light clay, 5Y6/2 49-100 cm, clay, darker, darkening downeards, few trace fossils, org./sulf. impregn., 5Y5/1 to 5Y4/1	217 - 317 cm
0-33 cm, clay, very dark, bioturbated, bioclastic layer at 15 cm, sharp base 33-42 cm, clay, brownish, org/sulf. impregn., 2.5Y4/2 42-62 cm, clay, greenish, bioturbated with brownish burrows, lense of bioclastic sand (59 cm) 62-71 cm, clay, lighter with dark burrows 71-100 cm, clay, darker, org./sulf. impregn., GLEY1, 5/10Y	317 - 417 cm
to be continued.....	

M125-61-2 __ Piston-/Gravitycore Archive PC ☒ GC ☐

Position:20°02.372´S, 38°34.797´W Water Depth: 1329 m
Recovery: 10.17 m
Analyst: S.Voigt Date: 01.04.2016



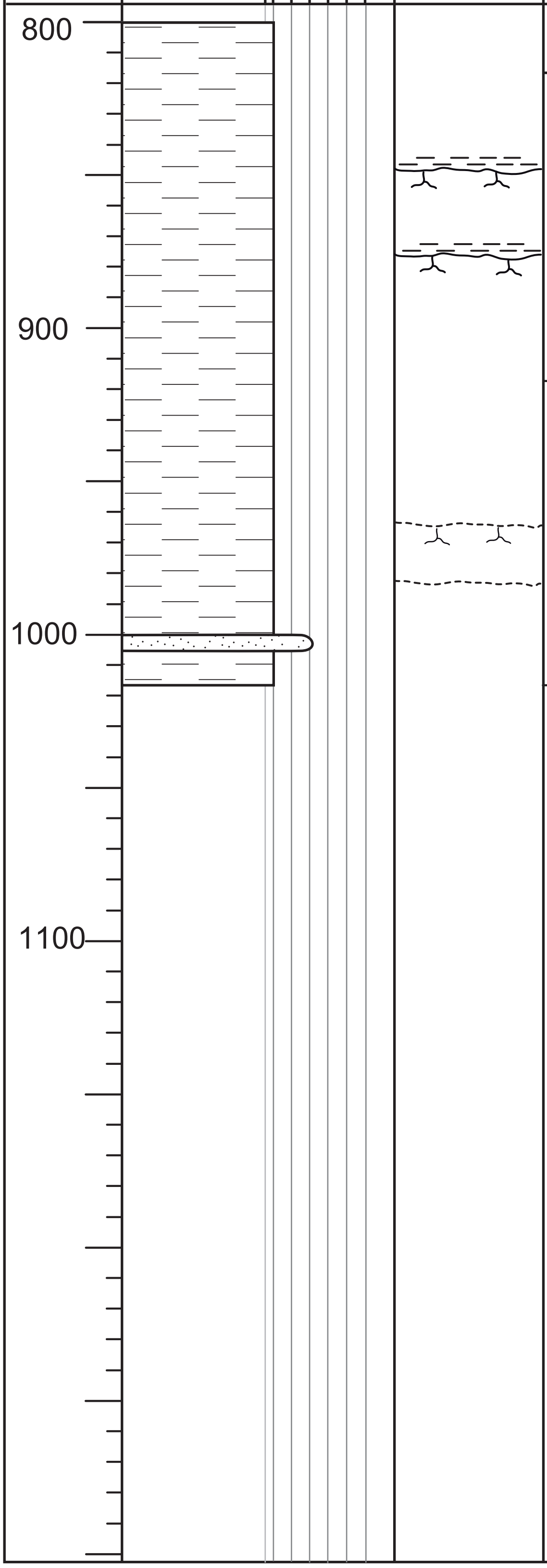
Description	
0-71 cm, clay, dark, org./sulf. impregn., sharp base 71-88 cm, clay, lighter, burrowed from top top (71-76 cm), intense org./sulf. impregn., sharp base 88-100 cm, clay, light grey, org./sulf. impregn., bioclastic	417 - 517 cm
0-14 cm, clay, light grey, as above 14-27 cm, clay, darker with trace fossils, sharp base, GLEY1,5/5GY 27-33 cm, clay, light, org./sulf. impregn., shell debris at base, GLEY1,6/10GY 33-58 cm, clay, medium grey, bioturbated, org./sulf. impregn., burrows from 14-27, weak base 58-73 cm, clay, speckled by burrows, medium grey 73-101cm, darker, speckled, org./sulf. impregn., GLEY1,4/10Y	517 - 617 cm
0-3 cm, clay, as above 3-11 cm, clay, lighter, burrowed from top, bioclastic, GLEY1,5/5GY 11-19 cm, clay, darker, bedded, weak base, GLEY1,5Y5/1 19-24 cm, clay, lighter, bioclastic 24-43 cm, clay, darker, org./sulf. impregn. 43-98 cm, clay, medium grey, bioturbated, slight darkening downwars, sharp base, GLEY1,5Y5/1 98-100 cm, clay, light, bioclastic	617 - 717 cm
0-4 cm, clay, light, intense bioturbated, dark burrows 4-16 cm, clay, medium-grey, speckled, org./sulf. impregn., GLEY1,5/10Y 16-86 cm, greenish grey, dark, som org./sulfid. spots, light trace fossil (*Nereites*?) 34-33, sharp base, GLEY1,4/Y10 86-100 cm, clay, light, some small burrows from top, GLEY1,6/10Y	717 - 817 cm
to be continued.....	

M125-61-2 __ Piston-/Gravitycore Archive

PC ☒ GC ☐

Position:20°02.372´S, 38°34.797´W Water Depth: 1329 m
Recovery: 10.17 m
Analyst: S.Voigt Date: 01.04.2016

Depth [cm]	Lithology	Cl - mud, Si - wacke, fSa - pack, mSa - grain, cSa - rud & bound, Gr	Texture	Description	

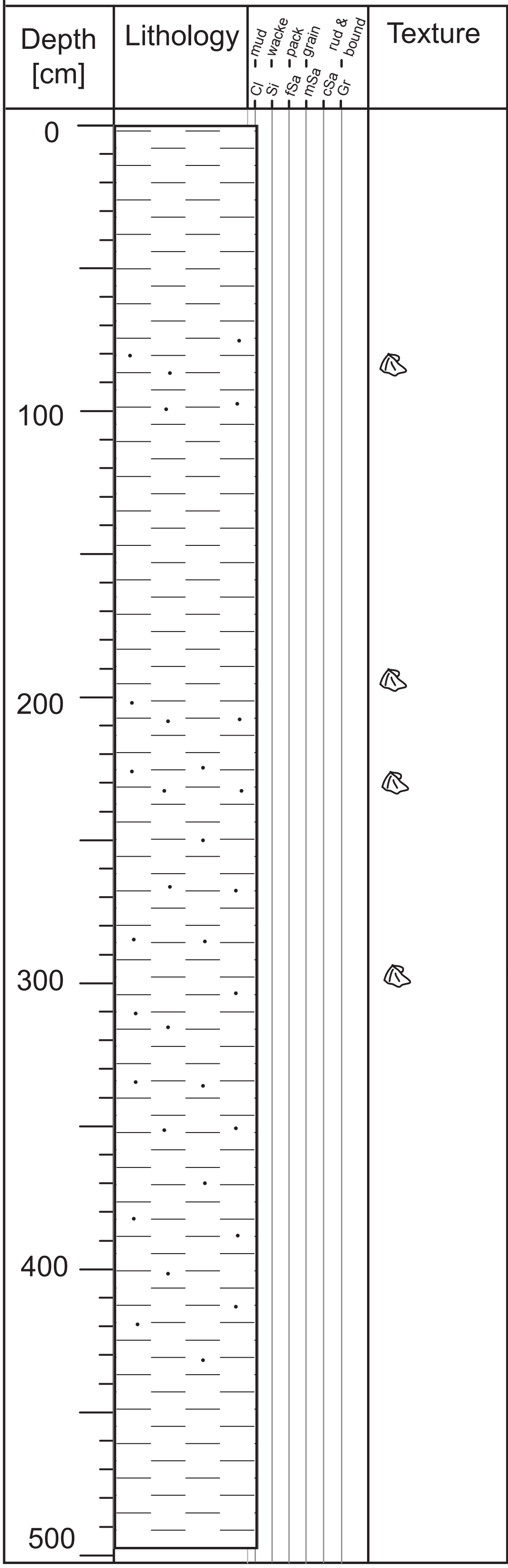


0-20 cm, clay, light, bioturbated, 5Y6/1 20-35 cm, clay, dark, light burrows from top, sharp base, org./sulfid. impregn. 5Y4/1 35-47 cm, clay, light with dark burrows, 5Y5/1, grading into: 47-61 cm, clay, dark olive, some bioclastics, light grey bed at 58, 5Y4/1 61-100 cm, light, burrows from top, sulf./org. impregn., bioclastic, darkening downwards, 5Y6/1	817 - 917 cm
0-14 cm, clay, dark green with trace fossils filled with bioclastic sediments, 5Y5/1 15-30 cm, clay, lighter, bioturbated, org./sulf. impregn., pteropod cluster at 19 cm 30-48 cm, clay, darker, bioturbated 48-58 cm, clay, medium grey, burrowed from top, 5Y6/2, grading into 58-74 cm, clay, lighter, burrowed, 5Y6/2 74-82 cm, clay, darker, some biocastics, 5Y5/2 82-89 cm, fine sand, light grey, 5Y6/1 89-100 cm, clay, medium grey, 5Y5/2	917 - 1017 cm

EOS

M125-67-4 **Piston-/Gravitycore Archive** PC ☐ GC ☒

Position:15°16.965´S, 38°54.801´W
Water Depth: 29 m
Recovery: 4.97 m
Analyst: S.Voigt
Date: 03.04.2016

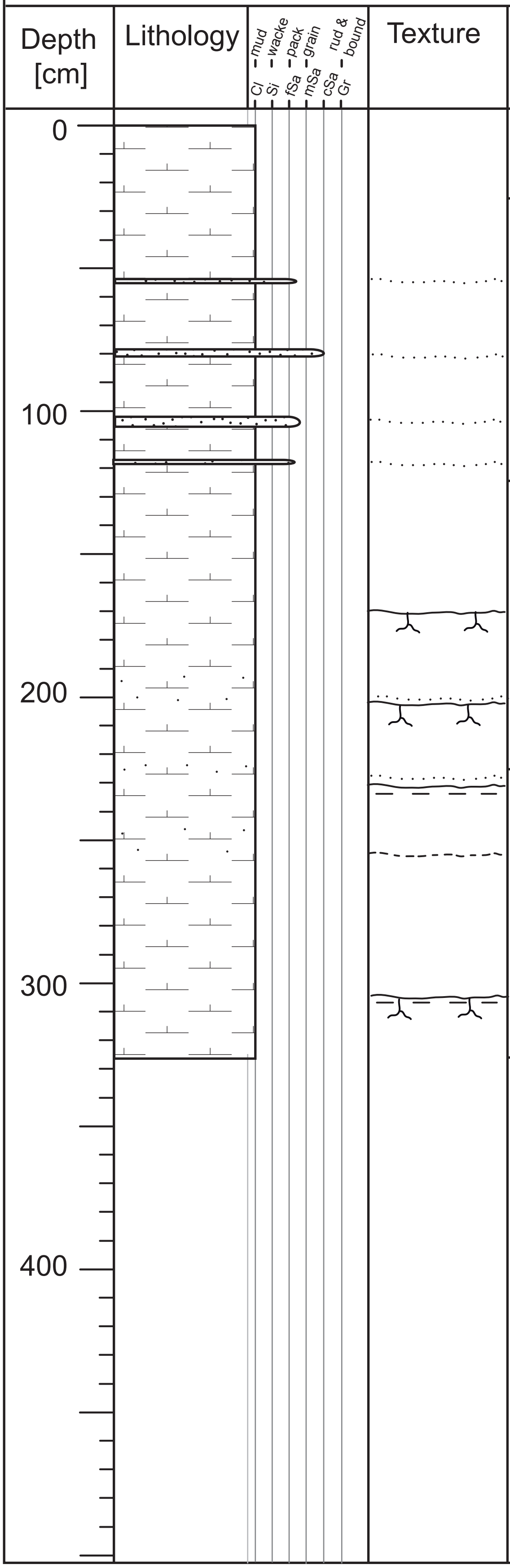


Description	
0-69 cm, clay, brown with open burrows, bioturbated, 2.5Y4/3 69-97 cm, clay, weakl silty, more greyish, large *Arca* sp. (sampled for ^{14}C), 2.5Y5/2	0 - 97 cm
0-100 cm, clay, brownish olive-grey, bioturbated, *Arca*-fragments at 97 cm (^{14}C sample), larger burrows at 7 and 27 cm, 5Y4/2	97 - 197 cm
0-100 cm, clay, silty, olive-grey, bioturbated, *Arca* sp. at 29 cm, Mussel (other species, sampled) at 100 cm, 5Y5/2	197 - 297 cm
0-100 cm, clay, silty, olive-grey, bioturbated, scaphopod (10 cm), pteropod cluster, encrusted red algae? (85 cm), 5Y5/2 85-100 cm, brown speckled, bioturbation	297 - 397 cm
0-100 cm, clay, silty, bioturbated, abundnt shell fragments, GLEY1,4/10Y	397 - 497 cm

M125-72-3 **Piston-/Gravitycore Archive** PC ☒ GC ☐

Position: 14° 12.775‘ S, 38° 38.529‘ W Water Depth: 1738.4 m
Recovery: 13.43 m
Analyst: S. Voigt Date: 04.04. 2016

Depth [cm]	Lithology	Texture	Description	



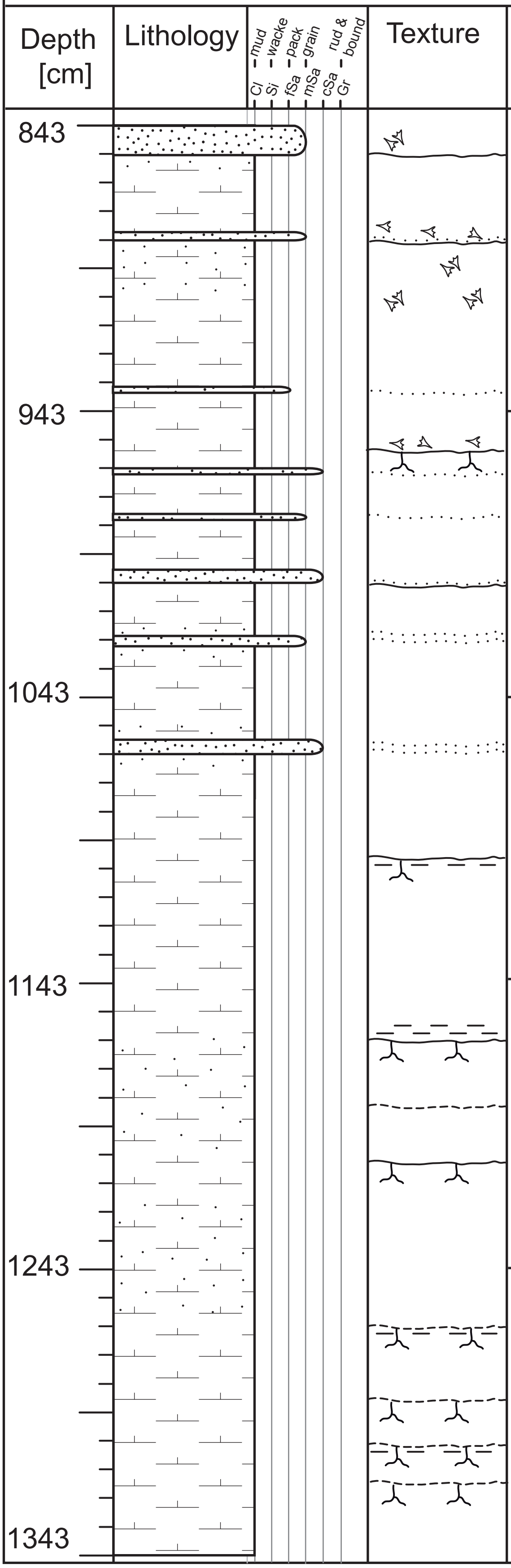
Description	
0-25 cm, calc. clay, bioclastic (pteropods, shells, forams), beige, 10YR6/6 (surface disturbed)	0-25 cm
0-22 cm, calc. clay, bioclastic, spotty bioturbation, beige, 10YR5/4 22-31 cm, calc. clay, less bioclastic, dark beige, 31cm - fine-medium bioclastic sand 32-39 cm, clay, light beige, 10YR7/4 39-44 cm, clay dark beige, burrowed, bioclastic, 10YR6/4 44-53 cm, clay, bioclastic, light beige, 10YR7/4 53-56 cm, fine sand, base coarse, sorted, beige, 10YR7/4 56-76 cm, clay, bioclastic, light, darker at 65-71 76-82 cm, fine-medium sand 82-100 cm, clay, bioclastic, dark beige, 10YR6/4, burrowed from top, sand layer at 97 cm	25 - 125 cm
0-6 cm, clay, dark beige, bioclastic 6-21 cm, clay, beige, gradational color change (reddish beige to dark beige 21-25 cm, clay, light grey 25-30 cm, clay, bioturbated, greenish grey 30-46 cm, clay, light grey, bioclastic, bioturbated, sharp base 47-65 cm, clay, green. grey, burrowed from top, 2.5Y6/3 65-70 cm, clay, bedded, yellowish, bioclastic 70-77cm, clay, strong bioclastic, light grey, basal surface 77-100 cm, clay, greenish grey, burrowed from top (77-84 cm), 2.5Y5/3	125 - 225 cm
0-4 cm, clay, strong bioclastic, light grey, surface 4-19 cm, clay, less bioclastic, darker beige, 2.5Y6/3 19-31 cm, clay, strong bioclastic, leight beige, 2.5Y7/2 31-40 cm, clay, darker beige, bioturbated 40-58 cm, clay, light grey.greenish, org/sulf. impregn. 58-63 cm, clay, darker green beige 63-80 cm, clay, ligt grey greenish, 2.5Y7/1, sharp base 80-100 cm, clay, dark green. beige, burrowed from top, 2.5Y5/3	225 - 325 cm
section liner II is not logged liner is ruptured, taped, supported and stored unopened as 1m-segments to be continued	

M125-72-3 **Piston-/Gravitycore Archive** PC ☒ GC ☐

Position: 14°12.775‘ S, 38°38.529‘ W Water Depth: 1738.4 m

Recovery: 13.43 m

Analyst: S. Voigt Date: 04.04.2016

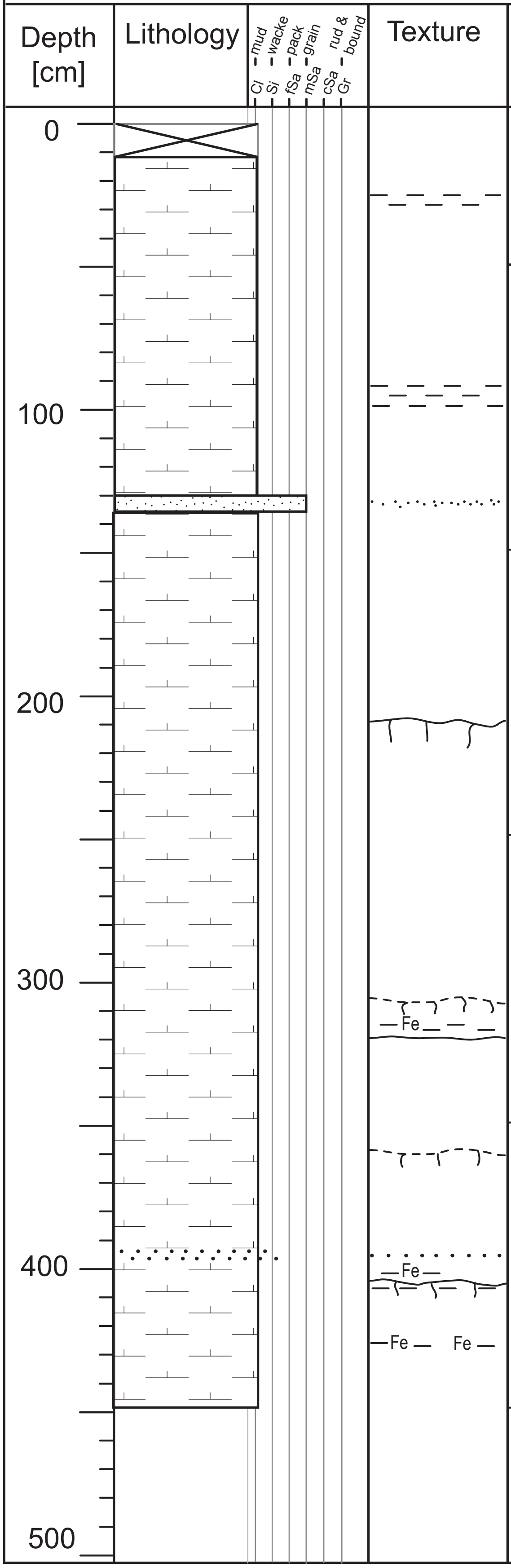


Description	
0-11 cm, medium sand, bioclastic, pteropods 11-20 cm, clay, strong bioclastic, olive green, 5Y5/3 20-28 cm, clay, Corg impregn., yellowish green 38-40 cm, medium sand, bioclastic 40-45 cm, clay, olive green, 2.5Y6/3, bioclastic, pteropods 45-52 cm, clay, light grey, pteropods, 5Y7/2 52-62 cm, clay, somewhat darker, more pteropods at the base, 5Y7/3 62-77 cm, clay, light grey, abundant pteropods, grades into 77-100 cm, clay, darkening down, bioturbated, sand layer at 92 cm, 2.5Y6/2	843 - 943 cm
0-14 cm, clay, bioclastic as above, sharp base with pteropods 14-37 cm, clay, dark olive green, 5Y5/3, coarse sand layer at 20-22 cm, medium sand 36-38 cm 38-50 cm, clay, olive 5Y5/3, bioturbated 50-60 cm, coarse sand (55-60 cm) grades into bioclastic clay, bioturbated 60-79 cm, clay, strong bioclastic, olive-beige, 5Y6/2 79-83 cm, medium sand, fining at top and bottom 83-100 cm, clay, bioclastic, Corg impregn., 2.5Y6/2	943 - 1043 cm
0-8 cm, clay, dark, bioturbated, Corg impregn., 2.5Y5/2 8-16 cm, clay, strong bioclastic, Corg impregn. 16-20 cm, coarse pteropod sand 20-31 cm, clay, light grey, bioclastic, 5Y7/2 32-41 cm, clay, somewhat darker, 5Y6/2 41-57 cm, clay, light grey, bioturbated, Corg impregn., basal surface 57-63 cm, clay, dark olive green, lightening down, bioclastic 63-89 cm, clay, bioclastic, pteropods, light grey, 5Y7/2 89-100 cm, clay, dark olive, speckled	1043 - 1143 cm
0-21 cm, clay, dark olive, bioturbated, 2.5Y5/2 21-42 cm, clay, bioclastic, light grey, darkening down, 5Y6/2 42-61 cm, clay, bioclastic, light grey, darkening down (55-62 cm), bioturbate, 5Y7/2 to 6/3 62-82 cm, clay, light grey, 5Y7/2, burrows from top, bioclastic, grades into 82-100 cm, clay, greenish grey, bioclastic, with sand clusters, 5Y6/2	1143 - 1243 cm
0-20 cm, clay, light grey, upper 5 cm slightly darker, bioturbated, 5Y7/2 20-46 cm, clay, dark olive brown, 2.5Y5/3, upper 10 cm burrowed 46-60 cm, clay, light brown, burrows from top, .5Y6/2 61-72 cm, clay, dark olive brown, burrows from top, 2.5Y5/3 73-100 cm, clay, light greenish grey, burrowed from top, 5Y6/2	1243 - 1343 cm

EOS

M125-73-3 _ Piston-/Gravitycore Archive PC ☒ GC ☐

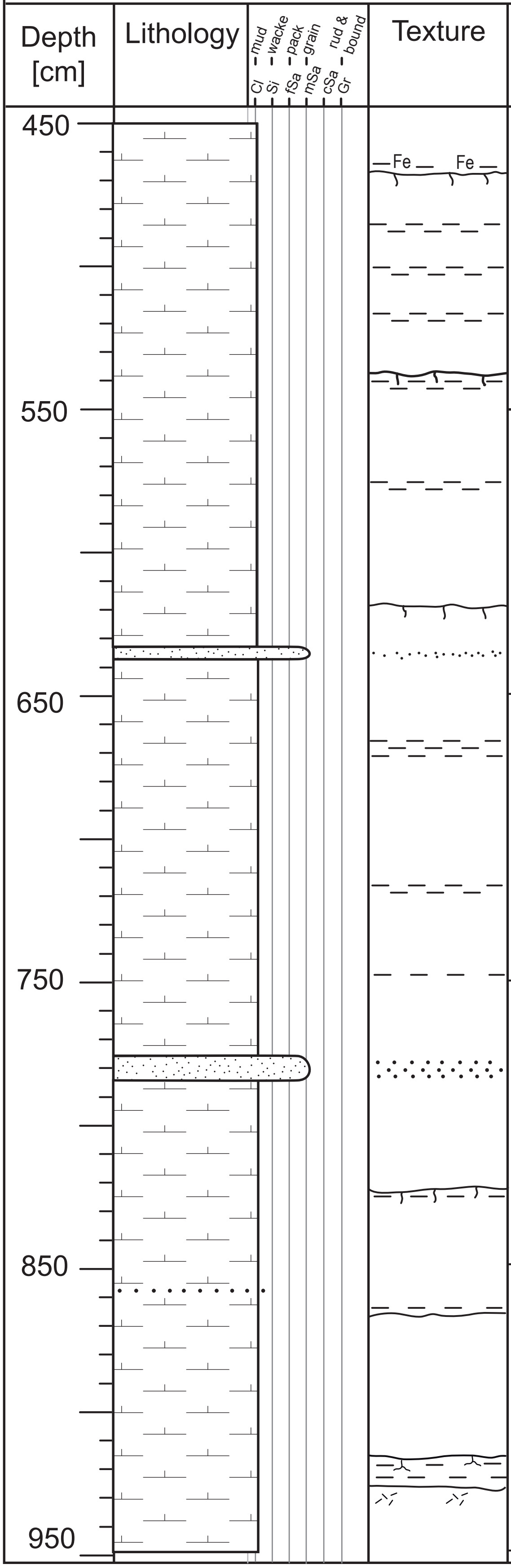
Position: 14°10.608´S, 38°32.178´W
Water Depth: 2108.8 m
Recovery: 12.49 m
Analyst: S.Voigt
Date: 04.04.2016



Description	
0-12 core loss 12-49 calcareous ooze with abundant bioclastics, sand-sized, bioturbated, beige, 10YR5/4 26-30 darker interval, mottled, 10YR5/3 to 4/3	0 - 49 cm
0-8 marly ooze rich in bioclasts, bioturbated, dark beige, 10YR6/4 8-40 marly ooze rich in bioclasts, bioturbated, lighter, 10YR6/4 40-57 clayey marl, speckled (grey, dark brown), rich in bioclasts, bioturbated 57-80 marly ooze, bioclasts, bioturbated, beige 80-85 arenitic ooze, rich in shell debris, medium-sized, beige, 10Y7/4 86-100 marly ooze, beige, bioclasts, 10YR7/4, darkening	49 - 149 cm
0-19 marly ooze rich in bioclasts, speckled by dark burrows 19-38 marly ooze lighter, bioclastic (scaphopods, pteropods) 38-52 calc. marl, dark, bioclastic 52-56 calc. ooze, light beige, distinct basal contact (burrowed), bundant bioclastics 57-100 marly ooze, bioclastic, burrowed fom top (57-65), darkening downward, 10YR6/4 to 2.5Y6/3	149 - 249 cm
0-56 calc. marl rich in bioclasts, bedded bioturbated, greenish-beige, 2.5Y6/4 56-70 calc. marl with light burrows from top (56-60), darker, orange layers (62-70), Fe-impregnated, 2.5Y5/4 70-78 clayey calc. marl, bioclasts!, scaphopods, color change to light grey, bioturbated, 5Y7/3 78-100 calc. marl, rich in bioclastics, darker between 81-86, 5Y7/3 to 5Y6/3	249 - 349 cm
0-5 calcareous clay, light grey, bioclasts, 5Y7/2 5-38 marly clay, burrowed from top (5-12), bioturbat., bioclastic, olive-green, grades lighter downwards, 5Y5/3 38-53 calcareous clay, light, arenitic layers at 42 and 46, bedded, bioturbated, base Fe-impregnated, 5Y7/2 53-76 marly clay, burrowed from top (to 59), base Fe-impregnaed, 5Y6/3 76-100 marly clay, bioclastic, bioturbated, 76-85 lighter, 85-100 darker, 5Y5/3	349 - 449 cm
to be continued	

M125-73-3 Piston-/Gravitycore Archive PC ☒ GC ☐

Position:14°10.608´S, 38°32.178´W Water Depth: 2108.8 m
Recovery: 12.49 m
Analyst: S.Voigt Date: 04.04.2016

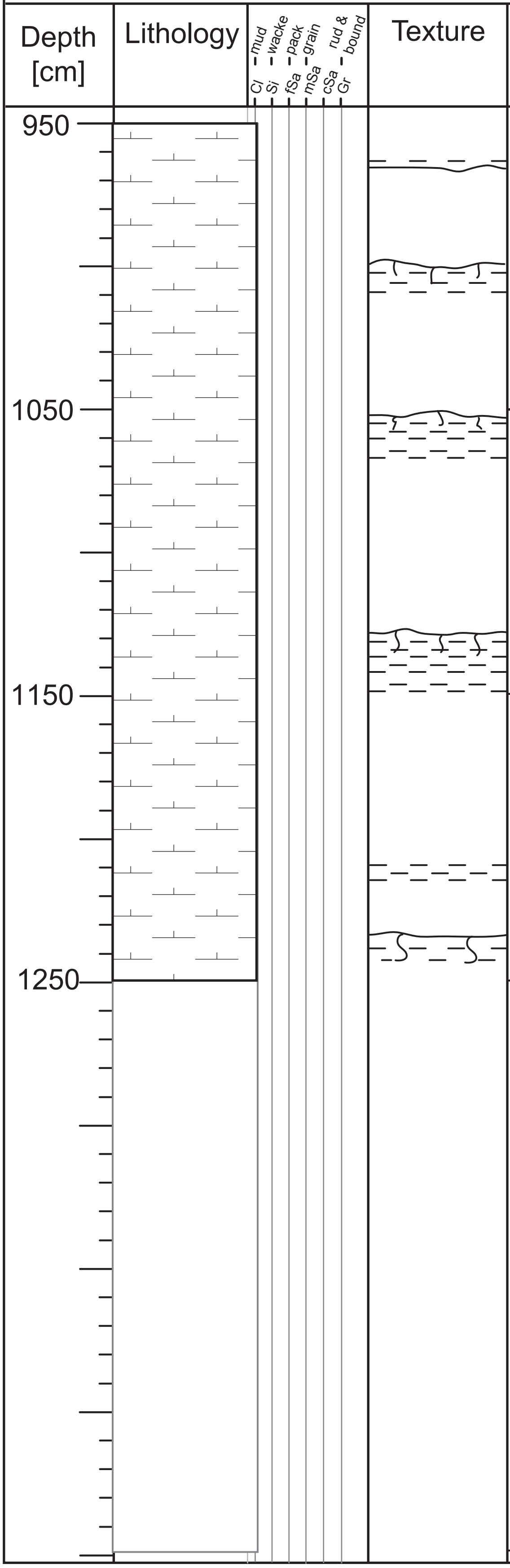


Description	
0-15 marl, medium olive green, biot., bioclast., Fe-impregn. at base, 5Y5/3 15-32 calcareous marl, light grey green, richer in bioclasts, 15-12 bioturbated from top 32-86 alternation of dark & light grey-green. marl, 5Y6/2 to 5Y5/3, bioturbated, bioclastic, 32-41 darker, 42-53 lighter, 51-60 darker, 60-67 lighter, 67-73 darker, 73-86 lighter, distinct color change at base 86-100 dark olive-brownish marl, burrowed from top (86-89), 2.5Y5/3	449 - 549 cm
0-27 calc. clay, grey-greenish, bioclastic, 5Y5/3 27-41 calc. clay, grey bioclastic, upper 9 cm Corg-impregnated, 5Y7/3 41-56 calc. clay, grey bioclastic, upper part (40-49) intense darkened by Corg/sulfid. impregn., 5Y7/2 56-64 calc. clay, somewhat darker, bioturbated 64-75 calc clay, dark olive, burrowed from top, Corg/sulfidic layers 75-98 calc. marl, light grey, bioclastic, arenitic (85-89), 5Y7/2; 98-100 darker marl	549 - 649 cm
0-14 calc. clay, greenish, base Fe-impregn., 5Y5/3 14-22 calc. clay, grey 2.5Y5/2 23-39 calc. clay, light greenish, speckled, bioclastic 39-64 calc. clay/marl, abundant bioclastics, light grey, 5Y7/3 64-97 calc. clay, light grey-greenish, bioclastic, burrowed from top (65-75), 5Y6/4 97-100 calc. clay, darker greenish	649 - 749 cm
0-10 clay, darker greenish, bioturbated 5Y5/4 10-18 calc. clay, dark olive, 5Y4/2 18-26 calc. clay, greenish grey, bioturbated, bioclastic 26-36 sand layer, Qz, well sorted, rounded, medium-coarse sized, Corg-rich, 5Y3/2 36-47 calc. clay, greenish, bioclastic 47-56 calc. clay, as above, color grades from lighter to darker, 5Y5/4 56-72 calc. clay, light grey, bioclastic, 5Y7/2; 72-84 clay, olive-green, burrowed, 5Y5/3; 85-95 lighter; 95-100 darker	749 - 849 cm
0-15 calc. clay, greenish, bioturbated, arenitic layer at 9 cm, 5Y6/3 15-23 calc. clay, light grey, org. impregn. 5Y7/2 23-40 calc. clay, olive, burrowed from top (23-27), 5Y4/2 40-64 calc. clay, greenisch-grey, bioturb., 5Y5/3 64-78 calc. clay, clay, olive, burrows on top, sharp base, 5Y4/2 78-85 calc. clay, lighter, *Chondrites* 85-100 calc. clay, greenish grey, darker on top, org. impregnated, 5Y5/2	849 - 949 cm

to be continued

M125-73-3 Piston-/Gravitycore Archive PC ☒ GC ☐

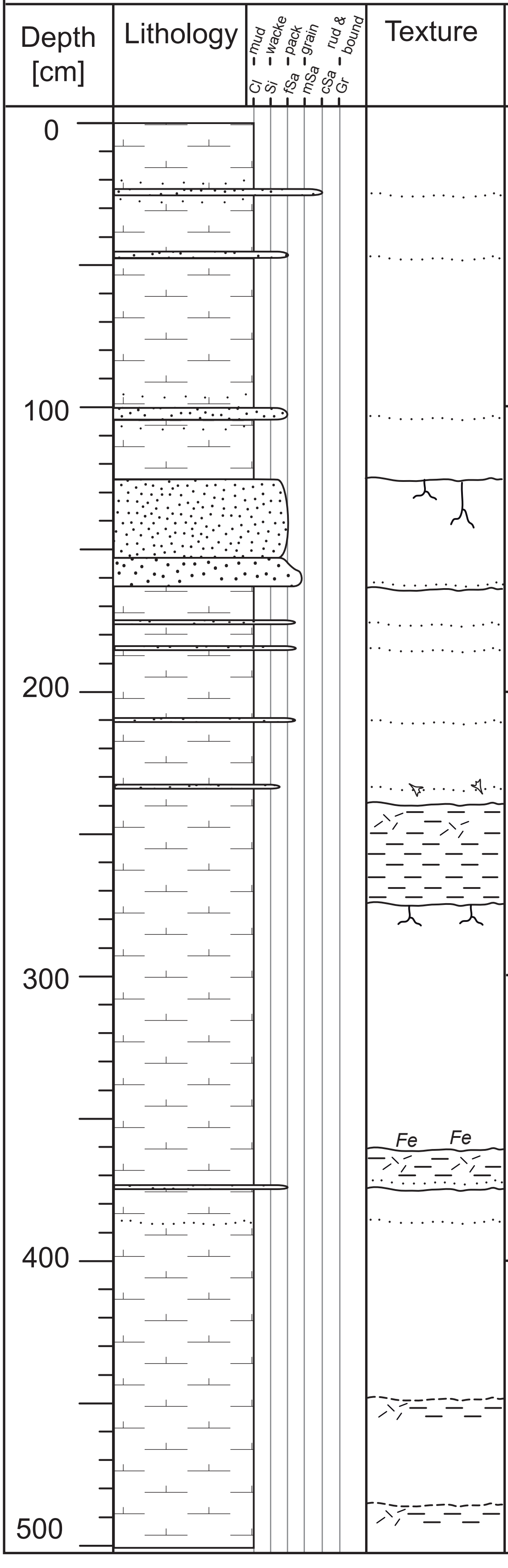
Position:14°10.608´S, 38°32.178´W Water Depth: 2108.8 m
Recovery: 12.49 m
Analyst: S.Voigt Date: 04.04.2016



Description	
0-14 clay, olive grey, bioclast., 5Y5/3 14-24 clay, light grey-brownish, bioclastic 24-28 clay, very light, bioclastic, arenitic 5Y7/2 28-46 clay, light grey, darkening down, 5Y6/2 46-62 clay, olive, burrowed from top, 5Y4/2 62-70 lighter 5Y4/3 70-100 clay, light grey-greenish, 5Y6/2, 88-93 darker horizon	949 - 1049 cm
0-2 as above 2-14 clay, olive, bioturbated, 5Y4/2 14-30 clay, light olive greenish, bioclastic, 2.5Y5/3 30-58 clay, medium grey-greenish, bioturbated, org. impregnated 2.5Y6/2 58-81 clay, light grey, rich in bioclastics (pteropods, scaphopods), 5Y7/2 81-100 clay, dark olive, burrowed from top (81-92) 2.5Y4/2	1049 - 1149 cm
0-7 clay, brown olive, 2.5Y4/2 7-22 clay, bioclastic, greenish-grey, 2.5Y5/2 22-42 clay, bioclastic, light greenish-grey, org. impregnated, 5Y6/2 42-58 clay, greenish, 42-50 darker, 50-48 lighter, speckled, organic impregnated, bioclastic 58-66 clay, dark greenish, bioturbated, 5Y5/3 66-84 clay, light grey, bioclastic!, pteropod acme (78-84), 5Y6/2 84-100 clay, greenish-grey, burrowed from top, 5Y5/3	1149 - 1249 cm
EOS	

M125-77-3 Piston-/Gravitycore Archive PC ☐ GC ☒

Position: 14°23.200´S, 38°43.551´W
Water Depth: 1393.9 m
Recovery: 6.00 m
Analyst: S.Voigt
Date: 05.04.2016



Description	
0-4 cm, foram sand, benthics, beige 4-13 cm, clay, brown, bioclastic, 10YR 5/4 13-46 cm, clay, beige brown, bioclastic, rich in pteropods, 10YR 6/3, 25 cm - arenitic layer, 46 cm - fine sand with mud, quartz 46-75 cm, clay, calc., bioclastic, light beige, basal Fe impregnated, 10Y7/4 75-100 cm, clay, calc., bioclastic, lighter beige, darkening down, basal Fe impregnated, 10Y7/4	0 - 100 cm
0-4 cm, arenitic layer, beige 4-25 cm, clay, calc., beige, bioclast., pteropods, 10YR6/6 25-35 cm, greyish clay, mottled, bioclastic, basal sandy, graded, 2.5Y6/3 35-53 cm, fine sand, grey, burrowed from top (-45 cm) 53-63 cm, medium sand, dark grey, heavy minerals, graded, erosional base, 5Y4/1 63-86 cm, clay, grey, bioclastic, arenitic (85-86, 74 cm), Corg impregnated from top, 5Y6/2 86-100 cm, clay, greenish grey, bioclastic	100 - 200 cm
0-16 cm, clay, light grey, rich in bioclasts, 5Y6/2, 10 cm - arenitic layer 16-29 cm, clay, as above, darker, 5Y6/3 29-40 cm, very light clay, rich in mm-sized pteropods (30-31 cm), 5Y7/2 40-74 cm, clay, greenish brown, bioclastic, *Chondrites* (40-46 cm), 5Y5/3 74-100 cm, clay, light greenish grey, bioclastic, bioturbated, burrows from top to 80 cm, 5Y6/3	200 - 300 cm
0-26 cm, clay, brownish green, bioclastic, light burrows from top, 2.5Y5/3 26-49 cm, clay, greenish grey, bioclastic, grades to.. 49-61 cm, clay, light grey, bioclastic, dark bioturbated (mottled), base Fe-impreg., 5Y6/3 61-75 cm, clay, dark olive, *Chondrites* from top, 74-75 cm - arenitic layer, erosive base, 2.5Y4/3 75-84 cm, clay, dark grey, sandy base 84-100 cm, clay, light-greenish, darkening down, 5Y5/3	300 - 400 cm
0-18 cm, clay, bioclastic, greenish grey, 2.5Y6/3 18-36 cm, clay, light greenish grey, Fe-impregnated, bioturbated, 5Y7/2 36-43 cm, clay, darker, speckled, 5Y5/2 43-48 cm, clay, olive-grey, burrowed from top, GLEY1,7/2 48-63 cm, clay, light grey, dark burrows, bioclastic 63-75 cm, clay, olive grey, light burrows, bioclastic, 5Y4/2 75-85 cm, clay, greenish grey, abundant pteropods, 5Y6/2 86-97 cm, clay, olive dark, *Chondrites* from top, 2.5Y4/3 97-100 cm, clay, greenish grey, bioclastic, 5Y5/2	400 - 500 cm

M125-77-3 Piston-/Gravitycore Archive

PC ☐ GC ☒

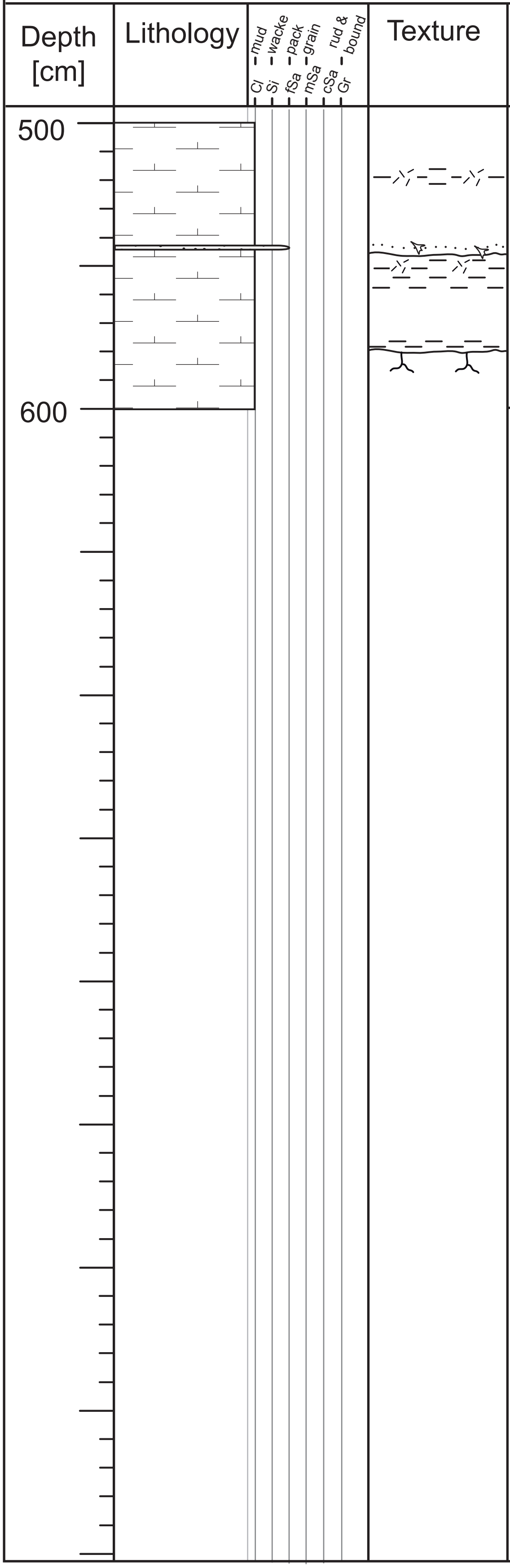
Position: 14°23.200´S, 38°43.551´W

Water Depth: 1393.9 m

Recovery: 6.00 m

Analyst: S.Voigt

Date: 05.04.2016



Description

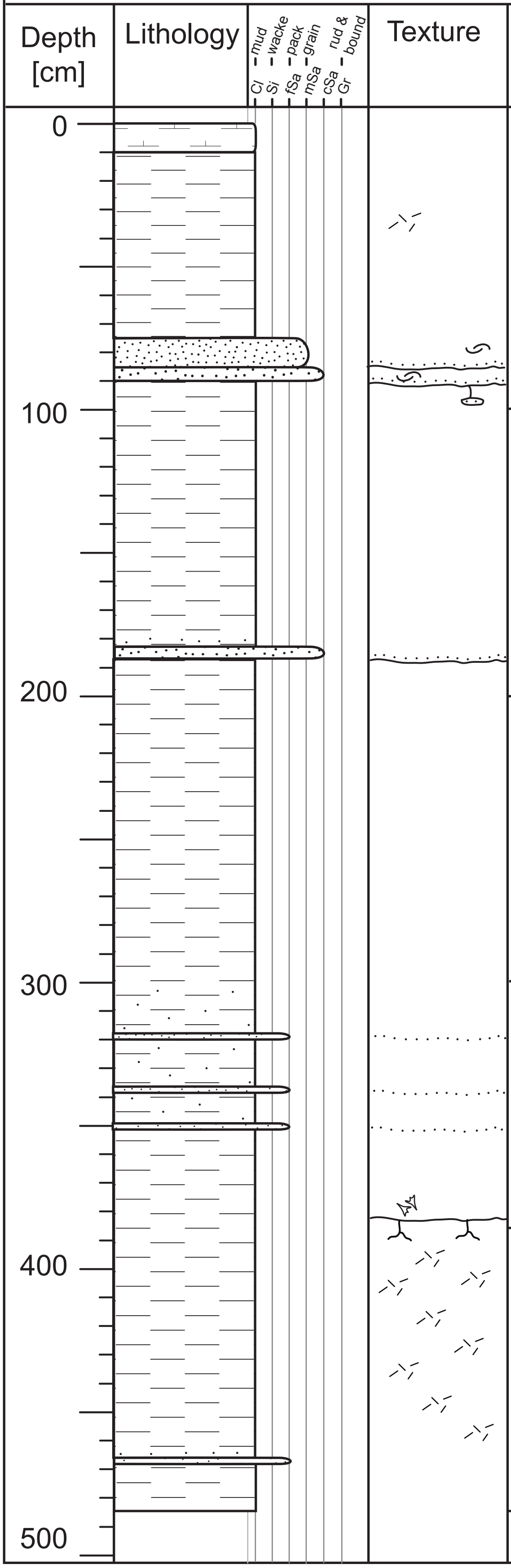
0-6 cm, clay, brownish-grey, 5Y4/2
6-14 cm, clay, bioclastic, light grey, 5Y6/2
14-23 cm, brownish, *Chondrites*, 5Y4/2
23-35 cm, clay, fine sandy, bioclast., light grey, Fe-impreg.
35-40 cm, clay, greenish grey, 5Y5/2
40-45 cm, clay, light grey, abundant pteropods, 5Y6/2
45-60 cm, clay, brown-olive, *Chondrites* from top, 5Y4/2
60-74 cm, clay, light greenish grey, bioturbated from top (61-87 cm), appears darker, 5Y6/2
74-80 cm, clay, brown-olive, 5Y4/2
80-100 cm, clay, greenish grey, bioclastic, upper 5 cm dark burrowed, 5Y6/2

500 - 600 cm

EOS

M125-78-3 **Piston-/Gravitycore Archive** PC ☒ GC ☐

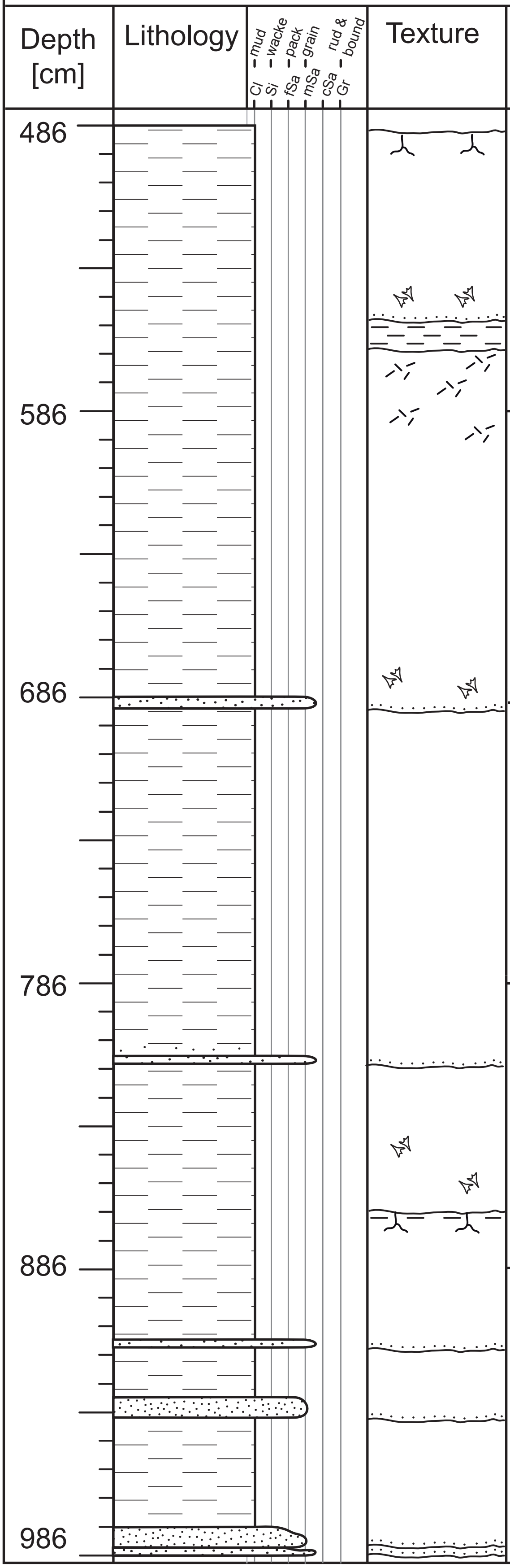
Position: 14°24.356´S, 38°50.068´W
Water Depth: 843.0 m
Recovery: 13.86 m
Analyst: S. Voigt
Date: 05.04.2016



Description	
0-10 cm, bioclastic calc. ooze, beige, rich in pteropods, 10YR6/3 10-74 cm, clay, dark olive grey, 33-36 cm - *Chondrites*, bioclastic with pteropods, 5Y3/2 74-90 cm, coarse bioclastic sand with Qz, erosive base, fining upwards to 86 cm, 86-74 cm - second fining upwards cylce (medium sand), components: echinoderm debris, benthic forams, ostracods, incrusting microbes (tubes) 90-100 cm, clay, dark grey, burrowed from top, 5Y3/2	0 - 100 cm
0-15 cm, clay, bioclastic, dark grey, 5Y3/2 15-21 cm, clay, lighter dark grey, bioturb., 5Y4/2 21-44 cm, clay, dark grey, 5Y3/2 44-75 cm, clay, olive dark grey, pteropod cluster, bioturbated, 5Y4/2 75-83 cm, clay, bioclastic, grey, sandy base 83-86 cm, coarse bioclastic sand 86-100 cm, clay, dark grey, 5Y5/2	100 - 200 cm
0-2 cm, clay, dark greenish grey 2-95 cm, clay, dark grey, few bioclastics, bioturbated, pteropod cluster (84 cm) 95-100 cm, clay, lighter dark grey	200 - 300 cm
0-20 cm, clay, fine sandy, olive grey, bioturb., lightening down, GLEY1, 4/2 20-38 cm, clay with abundant fine sand, heavy minerals, olive-grey, basal sand layer 38-52 cm, clay, fine sandy, dark grey green 52-82 cm, clay, medium grey, bioturbated, base with pteropods, 5Y5/2 82-86 cm, clay, olive, burrowed from top	300 - 386 cm
0-27 cm, clay, dark grey, bioclastic, GLEY1,4/3 27-48 cm, clay, green olive, bioturbated, *Chondrites*, 5Y5/2 48-82 cm, clay, dark greyish olive, *Chondrites* throughout, fine basal sand (76-82 cm) 82-83 cm, fine sand, erosional base, graded 83-100 cm, clay, light greenish grey, bioclastic, bioturbated, 5Y6/2	386 - 486 cm

M125-78-3 **Piston-/Gravitycore Archive** PC ☒ GC ☐

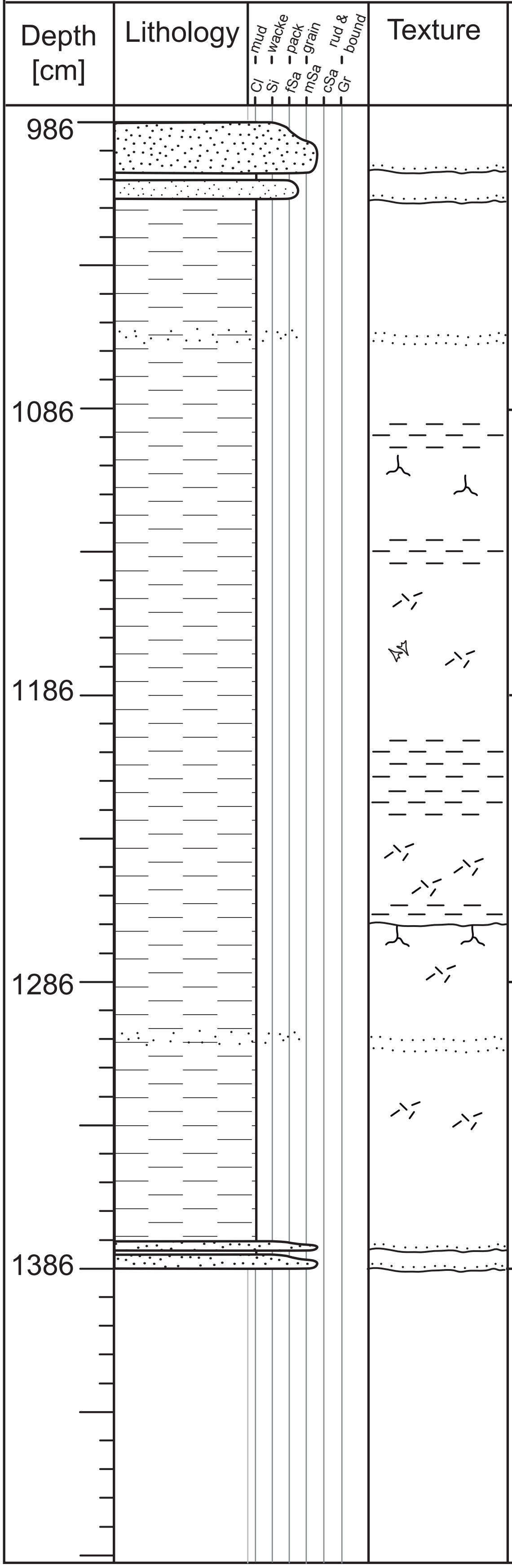
Position: 14°24.356´S, 38°50.068´W
Water Depth: 843.0 m
Recovery: 13.86 m
Analyst: S. Voigt
Date: 05.04.2016



Description	
0-8 cm, clay, grey green., burrowed from top 8-18 cm, clay, lighter, GLEY1, 5/2 18-34 cm, clay, green. grey, GLEY1, 4/2 34-55 cm, clay, lighter, dark burrows, GLEY1, 6/2 55-69 cm, clay, bioclastic, pteropod cluster, light grey 69-78 cm, clay, brownish green, burrowed, 5Y 4/3 78-100 cm, clay, dark brownish, *Chondrites* throughout, 5Y4/2	486 - 586 cm
0-100 cm, clay, dark olive, light *Chondrites* (0-10 cm), 5Y3/2, pteropod clusters (93-99 cm)	586 - 686 cm
0-6 cm, bioclastic medium to coarse grained sand 6-100 cm, clay, dark olive grey, 5Y3/2	686 - 786 cm
0-18 cm, clay, dark olive, 5Y3/2 18-26 cm, clay, lighter dark 26-28 cm, bioclastic sand, medium to coarse grained, sharp base 28-55 cm, clay, olive grey 55-81 cm, clay, olive grey, lighter, pteropod clusters, 5Y4/2 81-100 cm, clay, olive grey, burrowed from top	786 - 886 cm
0-26 cm, clay, dark olive grey, 5Y3/2 26-27 cm, bioclastic sand, medium to coarse grained, erosional base 27-44 cm, clay, olive grey, bioturbated 44-52 cm, bioclastic medium-grained sand 52-88 cm, clay, dark olive grey, 5Y3/1 88-100 cm, bioclastic sand with Qz, 2x fining up (89-93 cm, and 93-100 cm)	886 - 986 cm

M125-78-3 Piston-/Gravitycore Archive PC ☒ GC ☐

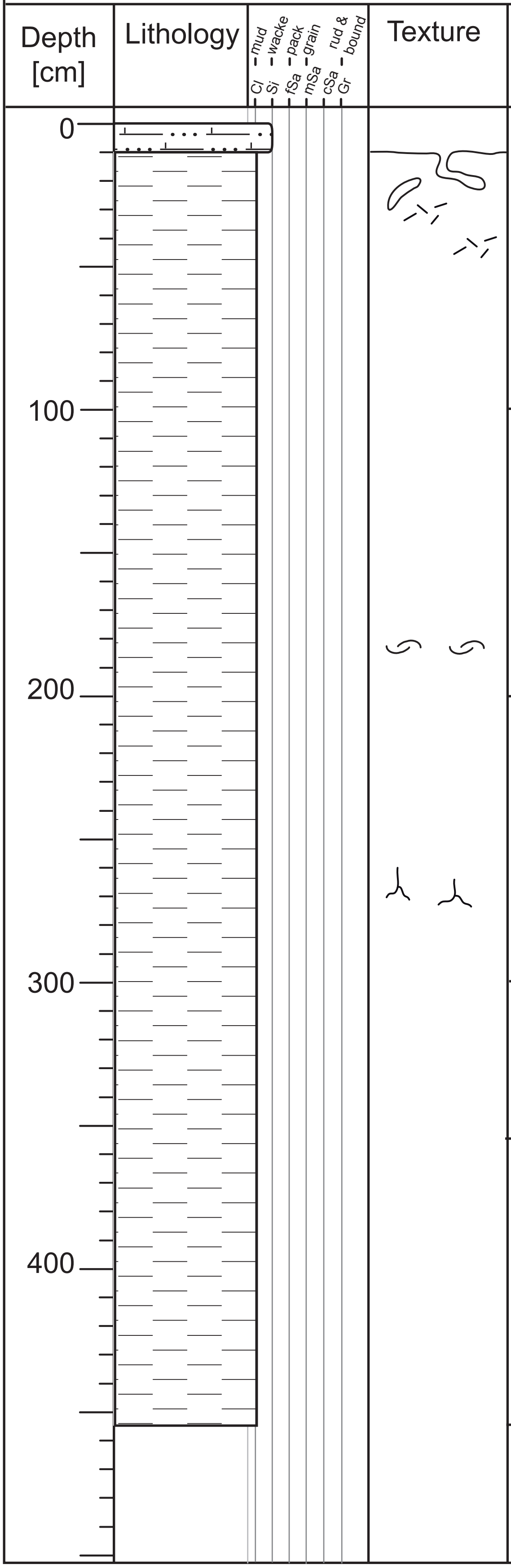
Position: 14°24.356´S, 38°50.068´W
Water Depth: 843.0 m
Recovery: 13.86 m
Analyst: S. Voigt
Date: 05.04.2016



Description	
0-18 cm, bioclastic quartz-sand, medium to coarse grained, erosive base, black, graded, 5Y3/1 18-20 cm, clay, dark grey, silty 20-29 cm, sand fine to medium grained, Qz, graded 29-53 cm, clay, dark grey, 5Y3/2 53-69 cm, clay, greenish grey, burrowed from top (55-60 cm), 5Y5/2 69-100 cm, clay, dark greenish grey, 73-81 cm clastic layer (quartz, bioclastics)	986 - 1086 cm
0-20 cm, clay, bioclastic greenish-grey, GLEY1,4/2 20-36 cm, clay, bioclastic, light greenish grey with dark burrows, GLEY1,5/2 36-64 cm, clay, greenish-grey, dark and light burrows 64-80 cm, clay, lighter, burrowed (*Chondrites*), GLEY1,4/2 80-100 cm, clay, light greenish grey, pteropod cluster, bioturbated (*Chondrites*), GLEY1,5/3	1086 - 1186 cm
0-16 cm, clay, light greenish-grey, GLEY1,5/2 16-46 cm, clay, olive grey, burrowed from top, 5Y4/2 46-83 cm, clay, dark olive grey, light *Chondrites* (57-76 cm), 5Y3/2 83-100 cm, clay, light greenish grey, burrowed from top, *Chondrites*, *Thalassinoides*, 5Y5/2	1186 - 1286 cm
0-16 cm, clay, greenish-grey, dark Chondrites, GLEY1,5/3 16-24 cm, clay, sandy, bioclastic, light greenish grey, pteropods, GLEY1,6/2 24-81 cm, clay, dark olive grey, *Chondrites* (43-48 cm), 5Y3/2 81-90 cm, clay, olive grey, bioclastic, 5Y4/2 90-93 and 96-100 cm, bioclastic sand with quartz, coarse to medium grained, graded	1286 - 1386 cm
EOS	

M125-80-2 **Piston-/Gravitycore Archive** PC ☐ GC ☒

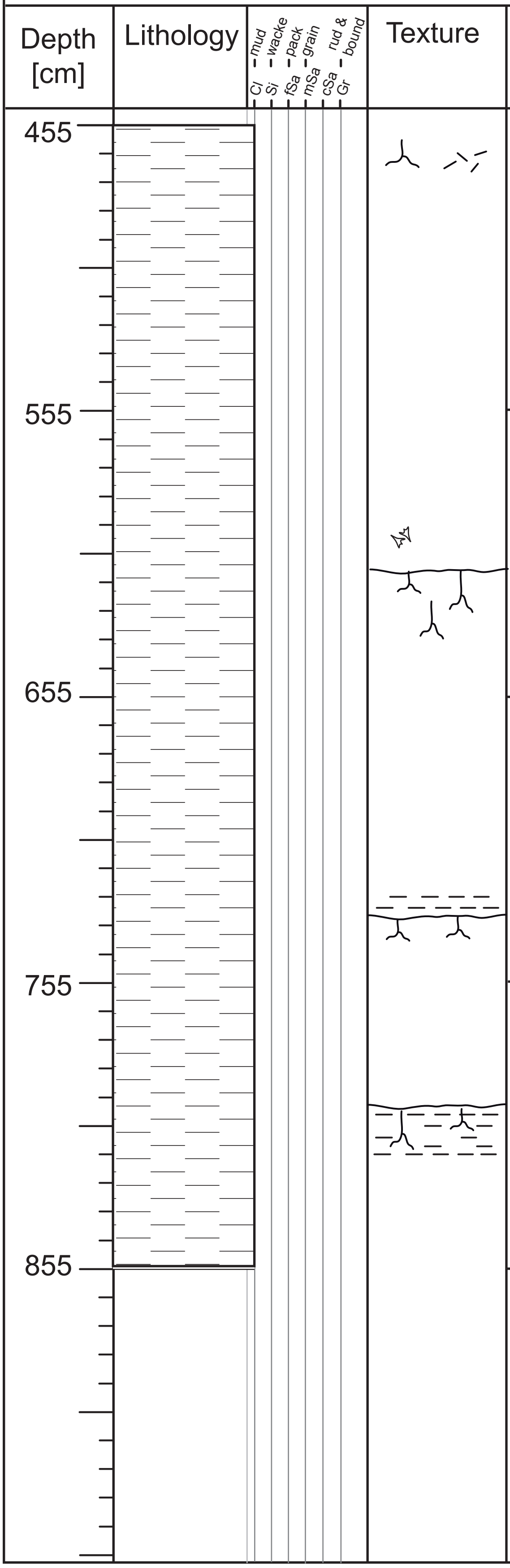
Position: 14°24.559´S, 38°53.307´W
Water Depth: 421.9 m
Recovery: 8.55 m
Analyst: S. Voigt
Date: 05.04.2016



Description	
0-10 cm, calc. clay, sandy, light olive 10-100 cm, clay, olive grey, burrowed from top (10-30 cm *Thalassinoides*, 10-150 cm *Chondrites*)	0 - 100 cm
0-80 cm, clay, dark olive grey, 5Y3/2 80-100 cm, clay, dark olive grey, with *Thalassinoides* burrows, 82 cm - bioclastic layer	100 - 200 cm
0-100 cm, clay, dark olive grey, 5Y3/1, 63-76 cm - *Thalassinoides* burrows	200 - 300 cm
0-55 cm, clay, dark olive grey, 5Y3/2	300 - 355 cm
0-44 cm, clay, dark olive grey, intense bioturbated, slightly lighter 44-100 cm, clay, dark olive grey with pteropod clusters at 54 and 82 cm	355 - 455 cm
to be continued...	

M125-80-2 **Piston-/Gravitycore Archive** PC ☐ GC ☒

Position: 14°24.559´S, 38°53.307´W
Water Depth: 421.9 m
Recovery: 8.55 m
Analyst: S. Voigt
Date: 05.04.2016

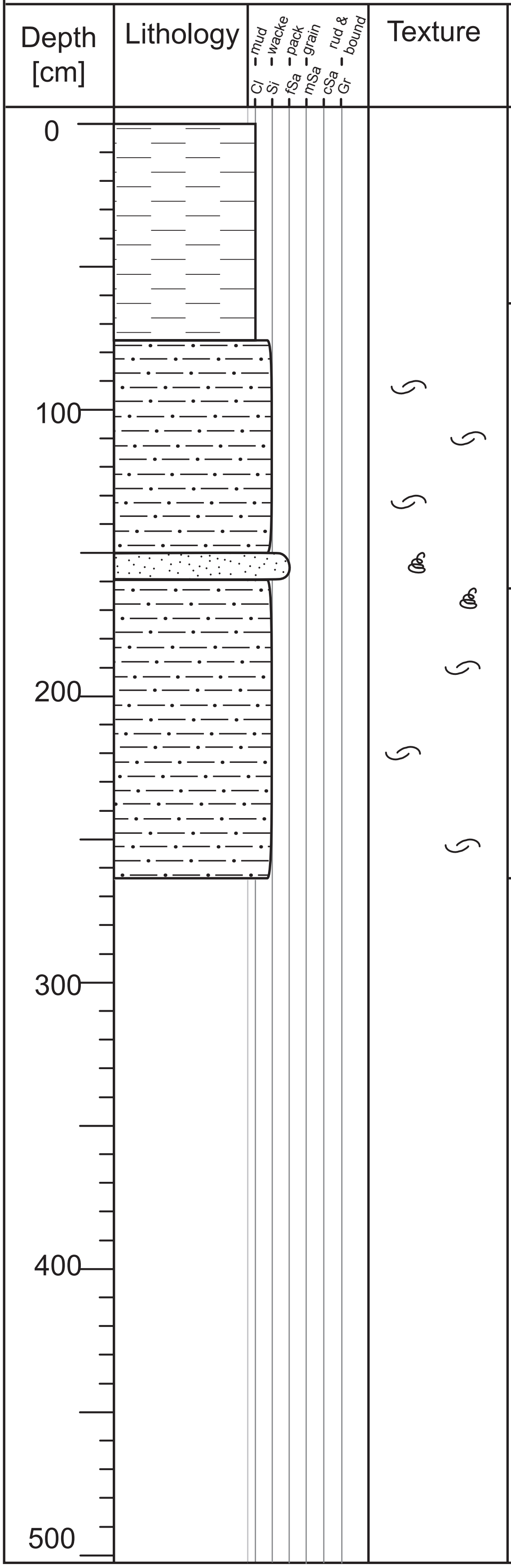


Description	
0-47 cm, clay, dark grey, with lighter burrows of *Thalassinoides* and *Chondrites*, 5Y3/1 44-100 cm, clay, dark olive grey with pteropod clusters at 54 and 82 cm	455 - 555 cm
0-57 cm, clay, dark grey greenish, bioclastic, pteropod cluster (50 cm), 5Y3/2 57-100 cm, clay, dark grey, burrowed from top (*Thalassinoides*, 57-83 cm), 5Y3/2	555 - 655 cm
0-77 cm, clay, dark grey, in part bioclastic, pteropod clusters (41, 68 cm), 5Y 3/2 77-100 cm, clay, dark green. grey, burrowed from top, abundant bioclastics, 5Y 4/2	655 - 755 cm
0-6 cm, clay, greenish grey, 5Y 4/2 6-18 cm, clay, lighter, both strongly burrowed & strong silty 5Y 5/2 18-43 cm, clay, green. gray, bioturb., abundant pteropods at base, 5Y5/2 43-100 cm, clay, dark grey, burrowed from top , (*Thalassinoides* until 58cm), 5Y3/2	755 - 855 cm
EOS	

M125-87-3 Piston-/Gravitycore Archive

PC ☐ GC ☒

Position: 13°58.646´S, 38°92.116´W
Water Depth: 47.0 m
Recovery: 2.63 m
Analyst: S. Voigt
Date: 06.04.2016

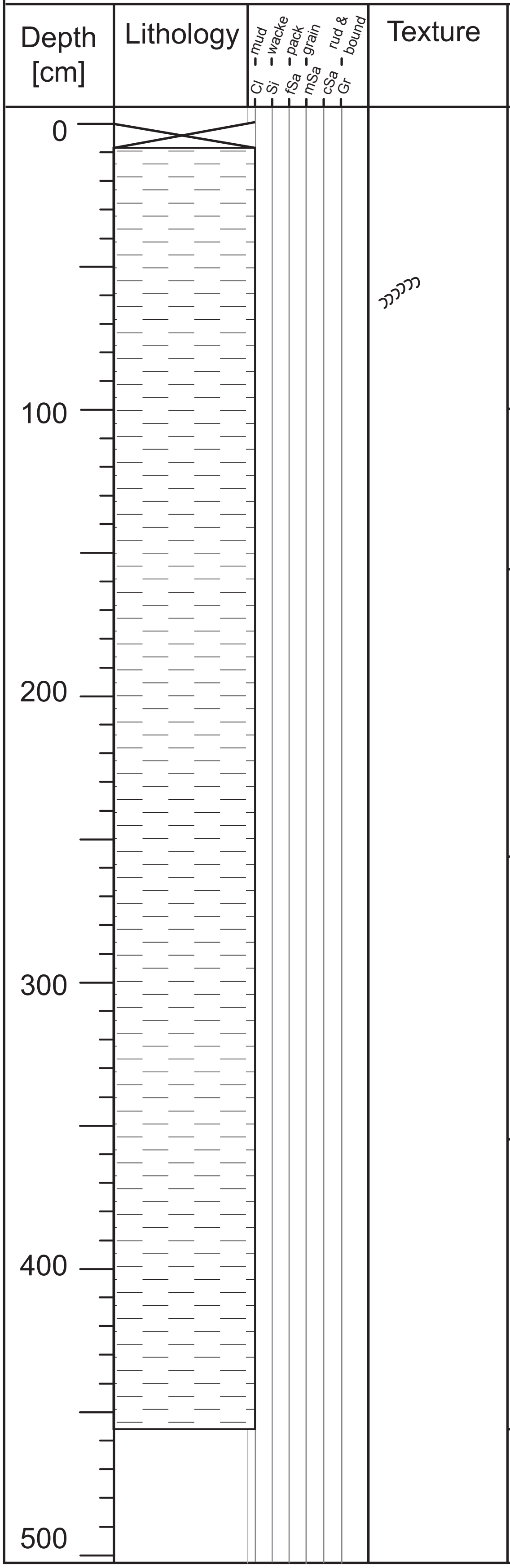


Description	
0-63 cm, clay, dark-brown greyish, open burrows, bioturbated, 10YR4/2 to 5Y4/2	0 - 63 cm
0-12 cm, clay, silty, bioturbated, greenish grey, 5Y4/2 12-85 cm, silt, fine sandy, abundant shell fragments, greenish grey, 5Y4/2 85-100 cm, fine sand, abundant shell fragments (gastropds), grey greenish	63 - 163 cm
0-100 cm, silt, fine sandy, clayey, abundant shell fragments, burrows filled with fine sand, gastropod (6 cm), shell cluster at 26.35 cm, grey, GLEY1,4/2	163 - 263 cm

M125-93-3 Piston-/Gravitycore Archive

PC ☐ GC ☒

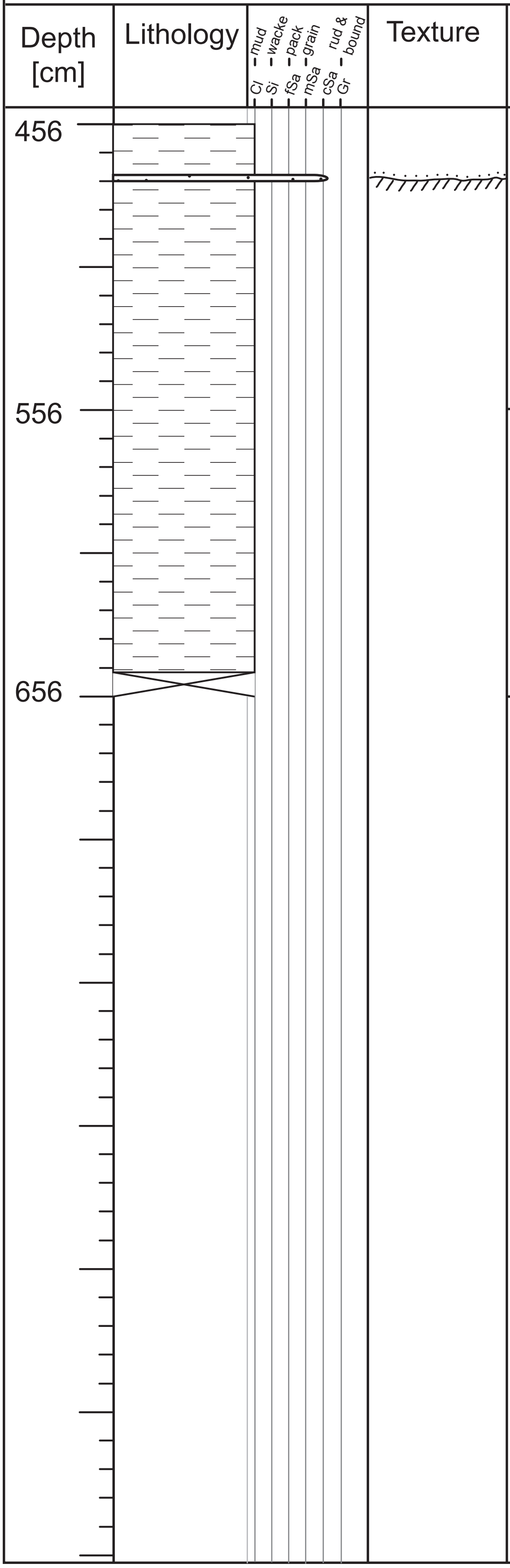
Position: 10°52.414´S, 36°22.934´W
Water Depth: 955.2 m
Recovery: 6.56 m
Analyst: S. Voigt
Date: 08.04.2016



Description	
0-9 cm, no recovery 9-14 cm, clay, beige, bioclastic 14-100 cm, clay, greenish-brownish grey, abundant bioclasts, bioturbated,63 cm - trace fossil (*Nereites*?), 5Y4/2	0 - 100 cm
0-56 cm, clay, greenish-brownish grey, light burrows, Corg. impregn., slight darkening, 5Y4/2	100 - 156 cm
0-100 cm, clay, greenish grey, Ibioclasts, Corg. - impregn. between 8-15 cm and 56-70 cm, dark burrows at 23 cm and 32-39 cm, 5Y4/2	156 - 256 cm
0-100 cm, clay, silty, greenish grey, few bioclasts, Corg impregn., bioturbated, 5Y3/2	256 - 356 cm
0-76 cm, clay, silty, greenish grey, 5Y3/2, Corg impregn., bioturbated, few bioclastics (pteropods) 76-100 cm, clay, silty, lighter greenish grey, less Corg impregn., bioclastic, 5Y4/2	356 - 456 cm

M125-93-3 **Piston-/Gravitycore Archive** PC ☐ GC ☒

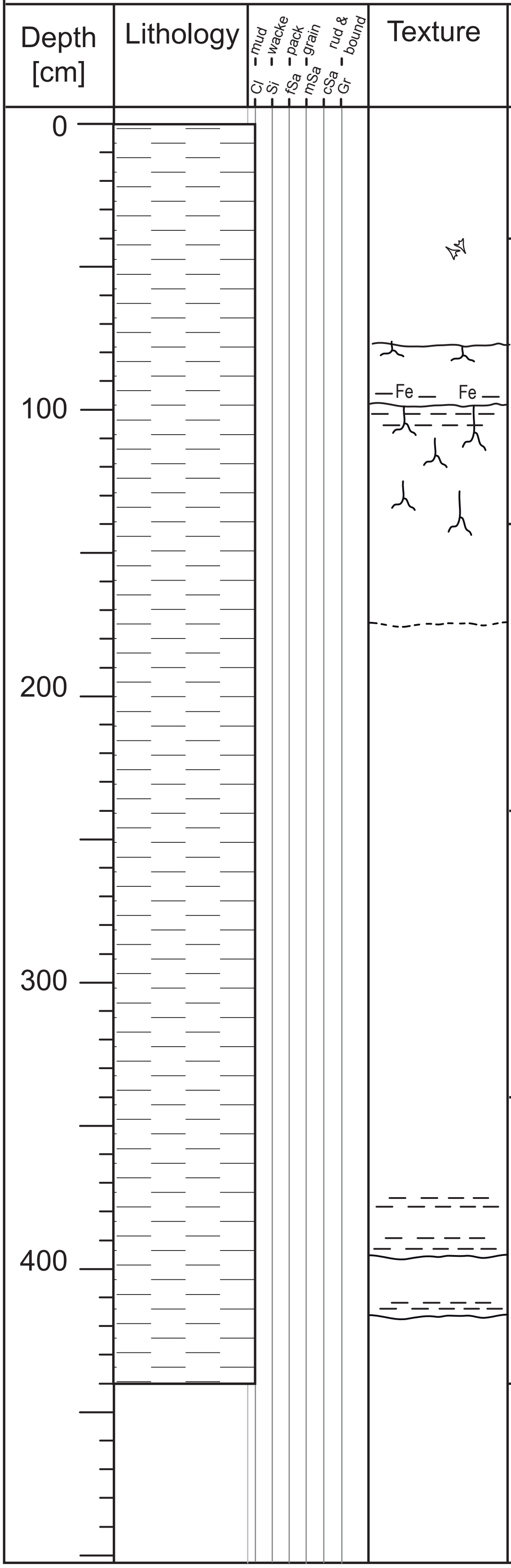
Position: 10°52.414´S, 36°22.934´W Water Depth: 955.2 m
Recovery: 6.56 m
Analyst: S. Voigt Date: 08.04.2016



Description	
0-19 cm, clay, silty, greenish grey, bioclastic, bioturbated, 5Y4/2 19-20 cm, coarse-medium sand, mostly incrusted bioclasts and benthic forams, some Qz, erosional base, graded 20-100 cm, clay, very fine, blue greenish grey, bioturbated, irregular 1 cm-sized concretions (pyrite), carbonate-free, GLEY1,4/2	456 - 556 cm
0-91 cm, clay, fatty, very fine, blue greenish grey, irregular 1cm-sized concretions (pyrite), GLEY1,4/2, carbonate free 91-100 cm, no recovery	556 - 656 cm
EOS	

M125-95-3 **Piston-/Gravitycore Archive** PC ☒ GC ☐

Position: 10°56.700´S, 36°12.342´W Water Depth: 1896.6 m
Recovery: 10.40 m
Analyst: S. Voigt Date: 08.04.2016

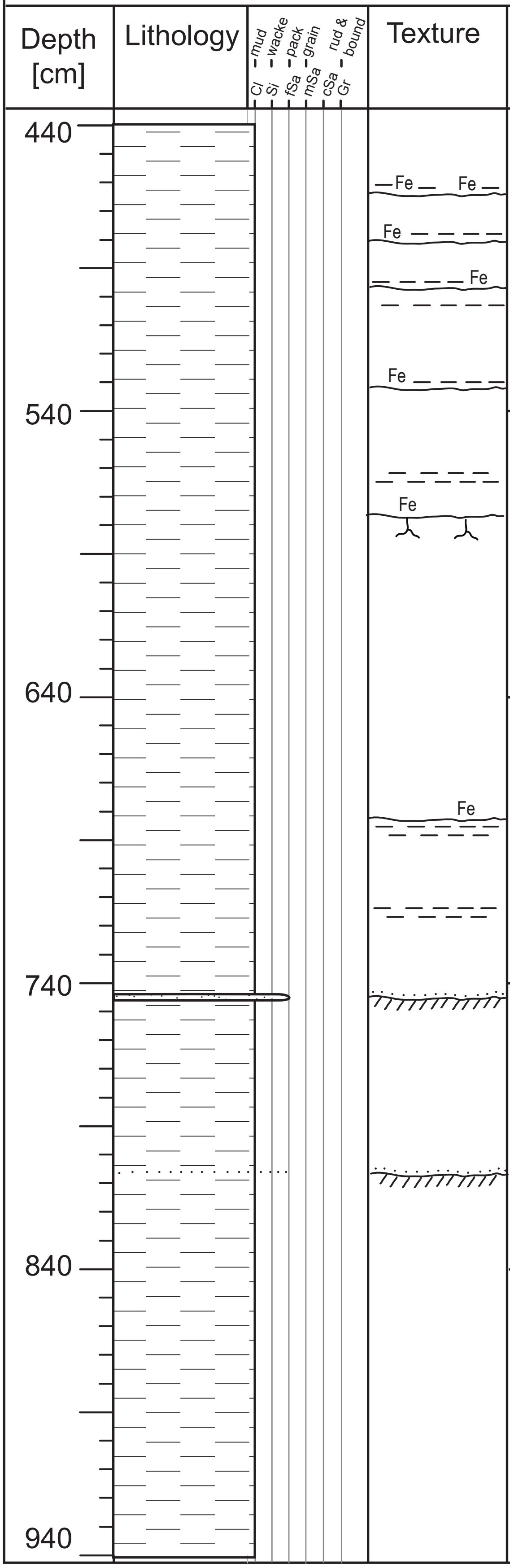


Description	
0-40 cm, clay, silty, beige, 10YR5/4	0-40 cm
0-21 cm, clay, silty, beige, abundant bioclastic particles (pteropods), abundant burrows, bioturbated, 2.5Y6/4 21-37 cm, clay, brownish green, burrowed from top, Fe impregn. (34-37 cm), bioclasts, 2.5Y5/4 37-59 cm, clay, greenish grey, speckled, 5Y5/2 59-100 cm, clay, dark greenish grey with light burrows, Corg impregn. (87-100 cm), 5Y3/2	40 - 140 cm
0-33 cm, clay, dark greenish grey with light burrows & clusters of Corg impregn. (greigite?), 5Y3/2 33-100 cm, clay, greenish grey, Corg impregn., darker layers at 52 and 58 cm, 5Y4/2	140 - 240 cm
0-47 cm, clay, dark greenish grey, abundant Corg impregn. 47-67 cm, clay, dark greenish grey, bioturbated, less Corg 67-100 cm, clay, dark greenish grey, abundant Corg impregn., 5Y3/2	240 - 340 cm
0-36 cm, clay, dark greenish grey, abundant Corg impregn., 5Y3/2 36-42 cm, more greenish layers 41-56 cm, clay, dark greenish grey, Corg impregn., more greenish between 54-56 cm, distinct base, 5Y4/2 56-76 cm, clay, greenish grey, abundant Corg, bioclasts, 5Y4/3, 75-77 cm- basal greenish clay 76-100 cm, darker greenish grey, abundant Corg, bioclasts, 5Y5/2	340 - 440 cm
to be continued	

M125-95-3 Piston-/Gravitycore Archive

PC ☒ GC ☐

Position:10°56.700´S, 36°12.342´W | Water Depth: 1896.6 m
Recovery: 10.40 m
Analyst: S. Voigt | Date: 08.04.2016

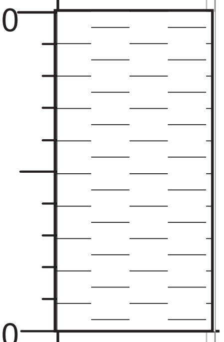


Description	
0-21 cm, clay, dark greenish grey, abundant Corg and bioclasts, 5Y4/2 21-24 cm, greenish layer, Fe-impregn., 5Y4/3 24-40 cm, clay, dark greenish grey, as above, darker and Fe-impregn. between 37-40 cm 40-58 cm, clay, greenish grey, rich in bioclasts,darker between 54-58 cm, Fe-stained, 2.5Y4/3 58-91 cm, clay, dark greenish grey, Corg impregn., few bioclasts, base (89-91) darker, Fe 91-100 cm, clay, green. grey, bioclasts, 2.5Y4/2	440 - 540 cm
0-13 cm, clay, greenish grey, bioclasts, 10-13 cm - Fe-stained 13-24 cm, clay, greenish-grey, darkening down, 5Y4/3 24-36 cm, clay, greenish grey, basal Fe-stained 36-100 cm, clay, dark greenish grey, burrowed from top (37-55 cm), filled with lighter sediment, 55-100	540 - 640 cm
0-42 cm, clay, dark greenish grey, abundant Corg impregn., greenish layer (40-42 cm), 5Y3/2 42-58 cm, clay, dark greenish grey 58-73 cm, clay, slightly lighter, distinct bedding plane (top), 2 darker layers at 66 and 67 cm 73-78 cm, clay, slightly darker, bioturbated 78-100 cm, clay, greenish grey, Corg impregn., 5Y4/2	640 - 740 cm
0-5 cm, clay, greenish grey, as above, sharp basal contact by calcareous fine sand (0.5 cm), 5Y3/2 5-40 cm, clay, very fine, carbonate-free, dark grey, GLEY1,3/2 40-67 cm, clay, banded light and dark grey, carbonate-free, basal calc. fine-sand layer (1 mm), sharp base, GLEY1,4/3 to 4/2 67-100 cm, clay, very dark grey, some bioclastic particles (95-100 cm), GLEY1,3/2	740 - 840 cm
0-38 cm, clay, very dark grey, as above, GLEY1,3/2 38-100 cm, clay, dark grey, abundant Corg impregn., few bioclastics, GLEY1,3/2 to be continued	840 - 940 cm

M125-95-3 Piston-/Gravitycore Archive

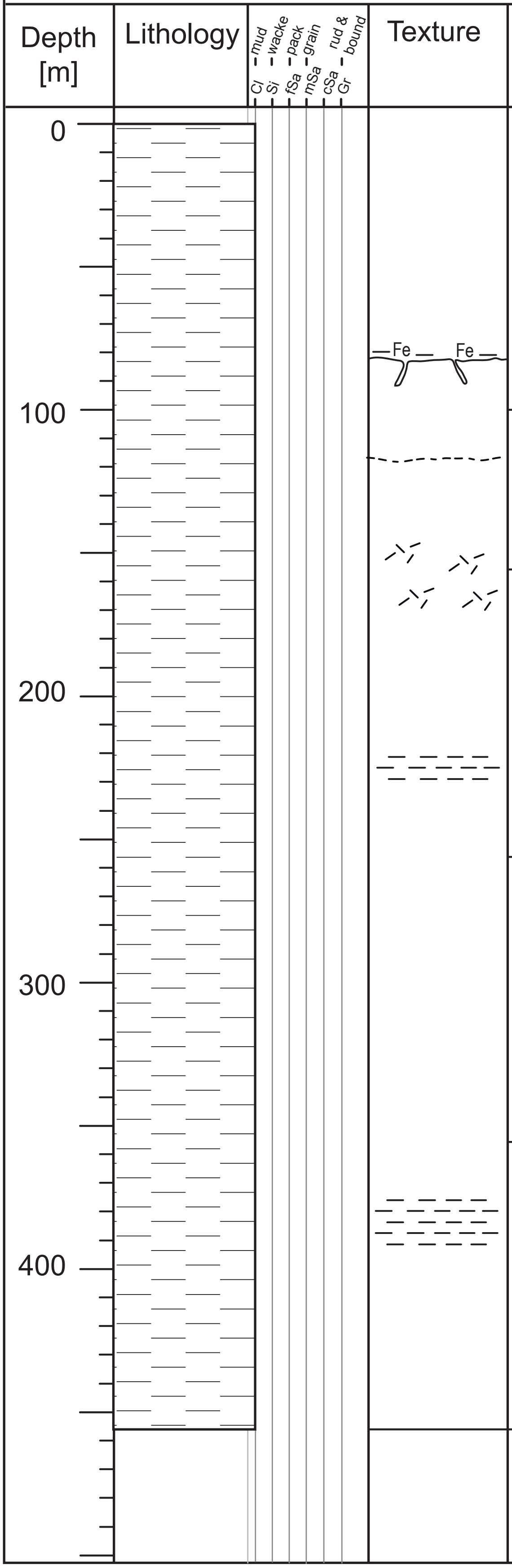
PC ☒ GC ☐

Position:10°56.700´S, 36°12.342´W Water Depth: 1896.6 m
Recovery: 10.40 m
Analyst: S. Voigt Date: 08.04.2016

Depth [cm]	Lithology	Cl – mud Si – wacke fSa – pack mSa – grain cSa – rud & Gr – bound	Texture	Description	
940 1040				0-22 cm, clay, greenish grey, Corg impregn., 20-22 cm - two dark bands, GLEY1,4/2 22-41 cm, clay, dark grey, Corg. impregn. 41-55 cm, clay, lighter grey, Corg impregn., 55-67, clay, green grey, bioturbated 67-100 cm, clay, dark grey, Corg impregn., GLEY1,3/2	940 - 1040 cm
				EOS	

M125-102-4 **Piston-/Gravitycore Archive** PC ☐ GC ☒

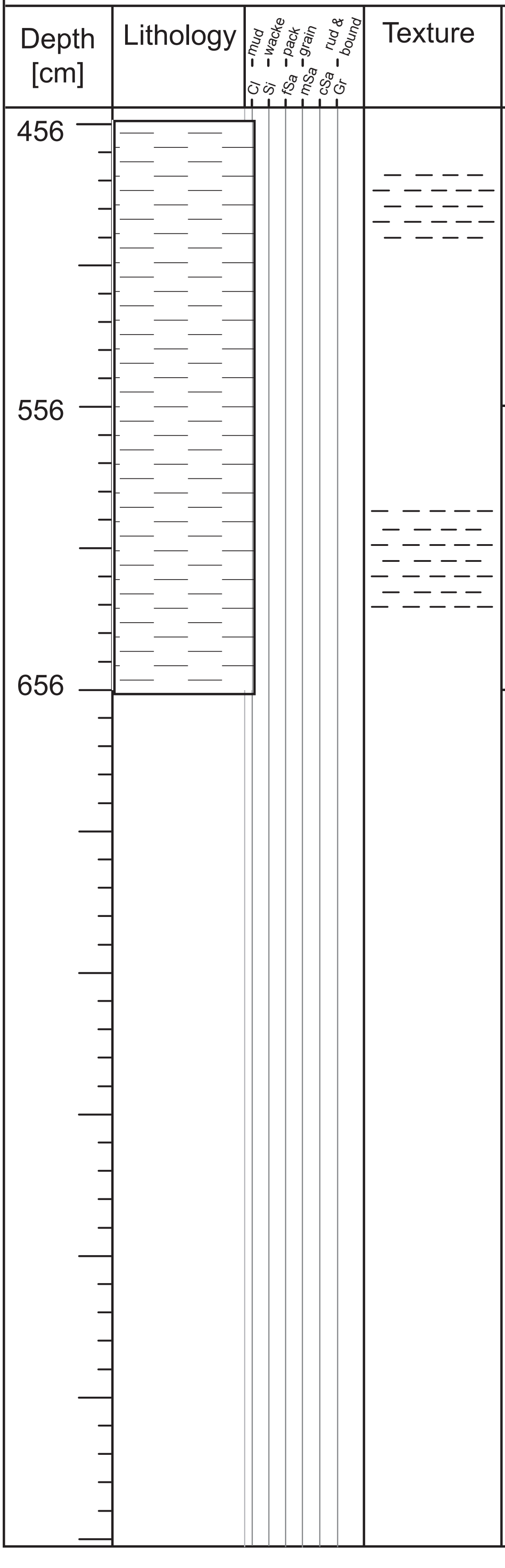
Position:10°40.915´S, 36°03.364´W
Water Depth: 1285.9 m
Recovery: 6.56 m
Analyst: S. Voigt
Date: 09.04.2016



Description	
0-27 cm, clay, with bioclasts, beige, 10YR5/3 27-75 cm, clay, greenish-beige with bioclasts, bioturbated, large *Thalassinoides* burrows, 2Y5/3 75-82 cm, clay, brownish-green, Fe-impregn. at base, with bioclasts, 2,5Y4/3 82-100 cm, clay, greenish-grey with large (7cm) *Thalassinoides* burrows from top, in part open, 5Y3/2	0 - 100 cm
0-15 cm, clay, greenish-grey, bioturbated, 5Y4/2 15-56 cm, clay, dark greenish-grey, with *Chondrites*, (beige) between 40-56 cm, 5Y3/2	100 - 156 cm
0-62 cm, clay, greenish-grey, *Chondrites* from 0-18 cm, 5Y4/2 to 5Y3/2 62-77 cm, clay, darker greenish-grey, Corg. impregn. at at the base, 5Y3/2 77-100 cm, clay, greenish grey, 5Y4/2	156 - 256 cm
0-100 cm, clay, greenish-grey, in part speckled, bioturbated, 5Y3/2 70-75 cm, Corg impregn., some bioclasts	256 - 356 cm
0-20 cm, clay, olive green grey 20-42 cm, clay, darker olive greenish grey, with lighter burrowsm 5Y3/2 42-100 cm, clay, olive greenish grey, some darker burrows, little Corg impregn., 5Y4/2	356 - 456 cm
to be continued	

M125-102-4 Piston-/Gravitycore Archive PC ☐ GC ☒

Position:10°40.915´S, 36°03.364´W Water Depth: 1285.9 m
Recovery: 6.56 m
Analyst: S. Voigt Date: 09.04.2016

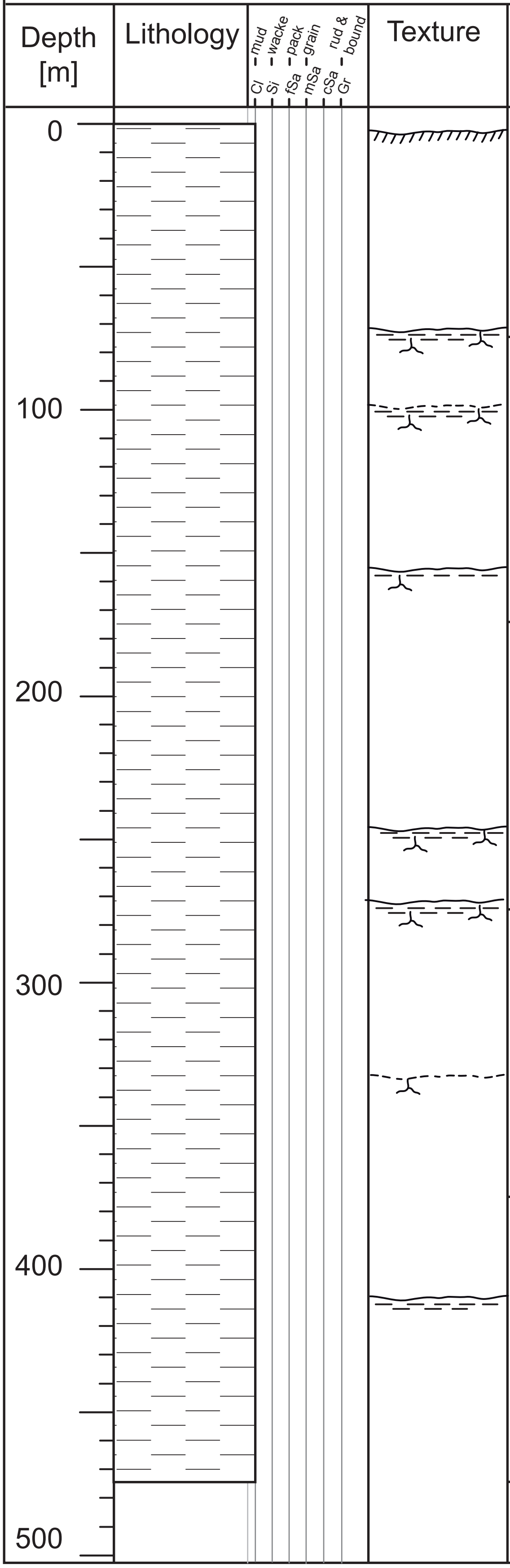


Description	
0-13 cm, clay, greenish grey, bioturbated, 5Y4/2 13-45 cm, clay, somewhat darker, Corg impregn., 5Y3/2 45-100 cm, clay, lighter greenish grey, Corg impregn., 5Y4/2	456 - 556 cm
0-20 cm, clay, greenish grey, 5Y4/2 20-33 cm, clay, somewhat darker, bioturbated 33-70 cm, clay, dark greenish grey, Corg impregn., 5Y3/2 70-100 cm, clay, greenish grey, bioturbated with darker burrows	556 - 656 cm
EOS	

M125-106-3 Piston-/Gravitycore Archive

PC ☒ GC ☐

Position:10°42.605´S, 36°08.310´W
Water Depth: 1025.3m
Recovery: 4.75m
Analyst: S. Voigt
Date: 10.04.2016

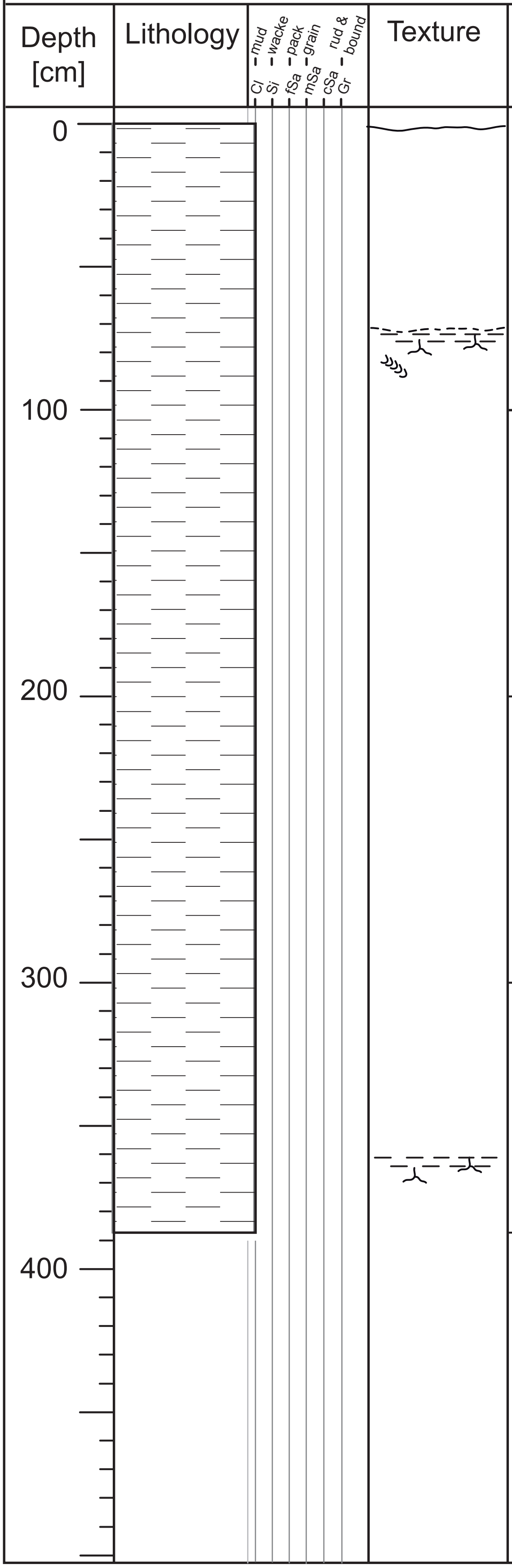


Description	
0-2 cm, clay, clay, brownisch, erosive base 2-69 cm, clay, olive-grey with pyrite concretions, 5Y4/2 69-72 cm, clay, light olive, sharp base 72-75 cm, clay, dark olive-grey, burrowed from top, 5Y3/2	0 - 75 cm
0-18 cm, clay, dark olive-grey 5Y3/2 18-23 cm, clay, lighter, nodular bedding, 5Y4/2 23-71 cm, clay, dark olive-grey, burrowed from top 71-80 cm, clay, lighter olive, bedded, sharp base, GLEY1,4/2 80-100 cm, clay, brownish grey, 2,5Y 4/2	75 - 175 cm
0-72 cm, clay, brownish grey, few Corg-impregn., 2,5Y4/2 72-97 cm, clay, olive-grey, burrowed from top 97-100 cm, clay, dark olive-grey, burrowed from top	175 - 275 cm
0-62 cm, clay, olive-grey, lighter 1-cm thick layers at 23, 29, 34 and 45 cm (burrows?) 5Y3/2 62-100 cm, clay, as above, burrowed from top (61-62 cm, bioturbated lighter horizon), 2.5Y3/2	275 - 375 cm
0-35 cm, clay, clay, olive-grey, some Corg-impregn. 5Y 4/2 35-67 cm, clay, darker olive-grey, sharp upper boundary, 5Y3/1 67-100 cm, clay, olive-grey, gradual color change from above, bioturbated, 5Y4/1	375 - 475 cm
EOS	

M125-108-3__ Piston-/Gravitycore Archive

PC ☐ GC ☒

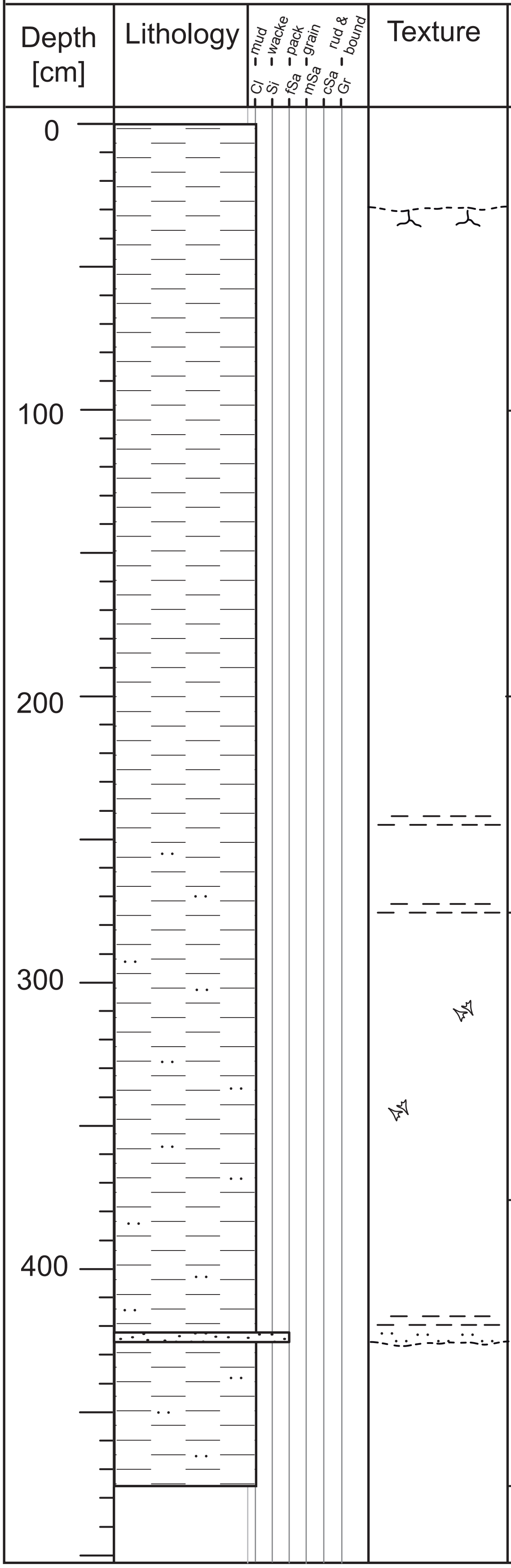
Position:10°39.860´S, 36°10.721´W
Water Depth: 698.20 m
Recovery: 3.87 m
Analyst: S. Voigt
Date:10.04.2016



Description	
0-1 cm, clay, surface at base 1-71 cm, clay, olive grey, bioturbated, org/sulf. impregn., 5Y3/2 71-100 cm, clay, darker olive grey, diverse bioturbation between 71-87 cm (*Thalassinoides, Nereites*), 5Y3/1	0 - 100 cm
0-74 cm, clay, dark olive-grey, intense Corg impregn. (greigite), 5Y3/2, 12cm: incipient pyrite concretion 74-100 cm, clay, dark olive grey, no greigite	100 - 200 cm
0-100cm, clay, olive-grey, Corg impregn., bioturbated, 5Y3/2	200 - 300 cm
0-18 cm, clay, olivegray, few Corg-impreg., 5Y3/2 18-61 cm, clay, olive-grey, abundant greigite (Corg-impreg. 61-87 cm, clay, olive-grey, abundant greigite, lighter burrows between 61-69, 5Y3/1	300 - 387 cm
EOS	

M125-115-4 **Piston-/Gravitycore Archive** PC ☐ GC ☒

Position: 10°41.297´S, 36°26.590´W
Water Depth: 46.6 m
Recovery: 7.76 m
Analyst: U. Sebastian
Date: 11.04.2016

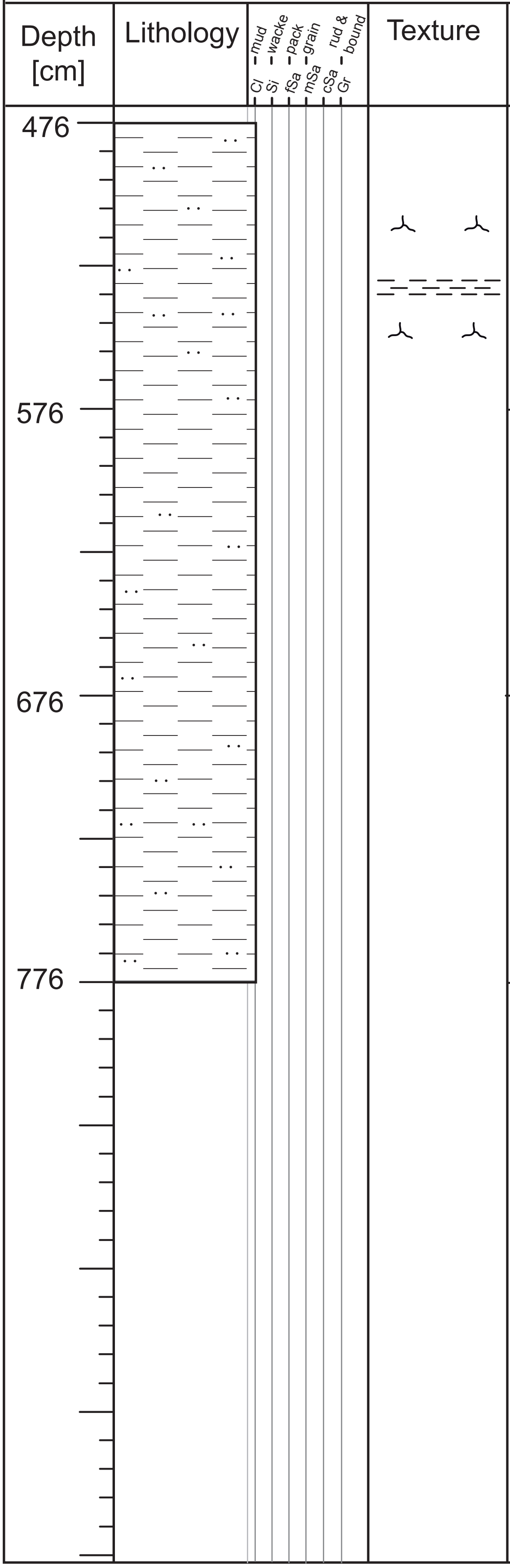


Description	
0-100 cm, clay, silty, light brown (10YR5/3) with irregular grayish bands (2.5Y3/1) 30-35 cm more bioturbated	0 - 100 cm
0-20 cm, clay, silty, mottled, brown, 2,5Y4/2 20-26 cm, clay, silty, mottled, grayish-brown, 2,5Y3/2 26-42 cm, clay, silty, mottled, light brown, 10YR5/6 42-100 cm, clay, silty, mottled, grey, darkening downwards, 2,5Y5/2 to 2,5Y4/1	100 - 200 cm
0-100 cm, clay, silty, grey, darker horizons at 45-50 cm and 70 cm, 5Y5/2 and 5Y4/1	200 - 276 cm
0-100 cm, clay, silty with sandy debris of calcareous constituents (pteropods?), plain light grey, 5Y6/2	276 - 376 cm
0-40 cm, clay, silty, sand-sized calcareous bioclastics, light grey, 5Y6/2 40-50 cm, clay, silty, bioclastics, darker grey, 5Y4/2 1 cm fine sand layer 50-100 cm, clay, silty, grey, 5Y6/3	376 - 476 cm
to be continued.....	

M125-115-4 Piston-/Gravitycore Archive

PC ☐ GC ☒

Position: 10°41.297´S, 36°26.590´W
Water Depth: 46.6 m
Recovery: 7.76 m
Analyst: U. Sebastian
Date: 11.04.2016



Description	
0-100 cm, clay, silty, sand-sized calcareous bioclastics, light olive grey, 5Y6/2, ichnofossils at 34-38 cm and 70-76 cm (5Y5/1) 55-60 cm, dark grey horizon, 5Y4/1	476 - 576 cm
0-100 cm, clay, silty, sand-sized calcareous bioclastics, olive grey, 5Y5/2	576 - 676 cm
0-100 cm, clay, silty, sand-sized calcareous bioclastics, olive grey, 5Y5/2	676 - 776 cm