

**APPENDIX III: STRATIGRAPHIC SUMMARY CHARTS**



DEPTH		CORE	LITHOLOGY	EPOCH	STAGE	AGE (ZONE)	BIOSTRATIGRAPHIC NOTES
m	ft						
100							
200							
300							
400							
500							
600		1	gray-green mud; mottled gray-green; Radiolaria and sponge spicules dominant <i>Montm.</i> Qtz. Kao-Mica	Miocene	upper middle		Good, well-preserved Radiolaria: <i>Panarium antipenultimum</i> , <i>Eucyrtidium</i> <i>delmontense</i> , <i>Theocapsa cayeuxi</i> but assemblage has apparently undergone some dissolution
700		2	radiolarian ooze; reddish yellow with pink mottling <i>Montm.</i> Qtz. Kao. Arag.	Eocene	lower	approx. <i>G. patmerae</i> Zone	Abundant, well-preserved Radiolaria: ( <i>Podocyrtis papalis</i> , <i>Dictyophimus babylonis</i> , <i>Phormocyrthis embolum</i> , ? <i>Clathrocyclas</i> <i>dominasinensis</i> , <i>Theocorys</i> sp.)
800		A 1	spiculite silty mud with radiolarian clayey mud breccia particles Qtz. Montm. Kao.	Eocene	lower	approx. <i>G. patmerae</i> Zone	Abundant, well-preserved Radiolaria; (faunas at above plus ? <i>pseudostaurosphaera</i> sp. and <i>Clathrocyclas</i> sp.)
900		A 2	chert - Cris.	Eocene	lower		Age determined from Radiolaria in sediment scraped from between chert layers; fauna sparse and poorly preserved.
1000		A 3	brown and green variegated chert with interbedded cherty radiolarian ooze cris. clin.	Eocene	lower		Age determined from Radiolaria in core catcher sample; fauna sparse and poorly preserved.
1100		A 4		Eocene	lower		Approximately 0.5 cc sediment recovered from inside core barrel; age determination based on sparse and poorly preserved Radiolaria.
1200							

STRATIGRAPHIC SUMMARY CHART - LEG 2 SITE 8

lat.  $35^{\circ}23.00'N$  long.  $76^{\circ}33.20'W$  Water depth 5169 m.

Depth of penetration 258 m. (Hole 8)  
305.7 m. (Hole 8a)

DEPTH		C O R E	LITHOLOGY	EPOCH	STAGE	AGE (ZONE)	BIOSTRATIGRAPHIC NOTES
m	ft						
		1	Coccolith-Foram ooze	Quaternary			<i>Gephyrocapsa</i> ; insufficient material for foraminiferal examination
		2	Coccolith-Foram ooze	Quaternary			<i>Gephyrocapsa</i> ; insufficient material for foraminiferal examination
		3					
100		4	Coccolith-Foram ooze	Quaternary			Abundant calcareous nannofossils; rich assemblage of planktonic forams and rare Radiolaria.
		5	Coccolith-Foram ooze with carbonate silt fragments <i>Qtz-Mica-Kao-Plag-Dolo.</i>	Quaternary		<i>Globorotalia truncatulinoides</i> Zone (N22 of Blow)	Rare to abundant calcareous nannofossils; Rare to abundant foraminifera, often with numerous benthonics which appear to be displaced; mixed low and middle latitude Radiolaria, Tripylean species often present.
200		6	Coccolith-Foram ooze	Quaternary		<i>Globorotalia truncatulinoides</i> Zone (N22 of Blow)	<i>Coccolithus cricetus</i> , <i>Discoaster brouweri</i> (very rare), <i>Gephyrocapsa</i> (rare)
300							
400							
500							
600							
		7	Mixed (clay) and calcareous sediments <i>Montm. Qtz. Kao. Mica</i>	late Mio. to middle Pliocene (probably early Plio.)			Common to abundant calcareous nannofossils poor and dwarfed foraminiferal faunas; benthonics present.
		8	Mixed clays and calcareous sediments <i>Montm. Qtz. Kao. Mica</i>	late Mio. to early Pliocene			Abundant calcareous nannofossils including <i>Ceratolithus tricorniculatus</i> ; forams as for barrel 7.
700							
800							
900							
1000		9	clay <i>Montm. Qtz. Kao. Mica</i> (Rhod.)				Barren
		10	Clay <i>Montm. Qtz. Kao. Mica</i> (Rhod.)				Barren
1100							
1200							
1300							
1400							
1500							
		11	Olive-gray Clay <i>Montm. Qtz. Kao. Mica</i> Rhod	-			Barren
		12	Olive-gray clay <i>Montm. Qtz. Chlor. Mica</i> Kao	--			Barren
1600							
1700							
1800							
1900							
2000							
2100							
2200							
		A2	Zeolitic Clay with some calcareous and siliceous microfossils; red-brown hues <i>Clin. Qtz. Kao. Mica</i>	Eocene	middle	Approx. <i>H. aragonensis</i> Zone	<i>In situ</i> Radiolarian fauna generally poor ( <i>Sethampora mongolfieri</i> , <i>Podocyrtis</i> sp. A)
		A3	Zeolitic clay with some calcareous and siliceous microfossils; red-brown hues <i>Clin. Qtz.</i>	Cretaceous	upper		
2300							
2400							
2500		A2	Zeolitic clay with some calcareous and siliceous microfossils; red-brown hues <i>Clin. Qtz. Kao. Mica</i>	Cretaceous (Senonian)	upper		Characteristic upper Cretaceous calcareous nannofossils; benthonics common; poorly preserved Radiolaria
		A3	Zeolitic clay with some calcareous and siliceous microfossils; red-brown hues <i>Clin. Qtz.</i>	Cretaceous	upper		Small lump containing calcareous nannofossils - probably caved from some level above barrel A3; Foraminifera absent, Radiolaria as for barrel A2.
2600							
2700		A4	Zeolitic clay with some calcareous and siliceous microfossils; red brown hues <i>Clin. Qtz.</i>	Cretaceous	upper		Calcareous nannofossils absent; Foraminifera absent; Radiolaria sparse and poorly preserved.
		A5	Igneous rock fragments probably slumped fossiliferous sediment	Cretaceous	upper		As for barrel A4; catcher contains a relatively rich and well-preserved radiolarian fauna ( <i>Dictyonitru</i> spp., <i>Pseudoaulophacus</i> sp.) ?possibly slumped.

STRATIGRAPHIC SUMMARY CHART - LEG 2 SITE 9  
Lat.: 32° 46.4' N Long.: 59° 17.7' W Water depth 4965 m.  
Depth of penetration 491.6 m (Hole 9)  
833.5 m (Hole 9A)

DEPTH		C O R E	LITHOLOGY	EPOCH	STAGE	AGE (ZONE)	BIOSTRATIGRAPHIC NOTES
m	ft						
100			Nannofossil chalk ooze	Pliocene	mid-low	<i>Sphaeroidinella dehiscens dehiscens</i> (N19 of Blow) and <i>G. multicamerata/P. obliquiloculata</i> (N20)	Nannofossils and Foraminifera abundant; indicate middle Plio. for upper part of barrel, lower Plio for lower part of sec. 1 and sec. 2.
1			Zeolitic clay, mixed and interbedded with coccolith ooze <i>Phil Kao Qtz. Cris.</i> Nannofossil chalk ooze	Miocene	upper, mid. and lower		Nannofossils and Foraminifera both indicate some important gaps in the sequence; Foraminifera generally poor; core catcher upper Oligocene Monotonous generalized nannoflora; foraminifera poor, dominated by benthonics.
2				Oligocene			
200			Nannofossil chalk ooze	Eocene	upper		Only a smear of material recovered, not even sufficient for dating with nannofossils
3				Eocene	upper		
4			Nannofossil chalk ooze	Eocene	middle	<i>Orbulinoides beckmanni</i> Zone	Abundant nannofossils which allow recognition of Oligocene-Eocene boundary at top of sec. 5; Foraminifera poor.
5			Nannofossil chalk ooze	Eocene	middle		core catcher contains rich nannoflora
6			Nannofossil chalk ooze	Eocene	lower		Foraminifera poorly preserved, benthonics abundant; rich nannofossil assemblage
300			Nannofossil chalk ooze Clin.	Eocene	lower		
100				Eocene			
400				Eocene			
500				Eocene			
600			Nannofossil chalk ooze with some siliceous microfossils	Eocene	lower		Abundant nannofossils and Radiolaria; Foraminifera absent (catcher sample only)
7			Nannofossil-radiolarian marl ooze	Eocene	lower	<i>G. aragonensis</i> Zone	Nannofossil assemblage similar to catcher of Core 8, with the addition of a form similar to <i>Discoaster multiradiatus</i> , but with only 14 rays (? <i>D. salisburgensis</i> ); Foraminifera absent; Radiolaria abundant and well-preserved. ( <i>Clathrocyclus</i> sp., <i>Lithocampe</i> sp. <i>Calocyclus casta</i> )
8				Eocene			
9				Eocene			
200				Eocene			
700				Eocene			
800				Eocene			
900				Eocene			
300			Nannofossil-Foraminifera chalk ooze, zeolites sparse or absent	Cretaceous	upper Maestrichtian	<i>Globotruncana mayaroensis</i> Zone	Both nannofossils and Foraminifera abundant and well-preserved and diversified; highly evolute Heterohelicidae
1000				Cretaceous			
1100				Cretaceous			
1200				Cretaceous			
1300			Nannofossil-Foraminifera chalk ooze, as for Core 11	Cretaceous	lower Maestrichtian	<i>Globotruncana tricarinata</i> Zone or correspondent	Both nannofossils and Foraminifera rich and diversified.
400			as for Core 11	"	"	"	as for Core 11
1400			as for Core 11	"	upper Campanian (pars.)	<i>Globotruncana calcarata</i> Zone (pars.)	Foraminifera and nannofossils abundant, well-preserved and diversified
1500			as for Core 11	"	upper and middle Campanian	<i>Globotruncana calcarata</i> and <i>G. elevata</i> Zones (or correspondent)	as for Core 13
16			as for Core 11	"	middle to lower Campanian	<i>Globotruncana elevata</i> Zone	Abundant, well-preserved and diversified Foraminifera and nannoflora
17			grades to dolomitic nannofossil-foraminifera chalk ooze with volcanic mins. and interbedded ? tuffs	"		"	as for Core 15
18			as for Core 17	"		"	as for Core 15
19			contact between calcareous sediments and igneous basement rock basalt	"		"	as for Core 15
20				"			

STRATIGRAPHIC SUMMARY CHART - LEG 2 SITE 10  
lat. 32°51'7"N long. 52°12'9"W  
Depth of penetration 458.8 m

Water depth 4697 m.

DEPTH		C O R E	LITHOLOGY	EPOCH	STAGE	AGE (ZONE)	BIOSTRATIGRAPHIC NOTES
m	ft						
			Foraminifera-nanno-fossil chalk ooze	Pleist. - Pliocene			Sections 1-3 Pleistocene with rich assemblages of planktonic Foraminifera and calcareous nannofossils; Section 4 contains mixed Pleistocene and lower Pliocene faunas.
100		1					
200							
300							
400							
500							
600							
700							
800		A1	Core Barrel empty				
		A2	Nannofossil-Foraminifera chalk ooze	Miocene	upper	lower Tortonian	Calcareous nannofossils and Foraminifera abundant in core catcher
		A3	Nannofossil-Foraminifera chalk ooze				
		A4	Nannofossil-Foraminifera chalk ooze	Miocene	middle	<i>Globorotalia foysi robusta</i> Zone (N12 of Blow)	Calcareous nannofossils and Foraminifera abundant; the tops of sections 1 and 2 are contaminated with Pliocene and Pleistocene
		A5	smear only; as above	Miocene	middle	<i>Globigerinatella insueta</i> Zone	Age determination based entirely on nannoflora; occurrence together of <i>Sphenolithus heteromorphus</i> and <i>Helicopontosphaera parallela</i> indicates correlation with <i>G. insueta</i> Zone.
		A6	basalt, glassy at top with thin interbed of metamorphosed ooze	Miocene	middle	near <i>Orbulina</i> datum	
		A7					
		A8					
STRATIGRAPHY SUMMARY CHART – LEG 2 SITE 11							
lat. 29°56.58'N long. 44°44.80'W Water depth 3556 m							
Depth of penetration 279.8 m (Hole 11)							
282.0 m (Hole 11A)							

DEPTH		C O R E	LITHOLOGY	EPOCH	STAGE	AGE (ZONE)	BIOSTRATIGRAPHIC NOTES
m	ft						
			D1	Pleistocene			
		C1					
		D2					
		C2R					
		D					
		2					
		R					
		D3					
100		D4					
			Clay <i>Qtz Paly Kao Mica</i>				Ages based on Foraminifera and nannofossils Radiolaria absent.
		C5					
		C6					
200		C7					
		C8					
		C9					
300		C10					
		C11					
		C12					
		B					
		1					
400							
500			Clay <i>Paly. Cris.</i>	Eocene			
		B2					
600							
700			Clay <i>Paly. Sep. Cris. Dol.</i>				
		B3					
800							
900							
1000							

STRATIGRAPHIC SUMMARY CHART - LEG 2 SITE 12  
lat.  $19^{\circ}41.73'N$  long.  $26^{\circ}00.03'W$  Water depth 4557 m  
Depth of penetration 215 m (Hole 12B)  
114.9 m (Hole 12C)  
36.6 m (Hole 12D)