

[illegible]

	late Miocene									
	NPD7A		NPD6B-6A				NPD5D		NPD5C	
Core, section (186-1151A-):	78R-3	79R-1	80R-3	84R-3	87R-3	91R-1	93R-1	95R-1	96R-3	98R-3
Depth (mbsf):	808.85	815.45	829.04	866.58	895.35	930.85	950.15	969.35	982.06	1001.06
Cyst count per microscope traverse:	0.6	1.0	9.0	23.4	12.8	6.1	5.3	255.0	32.5	10.3
Number of counted cysts:	33	25	269	117	192	92	80	510	130	103
Dinoflagellate cysts										
<i>Operculodinium centrocarpum</i> sensu Wall and Dale, 1966										
<i>Achomosphaera ramulifera</i>					1.0		2.5	2.0	10.8	2.9
<i>Impagidinium paradoxum</i>					0.5	2.2		0.4	11.5	21.4
<i>Nematosphaeropsis lemniscata</i>	3.0	20.0	7.8	18.8	57.8	2.2	1.3	0.2	3.1	2.9
<i>Operculodinium israelianum</i>					2.6					
<i>Spiniferites/Achomosphaera</i> spp.		36.0	4.8	9.4	11.5	18.5	7.5	4.7	30.0	16.5
<i>Xandarodinium</i> sp. A	12.1						1.3			1.0
<i>Brigantedinium irregulare</i>										
<i>Brigantedinium</i> spp.			24.9	8.5	8.3					
<i>Filisphaera filifera</i>	42.4	32.0	42.8	36.8	1.6		36.3	68.2	1.5	5.8
<i>Lejeunecysta</i> spp.			1.1						0.8	
<i>Selenopemphix quanta</i>			0.4							
<i>Operculodinium centrocarpum</i>	3.0		0.7	1.7	1.6		1.3			2.9
<i>Selenopemphix selenoides</i>										
<i>Spiniferites asperulus</i>										
<i>Spiniferites firmus</i>					0.5					
<i>Spiniferites membranaceus</i>			0.4							
<i>Spiniferites ramosus</i>					1.0				3.1	
<i>Tuberculodinium vancampoeae</i>	3.0		6.3		0.5	5.4	12.5			1.0
<i>Capillicysta fusca</i>								0.2		1.0
<i>Impagidinium patulum</i>	3.0	8.0		0.9	0.5	4.3			0.8	
<i>Lingulodinium machaerophorum</i>		4.0			5.7	14.1		1.2		
<i>Pyxidiniopsis</i> sp. A			1.1							
<i>Reticulatosphaera actinocoronata</i>							10.0	0.2		1.0
<i>Selenopemphix nephroides</i>			0.7							
<i>Spiniferites</i> sp. cf. <i>S. ellipsoideus</i>										
<i>Lejeunecysta hyalina</i>			0.4		0.5		2.5	0.4	0.8	
<i>Operculodinium</i> sp. cf. <i>O. israelianum</i>	3.0						1.3			2.9
<i>Habibacysta?</i> sp.										
<i>Melitasphaeridium choanophorum</i>			0.4							
<i>Spiniferites</i> sp. cf. <i>S. serratus</i>										
<i>Impagidinium</i> sp. A										
<i>Brigantedinium simplex</i>			0.7							
<i>Impagidinium</i> sp. cf. <i>I. patulum</i>	24.2					35.9				
cf. <i>Achomosphaera spongiosa</i>				0.9			11.3	0.8	20.8	3.9
<i>Achomosphaera</i> sp. A										
<i>Operculodinium?</i> sp. B			1.1			5.4		0.2		
<i>Operculodinium</i> sp. A										
<i>Lingulodinium brevispinum</i>				0.9				0.4		
<i>Operculodinium giganteum</i>				0.9	1.6					
<i>Spiniferites ellipsoideus</i>				0.9	0.5		1.3			
<i>Heteraulacacysta campanula</i>	3.0				0.5	3.3	5.0	0.8		1.9
Dinocyst B			0.7							
<i>Achomosphaera spongiosa</i>			4.1	1.7	1.0			0.4		

Table T1 (continued).

	hiatus								
	late middle Miocene		early middle Miocene						
	NPD5B		NPD4Ba				NPD4A		
Core, section (186-1151A-):	100R-3	101R-1	102R-1	102R-3	103R-1	104R-1	105R-1	106R-1	106R-3
Depth (mbsf):	1020.17	1026.92	1036.64	1039.54	1046.42	1056.05	1065.75	1075.45	1078.45
Cyst count per microscope traverse:	38.2	32.0	4.5	3.9	12.0	4.3	12.5	1.7	20.3
Number of counted cysts:	229	96	68	35	60	39	125	25	183
Dinoflagellate cysts									
<i>Operculodinium centrocarpum</i> sensu Wall and Dale, 1966									
<i>Achomosphaera ramulifera</i>	12.7	25.0	13.2	17.1	1.7	17.9	2.4		0.5
<i>Impagidinium paradoxum</i>	8.3	17.7			3.3	2.6	2.4	12.0	21.9
<i>Nematosphaeropsis lemniscata</i>	4.8	4.2		14.3	13.3	2.6	5.6	12.0	3.8
<i>Operculodinium israelianum</i>									
<i>Spiniferites/Achomosphaera</i> spp.	5.7	3.1	7.4	5.7	23.3	20.5	6.4	12.0	8.2
<i>Xandarodinium</i> sp. A									
<i>Brigantedinium irregulare</i>									
<i>Brigantedinium</i> spp.									
<i>Filisphaera filifera</i>					5.0		2.4		3.3
<i>Lejeunecysta</i> spp.			1.5				6.4		
<i>Selenopemphix quanta</i>									
<i>Operculodinium centrocarpum</i>	11.8	15.6	10.3	2.9		2.6	7.2		
<i>Selenopemphix selenoides</i>									
<i>Spiniferites asperulus</i>									
<i>Spiniferites firmus</i>									
<i>Spiniferites membranaceus</i>									
<i>Spiniferites ramosus</i>	1.3								
<i>Tuberculodinium vancampoe</i>									
<i>Capillicysta fusca</i>				2.9		2.6			
<i>Impagidinium patulum</i>	0.4				1.7			4.0	
<i>Lingulodinium machaerophorum</i>	2.2							4.0	
<i>Pyxidinopsis</i> sp. A									
<i>Reticulosphaera actinocoronata</i>	0.4	9.4	1.5	8.6		15.4	8.0	12.0	1.1
<i>Selenopemphix nephroides</i>									4.9
<i>Spiniferites</i> sp. cf. <i>S. ellipsoideus</i>									1.1
<i>Lejeunecysta hyalina</i>									1.1
<i>Operculodinium</i> sp. cf. <i>O. israelianum</i>			5.9		1.7				
<i>Habibacysta?</i> sp.									
<i>Melitasphaeridium choanophorum</i>									
<i>Spiniferites</i> sp. cf. <i>S. serratus</i>									
<i>Impagidinium</i> sp. A									
<i>Brigantedinium simplex</i>									
<i>Impagidinium</i> sp. cf. <i>I. patulum</i>									
cf. <i>Achomosphaera spongiosa</i>	3.1	1.0			10.0	2.6			
<i>Achomosphaera</i> sp. A									
<i>Operculodinium?</i> sp. B									
<i>Operculodinium</i> sp. A									
<i>Lingulodinium brevispinum</i>									
<i>Operculodinium giganteum</i>		15.6	2.9	2.9		12.8	7.2		0.5
<i>Spiniferites ellipsoideus</i>	0.4								
<i>Heteraulacacysta campanula</i>	0.4		1.5	11.4		5.1	11.2	4.0	3.8
Dinocyst B								24.0	33.3
<i>Achomosphaera spongiosa</i>		3.1			1.7				1.1
<i>Impagidinium cornutum</i>	10.0								
<i>Selenopemphix</i> spp.		1.0							
Dinocyst A			7.4	5.7					
<i>Batiacasphaera minuta</i>	6.1	2.1	25.0	5.7	10.0		28.0		4.4
<i>Impagidinium</i> sp. cf. <i>I. velorum</i>		1.0					4.0		
<i>Impagidinium</i> sp. B									
<i>Quadrina condita</i>									
<i>Spiniferites lenzii</i>									1.6
<i>Hystrichokolpoma denticulata</i>									
<i>Spiniferites strictus</i>									
<i>Impagidinium</i> sp. cf. <i>I. manumii</i>									
<i>Impagidinium</i> spp./sp. indet.		1.0	1.5			3.3			
<i>Spiniferites hexatypicus</i>									
<i>Impagidinium</i> sp. D					3.3				
<i>Hystrichosphaeropsis obscura</i>									
<i>Impagidinium</i> sp. E	0.9		4.4					4.0	
<i>Operculodinium longispinigerum</i>									
<i>Spiniferites adnatus</i>	4.8								
	0.4								
	25.8								

Table T1 (continued).

	early middle Miocene			
	NPD4A		NPD3B	
	108R-1	108R-3	109R-1	109R-3
Core, section (186-1151A-):				
Depth (mbsf):	1094.68	1097.45	1104.35	1107.31
Cyst count per microscope traverse:	8.8	5.7	94.0	29.0
Number of counted cysts:	132	51	282	87
Dinoflagellate cysts				
<i>Operculodinium centrocarpum</i> sensu Wall and Dale, 1966				
<i>Achomosphaera ramulifera</i>	0.8	5.9		1.1
<i>Impagidinium paradoxum</i>	3.0	3.9		1.1
<i>Nematosphaeropsis lemniscata</i>	12.1	3.9	0.7	2.3
<i>Operculodinium israelianum</i>				
<i>Spiniferites/Achomosphaera</i> spp.	4.5	13.7	0.7	12.6
<i>Xandarodinium</i> sp. A				
<i>Brigantedinium irregulare</i>				
<i>Brigantedinium</i> spp.				
<i>Filispheera filifera</i>	8.3			
<i>Lejeunecysta</i> spp.				
<i>Selenopemphix quanta</i>				1.1
<i>Operculodinium centrocarpum</i>	3.0			8.0
<i>Selenopemphix selenoides</i>				
<i>Spiniferites asperulus</i>				
<i>Spiniferites firmus</i>				
<i>Spiniferites membranaceus</i>				
<i>Spiniferites ramosus</i>		2.0		
<i>Tuberculodinium vancampoe</i>	0.8	2.0		2.3
<i>Capillicysta fusca</i>				
<i>Impagidinium patulum</i>	1.5	3.9		
<i>Lingulodinium machaerophorum</i>		3.9	0.7	2.3
<i>Pyxidinospis</i> sp. A	0.8			
<i>Reticulatosphaera actinocoronata</i>	2.3	3.9	0.7	6.9
<i>Selenopemphix nephroides</i>				
<i>Spiniferites</i> sp. cf. <i>S. ellipsoideus</i>				
<i>Lejeunecysta hyalina</i>				1.1
<i>Operculodinium</i> sp. cf. <i>O. israelianum</i>		2.0	0.4	
<i>Habibacysta?</i> sp.				
<i>Melitasphaeridium choanophorum</i>				
<i>Spiniferites</i> sp. cf. <i>S. serratus</i>	0.8			
<i>Impagidinium</i> sp. A	3.8			
<i>Brigantedinium simplex</i>				
<i>Impagidinium</i> sp. cf. <i>I. patulum</i>				
cf. <i>Achomosphaera spongiosa</i>				
<i>Achomosphaera</i> sp. A				
<i>Operculodinium?</i> sp. B				
<i>Operculodinium</i> sp. A				
<i>Lingulodinium brevispinum</i>				
<i>Operculodinium giganteum</i>				
<i>Spiniferites ellipsoideus</i>				
<i>Heteraulacacysta campanula</i>	2.3			1.1
Dinocyst B	12.9			
<i>Achomosphaera spongiosa</i>	2.3		0.7	
<i>Impagidinium cornutum</i>				
<i>Selenopemphix</i> spp.				
Dinocyst A				
<i>Batiacasphaera minuta</i>	23.5	33.3	1.4	14.9
<i>Impagidinium</i> sp. cf. <i>I. velorum</i>	0.8			
<i>Impagidinium</i> sp. B	4.5			
<i>Quadrina condita</i>				
<i>Spiniferites lenzii</i>	2.3			
<i>Hystrichokolpoma denticulata</i>				
<i>Spiniferites strictus</i>				
<i>Impagidinium</i> sp. cf. <i>I. manumii</i>				
<i>Impagidinium</i> spp./sp. indet.		5.9	0.4	
<i>Spiniferites hexatypicus</i>				
<i>Impagidinium</i> sp. D				
<i>Hystrichosphaeropsis obscura</i>				
<i>Impagidinium</i> sp. E				
<i>Operculodinium longispinigerum</i>		3.9		
<i>Spiniferites adnatus</i>				

Table T1 (continued).

	early Pliocene								late Miocene		
	NPD7B										
Core, section (186-1151A-):	16R-1	26R-1	31R-1	35R-3	41R-1	46R-3	51R-3	57R-1	62R-1	73R-1	77R-3
Depth (mbsf):	209.35	305.74	354.05	395.55	449.95	501.05	549.15	603.93	652.05	757.75	799.15
Cyst count per microscope traverse:	0.9	8.9	5.6	2.0	1.0	2.7	17.9	1.8	0.3	3.2	2.3
Number of counted cysts:	13	133	140	30	45	82	269	79	5	95	102
<i>Cleistosphaeridium placacanthum</i>											
<i>Cordosphaeridium minimum</i> sensu Benedek and Sarjeant											
<i>Diphyes latiusculum</i>											
<i>Diphyes</i> sp. cf. <i>D. latiusculum</i>											
<i>Pyxidinospis</i> sp. B											
<i>Pyxidinospis</i> sp. C											
<i>Spiniferites pseudofurcatus</i>											
<i>Litosphaeridium?</i> <i>parvum</i>											
<i>Palaeocystodinium</i> sp. cf. <i>P. golzowense</i>											
<i>Impagidinium</i> sp. cf. <i>I. japonicum</i>											
<i>Hystriocholpoma rigaudiae</i>											
<i>Cribroperidinium giuseppei</i>											
<i>Evittosphaerula</i> sp.											
<i>Dapsilidinium pastielsii</i>											
<i>Dapsilidinium</i> or <i>Diphyes</i> (operculum only)											
Dinocyst C											
Miscellaneous/indeterminable cysts											
Reworked cysts											
<i>Deflandrea</i> sp.								+	+		
<i>Diphyes latiusculum</i>											+
<i>Glaphyrocysta</i> sp. indet.											
<i>Oligosphaeridium albertense</i>											+
<i>Spinidinium</i> spp.					+						+
<i>Cleistosphaeridium placacanthum</i>											+
<i>Trinovantedinium boreale</i>						+					
Other palynomorphs											
<i>Pediastrum</i> spp.						+				+	
<i>Tasmanites</i> spp.	+		+	+	+	+	+	+	+	+	+
Foraminifer linings				+	+		+			+	
Acritarchs											
Small spiny acritarch brown											
<i>Lecaniella</i> sp.											
<i>Cyclopsiella granosa</i>											

Notes: Presence of reworked cysts and acritarchs indicated by “+” regardless of its actual count. All values in the body of the table are expressed in percent. Age from diatom biostratigraphy by Maruyama and Shiono (this volume). Diatom zone code by Yanagisawa and Akiba (1998). Total depth = 1113.6 mbsf.

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Table T1 (continued).

	early middle Miocene			
	NPD4A		NPD3B	
Core, section (186-1151A-):	108R-1	108R-3	109R-1	109R-3
Depth (mbsf):	1094.68	1097.45	1104.35	1107.31
Cyst count per microscope traverse:	8.8	5.7	94.0	29.0
Number of counted cysts:	132	51	282	87
<i>Cleistosphaeridium placacanthum</i>	1.5		84.4	2.3
<i>Cordosphaeridium minimum</i> sensu Benedek and Sarjeant				
<i>Diphyes latiusculum</i>	0.8	9.8	0.4	26.4
<i>Diphyes</i> sp. cf. <i>D. latiusculum</i>				
<i>Pyxidinospis</i> sp. B	0.8	2.0	0.7	1.1
<i>Pyxidinospis</i> sp. C				
<i>Spiniferites pseudofurcatus</i>				
<i>Litosphaeridium?</i> <i>parvum</i>				
<i>Palaeocystodinium</i> sp. cf. <i>P. golzowense</i>				
<i>Impagidinium</i> sp. cf. <i>I. japonicum</i>				
<i>Hystriocholpoma rigaudiae</i>	6.8			
<i>Cribroperidinium giuseppeii</i>				
<i>Evittosphaerula</i> sp.			8.9	5.7
<i>Dapsilidinium pastielsii</i>				3.4
<i>Dapsilidinium</i> or <i>Diphyes</i> (operculum only)				4.6
Dinocyst C				1.1
Miscellaneous/indeterminable cysts				
Reworked cysts				
<i>Deflandrea</i> sp.				
<i>Diphyes latiusculum</i>				
<i>Glaphyrocysta</i> sp. indet.				
<i>Oligosphaeridium albertense</i>				
<i>Spinidinium</i> spp.				
<i>Cleistosphaeridium placacanthum</i>				
<i>Trinovantedinium boreale</i>				
Other palynomorphs				
<i>Pediastrum</i> spp.				
<i>Tasmanites</i> spp.	+	+	+	+
Foraminifer linings				
Acritarchs				
Small spiny acritarch brown				
<i>Lecaniella</i> sp.				+
<i>Cyclopsiella granosa</i>				