Supplementary material

Factor Analyses Varimax Normalized Rotation: Cismon core		
	Factor 1	Factor 2
W. barnesiae	**0.27**	**0.61**
R. irregularis	**-0.36**	0.07
Nannoconus sp.	0.16	0.15
R. asper	0.03	**-0.79**
Cretarhabdus sp.	**-0.35**	**-0.60**
Z. diplogrammus	0.06	-0.14
Z. erectus	**-0.48**	0.04
E. floralis	0.28	0.12
B. costans	**-0.85**	0.03
D. rotatorius	**-0.84**	-0.07
S. stradneri	-0.11	**0.26**
Variance %	**19.00**	**13.00**

Table 1. Results of Factor Analysis (R-mode) varimax normalized rotation with principal component extraction for the Cismon core.

Factor Analyses Varimax Normalized Rotation: Piobbico core		
	Factor 1	Factor 2
W. barnesiae	-0.13	**0.78**
R. asper	**0.54**	**0.39**
B. constans	**0.62**	-0.15
D. rotatorius	**0.79**	-0.12
Z. diplogrammus	0.09	0.05
Cretarhabdus sp.	**0.60**	0.19
R. irregularis	**0.76**	0.07
Z. erectus	**0.77**	-0.07
S. stradneri	-0.01	**0.48**
E. floralis	0.13	**0.48**
Nannoconus sp.	**-0.34**	**-0.24**
R.parvidentatum	0.18	0.06
Variance %	**25.00**	**11.00**

Table 2. Results of Factor Analysis (R-mode) varimax normalized rotation with principal component extraction for the Piobbico core.

Factor Analyses Varimax Normalized Rotation: DSDP Site 463		
	Factor 1	Factor 2
W. barnesiae	-0.06	**-0.30**
R. irregularis	**0.75**	**0.31**
Nannoconus sp.	**-0.22**	**0.79**
R. asper	-0.17	**-0.24**
Cretarhabdus sp.	0.02	0.19
Z. diplogrammus	**0.45**	-0.09
Z. erectus	0.12	-0.14
E. floralis	0.04	**0.77**
B. constans	**0.33**	**-0.28**
D. rotatorius	**0.84**	-0.02
S. stradneri	**0.44**	**0.74**
Variance %	**17.00**	**19.00**

Table 3. Results of Factor Analysis (R-mode) varimax normalized rotation with principal component extraction for DSDP Site 463.

PCCA: Cismon core		
	Factor 1	Factor 2
W. barnesiae	**-0.26**	**0.73**
R. irregularis	0.30	0.02
Nannoconus sp.	**-0.22**	0.13
R. asper	0.10	**-0.78**
Cretarhabdus sp.	0.38	**-0.51**
Z. diplogrammus	0.14	0.16
Z. erectus	**0.74**	0.20
E. floralis	-0.19	0.14
B. costans	**0.87**	0.20
D. rotatorius	**0.86**	0.11
S. stradneri	0.23	**0.32**
*$\delta^{18}O$	-0.05	**0.28**
Variance %	**22.00**	**15.00**

Table 4. Results of the principal component and classification analysis (PCCA) for the Cismon core. The associated variable is the $\delta^{18}O$.

PCCA: Piobbico core		
	Factor 1	Factor 2
W. barnesiae	-0.06	0.68
R. asper	0.62	0.26
B. constans	**0.70**	-0.17
D. rotatorius	**0.79**	-0.25
Z. diplogrammus	0.36	0.28
Cretarhabdus sp.	0.46	-0.10
R. irregularis	0.74	-0.12
Z. erectus	**0.81**	-0.17
S. stradneri	0.25	**0.61**
E. floralis	0.25	**0.46**
Nannoconus sp.	**-0.26**	-0.05
R.parvidentatum	0.41	0.22
* $\delta^{18}O$	0.00	-0.01
Variance %	**28.00**	**11.00**

Table 5. Results of the principal component and classification analysis (PCCA) for the Piobbico core. The associated variable is the $\delta^{18}O$.

PCCA: DSDP Site 463		
	Factor 1	Factor 2
W. barnesiae	-0.20	-0.07
R. irregularis	**0.48**	**0.70**
Nannoconus sp.	**0.57**	-0.16
R. asper	**-0.73**	0.10
Cretarhabdus sp.	**-0.44**	**0.32**
Z. diplogrammus	-0.11	**0.35**
Z. erectus	**-0.71**	**0.31**
E. floralis	**0.70**	0.09
B. constans	**-0.45**	**0.37**
D. rotatorius	-0.07	**0.80**
S. stradneri	**0.62**	**0.59**
* $\delta^{18}O$	0.13	0.02
variance	**24.41**	**16.48**

Table 6. Results of the principal component and classification analysis (PCCA) for DSDP Site 463. The associated variable is the $\delta^{18}O$.

Cismon core			
m	22S/(22S+22R)	TEX86	SST (°C)
19.04	0.38	0.56	21.5
19.56	**0.21**	**0.64**	**25.6**
19.77	**0.08**	**0.58**	**22.5**
20.82	**0.10**	**0.66**	**26.1**
21.11	**0.11**	**0.65**	**26.0**
21.26	**0.18**	**0.64**	**25.3**
22.53	**0.15**	**0.67**	**26.7**
22.96	**0.16**	**0.62**	**24.4**
23.19	**0.19**	**0.61**	**23.7**
23.4	**0.17**	**0.57**	**21.7**
23.6	0.55	0.52	19.3
23.74	0.73	0.55	20.6
24.04	0.54	0.57	21.9
24.2	0.39	0.69	27.5
24.47	0.45	0.66	26.3
24.66	0.42	0.66	26.2
25.36	0.45	0.67	26.8

Table 7. Hopane 22S/(22S+22R) ratios (indicating the maturity of organic matter), TEX_{86}, and Sea Surface water Temperature (SST) °C for the Cismon core. In bold are highlighted the values having ratios < 0.2. Samples having values > 0.2 were excluded in the discussion since, at this level, TEX_{86} values will become biased towards lower temperatures (see the main text).