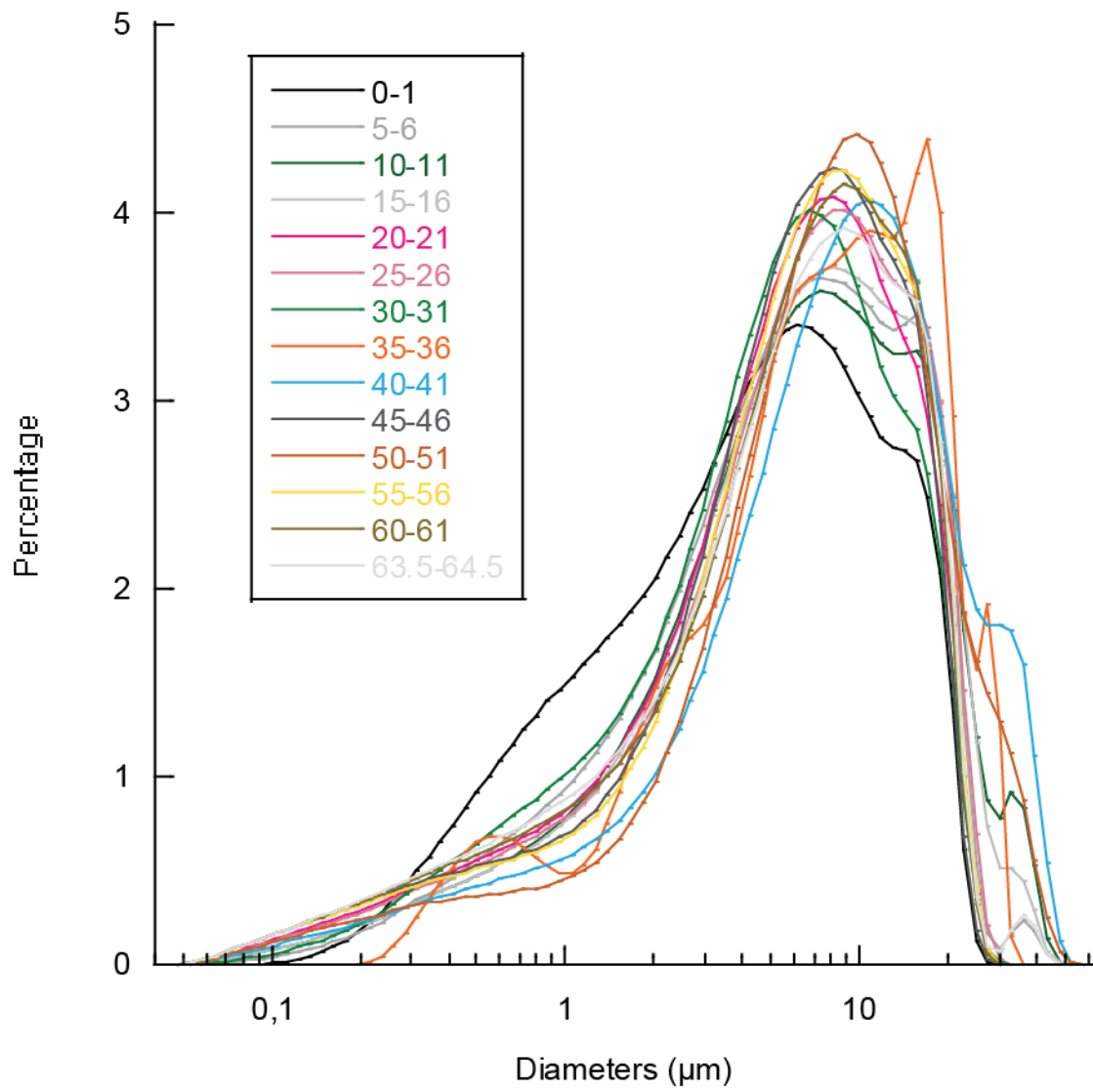


Supplementary Table 1

AZA-13-3 depth (cm)	HI (mgHC/gTOC)	IO (mgCO ₂ /gTOC)
0.5	324.9	174.5
5.5	324.9	177.3
10.5	321.8	191.8
15.5	291.8	195.7
20.5	278.7	211.1
25.5	306.8	197.6
30.5	363.0	170.6
35.5	344.9	192.8
45.5	335.9	187.0
50.5	306.8	192.8
55.5	311.8	185.1
60.5	309.8	184.1
65.5	241.6	214.9
70.5	266.7	210.1
75.5	327.9	187.0
80.5	327.9	172.5

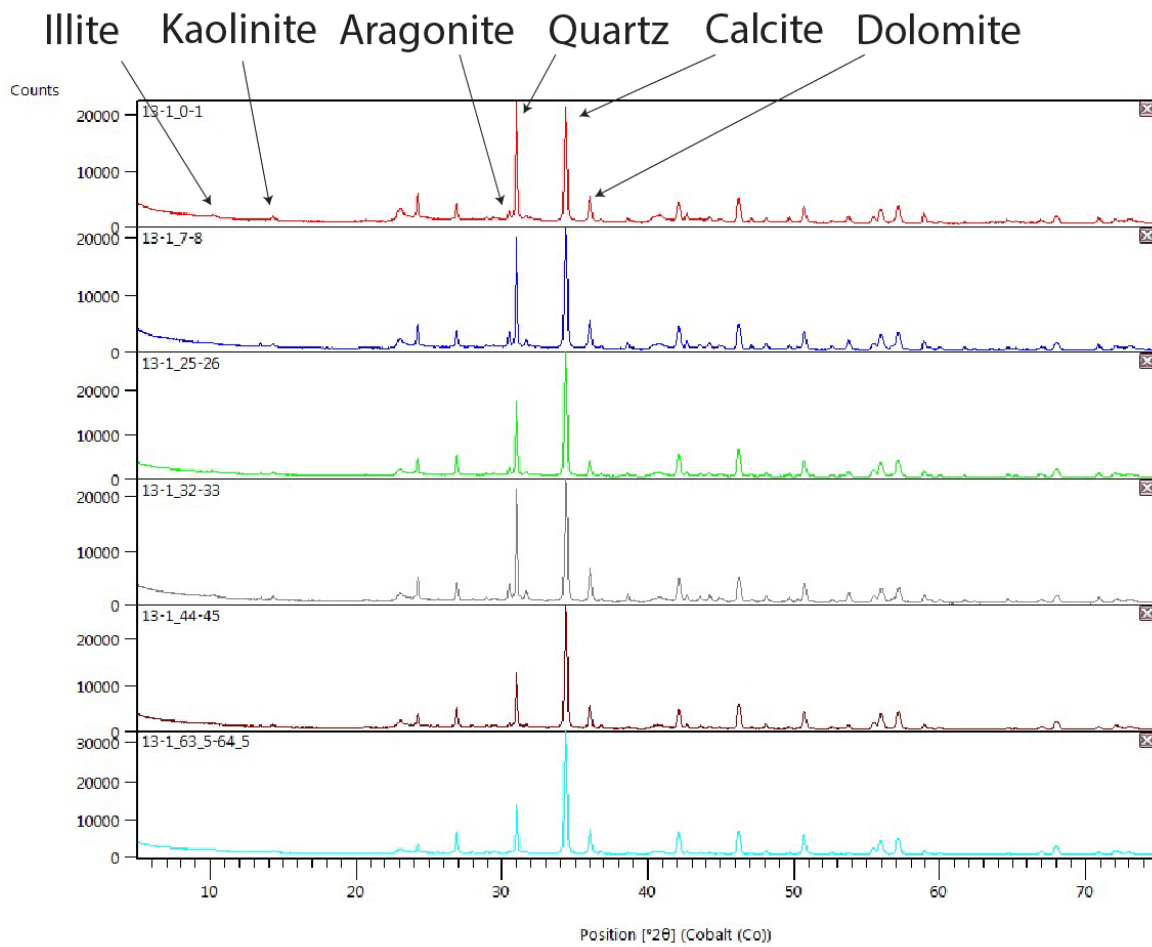
Hydrogen Index (HI) and Oxygen Index (OI) values from Rock Eval analysis in core AZA-13-3.

Supplementary Figure 1



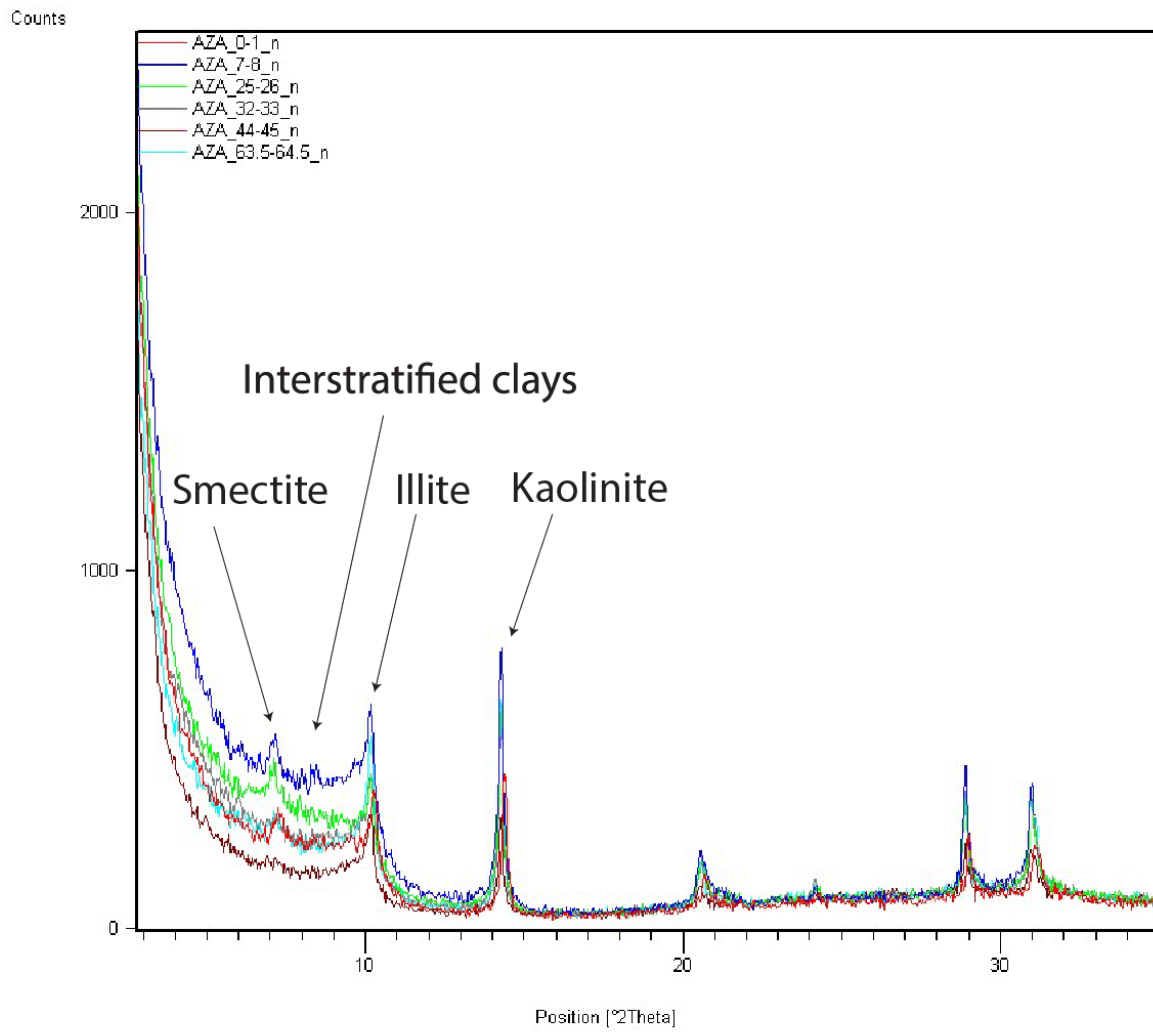
Laser diffraction grain size results in core AZA-13-1. Diameters are expressed in micrometers and plotted on a logarithmic scale.

Supplementary Figure 2



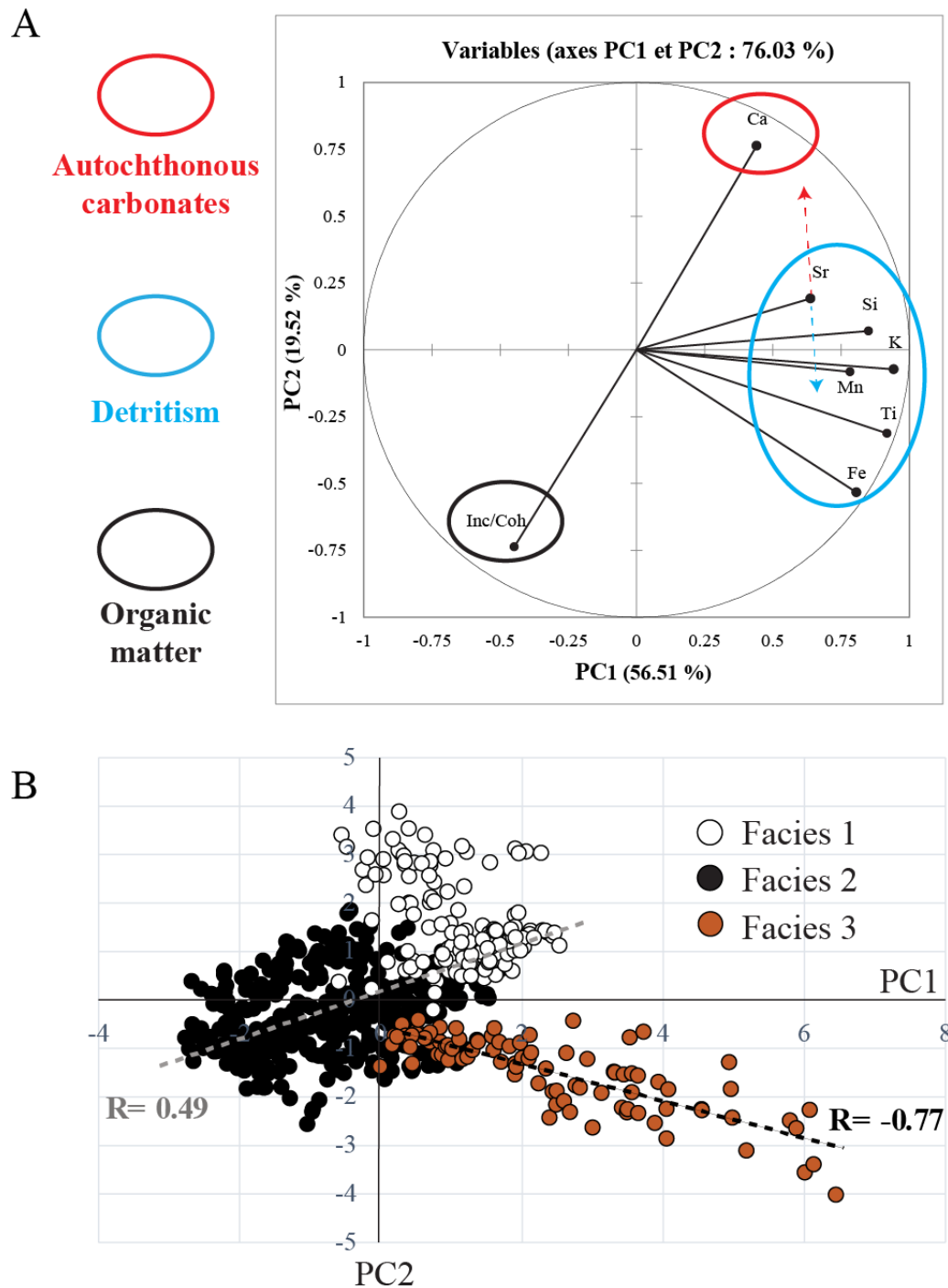
X-ray diffraction spectrum of total mineralogy of sediments in core AZA-13-1.

Supplementary Figure 3



X-ray diffraction spectrum of clay mineralogy of sediments in core AZA-13-1.

Supplementary Figure 4



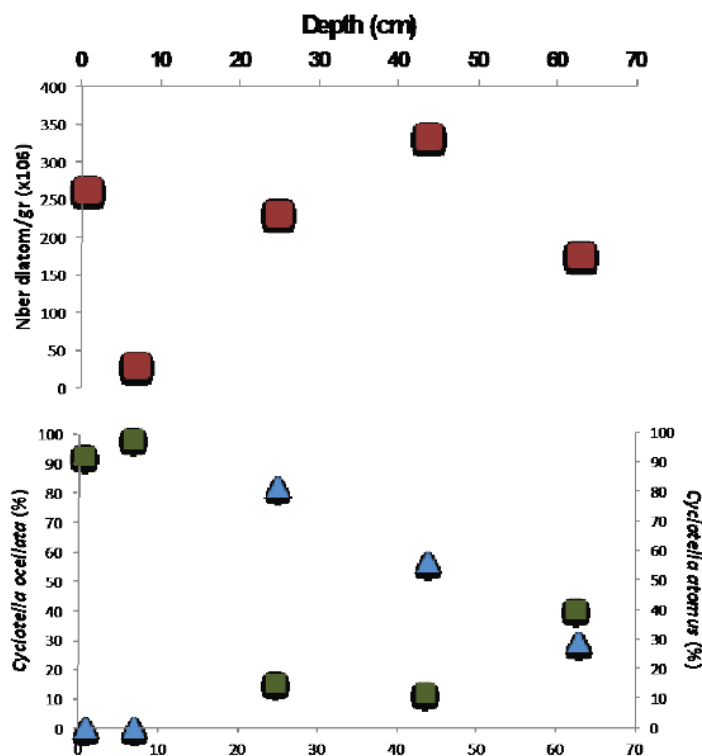
A) PCA analyses of XRF data for the entire AZA-13-1 sequence, with the identification of three chemical end-members autochthonous carbonates (red oval), detritism (blue oval) and organic matter (black oval); B) PC1 versus PC2 values (white, black and brown dots correspond to sedimentary Facies 1, 2 and 3 respectively). Correlation coefficients for positive and negative relationship between PC1 and PC2 are indicated in the figure.

Supplementary Figure 5

Diatom data

Methodology- Five selected-samples from core AZA-13-1 according lithological and sedimentological characteristics were analysed for their diatoms content. Analyses were conducted on 0.3 gr of dry sediment sub-samples, for diatom valve concentration, taxonomic and counting analyses. The samples were treated following the standard procedures (Battarbee et al., 2001). For each sample, at least 400 diatom valves were identified and counted using a Nikon light microscope (differential interference contrast Normanski optics, 1000x magnification, N.A.=1.25). Specimens were identified to their lowest taxonomic level (e.g. variety) following the species concept used by Krammer & Lange-Bertalot (1986; 1988; 1991) and Round et al. (1990). Ecological information are based on several references including Gasse (1986) and Flower et al. (1990).

Results- From the five analysed samples, the amount of species per sample is not very high, e.g. 18 species belonging 13 genera, but the amount of diatom valve is highly varying. After a high amount at the top of the sequence, diatom content is decreasing at 7-8 cm, for re-increasing downward. The assemblages are dominated by *Cyclotella spp.*; *Cyclotella ocellata* strongly dominates the first two samples at the top of the sequence, whereas in samples at 25-26 and 44-45 cm, the diatom assemblages are mainly dominated by *Cyclotella atomus*, associated *Achnanthes minutissima* and *Cyclotella stelligera*.



Diatom content and relative abundance (%) of *Cyclotella ocellata* (green square) and *Cyclotella atomus* (blue triangle) in the five samples selected from core AZA 13-1

Details of the methodology and results of the diatom analysis in core AZA-13-1.