Table 1 AMS 14C ages dated on core 45

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sampling site | Sample | Depth(cm) | Material | AMS 14C age (yr BP) | Calendar age (yr BP, 1σ) | Mid-point (cal yr BP) |
| Core 45 | 45-10 | 45-50 | Organic sediment | 4120 ± 30 | 4829-4780 | 4805 |
| 45-18 | 85-90 | Organic sediment | 8630 ± 30 | 9703-9548 | 9626 |

Table 2. Compositions and parameters of bulk organic matter, concentrations of *n*-alkanes and hydrocarbon parameters for core sediments

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sampling site | Sample | Depth(cm) | Texture | TOC (%) | TN | Atomic C/N ratio | Σ*n*-alkanes(ug/g dw) | CPI17-21 | CPI25-35 | TAR | NAR | Pr/Ph | Pr/*n*-C17 | Ph/*n*-C18 |
| Core 29 | 29-1 | 0-5 | clayed silt | 0.45 | 0.04 | 11.68 | 6.03 | 1.14 | 1.15 | 6.58 | 0.042 | 0.64 | 0.52 | 0.80 |
| 29-2 | 5-10 | clayed silt | 0.5 | 0.04 | 13.17 | 2.65 | 1.11 | 1.60 | 4.48 | 0.144 | 0.62 | 0.77 | 0.94 |
| 29-6 | 25-30 | clayed silt | 0.51 | 0.05 | 11.36 | 2.50 | 1.21 | 1.71 | 3.08 | 0.181 | 0.66 | 0.73 | 0.91 |
| 29-10 | 45-50 | clayed silt | 0.45 | 0.05 | 11.43 | 1.54 | 1.08 | 1.79 | 6.05 | 0.165 | 0.52 | 0.69 | 0.97 |
| 29-14 | 65-70 | clayed silt | 0.32 | 0.02 | 15.30 | 2.09 | 1.11 | 1.71 | 4.77 | 0.167 | 0.60 | 0.77 | 0.97 |
| 29-18 | 85-90 | clayed silt | 0.39 | 0.03 | 15.30 | 2.60 | 1.09 | 1.59 | 4.70 | 0.134 | 0.57 | 0.71 | 0.88 |
| Core 45 | 45-1 | 0-5 | clayed silt | 0.62 | 0.07 | 9.92 | 4.14 | 1.02 | 1.34 | 1.48 | 0.120 | 0.70 | 0.81 | 0.92 |
| 45-2 | 5-10 | clayed silt | 0.6 | 0.07 | 9.57 | 3.58 | 1.06 | 1.51 | 3.30 | 0.126 | 0.52 | 0.71 | 0.76 |
| 45-6 | 25-30 | clayed silt | 0.5 | 0.06 | 9.77 | 0.37 | 0.65 | 1.39 | 4.89 | 0.091 | 0.53 | 0.62 | 0.40 |
| 45-10 | 45-50 | clayed silt | 0.36 | 0.04 | 10.65 | 3.25 | 0.76 | 1.28 | 2.79 | 0.079 | 0.60 | 0.64 | 0.58 |
| 45-14 | 65-70 | clayed silt | 0.48 | 0.05 | 11.37 | 1.40 | 1.04 | 1.41 | 3.33 | 0.115 | 0.59 | 0.66 | 0.75 |
| 45-18 | 85-90 | clayed silt | 0.33 | 0.03 | 12.09 | 2.07 | 0.86 | 1.25 | 1.74 | 0.100 | 0.67 | 0.61 | 0.60 |

Σn-alkanes: concentration of total n-alkanes (nC14-nC37)

CPI17-21 = (1/2)[( *n*C17 + *n*C19+ *n*C21)/ ( *n*C18 + *n*C18+ *n*C20)+ ( *n*C17 + *n*C19+ *n*C21)/ ( *n*C18 + *n*C20+ *n*C22)

CPI25-35 = (1/2)[( *n*C25 + *n*C27+ *n*C29+ *n*C31+ *n*C33+ *n*C35)/ ( *n*C24 + *n*C26+ *n*C28+ *n*C30+ *n*C32+ *n*C34)+ ( *n*C25 + *n*C27+ *n*C29+ *n*C31+ *n*C33+ *n*C35)/ (*n*C26+ *n*C28+ *n*C30+ *n*C32+ *n*C34+ *n*C36)

TAR: terrigenous/aquatic ratio=(*n*C27+*n*C29+*n*C31)/(*n*C15+*n*C17+*n*C19)

NAR: natural *n*-alkane ratio = [∑(C19-C33)-2∑(C20-C32)even]/∑(C19-C32)

Table 3. Terpane and sterane parameters for core sediments

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Samplingsite | Sample | Depth（cm） | C30βα/C30αβ | C31αβ22S/(22S+22R) | Ts/Tm | C19TT/C23TT | C23TT/C30H | C24Tet/(C24Tet+C26TT) | C23TT/(C23TT+C30H) | C29steraneαββ/αββ+ααα | C29steraneααα20S/(20S+20R) | ααα20RC27/C29 |
| ST29 | 29-1 | 0-5 | 0.18 | 0.46 | 1.13 | 0.14  | 0.47 | 0.35  | 0.32  | 0.49 | 0.47 | 1.28 |
| 29-2 | 5-10 | 0.16 | 0.54 | 1.08 | 0.06  | 0.37 | 0.31  | 0.27  | 0.48 | 0.49 | 1.35 |
| 29-6 | 25-30 | 0.18 | 0.51 | 0.84 | 0.09  | 0.75 | 0.29  | 0.43  | 0.47 | 0.50 | 0.98 |
| 29-10 | 45-50 | 0.22 | 0.33 | 0.85 | 0.06  | 1.51 | 0.32  | 0.60  | 0.40 | 0.39 | 1.81 |
| 29-14 | 65-70 | 0.23 | 0.36 | 0.83 | 0.09  | 1.57 | 0.34  | 0.61  | 0.41 | 0.41 | 2.08 |
| 29-18 | 85-90 | 0.21 | 0.37 | 0.87 | 0.06  | 1.48 | 0.32  | 0.60  | 0.42 | 0.41 | 1.91 |
| ST45 | 45-1 | 0-5 | 0.16 | 0.53 | 0.72 | 0.11  | 1.08 | 0.30  | 0.52  | 0.46 | 0.45 | 1.59 |
| 45-2 | 5-10 | 0.17 | 0.51 | 0.93 | 0.07  | 0.90 | 0.30  | 0.47  | 0.48 | 0.50 | 1.50 |
| 45-6 | 25-30 | 0.19 | 0.45 | 0.87 | 0.06  | 1.50 | 0.34  | 0.60  | 0.45 | 0.41 | 1.78 |
| 45-10 | 45-50 | 0.15 | 0.52 | 0.93 | 0.07  | 0.80 | 0.32  | 0.44  | 0.44 | 0.42 | 1.90 |
| 45-14 | 65-70 | 0.18 | 0.48 | 0.98 | 0.07  | 0.94 | 0.32  | 0.49  | 0.45 | 0.43 | 1.93 |
| 45-18 | 85-90 | 0.15 | 0.45 | 1.00 | 0.12  | 1.43 | 0.30  | 0.59  | 0.45 | 0.41 | 1.73 |