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Supplement of

Deglacial export of pre-aged terrigenous carbon to the Bay of Biscay

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1 Considerations on the fββ proxy

In this study we have followed Meyer et al. (2019) and Wu et al. (2022) and applied the fββ indicator to track possible petrogenic contributions to the OM in core GeoB23302-2 (see Equation 3 in the manuscript). The index is based on the relative abundance of the so-called biologic (i.e., 17β,21β(H) and 22R) and geologic isomers (i.e., 17β,21αS, 17β,21αR, 17α,21βS and 17α,21βR) (e.g., Einsminger et al., 1972; Rohmer et al., 1992). The latter are usually the result of diagenetic and temperature-induced processes affecting the former and leading to a more thermally stable configuration (e.g., Seifert and Moldowan, 1980; Mackenzie and Mackenzie, 1983; Rohmer et al., 1992; Sinninghe Damsté et al., 1995; Van Duin et al., 1997; Kolaczkowska et al., 1990; Peters and Moldowan, 1993; Lockhart et al., 2008). The hopane abundance in core GeoB23302-2 shows that the concentration of the biosynthesized 31ββ isomer, typically present in immature fresh OM, is positively correlated with that of 31αβR, which is commonly found in petrogenic sources (e.g., Peters and Moldowan, 1993; Sinninghe Damsté et al., 1995; Lockhart et al., 2008). This means that increases in the input of the 31αβR compound rather than transformations from ββ to αβ and βα isomers are responsible for decreases in the fββ record. The geochemical signature of peat shows a high abundance of the 31αβR compound but comparatively low values for the 31αβS epimer (Inglis et al., 2018), which is reflected in our data. Contrary to what has been observed in Meyer et al. (2019), where low fββ and relatively high S/(S+R) values indicate petrogenic input, we see low fββ and low S/(S+R) values (Figure 1). Therefore, in this study, the fββ proxy does not reflect petrogenic input but rather the influx of peat material.

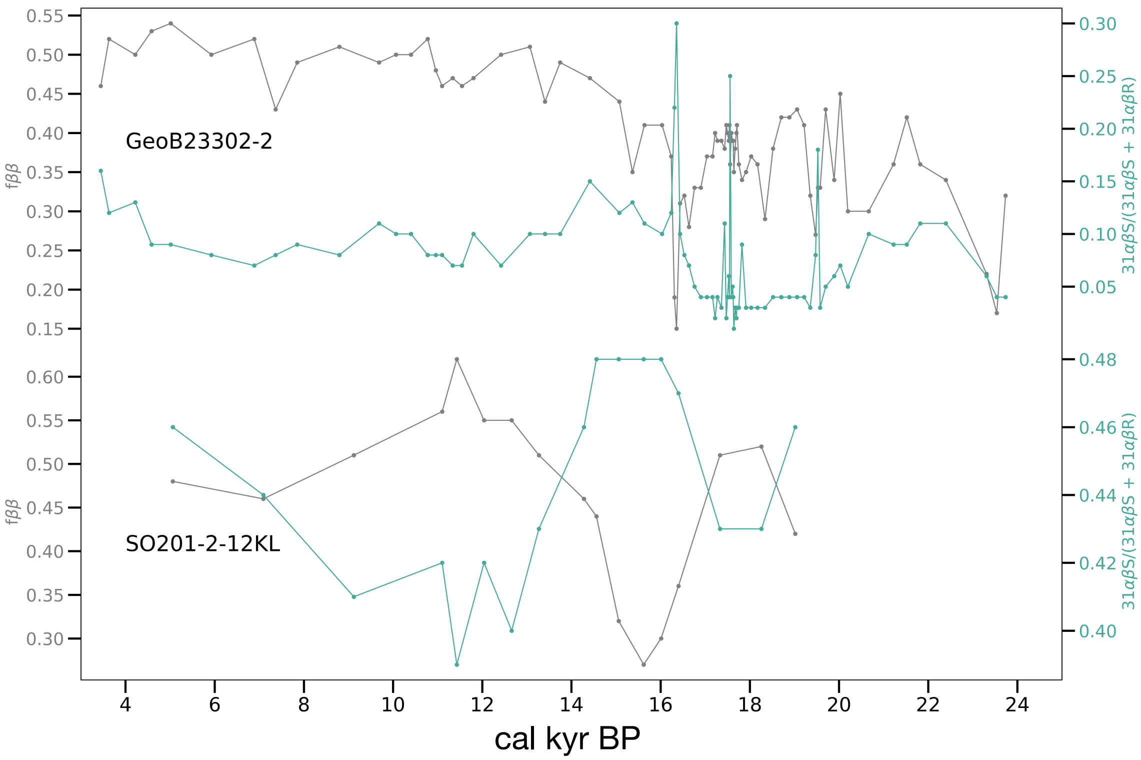

Figure S 1. Records of the fββ indicator and the relative abundance of the 31αβS and R compounds of cores GeoB23302-2 (this study) and SO201-2-12KL (Meyer et al., 2019) for comparison.

2 OxCal code of the age-depth model of core GeoB23302-2

```
Plot()
{
Curve("marine20","marine20.14c");
Delta_R("LocalMarineD",-94,45);
Outlier_Model("General",T(5),U(0,4),"t");
P_Sequence("P",1,0.1,U(-2,2))
{
Boundary();
R_Date("G",20432,202)
{
Outlier(0.05);
```

```
z=686.5;
};
R_Date("F",16893,203)
{
Outlier(0.05);
z=584.5;
};
{
};
R_Date("E",15112,151)
{
Outlier(0.05);
z=450.5;
};
R_Date("D",15131,142)
{
Outlier(0.05);
z=340.5;
};
{
};
R_Date("C",14111,124)
{
Outlier(0.05);
z=234.5;
};
R_Date("B",9981,105)
{
Outlier(0.05);
z=118.5;
};
```

```
R_Date("A",3556,67)
{
Outlier(0.05);
z=3.5;
};
Boundary();
};
};
```

3 Supplementary Figures

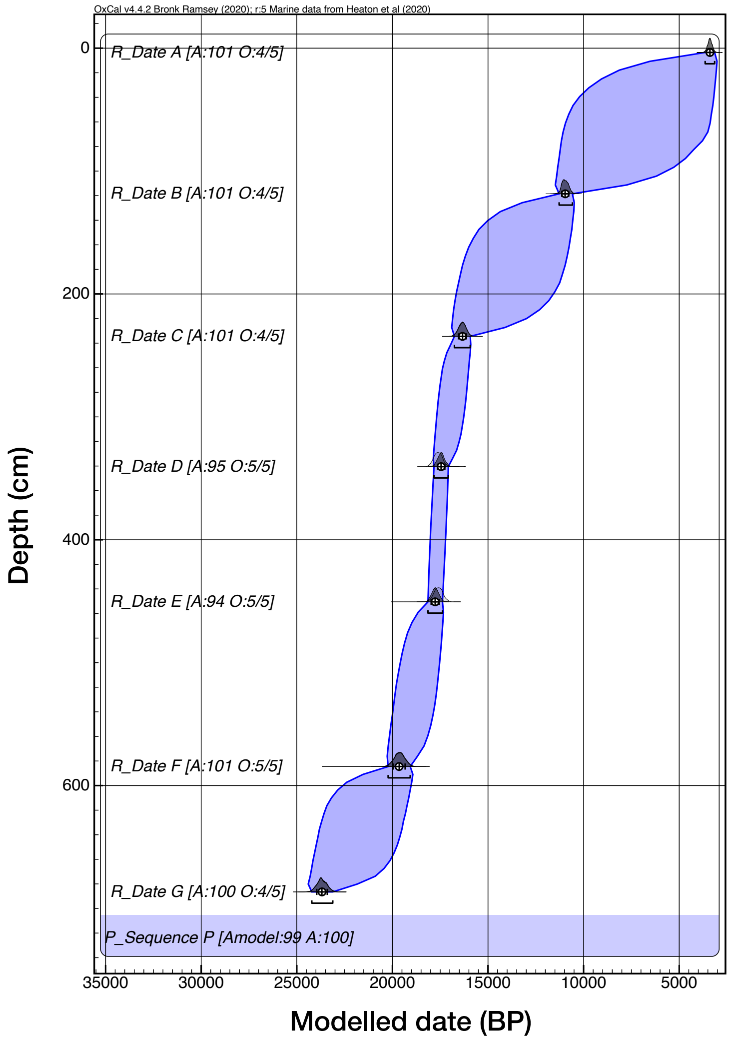

Figure S 2. Age-depth model for core GeoB23302-2.

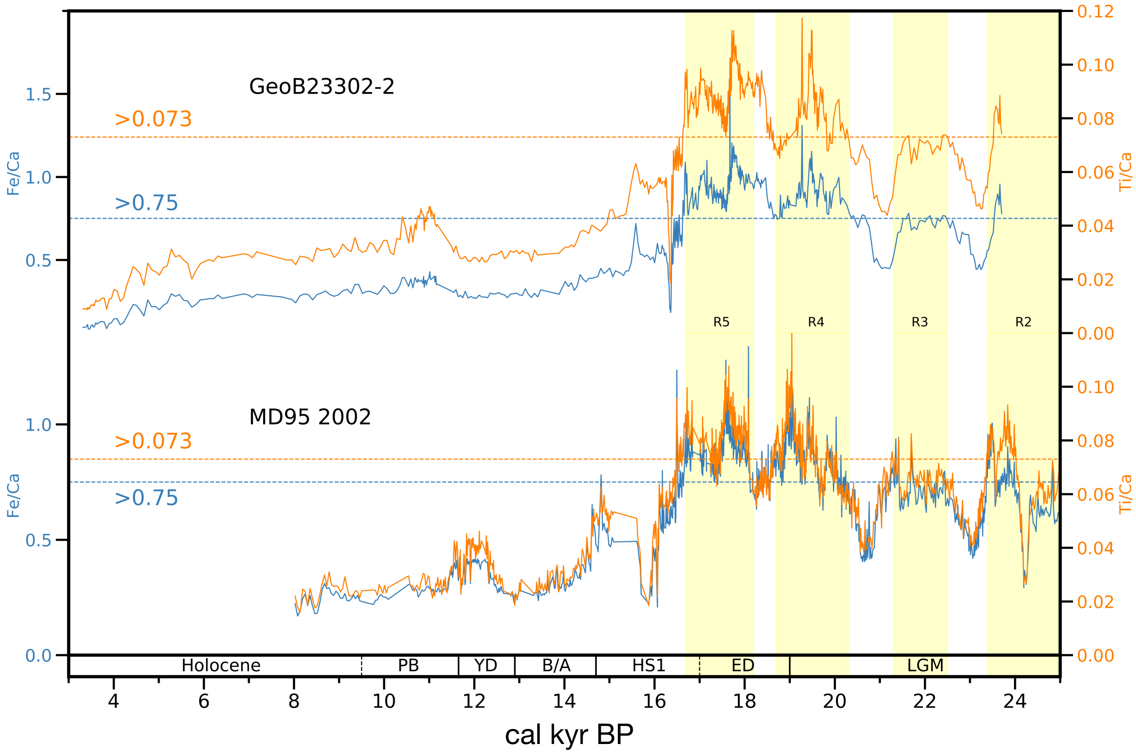

Figure S 3. XRF-Fe/Ca and Ti/Ca data for cores GeoB23302-2 (this study) and MD95 2002 (Toucanne et al., 2015) allow for the identification of runoff events (R2-R5) that may have enhanced erosive processes and contributed ^{14}C-depleted OM to the continental slope.

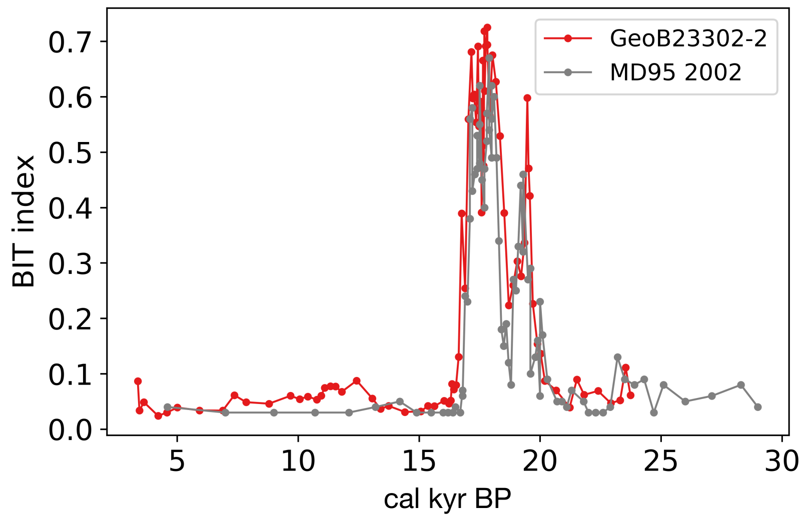

Figure S 4. BIT index data for cores GeoB23302-2 (this study) and MD95 2002 (Ménot et al., 2006).

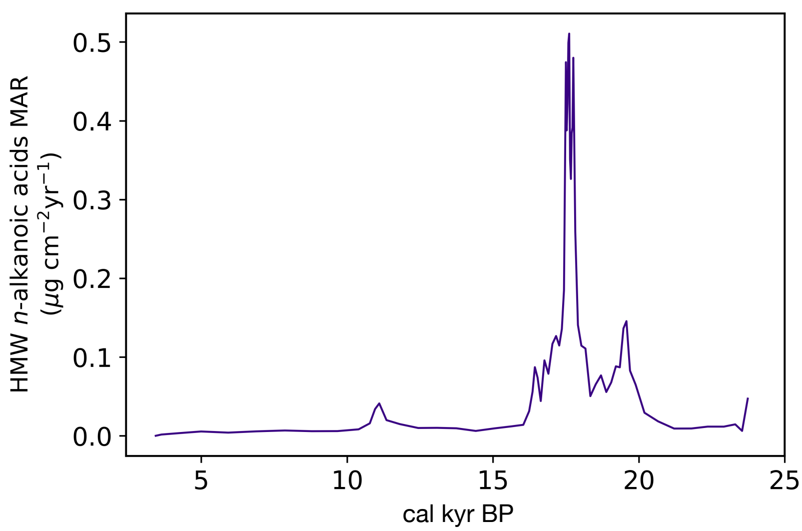

Figure S 5. Mass accumulation rate (MAR) of high molecular weight (HMW) *n*-alkanoic acids in core GeoB23302-2.

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