

Supporting Information for

The influence of near surface sediment hydrothermalism on the TEX₈₆ tetraether lipid-based proxy and a new correction for ocean bottom lipid overprinting

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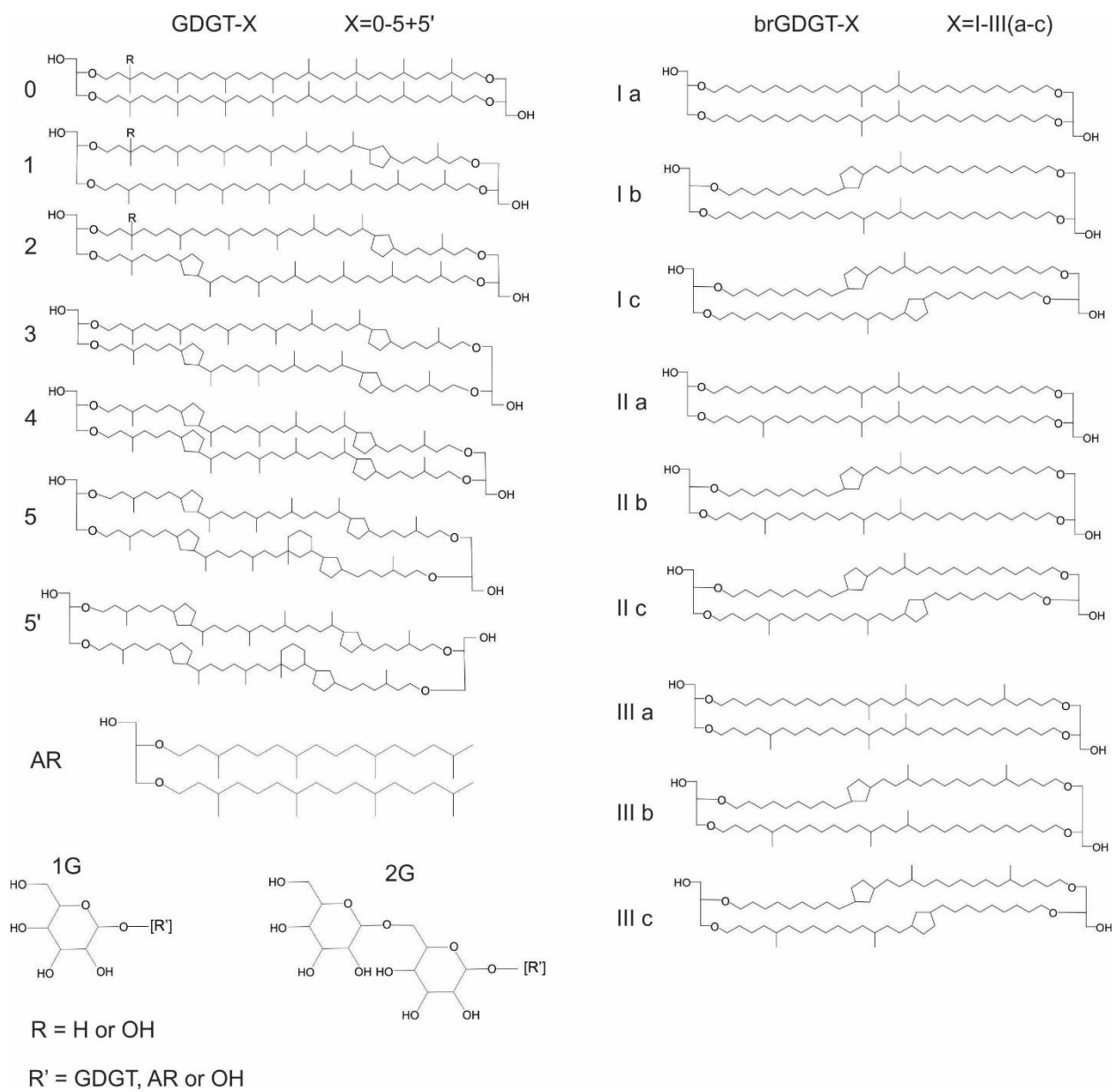


Figure S1: Molecular lipid structures of interest.

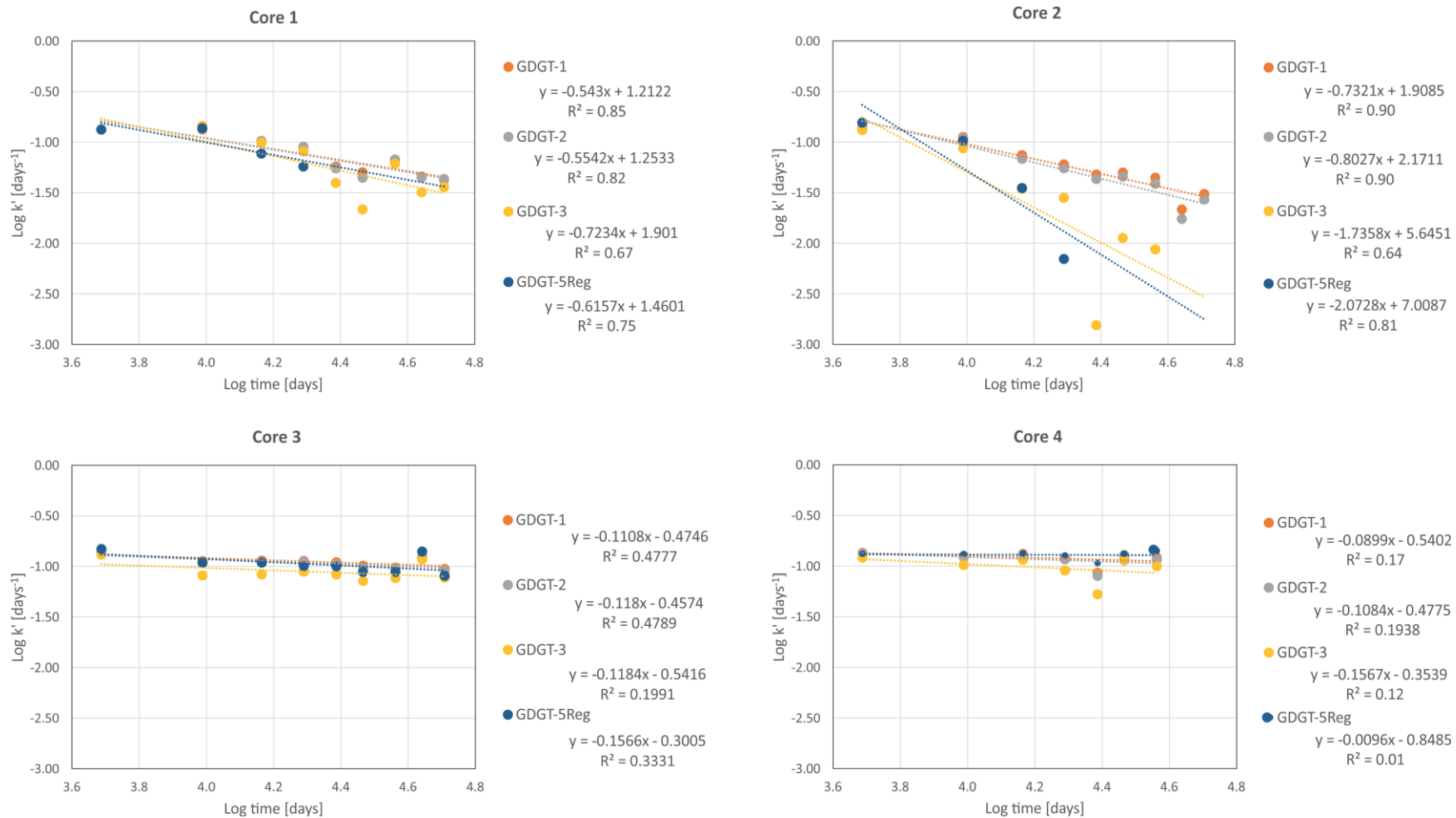


Figure S2: Kinetic degradation constants for the TEX₈₆ GDGT lipids.

Table S1. Concentrations of *i*GDGTs ($\mu\text{g/g}$ sed.).

| Core | GDGT-0 | GDGT-1 | GDGT-2 | GDGT-3 | GDGT-4 | GDGT-5 | GDGT-5' |
|-------------------------|--------|--------|--------|--------|--------|--------|---------|
| Core 1 (0-2cm) | 184.78 | 49.03 | 41.76 | 12.61 | 15.5 | 192.17 | 7.26 |
| Core 1 (2-4cm) | 160.85 | 48.87 | 44.8 | 15.74 | 13.24 | 170.49 | 7.73 |
| Core 1 (4-6cm) | 71.5 | 20.14 | 17.86 | 6.58 | 7.49 | 76.55 | 3.15 |
| Core 1 (6-8cm) | 50.75 | 13.97 | 11.99 | 4.67 | 9.77 | 55.07 | 2.35 |
| Core 1 (8-10cm) | 19.71 | 5.35 | 4.67 | 2.12 | 3.22 | 23.04 | 0.89 |
| Core 1 (10-12cm) | 16.41 | 4.36 | 3.47 | 1.51 | 2.52 | 19.72 | 0.76 |
| Core 1 (12-15cm) | 24.28 | 7.01 | 6.64 | 3.21 | 8.83 | 27.71 | 0.98 |
| Core 1 (15-18cm) | 13.23 | 3.81 | 3.51 | 1.84 | 4.17 | 15.43 | 0.59 |
| Core 1 (18-21cm) | 11.7 | 3.45 | 3.36 | 1.98 | 3.42 | 13.94 | 0.55 |
| Core 2 (0-2cm) | 208.96 | 58.31 | 47.78 | 12.21 | 17.23 | 236.25 | 10.22 |
| Core 2 (2-4cm) | 94.13 | 26.69 | 21.65 | 5.22 | 6.65 | 107.31 | 4.66 |
| Core 2 (4-6cm) | 30.87 | 8.79 | 6.8 | 1.93 | 2.64 | 34.7 | 1.69 |
| Core 2 (6-8cm) | 23.54 | 5.84 | 4.7 | 1.71 | 3.41 | 29.43 | 1.11 |
| Core 2 (8-10cm) | 16.19 | 4.05 | 3.36 | 1.03 | 2.29 | 20.55 | 0.9 |
| Core 2 (10-12cm) | 17.24 | 4.33 | 3.6 | 1.24 | 2.36 | 22.37 | 0.92 |
| Core 2 (12-15cm) | 14.43 | 3.68 | 2.96 | 1.18 | 2.13 | 19.13 | 0.72 |
| Core 2 (15-18cm) | 7.3 | 1.88 | 1.63 | 0.7 | 1.38 | 9.08 | 0.3 |
| Core 2 (18-21cm) | 10.18 | 2.46 | 2.14 | 0.91 | 1.55 | 13.49 | 0.45 |
| Core 3 (0-2cm) | 182.4 | 58.57 | 47.3 | 11.97 | 14.16 | 187.75 | 9.15 |
| Core 3 (2-4cm) | 109.85 | 27 | 20.89 | 4.72 | 5.64 | 135.69 | 5.07 |
| Core 3 (4-6cm) | 101.52 | 28.02 | 22.08 | 4.88 | 5.58 | 116.33 | 5.06 |
| Core 3 (6-8cm) | 98.79 | 27.5 | 22.38 | 5.4 | 6.55 | 110.21 | 4.5 |
| Core 3 (8-10cm) | 89.25 | 24.74 | 18.96 | 4.89 | 6.15 | 102.63 | 4.44 |
| Core 3 (10-12cm) | 80.39 | 19.37 | 15.09 | 3.92 | 5.92 | 99.31 | 3.72 |
| Core 3 (12-15cm) | 66.03 | 17.19 | 13.99 | 4.31 | 0.43 | 78.97 | 3.71 |
| Core 3 (15-18cm) | 154.3 | 38.95 | 30.34 | 9.35 | 19.59 | 212.44 | 8.11 |
| Core3 (18-21cm) | 60.66 | 15.83 | 12.84 | 4.37 | 8.79 | 76.47 | 3.34 |
| Core 4 (0-2cm) | 176.52 | 51.76 | 41.96 | 10.04 | 10.74 | 185.22 | 9.14 |
| Core 4 (2-4cm) | 146.4 | 39.72 | 31.19 | 7.04 | 8.73 | 177.32 | 7.36 |
| Core 4 (4-6cm) | 169.92 | 47.4 | 37.07 | 9 | 11.11 | 196.83 | 9.24 |
| Core 4 (6-8cm) | 129.68 | 33.76 | 26 | 5.6 | 7.08 | 152.16 | 5.39 |
| Core 4 (8-10cm) | 53.35 | 12.39 | 9.41 | 2.73 | 3.93 | 69.63 | 2.02 |
| Core 4 (10-12cm) | 166.36 | 42.7 | 32.74 | 8.68 | 11.97 | 190.17 | 6.91 |
| Core 4 (12-15cm) | 168.78 | 34.67 | 25.85 | 6.69 | 8.9 | 263.79 | 6.47 |

Table S2. Concentrations of 1G- and 2G-*i*GDGTs ($\mu\text{g/g}$ sed.).

| Core | 1G-GDGT-0 | 1G-GDGT-1 | 1G-GDGT-2 | 1G-GDGT-3 | 1G-GDGT-4 | 1G-GDGT-5 | 1G-GDGT-5' | 2G-GDGT-1 | 2G-GDGT-2 |
|------------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|
| Core 1 (0-2cm) | 4.94 | 1.27 | 0.99 | 0.64 | 0.81 | 6.12 | 0.09 | 0.78 | 1.04 |
| Core 1 (2-4cm) | 5.00 | 0.93 | 0.95 | 0.18 | 0.53 | 5.66 | 0.12 | 0.50 | 0.73 |
| Core 1 (4-6cm) | 2.12 | 0.58 | 0.40 | 0.21 | 0.40 | 2.19 | 0.09 | 0.00 | 0.00 |
| Core 1 (6-8cm) | 1.32 | 0.50 | 0.38 | 0.11 | 0.31 | 1.53 | 0.15 | 0.00 | 0.00 |
| Core 1 (8-10cm) | 0.75 | 0.39 | 0.49 | 0.41 | 0.73 | 0.30 | 0.11 | 0.00 | 0.00 |
| Core 1 (10-12cm) | 0.45 | 0.23 | 0.27 | 0.21 | 0.37 | 0.08 | 0.06 | 0.00 | 0.00 |
| Core 1 (12-15cm) | 0.40 | 0.23 | 0.21 | 0.24 | 0.22 | 0.05 | 0.04 | 0.00 | 0.00 |
| Core 1 (15-18cm) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Core 1 (18-21cm) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Core 2 (0-2cm) | 4.94 | 1.27 | 0.99 | 0.64 | 0.81 | 6.12 | 0.09 | 0.72 | 0.83 |
| Core 2 (2-4cm) | 5.00 | 0.93 | 0.95 | 0.18 | 0.53 | 5.66 | 0.12 | 0.35 | 0.43 |
| Core 2 (4-6cm) | 2.12 | 0.58 | 0.40 | 0.21 | 0.40 | 2.19 | 0.09 | 0.10 | 0.15 |
| Core 2 (6-8cm) | 1.32 | 0.50 | 0.38 | 0.11 | 0.31 | 1.53 | 0.15 | 0.00 | 0.08 |
| Core 2 (8-10cm) | 0.75 | 0.39 | 0.49 | 0.41 | 0.73 | 0.30 | 0.11 | 0.00 | 0.00 |
| Core 2 (10-12cm) | 0.45 | 0.23 | 0.27 | 0.21 | 0.37 | 0.08 | 0.06 | 0.00 | 0.00 |
| Core 2 (12-15cm) | 0.40 | 0.23 | 0.21 | 0.24 | 0.22 | 0.05 | 0.04 | 0.00 | 0.00 |
| Core 2 (15-18cm) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Core 2 (18-21cm) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Core 3 (0-2cm) | 4.95 | 1.09 | 1.15 | 0.00 | 0.62 | 6.26 | 0.10 | 0.46 | 0.71 |
| Core 3 (2-4cm) | 2.91 | 0.55 | 0.30 | 0.14 | 0.59 | 2.98 | 0.08 | 0.32 | 0.39 |
| Core 3 (4-6cm) | 2.36 | 0.38 | 0.31 | 0.10 | 0.20 | 2.96 | 0.07 | 0.24 | 0.34 |
| Core 3 (6-8cm) | 2.56 | 0.49 | 0.34 | 0.14 | 0.22 | 2.95 | 0.09 | 0.30 | 0.40 |
| Core 3 (8-10cm) | 1.74 | 0.45 | 0.54 | 0.00 | 0.31 | 1.98 | 0.17 | 0.22 | 0.33 |
| Core 3 (10-12cm) | 2.11 | 0.43 | 0.81 | 0.31 | 0.00 | 1.55 | 0.12 | 0.20 | 0.29 |
| Core 3 (12-15cm) | 1.59 | 0.79 | 0.84 | 0.58 | 0.86 | 1.56 | 0.31 | 0.00 | 0.00 |
| Core 3 (15-18cm) | 3.46 | 1.25 | 1.73 | 1.12 | 1.28 | 2.78 | 0.61 | 0.00 | 0.00 |
| Core3 (18-21cm) | 1.54 | 0.72 | 0.85 | 0.31 | 0.58 | 0.99 | 0.22 | 0.00 | 0.00 |
| Core 4 (0-2cm) | 4.34 | 0.75 | 0.61 | 0.27 | 0.00 | 5.16 | 0.00 | 0.37 | 0.43 |

| | | | | | | | | | |
|------------------|------|------|------|------|------|------|------|------|------|
| Core 4 (2-4cm) | 3.73 | 0.70 | 0.41 | 0.00 | 0.00 | 3.98 | 0.00 | 0.27 | 0.36 |
| Core 4 (4-6cm) | 4.25 | 0.72 | 0.53 | 0.00 | 0.00 | 5.54 | 0.00 | 0.37 | 0.53 |
| Core 4 (6-8cm) | 3.81 | 0.64 | 0.53 | 0.00 | 0.00 | 3.84 | 0.00 | 0.29 | 0.30 |
| Core 4 (8-10cm) | 1.26 | 0.22 | 0.00 | 0.00 | 0.00 | 0.93 | 0.00 | 0.00 | 0.22 |
| Core 4 (10-12cm) | 3.73 | 0.66 | 0.00 | 0.00 | 0.00 | 2.08 | 0.00 | 0.51 | 1.03 |
| Core 4 (12-15cm) | 2.98 | 0.00 | 0.00 | 0.00 | 0.00 | 3.07 | 0.00 | 0.00 | 0.00 |

Table S3. Kinetic degradation rate changes ($m_{\log k'$) for TEX₈₆ lipid classes.

| TEX ₈₆ Compounds | Core 1 | Core 2 | Core 3 | Core 4 | | |
|--------------------------------|--------------|--------------|--------------|--------------|-------------|---------------|
| GDGT-1 | -0.54 | -0.73 | -0.11 | -0.09 | | |
| GDGT-2 | -0.55 | -0.88 | -0.12 | -0.11 | | |
| GDGT-3 | -0.72 | -1.74 | -0.12 | -0.16 | | |
| GDGT-5' | -0.62 | -2.07 | -0.16 | -0.01 | | |
| Avg. | -0.61 | -1.36 | -0.13 | -0.09 | | |
| SD | 0.08 | 0.65 | 0.02 | 0.06 | | |
| Var. | 0.01 | 0.42 | 0.00 | 0.00 | 0.11 | Mean variance |