Supplement of

High variability of particulate organic carbon export along the North Atlantic GEOTRACES section GA01 as deduced from $^{234}$Th fluxes

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Table S1: \(^{234}\text{U}\) and total \(^{234}\text{Th}\) activities in dpm L\(^{-1}\) and resulting \(^{234}\text{Th}/^{238}\text{U}\) ratios. \(^{238}\text{U}\) activity is derived from salinity (see text).

| Station # | Depth \(\text{m}\) | Temperature \(\text{°C}\) | Salinity \(\text{psu}\) | \(^{238}\text{U}\) dpm L\(^{-1}\) | \(^{234}\text{Th}\) dpm L\(^{-1}\) | \(^{234}\text{Th}/^{238}\text{U}\) |
|-----------|------------------|----------------|----------------|----------------|----------------|----------------|
| #1 40.3°N / -10.0 °E 20/05/2014 | 19 | 15.89 | 35.27 | 2.46 \(\pm\) 0.05 | 1.83 \(\pm\) 0.06 | 0.74 |
| | 39 | 14.93 | 35.55 | 2.48 \(\pm\) 0.05 | 1.69 \(\pm\) 0.05 | 0.68 |
| | 60 | 13.81 | 35.68 | 2.49 \(\pm\) 0.05 | 2.11 \(\pm\) 0.07 | 0.85 |
| | 79 | 13.44 | 35.71 | 2.49 \(\pm\) 0.05 | 2.39 \(\pm\) 0.07 | 0.96 |
| | 98 | 13.21 | 35.74 | 2.49 \(\pm\) 0.05 | 2.55 \(\pm\) 0.08 | 1.02 |
| | 119 | 13.02 | 35.73 | 2.49 \(\pm\) 0.05 | 2.50 \(\pm\) 0.08 | 1.00 |
| | 137 | 12.88 | 35.73 | 2.49 \(\pm\) 0.05 | 2.34 \(\pm\) 0.07 | 0.94 |
| | 158 | 12.73 | 35.71 | 2.49 \(\pm\) 0.05 | 2.44 \(\pm\) 0.08 | 0.98 |
| | 199 | 12.55 | 35.71 | 2.49 \(\pm\) 0.05 | 2.54 \(\pm\) 0.08 | 1.02 |
| | 246 | 12.29 | 35.69 | 2.49 \(\pm\) 0.05 | 2.60 \(\pm\) 0.08 | 1.05 |
| | 298 | 12.08 | 35.68 | 2.49 \(\pm\) 0.05 | 2.67 \(\pm\) 0.08 | 1.17 |
| | 396 | 11.69 | 35.65 | 2.49 \(\pm\) 0.05 | 2.59 \(\pm\) 0.08 | 1.04 |
| | 496 | 11.43 | 35.67 | 2.49 \(\pm\) 0.05 | 2.43 \(\pm\) 0.07 | 0.98 |
| | 589 | 11.41 | 35.77 | 2.50 \(\pm\) 0.05 | 2.61 \(\pm\) 0.08 | 1.05 |
| | 695 | 11.60 | 35.94 | 2.51 \(\pm\) 0.05 | 2.58 \(\pm\) 0.08 | 1.03 |
| | 791 | 11.72 | 36.07 | 2.52 \(\pm\) 0.05 | 2.90 \(\pm\) 0.09 | 1.15 |
| | 989 | 11.34 | 36.15 | 2.53 \(\pm\) 0.05 | 2.68 \(\pm\) 0.08 | 1.06 |
| #13 41.4°N / -13.9 °E 25/05/2014 | 20 | 15.49 | 35.85 | 2.50 \(\pm\) 0.05 | 1.75 \(\pm\) 0.05 | 0.70 |
| | 40 | 14.86 | 35.81 | 2.50 \(\pm\) 0.05 | 1.83 \(\pm\) 0.05 | 0.73 |
| | 60 | 13.30 | 35.76 | 2.50 \(\pm\) 0.05 | 2.23 \(\pm\) 0.07 | 0.90 |
| | 78 | 13.14 | 35.76 | 2.50 \(\pm\) 0.05 | 2.31 \(\pm\) 0.06 | 0.93 |
| | 99 | 12.99 | 35.75 | 2.49 \(\pm\) 0.05 | 2.26 \(\pm\) 0.07 | 0.91 |
| | 119 | 12.93 | 35.75 | 2.49 \(\pm\) 0.05 | 2.63 \(\pm\) 0.08 | 1.05 |
| | 139 | 12.88 | 35.75 | 2.49 \(\pm\) 0.05 | 2.82 \(\pm\) 0.07 | 1.13 |
| | 159 | 12.83 | 35.74 | 2.49 \(\pm\) 0.05 | 2.64 \(\pm\) 0.07 | 1.06 |
| | 197 | 12.64 | 35.71 | 2.49 \(\pm\) 0.05 | 2.52 \(\pm\) 0.07 | 1.01 |
| | 248 | 12.38 | 35.68 | 2.49 \(\pm\) 0.05 | 2.65 \(\pm\) 0.07 | 1.06 |
| | 298 | 12.20 | 35.66 | 2.49 \(\pm\) 0.05 | 2.50 \(\pm\) 0.07 | 1.00 |
| | 398 | 11.82 | 35.62 | 2.48 \(\pm\) 0.05 | 2.52 \(\pm\) 0.07 | 1.01 |
| | 496 | 11.59 | 35.62 | 2.48 \(\pm\) 0.05 | 2.66 \(\pm\) 0.08 | 1.07 |
| | 594 | 11.23 | 35.61 | 2.48 \(\pm\) 0.05 | 2.61 \(\pm\) 0.07 | 1.05 |
| | 693 | 10.66 | 35.57 | 2.48 \(\pm\) 0.05 | 2.55 \(\pm\) 0.08 | 1.03 |
| | 792 | 10.55 | 35.68 | 2.49 \(\pm\) 0.05 | 2.35 \(\pm\) 0.06 | 0.95 |
| | 990 | 9.33 | 35.65 | 2.49 \(\pm\) 0.05 | 2.63 \(\pm\) 0.08 | 1.06 |
| | 1485 | 6.73 | 35.45 | 2.47 \(\pm\) 0.05 | 2.48 \(\pm\) 0.07 | 1.00 |
| Station # | Depth (m) | Temperature (°C) | Salinity (psu) | $^{238}$U (dpm L$^{-1}$) | $^{234}$Th (dpm L$^{-1}$) | $^{234}$Th/$^{238}$U |
|-----------|-----------|-----------------|---------------|-----------------|-----------------|---------------------|
| #21       |           |                 |               |                 |                 |                     |
| 46.5°N / -19.7°E |       |                 |               |                 |                 |                     |
| 31/05/2014 |       |                 |               |                 |                 |                     |
| 10        | 14.44    | 35.68           | 2.49 ± 0.05   | 1.41 ± 0.05    | 0.57            |                     |
| 20        | 13.65    | 35.66           | 2.49 ± 0.05   | 1.69 ± 0.05    | 0.68            |                     |
| 39        | 12.79    | 35.64           | 2.49 ± 0.05   | 1.79 ± 0.05    | 0.72            |                     |
| 59        | 12.71    | 35.65           | 2.49 ± 0.05   | 1.80 ± 0.05    | 0.72            |                     |
| 76        | 12.63    | 35.67           | 2.49 ± 0.05   | 2.07 ± 0.06    | 0.83            |                     |
| 100       | 12.45    | 35.69           | 2.49 ± 0.05   | 2.36 ± 0.07    | 0.95            |                     |
| 119       | 12.36    | 35.68           | 2.49 ± 0.05   | 2.62 ± 0.07    | 1.05            |                     |
| 158       | 12.23    | 35.66           | 2.49 ± 0.05   | 2.53 ± 0.07    | 1.02            |                     |
| 198       | 12.08    | 35.64           | 2.49 ± 0.05   | 2.70 ± 0.07    | 1.09            |                     |
| 296       | 11.80    | 35.60           | 2.48 ± 0.05   | 2.83 ± 0.07    | 1.14            |                     |
| 396       | 11.38    | 35.55           | 2.48 ± 0.05   | 2.61 ± 0.07    | 1.05            |                     |
| 495       | 11.01    | 35.50           | 2.48 ± 0.05   | 2.65 ± 0.08    | 1.07            |                     |
| 594       | 10.74    | 35.47           | 2.47 ± 0.05   | 2.52 ± 0.07    | 1.02            |                     |
| 693       | 9.78     | 35.32           | 2.46 ± 0.05   | 2.56 ± 0.07    | 1.04            |                     |
| 792       | 8.77     | 35.29           | 2.46 ± 0.05   | 2.69 ± 0.08    | 1.09            |                     |
| 989       | 7.47     | 35.32           | 2.46 ± 0.05   | 2.58 ± 0.07    | 1.05            |                     |
| 1189      | 6.17     | 35.21           | 2.45 ± 0.05   | 2.36 ± 0.07    | 0.96            |                     |
| #26       |           |                 |               |                 |                 |                     |
| 50.3°N / -22.6°E |       |                 |               |                 |                 |                     |
| 04/06/2014 |       |                 |               |                 |                 |                     |
| 20        | 11.69    | 35.34           | 2.46 ± 0.05   | 1.90 ± 0.06    | 0.77            |                     |
| 49        | 9.77     | 35.19           | 2.45 ± 0.05   | 1.90 ± 0.06    | 0.77            |                     |
| 74        | 9.65     | 35.19           | 2.45 ± 0.05   | 1.96 ± 0.06    | 0.80            |                     |
| 99        | 9.40     | 35.16           | 2.45 ± 0.05   | 2.07 ± 0.07    | 0.85            |                     |
| 199       | 8.88     | 35.17           | 2.45 ± 0.05   | 2.46 ± 0.08    | 1.00            |                     |
| 297       | 8.17     | 35.07           | 2.44 ± 0.05   | 2.36 ± 0.07    | 0.97            |                     |
| 397       | 7.18     | 34.95           | 2.43 ± 0.05   | 2.47 ± 0.08    | 1.01            |                     |
| 593       | 5.97     | 35.00           | 2.44 ± 0.05   | 2.59 ± 0.08    | 1.07            |                     |
| 792       | 5.23     | 35.03           | 2.44 ± 0.05   | 2.60 ± 0.08    | 1.07            |                     |
| #32       |           |                 |               |                 |                 |                     |
| 55.5°N / -26.7°E |       |                 |               |                 |                 |                     |
| 08/06/2014 |       |                 |               |                 |                 |                     |
| 11        | 10.51    | 35.13           | 2.45 ± 0.05   | 1.63 ± 0.08    | 0.67            |                     |
| 20        | 10.48    | 35.13           | 2.45 ± 0.05   | 1.58 ± 0.06    | 0.65            |                     |
| 40        | 8.89     | 35.07           | 2.44 ± 0.05   | 1.88 ± 0.06    | 0.77            |                     |
| 60        | 8.60     | 35.08           | 2.44 ± 0.05   | 1.87 ± 0.05    | 0.77            |                     |
| 99        | 8.67     | 35.13           | 2.45 ± 0.05   | 1.64 ± 0.05    | 0.67            |                     |
| 119       | 8.08     | 35.04           | 2.44 ± 0.05   | 2.32 ± 0.06    | 0.95            |                     |
| 139       | 7.88     | 35.03           | 2.44 ± 0.05   | 2.59 ± 0.08    | 1.06            |                     |
| 160       | 8.23     | 35.12           | 2.45 ± 0.05   | 2.48 ± 0.07    | 1.01            |                     |
| 199       | 7.99     | 35.09           | 2.44 ± 0.05   | 2.42 ± 0.07    | 0.99            |                     |
| 298       | 7.05     | 34.98           | 2.43 ± 0.05   | 2.48 ± 0.07    | 1.02            |                     |
| 376       | 5.99     | 34.89           | 2.43 ± 0.05   | 2.52 ± 0.07    | 1.04            |                     |
| 446       | 6.36     | 35.04           | 2.44 ± 0.05   | 2.47 ± 0.07    | 1.01            |                     |
| 494       | 5.70     | 34.98           | 2.43 ± 0.05   | 2.50 ± 0.07    | 1.03            |                     |
| 593       | 5.15     | 34.98           | 2.43 ± 0.05   | 2.52 ± 0.08    | 1.04            |                     |
| 693       | 4.78     | 34.96           | 2.43 ± 0.05   | 2.45 ± 0.07    | 1.01            |                     |
| 792       | 4.48     | 34.94           | 2.43 ± 0.05   | 2.29 ± 0.06    | 0.94            |                     |
| Station # | Depth  | Temperature °C | Salinity psu | $^{238}\text{U}$ dpm.L$^{-1}$ | $^{234}\text{Th}$ dpm.L$^{-1}$ | $^{234}\text{Th}/^{238}\text{U}$ |
|-----------|--------|---------------|--------------|----------------|---------------------|----------------|
| #38       |        |               |              |                |                     |                |
| 10        | 9.30   | 35.06         | 2.44 ± 0.05  | 1.23 ± 0.04    | 0.50                |
| 19        | 9.18   | 35.06         | 2.44 ± 0.05  | 1.48 ± 0.05    | 0.61                |
| 39        | 8.22   | 35.08         | 2.44 ± 0.05  | 2.12 ± 0.07    | 0.87                |
| 60        | 8.00   | 35.11         | 2.44 ± 0.05  | 2.38 ± 0.07    | 0.97                |
| 78        | 7.73   | 35.11         | 2.44 ± 0.05  | 2.45 ± 0.07    | 1.00                |
| 99        | 7.73   | 35.13         | 2.45 ± 0.05  | 2.61 ± 0.08    | 1.07                |
| 118       | 7.68   | 35.14         | 2.45 ± 0.05  | 2.61 ± 0.08    | 1.07                |
| 138       | 7.67   | 35.14         | 2.45 ± 0.05  | 2.41 ± 0.07    | 0.99                |
| 158       | 7.62   | 35.14         | 2.45 ± 0.05  | 2.43 ± 0.07    | 0.99                |
| 178       | 7.59   | 35.14         | 2.45 ± 0.05  | 2.51 ± 0.07    | 1.02                |
| 198       | 7.60   | 35.15         | 2.45 ± 0.05  | 2.46 ± 0.07    | 1.01                |
| 298       | 7.41   | 35.14         | 2.45 ± 0.05  | 2.40 ± 0.08    | 0.98                |
| 396       | 7.21   | 35.13         | 2.45 ± 0.05  | 2.50 ± 0.09    | 1.02                |
| 494       | 6.86   | 35.11         | 2.44 ± 0.05  | 2.45 ± 0.09    | 1.00                |
| 593       | 6.32   | 35.09         | 2.44 ± 0.05  | 2.48 ± 0.08    | 1.01                |
| 693       | 5.68   | 35.05         | 2.44 ± 0.05  | 2.54 ± 0.09    | 1.04                |
| 791       | 5.00   | 35.01         | 2.44 ± 0.05  | 2.51 ± 0.09    | 1.03                |
| #44       |        |               |              |                |                     |                |
| 9         | 6.83   | 34.85         | 2.42 ± 0.05  | 1.91 ± 0.06    | 0.79                |
| 20        | 6.80   | 34.85         | 2.42 ± 0.05  | 2.18 ± 0.06    | 0.90                |
| 40        | 5.07   | 34.89         | 2.43 ± 0.05  | 2.42 ± 0.07    | 1.00                |
| 59        | 4.49   | 34.87         | 2.43 ± 0.05  | 2.46 ± 0.07    | 1.01                |
| 79        | 4.33   | 34.90         | 2.43 ± 0.05  | 2.31 ± 0.06    | 0.95                |
| 99        | 4.28   | 34.91         | 2.43 ± 0.05  | 2.40 ± 0.06    | 0.99                |
| 118       | 4.12   | 34.89         | 2.43 ± 0.05  | 2.44 ± 0.07    | 1.00                |
| 138       | 4.03   | 34.89         | 2.43 ± 0.05  | 2.23 ± 0.05    | 0.92                |
| 158       | 4.04   | 34.89         | 2.43 ± 0.05  | 2.42 ± 0.07    | 1.00                |
| 198       | 4.00   | 34.89         | 2.43 ± 0.05  | 2.35 ± 0.06    | 0.97                |
| 297       | 3.92   | 34.89         | 2.43 ± 0.05  | 2.56 ± 0.06    | 1.05                |
| 396       | 3.88   | 34.89         | 2.43 ± 0.05  | 2.56 ± 0.07    | 1.05                |
| 495       | 3.79   | 34.88         | 2.43 ± 0.05  | 2.38 ± 0.06    | 0.98                |
| 594       | 3.73   | 34.88         | 2.43 ± 0.05  | 2.35 ± 0.05    | 0.97                |
| 692       | 3.63   | 34.87         | 2.43 ± 0.05  | 2.62 ± 0.06    | 1.08                |
| 792       | 3.61   | 34.87         | 2.43 ± 0.05  | 2.23 ± 0.06    | 0.92                |
| 1087      | 3.70   | 34.89         | 2.43 ± 0.05  | 2.43 ± 0.07    | 1.00                |
| Station # | Depth m | Temperature °C | Salinity psu | 238U dpm.L⁻¹ | 234Th dpm.L⁻¹ | 234Th/238U |
|----------|---------|----------------|-------------|---------------|---------------|-------------|
| #51 59.8°N / -42.0°E 18/06/2014 | 11 6.76 | 34.87 | 2.43 ± 0.05 | 1.92 ± 0.06 | 0.79 |
| | 19 6.65 | 34.88 | 2.43 ± 0.05 | 1.89 ± 0.05 | 0.78 |
| | 40 6.18 | 34.95 | 2.43 ± 0.05 | 2.18 ± 0.07 | 0.90 |
| | 60 5.96 | 34.97 | 2.43 ± 0.05 | 2.07 ± 0.06 | 0.85 |
| | 79 5.58 | 34.95 | 2.43 ± 0.05 | 2.20 ± 0.06 | 0.91 |
| | 100 5.51 | 34.95 | 2.43 ± 0.05 | 2.44 ± 0.07 | 1.00 |
| | 119 5.27 | 34.93 | 2.43 ± 0.05 | 2.58 ± 0.07 | 1.06 |
| | 139 5.13 | 34.92 | 2.43 ± 0.05 | 2.42 ± 0.07 | 1.00 |
| | 159 5.16 | 34.94 | 2.43 ± 0.05 | 2.31 ± 0.06 | 0.95 |
| | 178 4.93 | 34.92 | 2.43 ± 0.05 | 2.44 ± 0.07 | 1.01 |
| | 199 4.99 | 34.94 | 2.43 ± 0.05 | 2.53 ± 0.07 | 1.04 |
| | 298 4.97 | 34.96 | 2.43 ± 0.05 | 2.51 ± 0.07 | 1.03 |
| | 396 4.66 | 34.95 | 2.43 ± 0.05 | 2.41 ± 0.07 | 0.99 |
| | 495 4.51 | 34.94 | 2.43 ± 0.05 | 2.26 ± 0.06 | 0.93 |
| | 593 4.17 | 34.92 | 2.43 ± 0.05 | 2.30 ± 0.06 | 0.94 |
| | 692 4.05 | 34.91 | 2.43 ± 0.05 | 2.49 ± 0.07 | 1.02 |
| | 791 4.01 | 34.92 | 2.43 ± 0.05 | 2.46 ± 0.07 | 1.01 |
| #53 59.9°N / -43.1°E 16/06/2014 | 10 -0.73 | 31.91 | 2.19 ± 0.05 | 1.75 ± 0.06 | 0.80 |
| | 20 -1.21 | 32.14 | 2.21 ± 0.05 | 2.08 ± 0.10 | 0.94 |
| | 40 -1.24 | 32.80 | 2.26 ± 0.05 | 2.02 ± 0.06 | 0.89 |
| | 59 -1.47 | 33.05 | 2.28 ± 0.05 | 2.20 ± 0.07 | 0.96 |
| | 79 -1.31 | 33.16 | 2.29 ± 0.05 | 2.21 ± 0.07 | 0.96 |
| | 99 -0.79 | 33.36 | 2.31 ± 0.05 | 2.08 ± 0.07 | 0.90 |
| | 119 0.84 | 33.56 | 2.32 ± 0.05 | 2.03 ± 0.06 | 0.87 |
| | 138 -0.08 | 33.59 | 2.33 ± 0.05 | 1.91 ± 0.06 | 0.82 |
| #64 59.1°N / -46.1°E 20/06/2014 | 9 6.55 | 34.80 | 2.42 ± 0.05 | 1.89 ± 0.10 | 0.78 |
| | 20 6.04 | 34.85 | 2.42 ± 0.05 | 2.00 ± 0.07 | 0.83 |
| | 40 5.93 | 34.87 | 2.43 ± 0.05 | 1.88 ± 0.07 | 0.78 |
| | 79 5.37 | 34.95 | 2.43 ± 0.05 | 2.46 ± 0.09 | 1.01 |
| | 99 5.35 | 34.96 | 2.43 ± 0.05 | 2.57 ± 0.09 | 1.06 |
| | 139 5.17 | 34.96 | 2.43 ± 0.05 | 2.43 ± 0.09 | 1.00 |
| | 159 4.92 | 34.94 | 2.43 ± 0.05 | 2.43 ± 0.09 | 1.00 |
| | 197 4.78 | 34.93 | 2.43 ± 0.05 | 2.31 ± 0.08 | 0.95 |
| | 297 4.51 | 34.93 | 2.43 ± 0.05 | 2.33 ± 0.09 | 0.96 |
| | 396 4.35 | 34.93 | 2.43 ± 0.05 | 2.45 ± 0.09 | 1.01 |
| | 494 4.10 | 34.91 | 2.43 ± 0.05 | 2.54 ± 0.09 | 1.04 |
| | 594 3.97 | 34.90 | 2.43 ± 0.05 | 2.52 ± 0.09 | 1.04 |
| | 692 3.88 | 34.89 | 2.43 ± 0.05 | 2.42 ± 0.09 | 1.00 |
| | 792 3.71 | 34.88 | 2.43 ± 0.05 | 2.46 ± 0.09 | 1.01 |
| | 890 3.64 | 34.87 | 2.43 ± 0.05 | 2.46 ± 0.09 | 1.02 |
| Station | Depth | Temperature | Salinity | $^{238}$U | $^{234}$Th | $^{234}$Th/$^{238}$U |
|---------|-------|-------------|----------|----------|-------------|----------------|
| #69     |       |             |          |          |             |                |
| 55.8°N / -48.1°E | 23/06/2014 |       |          |          |             |                |
| 11      | 6.23  | 34.61       | 2.41 ± 0.05 | 1.58 ± 0.05 | 0.66        |
| 20      | 6.15  | 34.61       | 2.41 ± 0.05 | 1.84 ± 0.05 | 0.77        |
| 59      | 3.73  | 34.77       | 2.42 ± 0.05 | 2.58 ± 0.09 | 1.07        |
| 80      | 3.92  | 34.83       | 2.42 ± 0.05 | 2.52 ± 0.08 | 1.04        |
| 99      | 3.83  | 34.82       | 2.42 ± 0.05 | 2.62 ± 0.08 | 1.08        |
| 119     | 3.95  | 34.85       | 2.42 ± 0.05 | 2.55 ± 0.08 | 1.05        |
| 139     | 3.91  | 34.86       | 2.42 ± 0.05 | 2.45 ± 0.08 | 1.01        |
| 159     | 3.83  | 34.86       | 2.42 ± 0.05 | 2.41 ± 0.07 | 0.99        |
| 199     | 3.58  | 34.84       | 2.42 ± 0.05 | 2.61 ± 0.08 | 1.08        |
| 298     | 3.54  | 34.85       | 2.42 ± 0.05 | 2.56 ± 0.08 | 1.05        |
| 496     | 3.51  | 34.85       | 2.42 ± 0.05 | 2.33 ± 0.07 | 0.96        |
| 595     | 3.48  | 34.85       | 2.42 ± 0.05 | 2.50 ± 0.08 | 1.03        |
| 693     | 3.47  | 34.85       | 2.42 ± 0.05 | 2.37 ± 0.07 | 0.98        |
| 792     | 3.48  | 34.85       | 2.42 ± 0.05 | 2.53 ± 0.08 | 1.04        |
| 890     | 3.48  | 34.85       | 2.42 ± 0.05 | 2.32 ± 0.08 | 0.96        |
| 990     | 3.46  | 34.85       | 2.42 ± 0.05 | 2.36 ± 0.07 | 0.98        |
| #77     |       |             |          |          |             |                |
| 53.0°N / -51.1°E | 26/06/2014 |       |          |          |             |                |
| 10      | 6.92  | 34.49       | 2.40 ± 0.05 | 1.80 ± 0.07 | 0.75        |
| 20      | 6.27  | 34.56       | 2.40 ± 0.05 | 1.76 ± 0.07 | 0.73        |
| 39      | 5.11  | 34.64       | 2.41 ± 0.05 | 2.12 ± 0.08 | 0.88        |
| 59      | 4.09  | 34.71       | 2.41 ± 0.05 | 2.39 ± 0.10 | 0.99        |
| 79      | 3.60  | 34.74       | 2.42 ± 0.05 | 2.27 ± 0.07 | 0.94        |
| 100     | 3.49  | 34.76       | 2.42 ± 0.05 | 2.64 ± 0.08 | 1.09        |
| 119     | 3.44  | 34.77       | 2.42 ± 0.05 | 2.52 ± 0.08 | 1.04        |
| 139     | 3.41  | 34.79       | 2.42 ± 0.05 | 2.57 ± 0.08 | 1.06        |
| 159     | 3.43  | 34.81       | 2.42 ± 0.05 | 2.64 ± 0.08 | 1.09        |
| 199     | 3.46  | 34.83       | 2.42 ± 0.05 | 2.36 ± 0.08 | 0.97        |
| 298     | 3.53  | 34.85       | 2.42 ± 0.05 | 2.57 ± 0.09 | 1.06        |
| 397     | 3.57  | 34.86       | 2.42 ± 0.05 | 2.67 ± 0.09 | 1.10        |
| 495     | 3.52  | 34.86       | 2.42 ± 0.05 | 2.60 ± 0.09 | 1.07        |
| 595     | 3.56  | 34.87       | 2.43 ± 0.05 | 2.49 ± 0.08 | 1.03        |
| 693     | 3.49  | 34.86       | 2.43 ± 0.05 | 2.69 ± 0.08 | 1.11        |
| Station | Depth | 1-53 µm (SSF) | >53 µm (LSF) |
|---------|-------|---------------|---------------|
|         |       | 234Th dpm L^{-1} | POC µmol L^{-1} | 234Th dpm L^{-1} | POC µmol L^{-1} |
| #       |       |               |               |               |               |
| #1      | 40.3°N | 120          | 0.188 ± 0.006 | 0.567 ± 0.035 | 0.21 ± 0.001 | 0.105 ± 0.005 |
| -10.0 °E| 250    | 0.171 ± 0.004 | 0.428 ± 0.019 | 0.038 ± 0.001 | 0.068 ± 0.006 |
|         | 550    | 0.123 ± 0.004 | 0.217 ± 0.016 | 0.014 ± 0.000 | 0.023 ± 0.002 |
|         | 800    | 0.068 ± 0.003 | 0.035 ± 0.032 | 0.011 ± 0.001 | 0.024 ± 0.005 |
| #13     | 41.4°N | 120          | 0.431 ± 0.004 | ±              | 0.032 ± 0.001 | 0.039 ± 0.005 |
| -13.9 °E| 250    | 0.210 ± 0.002 | 0.366 ± 0.021 | 0.020 ± 0.001 | 0.027 ± 0.003 |
|         | 450    | 0.133 ± 0.001 | 0.266 ± 0.016 | 0.009 ± 0.000 | 0.018 ± 0.002 |
| #21     | 46.5°N | 150          | 0.280 ± 0.009 | 6.053 ± 0.068 | 0.161 ± 0.003 | 4.747 ± 0.020 |
| -19.7°E | 60     | 0.775 ± 0.017 | 4.064 ± 0.105 | 0.243 ± 0.005 | 1.201 ± 0.031 |
|         | 100    | 0.225 ± 0.005 | 0.545 ± 0.023 | 0.052 ± 0.001 | 0.133 ± 0.007 |
|         | 200    | 0.122 ± 0.003 | 0.360 ± 0.021 | 0.038 ± 0.001 | 0.046 ± 0.002 |
|         | 450    | 0.114 ± 0.003 | 0.234 ± 0.016 | 0.022 ± 0.000 | 0.023 ± 0.002 |
|         | 800    | 0.108 ± 0.002 | 0.158 ± 0.013 | 0.014 ± 0.000 | 0.017 ± 0.001 |
| #26     | 50.3°N | 30           | 0.279 ± 0.008 | 4.792 ± 0.059 | 0.206 ± 0.004 | 2.572 ± 0.017 |
| -22.6°E | 83     | 0.225 ± 0.005 | 0.848 ± 0.022 | 0.201 ± 0.002 | 0.877 ± 0.007 |
|         | 153    | 0.131 ± 0.003 | 0.400 ± 0.021 | 0.030 ± 0.001 | 0.123 ± 0.003 |
|         | 400    | 0.111 ± 0.005 | 0.240 ± 0.049 | 0.012 ± 0.001 | 0.035 ± 0.007 |
| #32     | 55.5°N | 30           | 0.109 ± 0.003 | 5.830 ± 0.097 | 0.045 ± 0.002 | 0.292 ± 0.014 |
| -26.7°E | 60     | 0.359 ± 0.007 | 1.565 ± 0.027 | 0.027 ± 0.001 | 0.124 ± 0.004 |
|         | 100    | 0.224 ± 0.005 | 0.887 ± 0.024 | 0.080 ± 0.002 | 0.338 ± 0.007 |
|         | 200    | 0.121 ± 0.004 | 0.467 ± 0.022 | 0.010 ± 0.000 | 0.046 ± 0.003 |
|         | 450    | 0.078 ± 0.002 | 0.240 ± 0.017 | 0.012 ± 0.000 | 0.037 ± 0.002 |
|         | 800    | 0.084 ± 0.002 | 0.203 ± 0.015 | 0.010 ± 0.000 | 0.066 ± 0.002 |
| #38     | 58.8°N | 20           | 0.239 ± 0.006 | 2.231 ± 0.041 | 0.028 ± 0.001 | 0.156 ± 0.004 |
| -31.3°E | 60     | 0.290 ± 0.006 | 1.273 ± 0.028 | 0.037 ± 0.001 | 0.128 ± 0.004 |
|         | 109    | 0.143 ± 0.003 | 0.621 ± 0.018 | 0.043 ± 0.001 | 0.156 ± 0.005 |
|         | 396    | 0.133 ± 0.004 | 0.292 ± 0.036 | 0.009 ± 0.000 | 0.030 ± 0.005 |
| #44     | 59.6°N | 20           | 1.188 ± 0.020 | 16.736 ± 0.102 | 0.480 ± 0.007 | 3.965 ± 0.020 |
| -38.9°E | 40     | 0.474 ± 0.010 | 3.550 ± 0.056 | 0.041 ± 0.001 | 0.133 ± 0.013 |
|         | 80     | 1.060 ± 0.028 | 6.736 ± 0.213 | 0.098 ± 0.004 | 0.306 ± 0.046 |
|         | 150    | 0.116 ± 0.004 | 0.392 ± 0.041 | 0.005 ± 0.000 | 0.262 ± 0.009 |
|         | 300    | 0.092 ± 0.003 | 0.334 ± 0.022 | 0.004 ± 0.000 | 0.022 ± 0.005 |
|         | 500    | 0.067 ± 0.002 | 0.187 ± 0.016 | 0.005 ± 0.000 | 0.016 ± 0.004 |
| #51     | 59.8°N | 8             | 0.183 ± 0.007 | 4.109 ± 0.064 | 0.230 ± 0.005 | 2.664 ± 0.017 |
| -42.0°E | 20     | 0.958 ± 0.025 | 8.974 ± 0.111 |               |               |
|         | 60     | 0.366 ± 0.009 | 2.154 ± 0.036 | 0.148 ± 0.003 | 0.554 ± 0.010 |
|         | 70     | 0.451 ± 0.009 | 2.375 ± 0.034 |               |               |
|         | 100    | 0.179 ± 0.006 | 0.832 ± 0.032 | 0.052 ± 0.002 | 0.153 ± 0.007 |
|         | 150    | 0.193 ± 0.006 | 0.747 ± 0.039 |               |               |
|         | 250    | 0.088 ± 0.003 | 0.328 ± 0.021 | 0.017 ± 0.001 | 0.076 ± 0.005 |
| Station | Depth (m) | 1-53 µm (SSF) |  >53 µm (LSF) |
|---------|----------|---------------|---------------|
|         | #        | 234Th dpm L⁻¹ | POC µmol L⁻¹  | 234Th dpm L⁻¹ | POC µmol L⁻¹  |
|         |          |               |               |               |               |
| #64     | 30       | 0.024 ± 0.001 | 0.418 ± 0.009 | 0.026 ± 0.001 | 0.373 ± 0.002 |
|         | 60       | 0.174 ± 0.007 | 1.726 ± 0.054 | 0.015 ± 0.001 | 0.154 ± 0.012 |
| 59.1°N  | 100      | 0.162 ± 0.004 | 1.968 ± 0.028 | 0.030 ± 0.001 | 0.267 ± 0.006 |
|         | 150      | 0.118 ± 0.005 | 0.189 ± 0.046 | 0.035 ± 0.002 | 0.208 ± 0.007 |
| -46.1°E | 400      | 0.113 ± 0.003 | 0.309 ± 0.019 | 0.010 ± 0.000 | 0.054 ± 0.004 |
| #69     | 30       | 0.206 ± 0.007 | 4.130 ± 0.052 | 0.070 ± 0.002 | 1.077 ± 0.013 |
| 55.8°N  | 60       | 0.159 ± 0.005 | 1.958 ± 0.040 | 0.015 ± 0.001 | 0.172 ± 0.009 |
| -48.1°E | 100      | 0.124 ± 0.004 | 1.655 ± 0.028 | 0.030 ± 0.001 | 0.299 ± 0.007 |
|         | 150      | 0.097 ± 0.004 | 0.895 ± 0.039 | 0.010 ± 0.001 | 0.083 ± 0.009 |
|         | 410      | 0.069 ± 0.002 | 0.313 ± 0.022 | 0.006 ± 0.000 | 0.075 ± 0.005 |
| #77     | 10       | 0.313 ± 0.011 | 11.182 ± 0.098| 0.206 ± 0.006 | 3.039 ± 0.021 |
| 53.0°N  | 50       | 0.447 ± 0.012 | 5.488 ± 0.067 | 0.057 ± 0.002 | 0.425 ± 0.016 |
|         | 80       | 0.150 ± 0.004 | 2.347 ± 0.028 | 0.039 ± 0.001 | 0.339 ± 0.007 |
| -51.1°E | 200      | 0.100 ± 0.004 | 0.533 ± 0.040 | 0.009 ± 0.000 | 0.081 ± 0.008 |
|         | 460      | 0.069 ± 0.003 | 0.167 ± 0.017 | 0.011 ± 0.000 | 0.060 ± 0.004 |
Figure S1: Comparison between a) $^{234}$Th activities and b) POC concentrations measured on GF/F and silver (Ag) filters.
Figure S2: Export efficiency (in %) as a function of primary production (mmol C m⁻² d⁻¹).

\[ y = -0.20x + 30 \]
\[ R^2 = 0.58 \]