Supplement of

The silicon stable isotope distribution along the GEOVIDE section (GEO-TRACES GA-01) of the North Atlantic Ocean

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**Supplementary Table S1.** Nutrient data analysed for the GEOVIDE transect relevant to this study. All nutrient data are concentrations (µM) and pressure was measured as decibars (equivalent to meters below surface). Note: concentration of dissolved silicon (DSi) recorded in this table was collected from a different cast than the samples collected for analysis of $\delta^{30}$Si<sub>DSi</sub>. The $\delta^{30}$Si<sub>DSi</sub> samples were analysed independently for DSi (see table S2). Si* = DSi – NO<sub>3</sub>.

| Station | Cast | Bottle | Pressure | NO<sub>3</sub> | NO<sub>2</sub> | DSi  | Si*  |
|---------|------|--------|----------|----------------|-------------|------|------|
| 1       | 1    | 24     | 2.6      | 0.04           | 0.00        | 0.90 | 0.86 |
| 1       | 1    | 23     | 16.2     | 0.03           | 0.00        | 0.87 | 0.84 |
| 1       | 1    | 22     | 36.7     | 0.90           | 0.00        | 0.55 | -0.35|
| 1       | 1    | 21     | 59.8     | 4.23           | 0.00        | 1.09 | -3.14|
| 1       | 1    | 20     | 99.3     | 5.60           | 0.00        | 1.88 | -3.72|
| 1       | 1    | 19     | 149.2    | 6.31           | 0.00        | 2.17 | -4.14|
| 1       | 1    | 18     | 201.2    | 7.30           | 0.00        | 2.72 | -4.57|
| 1       | 1    | 17     | 299.8    | 9.26           | 0.00        | 3.58 | -5.68|
| 1       | 1    | 16     | 401.9    | 10.75          | 0.00        | 4.69 | -6.06|
| 1       | 1    | 15     | 500.6    | 12.36          | 0.00        | 6.34 | -6.03|
| 1       | 1    | 14     | 600.4    | 12.81          | 0.00        | 7.28 | -5.53|
| 1       | 1    | 13     | 700.6    | 12.55          | 0.00        | 7.42 | -5.12|
| 1       | 1    | 12     | 799.5    | 12.60          | 0.00        | 7.95 | -4.65|
| 1       | 1    | 11     | 900.9    | 12.81          | 0.00        | 8.45 | -4.37|
| 1       | 1    | 10     | 1000.8   | 12.96          | 0.00        | 8.81 | -4.15|
| 1       | 1    | 9      | 1200.6   | 13.31          | 0.00        | 9.67 | -3.64|
| 1       | 1    | 8      | 1400.5   | 13.94          | 0.00        | 11.02| -2.92|
| 1       | 1    | 7      | 1600.3   | 14.53          | 0.00        | 13.20| -1.33|
| 1       | 1    | 6      | 1799.5   | 14.93          | 0.00        | 15.19| 0.26 |
| 1       | 1    | 5      | 2001     | 15.34          | 0.00        | 18.87| 3.53 |
| 1       | 1    | 4      | 2499.6   | 16.46          | 0.00        | 28.61| 12.15|
| 1       | 1    | 3      | 3000.4   | 17.21          | 0.00        | 36.05| 18.84|
| 1       | 1    | 2      | 3250.3   | 17.55          | 0.00        | 39.21| 21.66|
| 1       | 1    | 1      | 3580.6   | 17.82          | 0.00        | 41.72| 23.89|
| 13      | 1    | 24     | 4.2      | 0.05           | 0.01        | 0.53 | 0.48 |
| 13      | 1    | 23     | 29.7     | 0.65           | 0.06        | 0.67 | 0.03 |
| 13      | 1    | 22     | 49.1     | 2.70           | 0.30        | 0.95 | -1.75|
| 13      | 1    | 21     | 99.9     | 6.32           | 0.02        | 1.83 | -4.49|
| 13      | 1    | 20     | 200.6    | 7.30           | 0.02        | 2.26 | -5.04|
| 13      | 1    | 19     | 299.9    | 9.57           | 0.01        | 3.10 | -6.47|
| 13      | 1    | 18     | 399.7    | 9.01           | 0.02        | 2.96 | -6.05|
| 13      | 1    | 17     | 498.7    | 10.82          | 0.00        | 3.70 | -7.11|
| 13      | 1    | 16     | 599.8    | 12.93          | 0.01        | 5.04 | -7.89|
| 13      | 1    | 15     | 700.2    | 16.09          | 0.01        | 7.52 | -8.57|
| 13      | 1    | 14     | 798.6    | 17.08          | 0.00        | 8.69 | -8.40|
|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 13 | 1 | 13 | 1000 | 17.57 | 0.00 | 10.32 | -7.25 |
| 13 | 1 | 12 | 1250.5 | 16.76 | 0.00 | 10.65 | -6.11 |
| 13 | 1 | 11 | 1499.8 | 17.29 | 0.00 | 11.88 | -5.41 |
| 13 | 1 | 10 | 1749.7 | 17.52 | 0.00 | 13.08 | -4.43 |
| 13 | 1 |  9 | 1999.9 | 17.78 | 0.00 | 16.33 | -1.46 |
| 13 | 1 |  8 | 2250.1 | 18.34 | 0.00 | 20.19 |  1.85 |
| 13 | 1 |  7 | 2499.4 | 18.75 | 0.00 | 23.83 |  5.08 |
| 13 | 1 |  6 | 3000.2 | 19.96 | 0.00 | 33.31 | 13.35 |
| 13 | 1 |  5 | 3498.4 | 20.73 | 0.00 | 39.11 | 18.37 |
| 13 | 1 |  4 | 4000.8 | 21.38 | 0.00 | 43.43 | 22.05 |
| 13 | 1 |  3 | 4499.1 | 21.62 | 0.00 | 45.81 | 24.20 |
| 13 | 1 |  2 | 4998.9 | 21.72 | 0.00 | 46.51 | 24.79 |
| 13 | 1 |   1 | 5439.5 | 21.70 | 0.00 | 47.00 | 25.31 |
| 21 | 1 | 24 |  2.4 |  0.80 | 0.09 |  0.40 | -0.40 |
| 21 | 1 | 23 |  39.4 |  4.06 | 0.15 |  1.62 | -2.44 |
| 21 | 1 | 22 | 100.2 |  8.00 | 0.04 |  2.89 | -5.11 |
| 21 | 1 | 21 | 149.7 |  8.65 | 0.01 |  3.22 | -5.42 |
| 21 | 1 | 20 | 197.4 |  9.10 | 0.01 |  3.39 | -5.71 |
| 21 | 1 | 19 | 300.1 |  9.45 | 0.01 |  3.60 | -5.85 |
| 21 | 1 | 18 | 398.2 | 11.49 | 0.01 |  4.54 | -6.96 |
| 21 | 1 | 17 |  500 | 10.57 | 0.00 |  4.07 | -6.50 |
| 21 | 1 | 16 | 600.3 | 11.30 | 0.01 |  4.59 | -6.71 |
| 21 | 1 | 15 |  699 | 16.19 | 0.00 |  8.03 | -8.16 |
| 21 | 1 | 14 |  799.8 |  0.01 | | | |
| 21 | 1 | 13 |  800 | 18.11 | 0.00 | 10.05 | -8.06 |
| 21 | 1 | 12 | 1000.4 | 17.88 | 0.00 | 10.77 | -7.11 |
| 21 | 1 | 11 | 1250.6 | 17.49 | 0.00 | 11.01 | -6.49 |
| 21 | 1 | 10 | 1499.9 | 17.16 | 0.00 | 10.93 | -6.23 |
| 21 | 1 |  9 | 1749.6 | 17.07 | 0.00 | 11.44 | -5.63 |
| 21 | 1 |  8 | 2000.2 | 17.07 | 0.00 | 12.17 | -4.89 |
| 21 | 1 |  7 | 2300.2 | 17.00 | 0.00 | 13.34 | -3.67 |
| 21 | 1 |  6 | 2499.6 | 17.22 | 0.00 | 15.92 | -1.30 |
| 21 | 1 |  5 | 2999.4 | 18.01 | 0.00 | 23.76 |  5.75 |
| 21 | 1 |  4 | 3499.4 | 20.25 | 0.00 | 37.02 | 16.77 |
| 21 | 1 |  3 | 3998.9 | 21.22 | 0.00 | 43.11 | 21.89 |
| 21 | 1 |  2 | 4500.4 | 21.31 | 0.00 | 43.68 | 22.36 |
| 21 | 1 |   1 | 4607.2 | 21.64 | -0.01 | 45.61 | 23.97 |
| 26 | 1 | 24 |  4.2 |  5.60 | 0.53 |  1.13 | -4.47 |
| 26 | 1 | 23 |  34.6 |  5.87 | 0.55 |  1.19 | -4.67 |
| 26 | 1 | 22 |  99.9 | 10.72 | 0.00 |  4.03 | | |
| 26 | 1 | 21 | 149.5 | 12.01 | 0.00 |  5.13 | | |
|   |   |    |    |    |    |    |     |
|---|---|----|----|----|----|----|------|
| 26| 1 | 20 | 199.5| 12.52| 0.06| 5.90|-6.62 |
| 26| 1 | 19 | 300 | 12.99| 0.02| 6.47|-6.52 |
| 26| 1 | 18 | 400.3| 15.46| 0.02| 8.43|-7.03 |
| 26| 1 | 17 | 500.8| 18.37| 0.01| 11.26|-7.12 |
| 26| 1 | 16 | 600.3| 18.07| 0.01| 11.14|-6.93 |
| 26| 1 | 15 | 750.3| 17.16| 0.01| 10.75|-6.41 |
| 26| 1 | 14 | 899.3| 16.88| 0.00| 10.47|-6.41 |
| 26| 1 | 13 | 999 | 16.67| 0.00| 10.11|-6.56 |
| 26| 1 | 12 | 1199.5| 16.48| 0.00| 10.56|-5.89 |
| 26| 1 | 11 | 1400.4| 16.44| 0.00| 11.06|-5.44 |
| 26| 1 | 10 | 1599.7| 16.51| 0.00| 11.72|-4.77 |
| 26| 1 |  9 | 1800.2| 16.50| 0.00| 12.29|-4.15 |
| 26| 1 |  8 | 1998.4| 16.44| 0.00| 23.13| 5.90 |
| 26| 1 |  7 | 2299.9| 16.23| 0.00| 23.13| 5.90 |
| 26| 1 |  6 | 2498.9| 16.25| 0.00| 14.65|-1.60 |
| 26| 1 |  5 | 2749.2| 16.47| 0.00| 17.54| 1.07 |
| 26| 1 |  4 | 2999 | 17.24| 0.00| 23.13| 5.90 |
| 26| 1 |  3 | 3250.5| 18.37| 0.00| 29.41|11.04 |
| 26| 1 |  2 | 3499.5| 19.06| 0.00| 33.42|14.36 |
| 26| 1 |   1| 4191.8| 20.84| 0.00| 43.86|23.03 |
| 32| 1 |  24 | 15.7 | 6.74 | 0.15| 1.07|-5.67 |
| 32| 1 |  23 | 30.5 | 8.79 | 0.27| 2.21|-6.57 |
| 32| 1 |  22 | 100.1| 9.51 | 0.67| 1.95|-7.56 |
| 32| 1 |  21 | 150.9| 12.88| 0.08| 5.42|-7.46 |
| 32| 1 |  20 | 200.6| 12.94| 0.03| 5.85|-7.09 |
| 32| 1 |  19 | 299.8| 14.43| 0.02| 7.54|-6.89 |
| 32| 1 |  18 | 378.2| 15.40| 0.02| 8.43|-6.97 |
| 32| 1 |  17 | 450.1| 17.80| 0.01|10.65|-7.15 |
| 32| 1 |  16 | 501 | 17.72| 0.01|10.76|-6.96 |
| 32| 1 |  15 | 600.1| 16.44| 0.00|10.41|-6.02 |
| 32| 1 |  14 | 700.4| 16.30| 0.00|10.32|-5.98 |
| 32| 1 |  13 | 801.1| 16.44| 0.00| 9.76|-6.68 |
| 32| 1 |  12 | 899.1| 16.51| -0.01| 9.88|-6.63 |
| 32| 1 |  11 | 999.5| 15.88| -0.01| 9.64|-6.24 |
| 32| 1 |  10 | 1199.5| 15.69| 0.00| 9.77|-5.92 |
| 32| 1 |   9 | 1399| 15.81| -0.01|10.50|-5.32 |
| 32| 1 |   8 | 1549.3| 16.50| 0.00|10.89|-5.61 |
| 32| 1 |   7 | 1700| 16.49| 0.00|11.27|-5.23 |
| 32| 1 |   6 | 2000.1| 16.37| 0.00|11.93|-4.44 |
| 32| 1 |   5 | 2250| 16.33| 0.00|13.25|-3.08 |
| 32| 1 |   4 | 2499.8| 16.25| 0.00|14.47|-1.77 |
|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 60 | 3 | 10 | 999.5 | 15.58 | 0.00 | 9.71 |
| 60 | 3 | 9  | 999.4 |
| 60 | 3 | 8  | 1201.8 |
| 60 | 3 | 7  | 1201.7 | 15.40 | 0.00 | 10.06 | -5.34 |
| 60 | 3 | 6  | 1400.6 | 14.99 | 0.00 | 9.87 | -5.12 |
| 60 | 3 | 5  | 1400.6 |
| 60 | 3 | 4  | 1500.7 |
| 60 | 3 | 3  | 1600.4 |
| 60 | 3 | 2  | 1719.4 |
| 60 | 3 | 1  | 1738.1 | 14.63 | 0.00 | 9.94 | -4.68 |
| 64 | 1 | 24 | 4.6  | 4.70  | 0.12 | 4.47 | -0.24 |
| 64 | 1 | 23 | 49.7 | 10.65 | 0.20 | 6.93 | -3.71 |
| 64 | 1 | 22 | 99.8 | 14.00 | 0.31 | 7.37 | -6.63 |
| 64 | 1 | 21 | 149.7 | 15.14 | 0.15 | 7.40 | -7.74 |
| 64 | 1 | 20 | 199.7 | 15.51 | 0.08 | 7.64 | -7.88 |
| 64 | 1 | 19 | 319.6 | 15.67 | 0.05 | 8.00 | -7.67 |
| 64 | 1 | 18 | 399.7 | 16.00 | 0.02 | 8.15 | -7.85 |
| 64 | 1 | 17 | 499.6 | 15.73 | 0.02 | 8.10 | -7.63 |
| 64 | 1 | 16 | 649.3 | 15.99 | 0.00 | 8.41 | -7.58 |
| 64 | 1 | 15 | 750  | 15.97 | 0.01 | 8.32 | -7.65 |
| 64 | 1 | 14 | 799.7 | 15.89 | 0.00 | 8.25 | -7.64 |
| 64 | 1 | 13 | 899.9 | 15.88 | 0.01 | 8.35 | -7.53 |
| 64 | 1 | 12 | 999.4 | 16.07 | 0.01 | 8.68 | -7.39 |
| 64 | 1 | 11 | 1199.6 | 16.52 | 0.00 | 9.88 | -6.65 |
| 64 | 1 | 10 | 1399.4 | 16.60 | 0.01 | 10.41 | -6.19 |
| 64 | 1 | 9  | 1598.9 | 16.53 | 0.01 | 10.71 | -5.82 |
| 64 | 1 | 8  | 1799.8 | 16.56 | 0.01 | 11.41 | -5.15 |
| 64 | 1 | 7  | 1999.1 | 16.48 | 0.01 | 12.38 | -4.10 |
| 64 | 1 | 6  | 2249.7 |
| 64 | 1 | 5  | 2249.6 | 16.20 | 0.01 | 13.03 | -3.17 |
| 64 | 1 | 4  | 2401 |
| 64 | 1 | 3  | 2401  | 15.47 | 0.00 | 11.43 | -4.04 |
| 64 | 1 | 2  | 2502.3 |
| 64 | 1 | 1  | 2502.1 | 15.01 | 0.01 | 10.46 | -4.55 |
| 69 | 1 | 24 | 4.2  | 0.08  | 0.00 | 3.56 | 3.48 |
| 69 | 1 | 23 | 50.4 | 10.97 | 0.31 | 7.04 | -3.94 |
| 69 | 1 | 22 | 99.3 | 14.28 | 0.32 | 7.38 | -6.90 |
| 69 | 1 | 21 | 150  | 14.57 | 0.16 | 7.75 | -6.82 |
| 69 | 1 | 20 | 200.2 | 14.78 | 0.14 | 7.98 | -6.80 |
| 69 | 1 | 19 | 299.8 | 14.99 | 0.04 | 8.06 | -6.93 |
| 69 | 1 | 18 | 399.9 | 15.19 | 0.02 | 8.12 | -7.07 |
|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 69 | 1 | 17 | 499.7 | 14.89 | 0.02 | 8.10 | -6.78 |
| 69 | 1 | 16 | 600.7 | 14.93 | 0.01 | 8.06 | -6.88 |
| 69 | 1 | 15 | 800.9 | 15.10 | 0.01 | 8.20 | -6.90 |
| 69 | 1 | 14 | 1000.1 | 15.10 | 0.01 | 8.34 | -6.75 |
| 69 | 1 | 13 | 1200.1 | 15.07 | 0.00 | 8.25 | -6.82 |
| 69 | 1 | 12 | 1400.3 | 15.02 | 0.01 | 8.81 | -6.21 |
| 69 | 1 | 11 | 1599.8 | 15.61 | 0.00 | 9.14 | -6.48 |
| 69 | 1 | 10 | 1799.6 | 16.12 | 0.00 | 10.62 | -5.50 |
| 69 | 1 |  9 | 2000  | 15.91 | 0.00 | 10.83 | -5.08 |
| 69 | 1 |  8 | 2249.6 | 15.98 | 0.00 | 11.55 | -4.42 |
| 69 | 1 |  7 | 2500  | 15.69 | 0.00 | 11.65 | -4.04 |
| 69 | 1 |  6 | 2725.4 | 15.65 | 0.00 | 12.53 | -3.12 |
| 69 | 1 |  5 | 2999  | 15.47 | 0.00 | 13.22 | -2.25 |
| 69 | 1 |  4 | 3248.9 | 15.25 | 0.00 | 14.03 | -1.22 |
| 69 | 1 |  3 | 3499.9 | 14.33 | 0.00 | 11.49 | -2.84 |
| 69 | 1 |  2 | 3700.6 | 13.35 | 0.01 | 8.42 | -4.93 |
| 69 | 1 |   1| 3745.3 | 13.37 | 0.00 | 8.90 | -4.47 |
| 77 | 1 | 24 | 3.5   |   |   |   |   |
| 77 | 1 | 23 | 3.5   | 0.35 | 0.04 | 1.09 | 0.74 |
| 77 | 1 | 22 | 23.8  | 2.99 | 0.13 | 3.59 | 0.60 |
| 77 | 1 | 21 | 40.3  | 6.53 | 0.27 | 5.99 | -0.54 |
| 77 | 1 | 20 | 100.2 | 13.58 | 0.00 | 8.05 | -5.54 |
| 77 | 1 | 19 | 150.5 | 14.47 | 0.00 | 8.14 | -6.33 |
| 77 | 1 | 18 | 200.7 | 14.15 | 0.56 | 8.17 | -5.98 |
| 77 | 1 | 17 | 300.4 | 14.54 | 0.24 | 8.20 | -6.33 |
| 77 | 1 | 16 | 401.6 | 15.08 | 0.03 | 8.40 | -6.69 |
| 77 | 1 | 15 | 501.7 | 15.15 | 0.03 | 8.38 | -6.78 |
| 77 | 1 | 14 | 600.8 | 15.25 | 0.01 | 8.43 | -6.81 |
| 77 | 1 | 13 | 701  | 15.28 | 0.00 | 8.52 | -6.76 |
| 77 | 1 | 12 | 801.7 | 15.10 | 0.01 | 8.47 | -6.63 |
| 77 | 1 | 11 | 901.5 | 15.21 | 0.01 | 8.54 | -6.67 |
| 77 | 1 | 10 | 1001.4| 15.26 | 0.01 | 8.68 | -6.59 |
| 77 | 1 |  9 | 1201.7| 15.89 | 0.01 | 10.14 | -5.75 |
| 77 | 1 |  8 | 1301.6| 16.02 | 0.01 | 10.57 | -5.45 |
| 77 | 1 |  7 | 1500.3| 16.10 | 0.00 | 11.13 | -4.97 |
| 77 | 1 |  6 | 1750.5| 15.60 | 0.00 | 11.11 | -4.49 |
| 77 | 1 |  5 | 2000.4| 15.43 | 0.00 | 11.71 | -3.73 |
| 77 | 1 |  4 | 2201.2| 15.16 | 0.01 | 12.03 | -3.13 |
| 77 | 1 |  3 | 2400.5| 14.77 | 0.01 | 12.07 | -2.70 |
| 77 | 1 |  2 | 2449.4| 14.91 | 0.01 | 12.18 | -2.73 |
| 77 | 1 |   1| 2530.9| 14.56 | 0.01 | 11.82 | -2.74 |
Supplementary Table S2: Stable silicon isotope data ($\delta^{30}\text{Si}_{\text{DSi}}$) including; reproducibility (2SD) and number of full chemistry replicates (n), DSi concentration ([DSi]), and the inverse of [DSi] for each station and depth sampled during GEOVIDE.

| Station | Latitude (°N) | Longitude (°E) | Depth (m) | [DSi] (μM) | 1/[DSi] (μM$^{-1}$) | $\delta^{30}\text{Si}_{\text{DSi}}$ (%) | 2SD | n |
|---------|---------------|---------------|-----------|-------------|------------------------|--------------------------------------|-----|---|
| 1       | 40.333        | -10.036       | 500.6     | 6.8         | 0.148                  | 1.45                                 | 0.16 | 2 |
| 1       | 40.333        | -10.036       | 1000.8    | 9.3         | 0.107                  | 1.33                                 | 0.20 | 2 |
| 1       | 40.333        | -10.036       | 2499.6    | 29.1        | 0.034                  | 0.95                                 | 0.16 | 3 |
| 1       | 40.333        | -10.036       | 3000.4    | 36.5        | 0.027                  | 0.97                                 | 0.16 | 3 |
| 1       | 40.333        | -10.036       | 3580.6    | 42.3        | 0.024                  | 1.17                                 | 0.16 | 3 |
| 13      | 41.383        | -13.888       | 1000      | 10.8        | 0.041                  | n/a                                  | ---  | ---|
| 13      | 41.383        | -13.888       | 1999.9    | 16.7        | 0.060                  | n/a                                  | ---  | ---|
| 13      | 41.383        | -13.888       | 2499.4    | 24.2        | 0.041                  | 1.22                                 | 0.16 | 1 |
| 13      | 41.383        | -13.888       | 3000.2    | 33.6        | 0.030                  | 0.96                                 | 0.16 | 3 |
| 13      | 41.383        | -13.888       | 4000.8    | 43.8        | 0.023                  | 1.1                                   | 0.16 | 2 |
| 13      | 41.383        | -13.888       | 4998.9    | 46.6        | 0.021                  | 0.98                                 | 0.16 | 3 |
| 21      | 46.544        | -19.672       | 500       | 11.1        | 0.090                  | n/a                                  | ---  | ---|
| 21      | 46.544        | -19.672       | 1000.4    | 11.1        | 0.090                  | n/a                                  | ---  | ---|
| 21      | 46.544        | -19.672       | 2000.2    | 12.6        | 0.079                  | n/a                                  | ---  | ---|
| 21      | 46.544        | -19.672       | 2999.4    | 24.1        | 0.041                  | n/a                                  | ---  | ---|
| 21      | 46.544        | -19.672       | 3998.9    | 43.3        | 0.023                  | 1.17                                 | 0.16 | 2 |
| 21      | 46.544        | -19.672       | 4500.4    | 43.6        | 0.023                  | 1.31                                 | 0.16 | 2 |
| 26      | 50.278        | -22.602       | 500.8     | 11.7        | 0.086                  | 2.85                                 | 0.16 | 3 |
| 26      | 50.278        | -22.602       | 999       | 10.6        | 0.094                  | 2.26                                 | 0.16 | 3 |
| 26      | 50.278        | -22.602       | 1400.4    | 11.1        | 0.090                  | 1.72                                 | 0.16 | 3 |
| 26      | 50.278        | -22.602       | 1998.4    | 12.8        | 0.078                  | 1.74                                 | 0.20 | 2 |
| 26      | 50.278        | -22.602       | 2999     | 23.2        | 0.043                  | n/a                                  | ---  | ---|
| 26      | 50.278        | -22.602       | 3499.5    | 44.3        | 0.023                  | 1.07                                 | 0.16 | 1 |
| 32      | 55.506        | -26.710       | 501       | 11.1        | 0.090                  | n/a                                  | ---  | ---|
| 32      | 55.506        | -26.710       | 999.5     | 10.1        | 0.099                  | n/a                                  | ---  | ---|
| 32      | 55.506        | -26.710       | 1399      | 10.9        | 0.092                  | 1.86                                 | 0.16 | 2 |
| 32      | 55.506        | -26.710       | 2000.1    | 12.4        | 0.080                  | 1.74                                 | 0.16 | 2 |
| 32      | 55.506        | -26.710       | 2499.8    | 14.8        | 0.067                  | 1.55                                 | 0.16 | 3 |
| 32      | 55.506        | -26.710       | 2999.8    | 22.4        | 0.045                  | 1.52                                 | 0.16 | 3 |
| 44      | 59.623        | -38.954       | 499.4     | 8.8         | 0.114                  | 2.29                                 | 0.16 | 2 |
| 44      | 59.623        | -38.954       | 1000.8    | 10.2        | 0.098                  | 1.59                                 | 0.26 | 3 |
| 44      | 59.623        | -38.954       | 1401.3    | 11.6        | 0.086                  | 1.49                                 | 0.16 | 2 |
| 44      | 59.623        | -38.954       | 2000.3    | 13.4        | 0.075                  | 1.59                                 | 0.16 | 2 |
| 44      | 59.623        | -38.954       | 2501      | 14.2        | 0.070                  | 1.4                                  | 0.16 | 4 |
| 44      | 59.623        | -38.954       | 2900.1    | 8.0         | 0.125                  | 1.24                                 | 0.16 | 3 |
Supplementary Table S2 (continued).

| Station | Latitude (°N) | Longitude (°E) | Depth (m) | [DSi] (µM) | 1/[DSi] (µM⁻¹) | δ³⁰SiDSi (%) | 2SD | n |
|---------|---------------|----------------|-----------|-------------|----------------|--------------|-----|---|
| 60      | 59.799        | -42.003        | 500.1     | 8.9         | 0.112          | n/a          | --- | ---|
| 60      | 59.799        | -42.003        | 999.4     | 10.2        | 0.098          | 2.74         | 0.16| 3 |
| 60      | 59.799        | -42.003        | 1400.6    | 10.3        | 0.097          | 1.73         | 0.16| 2 |
| 60      | 59.799        | -42.003        | 1719.4    | 10.5        | 0.095          | 1.41         | 0.16| 1 |
| 64      | 59.068        | -46.083        | 499.6     | 8.5         | 0.117          | 2.01         | 0.18| 2 |
| 64      | 59.068        | -46.083        | 999.4     | 9.0         | 0.111          | 2.13         | 0.16| 2 |
| 64      | 59.068        | -46.083        | 1399.4    | 10.8        | 0.093          | 1.45         | 0.26| 3 |
| 64      | 59.068        | -46.083        | 1799.8    | 11.9        | 0.084          | 1.6          | 0.16| 2 |
| 64      | 59.068        | -46.083        | 1999.1    | 12.8        | 0.078          | 1.36         | 0.16| 2 |
| 64      | 59.068        | -46.083        | 2249.6    | 13.4        | 0.075          | 1.35         | 0.16| 2 |
| 69      | 55.842        | -48.093        | 499.7     | 8.6         | 0.116          | n/a          | --- | ---|
| 69      | 55.842        | -48.093        | 1000.1    | 8.8         | 0.113          | 1.56         | 0.16| 2 |
| 69      | 55.842        | -48.093        | 1400.3    | 9.1         | 0.110          | 1.43         | 0.16| 2 |
| 69      | 55.842        | -48.093        | 2000     | 11.4        | 0.088          | 1.55         | 0.16| 3 |
| 69      | 55.842        | -48.093        | 2999     | 13.8        | 0.072          | 1.53         | 0.16| 2 |
| 69      | 55.842        | -48.093        | 3499.9  | 12.0        | 0.084          | 1.55         | 0.16| 2 |
| 77      | 53            | -51.100        | 501.7     | 8.8         | 0.114          | 1.89         | 0.16| 3 |
| 77      | 53            | -51.100        | 1001.4    | 9.2         | 0.108          | 1.91         | 0.16| 2 |
| 77      | 53            | -51.100        | 1500.3    | 11.6        | 0.086          | 1.52         | 0.16| 2 |
| 77      | 53            | -51.100        | 2000.4    | 12.2        | 0.082          | 1.38         | 0.16| 2 |
| 77      | 53            | -51.100        | 2530.9    | 12.2        | 0.082          | 1.28         | 0.16| 2 |
Supplementary Table S3. Table 1 from García-Ibáñez, (2018) describes the: “properties characterizing the source water types (SWTs) considered in this study with their corresponding standard deviations. The square of correlation coefficients ($R^2$) between the observed and estimated properties are also given, together with the standard deviation of the residuals (SDR) and the SDR $\varepsilon$ ratios from the data below 400 dbar. The $\varepsilon$ (standard deviation of the water sample properties) used to compute the SDR $\varepsilon$ ratios are listed in Table S1” from García-Ibáñez, (2018). “The last column accounts for the uncertainties in the SWT contributions.” Please note that in this manuscript, the following changes to the water mass abbreviations have been made (Sutton et al. = García-Ibáñez et al. (2018)): (NACW = ENACW$_{16}$ + ENACW$_{12}$ + SPMW$_8$; IcSPMW = SPMW$_7$; SAIW = SAIW$_6$ + SAIW$_4$; NEADW = ISOW; LDW = NEADW$_L$).

|                      | $S$     | $O_2^0$   | Si(OH$_4$)$_0$ | NO$_3^0$ | Uncertainty |
|----------------------|---------|-----------|----------------|----------|-------------|
|                      | (°C)    | (μmol kg$^{-1}$) | (μmol kg$^{-1}$) | (μmol kg$^{-1}$) |             |
| ENACW$_{16}$         | 16.0 ± 0.6 | 36.20 ± 0.06 | 246 ± 7        | 1.87 ± 0.12 | 0.00 ± 0.15 | 9 %         |
| ENACW$_{12}$         | 12.3 ± 0.6 | 35.66 ± 0.06 | 251 ± 8        | 1.3 ± 0.9   | 8.0 ± 1.1   | 10 %        |
| SPMW$_8$             | 8.0 ± 0.6  | 35.23 ± 0.06 | 289 ± 9        | 2.7 ± 1.9   | 11.4 ± 1.3  | 11 %        |
| SPMW$_7$             | 7.1 ± 0.6  | 35.16 ± 0.06 | 280 ± 8        | 5.20 ± 0.15 | 12.83 ± 0.15 | 6 %        |
| IrSPMW               | 5.0 ± 0.6  | 35.01 ± 0.06 | 310 ± 9        | 5.9 ± 0.4   | 14.1 ± 0.4  | 12 %        |
| LSW                  | 3.40 ± 0.4 | 34.86 ± 0.01 | 307 ± 9        | 6.9 ± 0.7   | 14.8 ± 0.7  | 10 %        |
| SAIW$_6$             | 6.0 ± 0.5  | 34.70 ± 0.03 | 297 ± 9        | 6.0 ± 2.4   | 13.3 ± 1.2  | 9 %         |
| SAIW$_4$             | 4.5 ± 0.5  | 34.80 ± 0.03 | 290 ± 9        | 0.0 ± 2.4   | 0.0 ± 1.2   | 3 %         |
| MW                   | 11.7 ± 0.2 | 36.50 ± 0.07 | 190 ± 6        | 6.30 ± 0.15 | 13.2 ± 0.2  | 2 %         |
| ISOW                 | 2.7 ± 0.1  | 35.00 ± 0.02 | 294 ± 9        | 11.8 ± 0.9  | 14.0 ± 0.6  | 9 %         |
| DSOW                 | 1.30 ± 0.2 | 34.905 ± 0.01 | 314 ± 9       | 7.0 ± 0.5   | 12.9 ± 0.8  | 7 %         |
| PIW                  | 0.0 ± 0.2  | 34.65 ± 0.03 | 320 ± 10       | 8.4 ± 2.5   | 13.4 ± 1.2  | 9 %         |
| NEADW$_U$            | 2.5 ± 0.5  | 34.940 ± 0.07 | 274 ± 8       | 29.4 ± 0.6  | 18.1 ± 0.5  | n/a$^c$     |
| NEADW$_L$            | 1.98 ± 0.03 | 34.895 ± 0.003 | 252 ± 8    | 48.0 ± 0.3  | 22.0 ± 0.5  | 3 %         |
| $R^2$                | 0.9999  | 0.9984  | 0.9939 | 0.9978 | 0.9941 |
| SDR                  | 0.009  | 0.005  | 2.04  | 2.02  |
| SDR /$\varepsilon$   | 2.0   | 2.0    | 2.0   | 1.0   |

$^a$ ENACW$_{16}$ and ENACW$_{12}$ East North Atlantic Central Water of 16 and 12 °C, respectively; SPMW$_8$, SPMW$_7$ and IrSPMW Subpolar Mode Water of 8 °C, of 7 °C and of the Irminger Sea, respectively; LSW Labrador Sea Water; SAIW$_6$ and SAIW$_4$ Subarctic Intermediate Water of 6 and 4 °C, respectively; MW Mediterranean Water; ISOW Iceland–Scotland Overflow Water; DSOW Denmark Strait Overflow Water; PIW Polar Intermediate Water; and NEADW$_U$ and NEADW$_L$ North-East Atlantic Deep Water upper and lower, respectively. $^b$ The standard deviation of the properties of the SWTs were obtained following the method described in Text S1 in the Supplement. $^c$ No uncertainty is given for NEADW$_U$ since it was decomposed between MW, LSW, ISOW and NEADW$_L$ (see Sect. 2.3); n/a: not applicable.
Supplementary Table S4. Silicon isotope composition of dissolved silicon ($\delta^{30}$Si$_{DSi}$ measured as ‰), the corresponding dissolved silicon concentration (DSi measured in $\mu$M), and the contribution of each water mass (NACW, IcSPMW, IrSPMW, LSW, MW, NEADW, LDW, DSOW, PIW, SAIW – see text for definitions) to the relevant sample locations. The sum of all water masses present at a given sample location (Station/Depth) should equal 1. These data provide support for Fig. 5.

| Station | Depth (m) | NACW | IcSPMW | IrSPMW | LSW | MW | NEADW | LDW | DSOW | PIW | SAIW | [DSi] | $\delta^{30}$Si$_{DSi}$ |
|---------|-----------|------|--------|--------|-----|----|-------|-----|------|-----|------|-------|------------------|
| 1       | 3580.6    | 0    | 0      | 0      | 0   | 0.038952 | 0.007463 | 0.203445 | 0.75006 | 0    | 0    | 42.3 | 1.17            |
| 1       | 3000.4    | 0    | 0      | 0      | 0   | 0.106571 | 0.024527 | 0.268914 | 0.599912 | 0    | 0    | 36.5 | 0.97            |
| 1       | 2499.6    | 0    | 0      | 0      | 0   | 0.246288 | 0.057153 | 0.28473  | 0.411756 | 0    | 0    | 29.1 | 0.95            |
| 1       | 1000.8    | 0.313436 | 0        | 0       | 0   | 0.686524 | 0         | 0         | 0         | 0    | 0    | 9.3  | 1.33            |
| 1       | 500.6     | 0.833195 | 0        | 0       | 0   | 0.16678  | 0         | 0         | 0         | 0    | 0    | 6.8  | 1.45            |
| 13      | 4998.9    | 0    | 0      | 0      | 0   | 0.033024 | 0         | 0.052124 | 0.914941 | 0    | 0    | 46.6 | 0.98            |
| 13      | 4000.8    | 0    | 0      | 0      | 0   | 0.062395 | 0.003465 | 0.113085 | 0.82108  | 0    | 0    | 43.8 | 1.1             |
| 13      | 3000.2    | 0    | 0      | 0      | 0   | 0.173702 | 0.019858 | 0.255779 | 0.550685 | 0    | 0    | 33.6 | 0.96            |
| 13      | 2499.4    | 0    | 0      | 0      | 0   | 0.36734  | 0.045693 | 0.271997 | 0.314996 | 0    | 0    | 24.2 | 1.22            |
| 21      | 4500.4    | 0    | 0      | 0      | 0   | 0.044274 | 0.001477 | 0.14195  | 0.812298 | 0    | 0    | 43.6 | 1.31            |
| 21      | 3998.9    | 0    | 0      | 0      | 0   | 0.063272 | 0.006308 | 0.129339 | 0.801081 | 0    | 0    | 43.3 | 1.17            |
| 21      | 2999.4    | 0    | 0      | 0      | 0   | 0.078493 | 0.001429 | 0.39329  | 0.526753 | 0    | 0    | 44.3 | 1.07            |
| 26      | 1998.4    | 0    | 0      | 0      | 0   | 0.659141 | 0.014264 | 0.295675 | 0.03091  | 0    | 0    | 12.8 | 1.74            |
| 26      | 1400.4    | 0.040175 | 0        | 0       | 0   | 0.881685 | 0.020777 | 0.020767 | 0.029279 | 0    | 0    | 11.1 | 1.72            |
| 26      | 999.9     | 0.1889902 | 0        | 0       | 0   | 0.760141 | 0.018501 | 0.013048 | 0.018396 | 0    | 0    | 10.6 | 2.26            |
| 26      | 500.8     | 0.600071 | 0        | 0       | 0   | 0.04495  | 0         | 0         | 0         | 0    | 0    | 354.938 | 11.7 | 2.85 |
| 32      | 2999.8    | 0    | 0      | 0      | 0   | 0.087495 | 0         | 0.677843 | 0.234655 | 0    | 0    | 22.4 | 1.52            |
| 32      | 2499.8    | 0    | 0.007241 | 0      | 0   | 0.34474  | 0.00089  | 0.590358 | 0.056771 | 0    | 0    | 14.8 | 1.55            |
| 32      | 2000.1    | 0    | 0.04754  | 0      | 0   | 0.550158 | 0.000262 | 0.38531  | 0.016732 | 0    | 0    | 12.4 | 1.74            |
| 32      | 1399.0    | 0    | 0.125957 | 0      | 0   | 0.685427 | 0.000061 | 0.184672 | 0.003877 | 0    | 0    | 10.9 | 1.86            |
| 44      | 2900.1    | 0    | 0      | 0      | 0   | 0         | 0         | 0         | 0.857839 | 0.142346 | 0    | 8    | 1.24            |
| 44      | 2501.0    | 0    | 0      | 0      | 0   | 0.23912  | 0         | 0.684864 | 0         | 0    | 0.076018 | 0    | 14.2 | 1.4             |
| 44      | 2000.3    | 0    | 0.01436  | 0      | 0   | 0.439422 | 0.000353 | 0.523328 | 0.022535 | 0    | 0    | 13.4 | 1.59            |
| 44      | 1401.3    | 0    | 0.098256 | 0      | 0   | 0.596596 | 0.000123 | 0.297178 | 0.007845 | 0    | 0    | 11.6 | 1.49            |
| 44      | 1000.8    | 0    | 0.097376 | 0      | 0   | 0.80477  | 0.000152 | 0.088    | 0.009701 | 0    | 0    | 10.2 | 1.59            |
| 44      | 499.4     | 0    | 0      | 0.180387 | 0  | 0.805045 | 0         | 0         | 0         | 0    | 0    | 0.014592 | 8.8  | 2.29 |
### Supplementary Table S4 (continued).

| Station | Depth (m) | NACW | IcSPMW | IrSPMW | LSW | MW | NEADW | LDW | DSOW | PIW | SAIW | [DSi] | $\delta^{30}$Si$_{DSi}$ |
|---------|-----------|------|--------|--------|-----|----|-------|-----|------|-----|------|-------|------------------|
| 60      | 1719.4    | 0    | 0      | 0      | 0.483212 | 0 | 0.474534 | 0 | 0   | 0.042178 | 0 | 10.5 | 1.41 |
| 60      | 1400.6    | 0    | 0.058271 | 0      | 0.560258 | 0 | 0.381458 | 0 | 0   | 0   | 0   | 0   | 10.3 | 1.73 |
| 60      | 999.4     | 0    | 0      | 0.696124 | 0 | 0 | 0 | 0 | 0   | 0   | 0.231347 | 0.072465 | 10.2 | 2.74 |
| 64      | 2249.6    | 0    | 0      | 0      | 0.346291 | 0 | 0.415221 | 0 | 0   | 0.238539 | 0 | 13.4 | 1.35 |
| 64      | 1999.1    | 0    | 0      | 0      | 0.399370 | 0.001199 | 0.523566 | 0.076425 | 0 | 0 | 12.8 | 1.36 |
| 64      | 1799.8    | 0    | 0.001937 | 0      | 0.558280 | 0.000128 | 0.431492 | 0.008174 | 0 | 0 | 11.9 | 1.6 |
| 64      | 1399.4    | 0    | 0.084409 | 0.639605 | 0.000147 | 0.266471 | 0.009379 | 0 | 0 | 10.8 | 1.45 |
| 64      | 999.4     | 0    | 0      | 0.092985 | 0.907081 | 0 | 0 | 0 | 0   | 0 | 0 | 9 | 2.13 |
| 64      | 499.6     | 0    | 0      | 0.366187 | 0.621007 | 0 | 0 | 0 | 0   | 0 | 0 | 8.5 | 2.01 |
| 69      | 3499.9    | 0    | 0      | 0      | 0.035193 | 0 | 0.536381 | 0.240755 | 0.187675 | 0 | 12 | 1.55 |
| 69      | 2999      | 0    | 0      | 0      | 0.22278 | 0 | 0.651777 | 0 | 0 | 0.125457 | 0 | 13.8 | 1.53 |
| 69      | 2000      | 0    | 0      | 0 | 0.057333 | 0 | 0.571034 | 0 | 0 | 0 | 0 | 11.4 | 1.55 |
| 69      | 1400.3    | 0    | 0.003369 | 0 | 0.954388 | 0.000242 | 0.026603 | 0.015397 | 0 | 0 | 9.1 | 1.43 |
| 69      | 1000.1    | 0    | 0      | 0 | 0.987809 | 0.000111 | 0.00504 | 0.007106 | 0 | 0 | 8.8 | 1.56 |
| 77      | 2530.9    | 0    | 0      | 0 | 0.098633 | 0.097471 | 0 | 0.152841 | 0.17356 | 0 | 12.2 | 1.28 |
| 77      | 2000.4    | 0    | 0      | 0 | 0.372745 | 0 | 0.551882 | 0 | 0.011232 | 0.064138 | 0 | 12.2 | 1.38 |
| 77      | 1500.3    | 0    | 0.050403 | 0 | 0.580738 | 0 | 0.36886 | 0 | 0 | 0 | 11.6 | 1.52 |
| 77      | 1001.4    | 0    | 0.021563 | 0 | 0.916609 | 0.0000183 | 0.04999 | 0.011659 | 0 | 0 | 9.2 | 1.91 |
| 77      | 501.7     | 0    | 0.005663 | 0 | 0.99435 | 0 | 0 | 0 | 0 | 0 | 0 | 8.8 | 1.89 |