Supplement of Biogeosciences, 23, 1987–2002, 2026
https://doi.org/10.5194/bg-23-1987-2026-supplement


Biogeosciences Open Access EGU

*Supplement of*

# The distribution and isotopomeric characterization of nitrous oxide in the Eastern Gotland Basin (central Baltic Sea)

**Pratirupa Bardhan et al.**

*Correspondence to:* Pratirupa Bardhan (pratirupabardhan@gmail.com)

SUPPLEMENTARY INFORMATION

Table 1: Data from all stations with sampling depths, temperature, salinity, $N_2O$ concentrations, $N_2O$ saturations, their $\delta^{15}N_{bulk}$-, $\delta^{18}O$, site preferences (SP), $\delta^{15}N_{\alpha}$- and $\delta^{15}N_{\beta}$-values.

| Station | Depth (m) | Temperature (°C) | Salinity | [$N_2O$] (nM) | $N_2O$ % Saturation | $\delta^{15}N$-$N_2O$ (‰) | $\delta^{18}O$-$N_2O$ (‰) | SP (‰) | $\delta^{15}N_{\alpha}$ (‰) | $\delta^{15}N_{\beta}$ (‰) |
|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 3 | 8.82 | 7.13 | 13.3 | 100.5 | 7.62 | 41.93 | 24.02 | 19.4 | -4.62 |
| 25 | 10 | 8.82 | 7.13 | 13.2 | 100.2 | 8.22 | 43.23 | 13.45 | 14.76 | 1.31 |
| 25 | 20 | 8.43 | 7.17 | 13.5 | 100.5 | 7.59 | 43.1 | 0.45 | 7.71 | 7.26 |
| 25 | 35 | 3.74 | 7.36 | 14.8 | 92.2 | 7.12 | 42.45 | 2 | 7.86 | 6.17 |
| 25 | 50 | 3.49 | 7.49 | 14.8 | 91.1 | 5.29 | 44.02 | 21 | 17.44 | -3.62 |
| 25 | 60 | 4.00 | 7.80 | 14.4 | 91.1 | 5.28 | 44.07 | 24.79 | 18.23 | -6.57 |
| 25 | 69 | 5.67 | 9.80 | 8.6 | 58.9 | | | | | |
| 25 | 71 | 5.78 | 10.05 | 22.1 | 151.5 | 6.51 | 46.18 | | | |
| 25 | 73 | 5.90 | 10.21 | 3.4 | 23.3 | | | | | |
| 25 | 75 | 6.03 | 10.36 | 1.6 | 10.9 | | | | | |
| 25 | 80 | 6.28 | 10.72 | 1.0 | 7.1 | | | | | |
| 25 | 89 | 6.72 | 11.19 | 0.2 | 1.3 | | | | | |
| 25 | 91 | 6.76 | 11.28 | 0.7 | 5.3 | | | | | |
| 25 | 93 | 6.90 | 11.38 | 6.2 | 45.0 | -3.06 | 54.31 | 34.74 | | |
| 25 | 100 | 7.22 | 11.64 | 11.3 | 82.4 | 3.07 | 50.37 | | | |
| 25 | 110 | 7.41 | 11.98 | 11.1 | 81.9 | 2.31 | 46.38 | 15.15 | | |
| 25 | 120 | 7.30 | 12.20 | 9.5 | 70.0 | 3.02 | 48.14 | | | |
| 25 | 137 | 7.46 | 12.59 | 7.9 | 58.6 | -0.52 | 45.82 | | | |
| 25 | 139 | 7.45 | 12.61 | 5.2 | 38.6 | -4.25 | 48.46 | | | |
| 25 | 141 | 7.42 | 12.62 | 4.0 | 29.5 | 5.49 | 50.93 | | | |
| 25 | 150 | 7.44 | 12.73 | 0.8 | 5.9 | | | | | |
| 25 | 175 | 7.17 | 13.00 | 0.8 | 5.9 | | | | | |
| 25 | 200 | 7.20 | 13.15 | 0.8 | 6.0 | | | | | |
| 25 | 225 | 7.42 | 13.31 | 0.8 | 6.0 | | | | | |
| 25 | 233 | 7.43 | 13.31 | 0.8 | 5.9 | | | | | |
| 26 | 65 | 4.92 | 8.87 | 13.5 | 89.2 | 5.98 | 45.85 | 25.13 | 18.34 | -6.79 |
| 26 | 68 | 5.50 | 9.52 | 14.6 | 98.6 | 6.27 | 51.72 | 31.29 | 21.67 | -9.62 |
| 26 | 71 | 5.72 | 9.95 | 2.9 | 19.8 | | | | | |
| 26 | 73 | 5.75 | 10.09 | 1.7 | 11.7 | | | | | |
| 26 | 72 | 5.74 | 10.05 | | | | | | | |
| 26 | 73 | 5.84 | 10.22 | 1.5 | 10.3 | | | | | |
| 26 | 75 | 6.06 | 10.45 | 0.9 | 6.2 | | | | | |
| 26 | 78 | 6.29 | 10.68 | 0.7 | 5.2 | | | | | |
| 26 | 81 | 6.40 | 10.84 | 0.8 | 5.5 | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 26 | 81 | 6.39 | 10.83 | | | | | | | |
| 26 | 85 | 6.63 | 11.06 | 9.7 | 69.4 | 4.47 | 51.8 | 34.23 | | |
| 27 | 3 | 9.14 | 7.14 | 13.3 | 101.7 | | | | | |
| 27 | 65 | 4.38 | 8.18 | 14.4 | 92.3 | 13.42 | 53.21 | 66.89 | | |
| 27 | 69 | 5.23 | 9.27 | 14.0 | 93.7 | 6.88 | 59.4 | 47.82 | | |
| 27 | 72 | 5.77 | 9.91 | 7.4 | 50.4 | 5.06 | 59.51 | 68.64 | | |
| 27 | 74 | 5.99 | 10.24 | 5.6 | 38.5 | 11.32 | 53.3 | | | |
| 27 | 75 | 6.06 | 10.37 | 3.0 | 21.1 | | | | | |
| 27 | 76 | 6.13 | 10.50 | 1.9 | 13.2 | | | | | |
| 27 | 78 | 6.18 | 10.59 | 1.8 | 12.6 | | | | | |
| 27 | 81 | 6.37 | 10.81 | 1.4 | 9.8 | | | | | |
| 27 | 81 | 6.36 | 10.80 | | | | | | | |
| 27 | 87 | 6.68 | 11.13 | 6.9 | 49.1 | | | | | |
| 28 | 3 | 9.31 | 7.20 | 12.8 | 99.1 | | | | | |
| 28 | 10 | 9.29 | 7.21 | 13.0 | 100.1 | 6.75 | 41.89 | 10.5 | 11.86 | 1.36 |
| 28 | 30 | 3.98 | 7.41 | 15.0 | 94.3 | 7.68 | 44.02 | 37.69 | 26.23 | -11.46 |
| 28 | 40 | 3.87 | 7.47 | 15.0 | 94.1 | 7.41 | 42.82 | 35.69 | 24.97 | -10.72 |
| 28 | 50 | 3.76 | 7.51 | 14.9 | 93.2 | 6.84 | 43.58 | 20.87 | 17.08 | -3.79 |
| 28 | 60 | 3.99 | 7.80 | 14.7 | 92.7 | 4.98 | 48.01 | 20.47 | 15.05 | -5.42 |
| 28 | 70 | 4.94 | 8.94 | 14.9 | 98.2 | 5.17 | 44.51 | 12.66 | 11.37 | -1.29 |
| 28 | 75 | 5.61 | 9.77 | 15.6 | 106.4 | 6.49 | 52.84 | 12.57 | 12.62 | 0.05 |
| 28 | 78 | 5.72 | 9.91 | 19.4 | 132.7 | 6.56 | 54.34 | 20.48 | 16.61 | -3.87 |
| 28 | 80 | 5.79 | 10.00 | 20.5 | 140.6 | 7.68 | 43.17 | 21.49 | 18.21 | -3.29 |
| 28 | 81 | 5.90 | 10.14 | 21.6 | 148.8 | 7.6 | 55.53 | 19.68 | 17.24 | -2.45 |
| 28 | 82 | 6.01 | 10.28 | 18.1 | 125.7 | 8.22 | 41.84 | 39.9 | 27.86 | -12.05 |
| 29 | 70 | 4.98 | 8.97 | 14.5 | 96.0 | 5.5 | 48.05 | 22.86 | 16.74 | -6.11 |
| 29 | 74 | 5.55 | 9.69 | 15.2 | 103.0 | 5.52 | 49.31 | 9.38 | 10.09 | 0.72 |
| 29 | 77 | 5.63 | 9.84 | 9.8 | 67.0 | 3.76 | 49.38 | 38.5 | | |
| 29 | 79 | 5.80 | 10.01 | 12.1 | 83.4 | 3.93 | 49.77 | 30.51 | | |
| 29 | 81 | 6.01 | 10.29 | 20.5 | 142.4 | 7.89 | 55.27 | -2.1 | 6.74 | 8.84 |
| 29 | 83 | 6.14 | 10.46 | 5.9 | 41.3 | 3.23 | 50.58 | | | |
| 29 | 83 | 6.22 | 10.55 | 4.2 | 29.6 | 0.66 | 40.3 | 1.91 | | |
| 29 | 84 | 6.33 | 10.70 | 2.3 | 16.5 | | | | | |
| 29 | 86 | 6.50 | 10.91 | 1.4 | 10.0 | | | | | |
| 29 | 89 | 6.58 | 11.00 | 1.1 | 7.8 | | | | | |
| 30 | 65 | 4.93 | 8.90 | 13.2 | 87.2 | 39.34 | 59.04 | 33.53 | | |
| 30 | 68 | 5.47 | 9.68 | 34.5 | 233.7 | 7.27 | 42.38 | 34.52 | | |
| 30 | 70 | 5.67 | 9.99 | 1.6 | 10.7 | | | | | |
| 30 | 71 | 5.73 | 10.10 | 1.5 | 10.3 | | | | | |
| 30 | 72 | 5.79 | 10.15 | 1.8 | 12.1 | | | | | |
| 30 | 75 | 5.93 | 10.36 | 0.9 | 6.4 | | | | | |
| 30 | 92 | 6.65 | 11.19 | 1.0 | 7.3 | | | | | |
| 30 | 95 | 6.85 | 11.32 | 8.5 | 61.0 | 3.05 | 49.66 | | | |
| 30 | 96 | 6.90 | 11.35 | 4.6 | 33.3 | | | | | |
| 30 | 98 | 6.95 | 11.45 | 9.1 | 65.6 | 1.01 | 40.07 | | | |
| 32 | 1 | 12.44 | 7.53 | 12.1 | 104.3 | 7.27 | 41.32 | 11.57 | 12.89 | 1.33 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 5 | 11.43 | 7.54 | 12.3 | 102.5 | 6.5 | 42.81 | 30.01 | 21.26 | -8.75 |
| 32 | 10 | 10.56 | 7.47 | 12.6 | 102.2 | 6.72 | 42.43 | 26.26 | 19.62 | -6.64 |
| 32 | 20 | 9.17 | 7.57 | 13.0 | 100.1 | 2.44 | 48.02 | 12.04 | 8.39 | -3.66 |
| 32 | 30 | 6.67 | 7.61 | 13.8 | 96.9 | 6.59 | 40.3 | 20.66 | 16.73 | -3.94 |
| 32 | 40 | 4.95 | 7.98 | 14.6 | 95.6 | 7.13 | 43.79 | 28.92 | 21.35 | -7.57 |
| 32 | 50 | 5.83 | 10.08 | 15.2 | 104.4 | 7.74 | 44.83 | 33.82 | 24.37 | -9.45 |
| 32 | 58 | 6.07 | 12.36 | 15.6 | 109.4 | 6.35 | 44.33 | 28.93 | 20.58 | -8.35 |
| 32 | 70 | 7.98 | 15.47 | 19.6 | 150.9 | 3.16 | 46.23 | 31.25 | 18.6 | -12.65 |
| 32 | 80 | 8.74 | 16.64 | 20.3 | 161.9 | -8.1 | 49.91 | 26.7 | 5.28 | -21.42 |
| 32 | 85 | 8.68 | 17.01 | 6.8 | 54.3 | -9.28 | 49.98 | 29.19 | | |
| 32 | 88 | 8.66 | 17.05 | 15.7 | 125.2 | -11.96 | 50.76 | 38.73 | 7.44 | -31.28 |

Fig S1: The plot of $\delta^{15}N_{\alpha}$- vs. $\delta^{18}O$-$N_2O$ in the oxygen deficient zone of all stations.

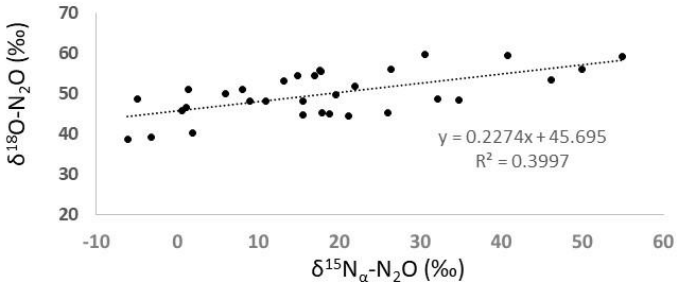


Fig S2: The plot of dual nitrate isotopes in the oxygen deficient zone of Station 32.