Table S1. Data generated in this study. For each station we show the bioluminescence intensity (BL), detection of the luciferase gene (*lcf*) and cell counts of the various dinoflagellate (dinos) groups and diatoms. As only surface chlorophyll values are shown in the main manuscript, we include the full data set for our stations here.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Station** | **Depth (m)** | **Date** | **Time (GMT)** | **Lat (ºS)** | **Long (ºW)** | **Chlorophyll (µg L-1)** | **BL (photons cm-2 s-1)** | ***lcf*** | **BL dinos (cells mL-1)** | **Non BL dinos (cells mL-1)** | **Total dinos (cells mL-1)** | **Diatoms (cells mL-1)** |
| 1 | 5.6 | 20081205 | 11:58 | 37.33 | 55.75 |  | 4.40E+11 | Yes |  |  |  |  |
| 1 | 19.5 | 20081205 | 12:26 | 37.33 | 55.75 | 0.65 | 8.05E+11 | Yes |  |  |  |  |
| 3 | 4.4 | 20081205 | 1:04 | 37.92 | 54.50 | 0.67 | 3.07E+11 | No |  |  |  |  |
| 3 | 18.4 | 20081205 | 1:16 | 37.92 | 54.50 | 0.37 | 1.71E+11 | No |  |  |  |  |
| 5 | 6.7 | 20081206 | 7:22 | 38.13 | 54.07 | 2.29 | 3.31E+11 | Yes | 120 | 13716 | 13836 | 121480 |
| 5 | 16.5 | 20081206 | 7:33 | 38.13 | 54.07 | 2.71 | 4.40E+11 | Yes | 0 | 1384 | 1384 | 34364 |
| 7 | 4.5 | 20081206 | 20:43 | 38.49 | 53.28 | 0.34 | 1.99E+11 | Yes |  |  |  |  |
| 7 | 22.4 | 20081206 | 21:17 | 38.49 | 53.28 |  | 1.66E+11 | Yes |  |  |  |  |
| 7 | 53.5 | 20081206 | 21:32 | 38.49 | 53.28 | 0.58 | 5.89E+10 | No |  |  |  |  |
| 8 | 3 | 20081207 | 6:12 | 38.77 | 52.63 | 0.14 | 2.20E+11 | Yes |  |  |  |  |
| 8 | 64.8 | 20081207 | 6:36 | 38.77 | 52.63 | 0.43 | 1.75E+11 | No |  |  |  |  |
| 10 | 6.9 | 20081207 | 5:17 | 39.40 | 51.42 |  | 3.06E+11 | Yes | 340 | 5220 | 5560 | 992 |
| 10 | 36.7 | 20081207 | 5:28 | 39.40 | 51.42 |  | 2.02E+11 | Yes | 480 | 2320 | 2800 | 120 |
| 10.2 | 6.9 | 20081208 | 20:37 | 39.40 | 51.42 | 0.39 | 1.83E+11 | Yes |  |  |  |  |
| 10.2 | 42.4 | 20081208 | 21:08 | 39.40 | 51.42 | 0.54 | 1.68E+11 |  |  |  |  |  |
| 13 | 3.7 | 20081209 | 2:02 | 41.13 | 54.45 | 0.54 | 1.26E+11 |  |  |  |  |  |
| 13 | 26.4 | 20081209 | 2:55 | 41.13 | 54.45 | 0.77 | 1.67E+11 |  |  |  |  |  |
| 15 | 6.9 | 20081209 | 16:01 | 42.27 | 56.45 | 0.76 | 1.64E+11 | No |  |  |  |  |
| 15 | 21.9 | 20081209 | 16:18 | 42.27 | 56.45 | 0.70 | 2.10E+11 | Yes |  |  |  |  |
| 16 | 2.6 | 20081210 | 1:37 | 42.81 | 57.47 | 1.10 | 1.88E+11 |  | 0 | 7540 | 7540 | 7956 |
| 16 | 19.1 | 20081209 | 1:10 | 42.81 | 57.47 | 1.07 | 1.53E+11 | Yes | 0 | 1524 | 1524 | 10628 |
| 17 | 3 | 20081210 | 5:24 | 43.37 | 58.46 | 1.42 | 1.31E+11 | Yes | 120 | 12200 | 12320 | 17900 |
| 17 | 18.7 | 20081210 | 5:24 | 43.37 | 58.46 | 1.45 | 1.64E+11 | Yes | 280 | 5000 | 5280 | 18820 |
| 18 | 2.9 | 20081210 | 16:42 | 43.92 | 59.49 | 0.81 | 1.83E+11 | Yes | 40 | 326870 | 326910 | 720 |
| 18 | 52.3 | 20081210 | 17:07 | 43.92 | 59.49 | 1.66 | 1.29E+11 | No | 120 | 370540 | 370660 | 280 |
| 19 | 2.6 | 20081210 | 21:00 | 44.47 | 60.51 | 0.52 |  | No |  |  |  |  |
| 19 | 34.8 | 20081210 | 21:00 | 44.47 | 60.51 | 1.17 |  | No |  |  |  |  |
| 20 | 4.3 | 20081211 | 4:30 | 45.00 | 61.50 | 0.75 | 1.92E+11 | No |  |  |  |  |
| 20 | 25.2 | 20081211 | 4:17 | 45.00 | 61.50 | 0.11 | 1.84E+11 | No |  |  |  |  |
| 24 | 4.4 | 20081211 | 23:45 | 45.00 | 59.71 | 0.80 | 1.81E+11 | Yes | 0 | 36600 | 36600 | 840 |
| 24 | 50 | 20081211 | 23:59 | 45.00 | 59.71 | 0.75 | 1.59E+11 | No | 200 | 455592 | 455792 | 960 |
| 32 | 4.6 | 20081213 | 7:17 | 46.25 | 57.00 | 0.91 | 1.44E+11 | Yes | 80 | 8200 | 8280 | 3160 |
| 32 | 24.8 | 20081213 | 7:33 | 46.25 | 57.00 | 0.84 | 1.21E+11 | Yes | 40 | 4440 | 4480 | 1080 |
| 37 | 2.4 | 20081213 | 23:43 | 46.25 | 59.81 | 0.57 | 2.27E+11 | Yes |  |  |  |  |
| 38 | 2.1 | 20081214 | 4:15 | 46.25 | 60.38 | 0.50 | 2.34E+11 | Yes | 380 | 41876 | 42256 | 20 |
| 38 | 25.1 | 20081214 | 4:25 | 46.25 | 60.38 | 0.51 | 2.13E+11 | Yes | 180 | 57808 | 57988 | 0 |
| 46 | 5.6 | 20081214 | 22:33 | 47.50 | 60.38 | 3.89 | 2.37E+11 | Yes | 1040 | 2195648 | 2196688 | 0 |
| 47 | 3.4 | 20081215 | 2:47 | 47.49 | 60.22 | 1.10 | 2.91E+11 | Yes | 4400 | 12680 | 17080 | 9000 |
| 47 | 34.6 | 20081215 | 3:55 | 47.49 | 60.22 | 1.45 | 0.00E+00 | Yes | 1000 | 3120 | 4120 | 9840 |
| 52 | 5.6 | 20081216 | 5:40 | 47.50 | 57.00 | 2.14 | 1.02E+11 | Yes | 120 | 9160 | 9280 | 680 |
| 52 | 28.7 | 20081216 | 6:01 | 47.50 | 57.00 | 0.97 | 2.05E+11 | Yes | 400 | 11840 | 12240 | 280 |
| 58 | 4.6 | 20081216 | 22:46 | 48.75 | 58.11 | 0.83 | 9.30E+10 | No |  |  |  |  |
| 58 | 29.5 | 20081216 | 22:55 | 48.75 | 58.11 | 1.11 | 2.49E+11 | No |  |  |  |  |
| 59.5 | 13 | 20081217 | 4:15 | 48.75 | 58.66 |  | 1.76E+11 | Yes |  |  |  |  |
| 60 | 6.9 | 20081217 | 6:21 | 48.75 | 59.16 | 2.54 | 2.05E+11 | Yes | 780 | 106360 | 107140 | 4520 |
| 60 | 12.9 | 20081217 | 6:30 | 48.75 | 59.16 | 1.41 | 1.27E+11 | Yes | 200 | 37280 | 37480 | 3600 |
| 66 | 3.7 | 20081218 | 4:23 | 49.30 | 62.16 | 0.97 | 2.50E+11 | Yes |  |  |  |  |
| 66 | 18.6 | 20081218 | 5:31 | 49.30 | 62.16 | 0.86 | 1.63E+11 |  |  |  |  |  |
| 68 | 5.2 | 20081218 | 10:36 | 49.63 | 62.79 | 0.26 | 2.24E+11 | Yes | 340 | 15800 | 16140 | 20 |
| 68 | 35.7 | 20081218 | 10:46 | 49.63 | 62.79 | 0.82 | 1.35E+11 | Yes | 40 | 1820 | 1860 | 0 |
| 70 | 6.5 | 20081218 | 22:22 | 49.75 | 61.59 | 0.58 | 1.20E+11 | Yes |  |  |  |  |
| 70 | 43.8 | 20081218 | 22:36 | 49.75 | 61.59 | 2.21 | 1.42E+11 | Yes |  |  |  |  |
| 72 | 3.9 | 20081219 | 4:08 | 49.75 | 60.47 | 0.48 | 1.34E+11 | Yes | 40 | 1694538 | 1694578 | 300 |
| 72 | 27 | 20081219 | 4:24 | 49.75 | 60.47 | 1.46 | 1.36E+11 |  | 80 | 132676 | 132756 | 120 |
| 73 | 5.9 | 20081219 | 6:16 | 49.75 | 59.90 |  | 1.16E+11 | No | 60 | 1928372 | 1928432 | 0 |
| 74 | 4.9 | 20081219 | 8:58 | 49.75 | 59.33 | 1.72 | 1.85E+11 | Yes | 180 | 81340 | 81520 | 20 |
| 74 | 14.1 | 20081219 | 9:08 | 49.75 | 59.33 | 1.66 | 4.23E+11 | Yes | 180 | 47824 | 48004 | 480 |
| 78 | 26.7 | 20081220 | 5:36 | 49.75 | 57.20 | 1.03 | 2.43E+11 | Yes | 160 | 7976 | 8136 | 43112 |
| 80 | 4.3 | 20081220 | 10:35 | 49.75 | 55.92 | 0.55 | 1.30E+11 | Yes | 200 | 18660 | 18860 | 5240 |
| 80 | 27.1 | 20081220 | 10:45 | 49.75 | 55.92 | 0.88 | 2.60E+11 | No | 0 | 15520 | 15520 | 1280 |
| 86 | 8.1 | 20081221 | 4:43 | 50.97 | 54.77 | 1.57 | 2.15E+11 | No | 2380 | 8720 | 11100 | 531400 |
| 86 | 48.1 | 20081221 | 5:07 | 50.97 | 54.77 | 1.51 | 1.17E+11 | Yes | 100 | 5940 | 6040 | 634040 |
| 100 | 5.3 | 20081223 | 22:20 | 48.13 | 59.72 | 0.53 | 1.76E+11 | Yes |  |  |  |  |
| 100 | 36.3 | 20081223 | 22:27 | 48.13 | 59.72 | 0.69 | 9.37E+09 | Yes | 20 | 680 | 700 | 28440 |
| 102 | 5.2 | 20081224 | 4:44 | 48.75 | 59.23 | 0.34 | 1.89E+11 | Yes |  |  |  |  |
| 102 | 29 | 20081224 | 4:15 | 48.75 | 59.23 | 0.56 | 1.62E+11 | Yes |  |  |  |  |
| 108 | 6 | 20081225 | 4:20 | 50.36 | 56.22 | 0.65 | 1.05E+11 | Yes |  |  |  |  |
| 108 | 41.2 | 20081225 | 4:31 | 50.36 | 56.22 | 0.90 | 1.98E+11 | Yes |  |  |  |  |
| 116 | 4 | 20081226 | 7:54 | 51.97 | 57.62 |  | 1.76E+11 | No |  |  |  |  |
| 116 | 27.8 | 20081226 | 8:21 | 51.97 | 57.62 | 1.91 | 2.70E+11 | No |  |  |  |  |
| 122 | 7.5 | 20081227 | 4:59 | 52.90 | 55.34 | 1.16 | 2.91E+11 | No | 320 | 4000 | 4320 | 13560 |
| 122 | 47.1 | 20081227 | 5:13 | 52.90 | 55.34 | 1.41 | 2.37E+11 | No | 0 | 1320 | 1320 | 16400 |
| 128 | 6.1 | 20081228 | 4:32 | 52.38 | 58.32 | 1.06 | 1.55E+11 | No | 20 | 320 | 340 | 0 |
| 128 | 40.2 | 20081228 | 4:40 | 52.38 | 58.32 | 0.80 | 3.22E+11 | No | 0 | 180 | 180 | 0 |
| 134 | 6.1 | 20081229 | 3:12 | 54.11 | 58.30 | 0.60 | 3.52E+11 | Yes | 100 | 18940 | 19040 | 12840 |
| 142 | 5.4 | 20081230 | 4:52 | 52.61 | 60.28 | 2.02 | 2.54E+11 | No | 0 | 1000 | 1000 | 206500 |
| 142 | 34.5 | 20081230 | 5:00 | 52.61 | 60.28 | 1.85 | 1.93E+11 | No | 20 | 520 | 540 | 172880 |