**Table S1.** Microbial parameters in the mixed layer (ML) during **SPRING**: Onset of the bloom , KEOPS2 cruise (2011), **SUMMER**: Decline of the bloom KEOPS1cruise (2005) and **LATE SUMMER** post-bloom MOBYDICK cruise (2018) on the plateau and ocean area of Kerguelen. The mean mixed layer depht (ZML) of all CTD casts performed during the occupation of the stations is given. For the rest of the variables the mean±SD is given for the mixed layer except for GCP which is an integrated value and the bacterial growth rate (**μ**) which is the mean bacterial production/bacterial biomass. **BP**:bacterial production, **BR**: bacterial respiration, **BGE**: bacterial growth efficiency, **GCP**: gross community production, **HB**: heterotrophic bacteria, **HNF** heterotrophic nanoflagellates, **VLP**: viral-like particles **PNP**: Pico- nanophytoplankton, **CIL**:ciliates, KEOPS station A3 was named M2 during the MOBYDICK cruise and have the same coordinates (**cf Fig. S1**). The off-plateau reference stations were located in the HNLC waters off the plateau and had different coordinates during the three cruises ; (**cf Fig. S2**). KEOPS 1, data from Christaki et al. 2008, Obernosterer et al. 2008 , Malits et al. 2014, KEOPS 2, data from Georges et al. 2014, Christaki et al. 2014, 2015 Lasbleiz et al. 2016. nd: not done. Conversion to biomass: HB: 12.4 fg C cell-1, Fukuda et al. 1998, VLPs: 1 10-4 fg C VLP-1, Børsheim et al.1990, HNF: 183 fg μm-3 Caron et al. 1995, PNP: pgC cell-1 = 0.433\*(biovolume)0.86, Verity et al. 1992, CIL: pgC cell-1 = 0.216xvolume0.939 Menden-Deuer et al. 2000. **KEOPS**: KErguelen Ocean and Plateau compared Study project, **MOBYDICK**: Marine Ecosystem Biodiversity and Dynamics of Carbon.

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| --- | --- |
| **On-plateau** | **Reference station off plateau(HNLC)** |
|  | **SPRING** | **SUMMER** | **LATE SUMMER** | **SPRING** | **SUMMER** | **LATE SUMMER** |
| station  | A3-1 | A3-2 | A3-1 | A3-3 | A3-4 | A3-5 | M2-1 | M2-2 | M2-3 | R | C11 | M3-1 | M3-3 |
| dates | 20/10 | 16/11 | 19/01 | 24/01 | 04/02 | 12/02 | 26-28/02 | 6-8/03 | 16-17/03 | **26/10** | **26/01** | **3-5/03** | **18-20/03** |
| Long-Lat (°E,°S) | 72.1-50.6 | 72.1-50.6 | 72.1-50.6 | 72.0-50.4 | 72.0-50.4 | 72.0-50.4 | 72.0-50.4 | 72.0-50.4 | 72.0-50.4 | 66.7-50.4 | 77.6-51.4 | 68.0-50.4 | 68.0-50.4 |
| ZML | 105 | 168 | 52 | 51 | 79 | 84 | 62 | 61 | 68 | 105 | 73 | 65 | 79 |
| Chl a (μg/L) | 0.62±0.17 | 2.03±0.33 | 1.26±0.26 | 1.15±0.19 | 1.36±0.11 | 1.05±0.02 | 0.27±0.02 | 0.30±0.04 | 0.58±0.02 | 0.28±0.04 | 0.18±0.00 | 0.20±0.02 | 0.14±0.00 |
| BP (nmol C L-1 d-1) | 8.2±1.9 | 37.1±8.7 | 225.0±44.8 | 247.1±28.1 | 96.7±2.2 | 136.6±31.8 | 51.5±3.8 | 75.95±7.41 | 96.7±7.5 | 5.5±1.0 | 22.3±3.7 | 26.8±2.9 | 25.7±1.1 |
| μ (P/B) (d-1) | 0.02 | 0.12 | 0.46 | 0.41 | 0.22 | 0.23 | 0.04 | 0.09 | 0.13 | 0.02 | 0.10 | 0.04 | 0.04 |
| BR (μmol Cl-1 d-1) | nd | 0.63±0.45 | 0.90±0.26 | 0.23±0.19 | 0.25±0.06 | 0.29±0.08 | 1.53±1.20 | 0.30±0.26 | 0.20±0.18 | 0.29±0.11 | 0.23±0.1 | nd | 0.20±0.18 |
| BGE (%) | nd | 9.0±7.9 | 20.0±8.0 | 17.0±6.0 | 15.0±5.0 | 14.0±4.5 | 4.5±2.1 | 15.5±3.5 | 24.5±4.9 | 2.50±1.00 | 6.0±3.0 | nd | 8.0±0.0 |
| GCP (mmol C m-2)ZML integrated  | nd | 344 | 138 | 80 | 80 | 101 | 105 | 215 | 104 | 59 | 25 | 132 | n.d. |
| HB (μmol C L-1) | 0.41±0.01 | 0.30±0.05 | 0.49±0.03 | 0.60±0.14 | 0.43±0.02 | 0.58±0.02 | 1.17±0.06 | 0.85±0.02 | 0.73±0.04 | 0.28±0.03 | 0.23±0.02 | 0.71±0.03 | 0.58±0.06 |
| VLP (pmol C L-1) | 15.17±0.89 | 3.08±0.42 | 118.33±3.7 | nd | nd | nd | 46.33±5.50 | 58.33±5.75 | 59.75±5.75 | 11.67±1.42 | 45.83±0.92 | 32.50±0.50 | 31.92±1.92 |
| HNF ( μmol C L-1) | 0.10±0.01 | 0.35±0.01 | 0.55±0.30 | 0.45±0.12 | 0.45±0.09 | 0.31±0.03 | 0.45±0.04 | 0.77±0.02 | 0.49±0.06 | 0.06±0.02 | 0.34±0.03 | 0.22±0.03 | 0.21±0.02 |
| PNP (μmol C L-1) | 0.46±0.04 | 0.15±0.04 | 0.81±0.24 | 0.79±0.03 | 1.53±0.07 | 0.72±0.31 | 0.87±0.08 | 1.02±0.07 | 2.19±0.09 | 0.58±0.12 | 1.15±0.07 | 1.01±0.12 | 0.49±0.11 |
| CIL (μmol C L-1) | 0.01±0.00 | 0.11±0.06 | 0.08±0.05 | 0.14±0.09 | 0.05±0.04 | 0.04±0.02 | 0.07±0.004 | 0.15±0.10 | 0.11±0.08 | 0.05±0.03 | 0.04±0.03 | 0.10±0.03 | 0.09±0.03 |

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