Dataset name: **Bacterial production**

|  |  |
| --- | --- |
| Parameters: | * **Carbon bacterial production** |

PROJECT TITLE: **MOBYDICK**

Oceanographic cruise: **MOBYDICK**

Start date: **18/02/2018**

End date: **27/03/2018**

Project manager: **Bernard Quéguiner** [bernard.queguiner@mio.osupytheas.fr](mailto:bernard.queguiner@mio.osupytheas.fr)

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**Observatoire Océanologique de Banyuls sur mer**

**66650 Banyuls sur mer, France**

Geographic information: **Indian sector of the Southern Ocean**

Latitude: **49.5°S – 52.5°S**

Longitude: **67,0°E – 74.5°E**

Parameter supervisor: **Urania Christaki**

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# OPERATIONS

## Sampling device(s)

Water was sampled from the rosette bottles and from the *in situ* microbial incubator of the University of Vienna (deep water > 1000 m).

## List of stations sampled

**Table 1 : List of stations for bacterial production measurements**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Station ID** | **Date** | **CTD #** | **Bottle #** | **Depth (m)** |
| **M2\_1** | 26/02/18 | 5 | 1 | 450 |
| **M2\_1** | 26/02/18 | 5 | 15 | 200 |
| **M2\_1** | 26/02/18 | 5 | 18 | 100 |
| **M2\_1** | 26/02/18 | 5 | 22 | 10 |
| **M4\_2** | 12/03/18 | 44 | 2 | 4000 |
| **M4\_2** | 12/03/18 | 44 | 7 | 3500 |
| **M4\_2** | 12/03/18 | 44 | 11 | 2500 |
| **M4\_2** | 12/03/18 | 44 | 14 | 1000 |
| **M4\_2** | 12/03/18 | 44 | 16 | 500 |
| **M4\_2** | 12/03/18 | 44 | 20 | 200 |
| **M4\_2** | 12/03/18 | 44 | 21 | 100 |
| **M4\_1** | 02/03/18 | 17 | 3 | 1900 |
| **M4\_1** | 02/03/18 | 17 | 6 | 1000 |
| **M4\_1** | 02/03/18 | 17 | 9 | 500 |
| **M4\_1** | 02/03/18 | 17 | 14 | 200 |
| **M4\_1** | 02/03/18 | 17 | 18 | 100 |
| **M4\_1** | 02/03/18 | 18 | 19 | 4000 |
| **M4\_1** | 02/03/18 | 18 | 21 | 3000 |
| **M3** | 04/03/18 | 26 | 1 | 1500 |
| **M3** | 04/03/18 | 26 | 6 | 1000 |
| **M3** | 04/03/18 | 26 | 10 | 500 |
| **M3** | 04/03/18 | 26 | 14 | 200 |
| **M3** | 04/03/18 | 26 | 19 | 100 |

**Table 1 : List of stations for bacterial production measurements (cont'd)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Station ID** | **Date** | **CTD #** | **Bottle #** | **Depth (m)** |
| **M2\_2** | 06/03/18 | 29 | 1 | 500 |
| **M2\_2** | 06/03/18 | 29 | 4 | 400 |
| **M1** | 09/03/18 | 35 | 1 | 2500 |
| **M1** | 09/03/18 | 35 | 5 | 2000 |
| **M1** | 09/03/18 | 35 | 8 | 1000 |
| **M1** | 09/03/18 | 35 | 11 | 500 |
| **M1** | 09/03/18 | 35 | 15 | 200 |
| **M1** | 09/03/18 | 35 | 18 | 100 |
| **M2\_3** | 16/03/18 | 52 | 1 | 500 |
| **M2\_3** | 16/03/18 | 52 | 4 | 400 |
| **M2\_3** | 16/03/18 | 52 | 6 | 350 |
| **M2\_3** | 16/03/18 | 52 | 11 | 300 |
| **M2\_3** | 16/03/18 | 52 | 14 | 175 |
| **M2\_3** | 16/03/18 | 52 | 10 | 50 |
| **M3\_2** | 18/03/18 | 57 | 1 | 1500 |
| **M3\_2** | 18/03/18 | 57 | 7 | 1000 |
| **M3\_2** | 18/03/18 | 57 | 10 | 800 |
| **M3\_2** | 18/03/18 | 57 | 13 | 500 |
| **M3\_2** | 18/03/18 | 57 | 17 | 200 |
| **M3\_2** | 18/03/18 | 57 | 20 | 100 |

# INSTRUMENTS

Instrument Type: **Liquid scintillation counter TRICARB 2100**

Manufacturer: **Perkin Elmer**

Model: **Tri-Carb® 2100TR**

Instrument Features / Calibration: **N/A**

# DESCRIPTION of PARAMETERS

## Measurement details

Bacterial production was measured on board at all stations at 10-15 depths between 0-4400 m. The incorporation of 3H leucine was used to estimate BP (Kirchman, 1993). Leucine concentrations and incubation times were tested on board and adjusted for different depths in order to obtain a sufficient radioactivity signal and to maintain linear uptake during the incubation. Incubation times (3 h–1 day) and concentration kinetics (from 1 to 40 nM) were tested to satisfy linear uptake and saturated condition respectively at 3 different stations. The theoretical conversion factor of 1.55 kg of Cmol–1 was used to convert leucine incorporation rates to prokaryotic carbon production (Kirchman, 1993).

## Analytical procedure

After filtration, Ultima Gold scintillation cocktail (Packard) was added to the vials containing the filters and the samples were radioassayed on board.

## Units

* C bacterial production: µg C.L–1 d–1

## Sensor precision

N/A

## Post-cruise data analysis/treatment required

N/A

## Estimated Date of Delivery

Data available at the end of the cruise (measurments and calculations made on board).

# BIBLIOGRAPHY

Christaki U., Lefèvre D., Georges C., Colombet J., Catala P., Courties C., Sime-Ngando T., Blain S., Obernosterer I., 2014. Microbial food web dynamics during spring phytoplankton blooms in the naturally iron-fertilized Kerguelen area (Southern Ocean). *Biogeosciences*, **11**, 6739–6753.   
<https://doi.org/10.5194/bg-11-6739-2014>

Kirchman D.L., 1993. Leucine incorporation as a measure of biomass production by heterotrophic bacteria, *in Kemp P.F., Sherr B.F., Sherr E.B., Cole J.J. (Eds.), Handbook of Methods in Aquatic Microbial Ecology. Lewis Publishers, Boca Raton, pp. 509 – 512.*