Dataset name: **Dark inorganic carbon fixation**

|  |  |
| --- | --- |
| Parameter: | * **Dark inorganic carbon fixation rate**
 |

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

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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: **Pavla Debeljak**

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# OPERATIONS

## Sampling device(s)

Water samples were collected from the rosette bottles at 7 stations (see Table 1 below).

## List of stations sampled

**Table 1 : Details of sampled stations and** **casts**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Station** | **Cast #** | **Depth** | **Prefiltration****(** x **= yes )** |  | **Station** | **Cast #** | **Depth** | **Prefiltration****(**x **= yes )** |
| M4\_1 | CTD017 | 1000 m |  |  | M4\_2 | CTD044 | 3500 m |  |
| M4\_1 | CTD017 | 500 m |  |  | M4\_2 | CTD044 | 3500 m |  |
| M4\_1 | CTD017 | 200 m |  |  | M4\_2 | CTD044 | 1000 m |  |
| M4\_1 | CTD017 | 25 m | x |  | M4\_2 | CTD044 | 500 m |  |
| M3 | CTD026 | 50 m | x |  | M4\_2 | CTD044 | 200 m |  |
| M3 | CTD026 | 200 m |  |  | M4\_2 | CTD044 | 50 m | x |
| M3 | CTD026 | 500 m |  |  | M2\_3 | CTD052 | 50 m | x |
| M3 | CTD026 | 1000 m |  |  | M2\_3 | CTD052 | 150 m |  |
| M2\_2 | CTD029 | 25 m | x |  | M2\_3 | CTD052 | 350 m |  |
| M2\_2 | CTD029 | 100 m | x |  | M2\_3 | CTD052 | 400 m |  |
| M2\_2 | CTD029 | 200 m |  |  | M2\_3 | CTD052 | 500 m |  |
| M2\_2 | CTD029 | 400 m |  |  | M3\_3 | CTD057 | 100 m |  |
| M2\_2 | CTD029 | 400 m |  |  | M3\_3 | CTD057 | 200 m |  |
| M1 | CTD035 | 2500 m |  |  | M3\_3 | CTD057 | 500 m |  |
| M1 | CTD035 | 2000 m |  |  | M3\_3 | CTD057 | 800 m |  |
| M1 | CTD035 | 2000 m |  |  | M3\_3 | CTD057 | 1000 m |  |
| M1 | CTD035 | 1000 m |  |  | M3\_3 | CTD057 | 1500 m |  |
| M1 | CTD035 | 1000 m |  |  |  |  |  |  |
| M1 | CTD035 | 500 m |  |  |  |  |  |  |
| M1 | CTD035 | 200 m |  |  |  |  |  |  |
| M1 | CTD035 | 100 m | x |  |  |  |  |  |

# INSTRUMENTS

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

Manufacturer: **Perkin Elmer**

Model: **Tri-Carb® 2100TR**

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

Instrument Type: **Peristaltic pump**

Manufacturer: **Cole Parmer**

Model: **Masterflex L/S Easy-Load II**

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

# DESCRIPTION of PARAMETERS

## Measurement details

Seawater samples (400 mL) were taken from different depths at 7 stations. Samples from upper depth(s) were pre-filtered through a 0.8 µm polycarbonate filter (47 mm) using a peristaltic pump.

## Analytical procedure

To measure DIC fixation rates, seawater samples (40 mL triplicate samples and duplicate formaldehyde–treated blanks) were incubated in the dark with 14C-labeled sodium bicarbonate at *in situ* temperature for 72 h. Incubations were terminated by adding formaldehyde and filtered onto 0.2 μm polycarbonate filters. Filters were exposed to fuming HCl for 12 h then transferred to scintillation vials. Scintillation cocktail was added and counted after 18 h. Replicate sample disintegrations per minute (DPMs) were averaged, blank-corrected, and converted into DIC fixation rates.

## Units

* DIC dark fixation rate (µmol C m–3) 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).

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Reinthaler T., van Aken H.M., Herndl G.J., 2010. Major contribution of autotrophy to microbial carbon cycling in the deep North Atlantic’s interior. Deep Sea Research Part II: Topical Studies in Oceanography, **57**, 1572–1580.
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