Dataset name: **Calcifying plankton and particulate inorganic carbon**

|  |  |
| --- | --- |
| Parameters: | * **Particulate inorganic carbon (PIC)**
* **Coccolithophorid taxonomy/diversity**
* **Coccolithophorid calcite weight**
* **Foraminifer taxonomy/diversity/morphometry**
* **Foraminifer calcite weight**
 |

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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Address: **Laboratoire d’Océanographie Microbienne**

 **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: **Thibault de Garidel-Thoron**

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# OPERATIONS

## Sampling device(s)

Water for PIC, coccolithophorid diversity, and coccolithophorid calcite weigth were sampled from the rosette bottles. Samples for foraminiferal diversity, foraminiferal calcite weight and morphometry were obtained from MultiNet tows.

## List of stations sampled

**Table 1 : MultiNet casts for foraminiferal assemblages and morphological features**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Station ID** | **Cast ID** | **Tow #** | **Cast ID TG** | **Max depth (m)** |
| M2\_1 | MultiNet\_001 | T1 | MobyDick\_MPS\_M2\_1\_T1 | 450 |
| M2\_1 | MultiNet\_002 | T2 | MobyDick\_MPS\_M2\_1\_T2 | 100 |
| M4\_1 | MultiNet\_003 | T1 | MobyDick\_MPS\_M4\_1\_T1 | 500 |
| M4\_1 | MultiNet\_004 | T2 | MobyDick\_MPS\_M4\_1\_T2 | 100 |
| M3 | MultiNet\_005 | T1 | MobyDick\_MPS\_M3\_T1 | 500 |
| M3 | MultiNet\_006 | T2 | MobyDick\_MPS\_M3\_T2 | 100 |
| M2\_2 | MultiNet\_007 | T1 | MobyDick\_MPS\_M2\_2\_T1 | 400 |
| M2\_2 | MultiNet\_008 | T2 | MobyDick\_MPS\_M2\_2\_T2 | 100 |
| M1 | MultiNet\_009 | T1 | MobyDick\_MPS\_M1\_T1 | 500 |
| M1 | MultiNet\_010 | T2 | MobyDick\_MPS\_M1\_T2 | 100 |
| M4\_2 | MultiNet\_011 | T1 | MobyDick\_MPS\_M4\_2\_T1 | 500 |
| M4\_2 | MultiNet\_012 | T2 | MobyDick\_MPS\_M4\_2\_T2 | 100 |
| M2\_3 | MultiNet\_013 | T1 | MobyDick\_MPS\_M2\_3\_T1 | 400 |
| M2\_3 | MultiNet\_014 | T2 | MobyDick\_MPS\_M2\_3\_T2 | 100 |
| M3\_3 | MultiNet\_015 | T1 | MobyDick\_MPS\_M3\_3\_T1 | 490 |
| M3\_3 | MultiNet\_016 | T2 | MobyDick\_MPS\_M3\_3\_T2 | 100 |

**Table 2 : summary of MultiNet 100 µm plankton nets**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Cast\_ID** | **Cast\_ID\_CEREGE** | **Station\_ID** | **Net\_#** | **Net\_ID** |
| MultiNet\_001 | MobyDick\_MPS\_M2\_1\_T1 | M2\_1 | 1 | MobyDick\_MPS\_M2\_1\_T1\_N1 |
| MultiNet\_001 | MobyDick\_MPS\_M2\_1\_T1 | M2\_1 | 2 | MobyDick\_MPS\_M2\_1\_T1\_N2 |
| MultiNet\_001 | MobyDick\_MPS\_M2\_1\_T1 | M2\_1 | 3 | MobyDick\_MPS\_M2\_1\_T1\_N3 |
| MultiNet\_001 | MobyDick\_MPS\_M2\_1\_T1 | M2\_1 | 4 | MobyDick\_MPS\_M2\_1\_T1\_N4 |
| MultiNet\_001 | MobyDick\_MPS\_M2\_1\_T1 | M2\_1 | 5 | MobyDick\_MPS\_M2\_1\_T1\_N5 |
| MultiNet\_002 | MobyDick\_MPS\_M2\_1\_T2 | M2\_1 | 1 | MobyDick\_MPS\_M2\_1\_T2\_N1 |
| MultiNet\_002 | MobyDick\_MPS\_M2\_1\_T2 | M2\_1 | 2 | MobyDick\_MPS\_M2\_1\_T2\_N2 |
| MultiNet\_002 | MobyDick\_MPS\_M2\_1\_T2 | M2\_1 | 3 | MobyDick\_MPS\_M2\_1\_T2\_N3 |
| MultiNet\_002 | MobyDick\_MPS\_M2\_1\_T2 | M2\_1 | 4 | MobyDick\_MPS\_M2\_1\_T2\_N4 |
| MultiNet\_002 | MobyDick\_MPS\_M2\_1\_T2 | M2\_1 | 5 | MobyDick\_MPS\_M2\_1\_T2\_N5 |
| MultiNet\_003 | MobyDick\_MPS\_M4\_1\_T1 | M4\_1 | 1 | MobyDick\_MPS\_M4\_1\_T1\_N1 |
| MultiNet\_003 | MobyDick\_MPS\_M4\_1\_T1 | M4\_1 | 2 | MobyDick\_MPS\_M4\_1\_T1\_N2 |
| MultiNet\_003 | MobyDick\_MPS\_M4\_1\_T1 | M4\_1 | 3 | MobyDick\_MPS\_M4\_1\_T1\_N3 |
| MultiNet\_003 | MobyDick\_MPS\_M4\_1\_T1 | M4\_1 | 4 | MobyDick\_MPS\_M4\_1\_T1\_N4 |
| MultiNet\_003 | MobyDick\_MPS\_M4\_1\_T1 | M4\_1 | 5 | MobyDick\_MPS\_M4\_1\_T1\_N5 |
| MultiNet\_004 | MobyDick\_MPS\_M4\_1\_T2 | M4\_1 | 1 | MobyDick\_MPS\_M4\_1\_T2\_N1 |
| MultiNet\_004 | MobyDick\_MPS\_M4\_1\_T2 | M4\_1 | 2 | MobyDick\_MPS\_M4\_1\_T2\_N2 |
| MultiNet\_004 | MobyDick\_MPS\_M4\_1\_T2 | M4\_1 | 3 | MobyDick\_MPS\_M4\_1\_T2\_N3 |
| MultiNet\_004 | MobyDick\_MPS\_M4\_1\_T2 | M4\_1 | 4 | MobyDick\_MPS\_M4\_1\_T2\_N4 |
| MultiNet\_004 | MobyDick\_MPS\_M4\_1\_T2 | M4\_1 | 5 | MobyDick\_MPS\_M4\_1\_T2\_N5 |
| MultiNet\_005 | MobyDick\_MPS\_M3\_T1 | M3 | 1 | MobyDick\_MPS\_M3\_T1\_N1 |
| MultiNet\_005 | MobyDick\_MPS\_M3\_T1 | M3 | 2 | MobyDick\_MPS\_M3\_T1\_N2 |
| MultiNet\_005 | MobyDick\_MPS\_M3\_T1 | M3 | 3 | MobyDick\_MPS\_M3\_T1\_N3 |
| MultiNet\_005 | MobyDick\_MPS\_M3\_T1 | M3 | 4 | MobyDick\_MPS\_M3\_T1\_N4 |
| MultiNet\_005 | MobyDick\_MPS\_M3\_T1 | M3 | 5 | MobyDick\_MPS\_M3\_T1\_N5 |
| MultiNet\_006 | MobyDick\_MPS\_M3\_T2 | M3 | 1 | MobyDick\_MPS\_M3\_T2\_N1 |
| MultiNet\_006 | MobyDick\_MPS\_M3\_T2 | M3 | 2 | MobyDick\_MPS\_M3\_T2\_N2 |
| MultiNet\_006 | MobyDick\_MPS\_M3\_T2 | M3 | 3 | MobyDick\_MPS\_M3\_T2\_N3 |
| MultiNet\_006 | MobyDick\_MPS\_M3\_T2 | M3 | 4 | MobyDick\_MPS\_M3\_T2\_N4 |
| MultiNet\_006 | MobyDick\_MPS\_M3\_T2 | M3 | 5 | MobyDick\_MPS\_M3\_T2\_N5 |

**Table 2 : summary of MultiNet 100 µm plankton nets (cont'd)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| MultiNet\_007 | MobyDick\_MPS\_M2\_2\_T1 | M2\_2 | 1 | MobyDick\_MPS\_M2\_2\_T1\_N1 |
| MultiNet\_007 | MobyDick\_MPS\_M2\_2\_T1 | M2\_2 | 2 | MobyDick\_MPS\_M2\_2\_T1\_N2 |
| MultiNet\_007 | MobyDick\_MPS\_M2\_2\_T1 | M2\_2 | 3 | MobyDick\_MPS\_M2\_2\_T1\_N3 |
| MultiNet\_007 | MobyDick\_MPS\_M2\_2\_T1 | M2\_2 | 4 | MobyDick\_MPS\_M2\_2\_T1\_N4 |
| MultiNet\_007 | MobyDick\_MPS\_M2\_2\_T1 | M2\_2 | 5 | MobyDick\_MPS\_M2\_2\_T1\_N5 |
| MultiNet\_008 | MobyDick\_MPS\_M2\_2\_T2 | M2\_2 | 1 | MobyDick\_MPS\_M2\_2\_T2\_N1 |
| MultiNet\_008 | MobyDick\_MPS\_M2\_2\_T2 | M2\_2 | 2 | MobyDick\_MPS\_M2\_2\_T2\_N2 |
| MultiNet\_008 | MobyDick\_MPS\_M2\_2\_T2 | M2\_2 | 3 | MobyDick\_MPS\_M2\_2\_T2\_N3 |
| MultiNet\_008 | MobyDick\_MPS\_M2\_2\_T2 | M2\_2 | 4 | MobyDick\_MPS\_M2\_2\_T2\_N4 |
| MultiNet\_008 | MobyDick\_MPS\_M2\_2\_T2 | M2\_2 | 5 | MobyDick\_MPS\_M2\_2\_T2\_N5 |
| MultiNet\_009 | MobyDick\_MPS\_M1\_T1 | M1 | 1 | MobyDick\_MPS\_M1\_T1\_N1 |
| MultiNet\_009 | MobyDick\_MPS\_M1\_T1 | M1 | 2 | MobyDick\_MPS\_M1\_T1\_N2 |
| MultiNet\_009 | MobyDick\_MPS\_M1\_T1 | M1 | 3 | MobyDick\_MPS\_M1\_T1\_N3 |
| MultiNet\_009 | MobyDick\_MPS\_M1\_T1 | M1 | 4 | MobyDick\_MPS\_M1\_T1\_N4 |
| MultiNet\_009 | MobyDick\_MPS\_M1\_T1 | M1 | 5 | MobyDick\_MPS\_M1\_T1\_N5 |
| MultiNet\_010 | MobyDick\_MPS\_M1\_T2 | M1 | 1 | MobyDick\_MPS\_M1\_T2\_N1 |
| MultiNet\_010 | MobyDick\_MPS\_M1\_T2 | M1 | 2 | MobyDick\_MPS\_M1\_T2\_N2 |
| MultiNet\_010 | MobyDick\_MPS\_M1\_T2 | M1 | 3 | MobyDick\_MPS\_M1\_T2\_N3 |
| MultiNet\_010 | MobyDick\_MPS\_M1\_T2 | M1 | 4 | MobyDick\_MPS\_M1\_T2\_N4 |
| MultiNet\_010 | MobyDick\_MPS\_M1\_T2 | M1 | 5 | MobyDick\_MPS\_M1\_T2\_N5 |
| MultiNet\_011 | MobyDick\_MPS\_M4\_2\_T1 | M4\_2 | 1 | MobyDick\_MPS\_M4\_2\_T1\_N1 |
| MultiNet\_011 | MobyDick\_MPS\_M4\_2\_T1 | M4\_2 | 2 | MobyDick\_MPS\_M4\_2\_T1\_N2 |
| MultiNet\_011 | MobyDick\_MPS\_M4\_2\_T1 | M4\_2 | 3 | MobyDick\_MPS\_M4\_2\_T1\_N3 |
| MultiNet\_011 | MobyDick\_MPS\_M4\_2\_T1 | M4\_2 | 4 | MobyDick\_MPS\_M4\_2\_T1\_N4 |
| MultiNet\_011 | MobyDick\_MPS\_M4\_2\_T1 | M4\_2 | 5 | MobyDick\_MPS\_M4\_2\_T1\_N5 |
| MultiNet\_012 | MobyDick\_MPS\_M4\_2\_T2 | M4\_2 | 1 | MobyDick\_MPS\_M4\_2\_T2\_N1 |
| MultiNet\_012 | MobyDick\_MPS\_M4\_2\_T2 | M4\_2 | 2 | MobyDick\_MPS\_M4\_2\_T2\_N2 |
| MultiNet\_012 | MobyDick\_MPS\_M4\_2\_T2 | M4\_2 | 3 | MobyDick\_MPS\_M4\_2\_T2\_N3 |
| MultiNet\_012 | MobyDick\_MPS\_M4\_2\_T2 | M4\_2 | 4 | MobyDick\_MPS\_M4\_2\_T2\_N4 |
| MultiNet\_012 | MobyDick\_MPS\_M4\_2\_T2 | M4\_2 | 5 | MobyDick\_MPS\_M4\_2\_T2\_N5 |

**Table 2 : summary of MultiNet 100 µm plankton nets (cont'd)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| MultiNet\_013 | MobyDick\_MPS\_M2\_3\_T1 | M2\_3 | 1 | MobyDick\_MPS\_M2\_3\_T1\_N1 |
| MultiNet\_013 | MobyDick\_MPS\_M2\_3\_T1 | M2\_3 | 2 | MobyDick\_MPS\_M2\_3\_T1\_N2 |
| MultiNet\_013 | MobyDick\_MPS\_M2\_3\_T1 | M2\_3 | 3 | MobyDick\_MPS\_M2\_3\_T1\_N3 |
| MultiNet\_013 | MobyDick\_MPS\_M2\_3\_T1 | M2\_3 | 4 | MobyDick\_MPS\_M2\_3\_T1\_N4 |
| MultiNet\_013 | MobyDick\_MPS\_M2\_3\_T1 | M2\_3 | 5 | MobyDick\_MPS\_M2\_3\_T1\_N5 |
| MultiNet\_014 | MobyDick\_MPS\_M2\_3\_T2 | M2\_3 | 1 | MobyDick\_MPS\_M2\_3\_T2\_N1 |
| MultiNet\_014 | MobyDick\_MPS\_M2\_3\_T2 | M2\_3 | 2 | MobyDick\_MPS\_M2\_3\_T2\_N2 |
| MultiNet\_014 | MobyDick\_MPS\_M2\_3\_T2 | M2\_3 | 3 | MobyDick\_MPS\_M2\_3\_T2\_N3 |
| MultiNet\_014 | MobyDick\_MPS\_M2\_3\_T2 | M2\_3 | 4 | MobyDick\_MPS\_M2\_3\_T2\_N4 |
| MultiNet\_014 | MobyDick\_MPS\_M2\_3\_T2 | M2\_3 | 5 | MobyDick\_MPS\_M2\_3\_T2\_N5 |
| MultiNet\_015 | MobyDick\_MPS\_M3\_3\_T1 | M3\_3 | 2 | MobyDick\_MPS\_M3\_3\_T1\_N2 |
| MultiNet\_015 | MobyDick\_MPS\_M3\_3\_T2 | M3\_3 | 3 | MobyDick\_MPS\_M3\_3\_T2\_N3 |
| MultiNet\_015 | MobyDick\_MPS\_M3\_3\_T3 | M3\_3 | 4 | MobyDick\_MPS\_M3\_3\_T3\_N4 |
| MultiNet\_015 | MobyDick\_MPS\_M3\_3\_T4 | M3\_3 | 5 | MobyDick\_MPS\_M3\_3\_T4\_N5 |
| MultiNet\_016 | MobyDick\_MPS\_M3\_3\_T2 | M3\_3 | 2 | MobyDick\_MPS\_M3\_3\_T2\_N2 |
| MultiNet\_016 | MobyDick\_MPS\_M3\_3\_T2 | M3\_3 | 3 | MobyDick\_MPS\_M3\_3\_T2\_N3 |
| MultiNet\_016 | MobyDick\_MPS\_M3\_3\_T2 | M3\_3 | 4 | MobyDick\_MPS\_M3\_3\_T2\_N4 |
| MultiNet\_016 | MobyDick\_MPS\_M3\_3\_T2 | M3\_3 | 5 | MobyDick\_MPS\_M3\_3\_T2\_N5 |

# INSTRUMENTS

Instrument Type: **MultiNet**

Manufacturer: **HydroBios**

Model: **Midi**

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

# DESCRIPTION of PARAMETERS

## Sampling details

**Particulate inorganic calcite**: At each station, between 2.5 to 4.5 L water samples were taken at each depth from the "stock" rosette. Water was filtered onto GF/F filters and stored in the freezer (–20°C) right after filtration.

**Coccolithophorid assemblages, sizes and weights**: Seawater samples were collected from the "stock" rosette to assess the biodiversity of coccolithophorids, their biovolume and their liths' weight. At each station, between 1.5 to 2.32 L of water were taken at each depth (except at 1,000 m). Water was filtered onto GF/F filters in the dark and stored in capsules. Samples were flash-freezed in liquid nitrogen and stored at –80°C.

**Foraminifera assemblages, sizes and weights** : Plankton samples retrieved in the net collectors were transferred immediately into the freezer (–20°C) to store them until processing.

## Analytical procedure

Foraminifera will be hand–picked to extract them from the remaining plankton. Each cell will be imaged using CEREGE prototype to sort the foraminifers. Shell weights will be measured in batch using an ultramicrobalance. Foraminiferal assemblages, shell weights, and sizes will be measured according to the recent SCOR WG138 on planktonic foraminifera best practices (book in prep.; Schiebel and Hemleben, 2017).

Coccolithophorids assemblages will be classified automatically, using the SYRACO software (Beaufort & Dollfus, 2004); the mass of coccoliths will be estimated using the Calciprobe software (Beaufort *et al.*, 2015).

## Units

* Foraminifera assemblages: cell numbers per species per net
* Foraminifera stock: cell numbers m–3
* Coccolithophorid assemblages: cell numbers per species per net
* Coccolithophorid stock: cell numbers L–1
* Particulate Inorganic Carbon (PIC): µmol L–1

## Sensor precision

N/A

## Post-cruise data analysis/treatment required

N/A

## Estimated Date of Delivery

December 2019

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