Dataset name: **Nano-microplankton taxonomy**

|  |  |
| --- | --- |
| Parameters: | * **nano– and microplankton taxa** * **nano– and microplankton abundances** * **nano– and microplankton specific biomass per taxon** |

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)

Address: **Mediterranean Institute of Oceanolography**

**Institut Pytheas - Observatoire des Sciences de l'Univers**

**Bâtiment OCEANOMED, Campus de Luminy, case 901**

**F-13288 Marseille Cedex 09, France**

Chief scientist: **Ingrid Obernosterer** [ingrid.obernosterer@obs-banyuls.fr](mailto:ingrid.obernosterer@obs-banyuls.fr)

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: **Karine Leblanc**

Mediterranean Institute of Oceanolography

Institut Pytheas - Observatoire des Sciences de l'Univers

Bâtiment OCEANOMED, Campus de Luminy, case 901

13288 Marseille Cedex 09, France

+33 (0)4 86 09 05 72

[karine.leblanc@univ-amu.fr](mailto:karine.leblanc@univ-amu.fr)

Dataset contact: **Karine Leblanc**

Mediterranean Institute of Oceanolography

Institut Pytheas - Observatoire des Sciences de l'Univers

Bâtiment OCEANOMED, Campus de Luminy, case 901

13288 Marseille Cedex 09, France

+33 (0)4 86 09 05 72

[karine.leblanc@univ-amu.fr](mailto:karine.leblanc@univ-amu.fr)

# OPERATIONS

## Sampling device(s)

Samples (surface water : 10 or 15 m) were collected from rosette bottles during CTD casts (4 to 8 depths between 0–200 m, see Table 1 below), from bottle–net (deployment depth to complement vertical profile and/or selection of discrete layers), and from phytoplankton net (35 µm) vertical tows (0–125 m deployment usually, day and night).

## List of stations sampled

**Table 1 : Sampling operations for nano– and microplankton observations**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Station ID** | **Type of operation** | **Cast ID** | **Rosette bottle water** | **Rosette bottle-net** | **Phytoplankton net** |
| M2\_1 | CTD\_Deep stocks | CTD\_005 |  | 100-450 m |  |
| M2\_1 | Phytopl. net | Phytonet\_001 |  |  | 0-125 m |
| M2\_1 | CTD\_eDNA | CTD\_006 | 6 depths |  |  |
| M2\_1 | Phytopl. net | Phytonet\_002 |  |  | 0-125 m |
| M2\_1 | CTD\_Stock | CTD\_007 | 8 depths | 100-450 m |  |
| M2\_1 | CTD\_OMICS-T | CTD\_009 | 4 depths |  |  |
| M4\_1 | CTD\_OMICS-T | CTD\_011 | 4 depths | 125-150 m |  |
| M4\_1 | Phytopl. net | Phytonet\_003 |  |  | 0-125 m |
| M4\_1 | CTD\_eDNA | CTD\_012 | 6 depths |  |  |
| M4\_1 | Phytopl. net | Phytonet\_004 |  |  | 0-125 m |
| M4\_1 | CTD\_Stock | CTD\_013 | 8 depths | 125-150 m |  |
| M4\_1 | CTD\_Deep stocks | CTD\_017 |  | 150-1900 m |  |
| M4\_1 | CTD\_Deep stocks | CTD\_018 |  | 1900-4000 m |  |
| M3 | CTD\_Deep stocks | CTD\_019 |  | fermé ('blanc') |  |
| M3 | CTD\_OMICS-P | CTD\_20 |  | fermé ('blanc') |  |
| M3 | Phytopl. net | Phytonet\_005 |  |  | 0-125 m |
| M3 | CTD\_OMICS-T | CTD\_021 | 4 depths | 60-125 m |  |
| M3 | CTD\_eDNA | CTD\_022 | 6 depths |  |  |
| M3 | Phytopl. net | Phytonet\_006 |  |  | 0-125 m |
| M3 | CTD\_Stock | CTD\_023 | 8 depths | 125-500 m |  |
| M3 | CTD\_NCP | CTD\_024 |  | 125-500 m |  |
| M3 | CTD\_Deep stocks | CTD\_025 |  | 500-1500 m |  |

**Table 1 : Sampling operations for nano– and microplankton observations (cont'd)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Station ID** | **Type of operation** | **Cast ID** | **Rosette bottle water** | **Rosette bottle-net** | **Phytoplankton net** |
| M2\_2 | CTD\_OMICS-T | CTD\_027 | 4 depths | 100-150 m |  |
| M2\_2 | CTD\_eDNA | CTD\_028 | 6 depths |  |  |
| M2\_2 | Phytopl. net | Phytonet\_007 |  |  | 0-125 m |
| M2\_2 | CTD\_Stock | CTD\_030 | 8 depths | 125-450 m |  |
| M1 | CTD\_Deep stocks | CTD\_035 |  | 500-2500 m |  |
| M1 | CTD\_OMICS-T | CTD\_036 | 4 depths | 60-125 m |  |
| M1 | Phytopl. net | Phytonet\_008 |  |  | 0-125 m |
| M1 | CTD\_Stock | CTD\_038 | 8 depths | 125-500 m |  |
| M1 | CTD\_eDNA | CTD\_039 | 6 depths |  |  |
| M4\_2 | Phytopl. net | Phytonet\_009 |  |  | 0-125 m |
| M4\_2 | CTD\_Stock | CTD\_042 | 8 depths | 248-500 m |  |
| M4\_2 | Phytopl. net | Phytonet\_010 |  |  | 0-125 m |
| M4\_2 | CTD\_eDNA | CTD\_045 | 6 depths |  |  |
| M4\_2 | CTD\_Deep stocks | CTD\_047 |  | 500-1000 m |  |
| M2\_3 | CTD\_OMICS-T | CTD\_049 | 4 depths | 125-375 m |  |
| M2\_3 | Phytopl. net | Phytonet\_011 |  |  | 0-125 m |
| M2\_3 | CTD\_eDNA | CTD\_050 |  | fermé ('blanc') |  |
| M2\_3 | CTD\_Deep incub. | CTD\_051 |  | fermé ('blanc') |  |
| M2\_3 | CTD\_Deep stocks | CTD\_052 |  | 350-350 m ('blanc') |  |
| M2\_3 | Phytopl. net | Phytonet\_012 |  |  | 0-125 m |
| M2\_3 | CTD\_Stock | CTD\_053 | 8 depths | 125-375 m |  |
| M2\_3 | Phytopl. net | Phytonet\_013 |  |  | 0-125 m |
| M3\_3 | CTD\_Deep stocks | CTD\_057 |  | 200-1500 m |  |
| M3\_3 | CTD\_OMICS-T | CTD\_059 | 4 depths |  |  |
| M3\_3 | CTD\_eDNA | CTD\_060 | 6 depths |  |  |
| M3\_3 | Phytopl. net | Phytonet\_014 |  |  | 0-125 m |
| M3\_3 | CTD\_Stock | CTD\_061 | 8 depths | 125-500 m |  |

# INSTRUMENTS

Instrument Type: **Inverted epifluorescence microscope**

Manufacturer: **Nikon**

Model: **TE–200**

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

Instrument Type: **Inverted epifluorescence microscope**

Manufacturer: **Zeiss**

Model: **Primovert**

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

Instrument Type: **Straight epifluorescence microscope**

Manufacturer: **Zeiss**

Model: **Axio Imager**

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

Instrument Type: **Inverted microscopes**

Manufacturer: **Zeiss**

Model: **Axio Vert**

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

Instrument Type: **Scanning Electron Microscope**

Manufacturer: **PhenomWorld**

Model: **Phenom**

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

# DESCRIPTION of PARAMETERS

## Measurement details

Water samples for nano–/microphytoplankton and microzooplankton were collected in 250 mL bottles fixed with 0.8 mL acidified lugol and stored at 4°C. For phytonet samples (0-125 m), 2 x 60 mL samples were fixed with lugol or neutralized formol. For bottlenet samples (various depths), 2 x 4 mL samples were fixed similarly with lugol or formol. Organisms will be identified and counted at the laboratory following Utermöhl (1931). Live sample images and preliminary identification were already carried out on board on all phytonet and bottlenet samples. For each sampling depth, phytonet and bottlenet samples, 50 ml to 1 ml were filtered onto polycarbonate 0.2 μm and dried at room temperature and stored in petri dishes for SEM analyses.

## Analytical procedure

Organisms will be identified, counted and measured (to derive biovolumes) at the laboratory following Utermöhl (1931). Live sample images and preliminary identification were already carried out on board on all phytonet and bottlenet samples. Biovolumes will be determined according to Leblanc *et al.* (2012).

Radiolarians >100 μm will be collected if present in multinet samples collected by T. de Garidel (CEREGE). Abundance, determination and biomass estimates will be made at the laboratory on thawed samples.

Samples were analyzed in SEM on a Phenom electronic microscope (Roscoff) and wille further be analyzed on an SEM microscope at CINAM (Marseille) and CEREGE (Aix) for species determination.

## Units

* nano– and microplankton taxa list of taxa
* Cell abundances cell numbers L–1
* Cell specific biomass µg C L–1 per taxon/group
* Total nano– + microplankton biomass µg C L–1

## Sensor precision

N/A

## Post-cruise data analysis/treatment required

N/A

## Estimated Date of Delivery

December 2019

# BIBLIOGRAPHY

Leblanc K., Arístegui J., Armand L., Assmy P., Beker B., Bode A., Breton E., Cornet V., Gibson J., Gosselin M.-P., Kopczyńska E., Marshall H., Peloquin J., Piontkovski S., Poulton A.J., Quéguiner B., Schiebel R., Shipe R., Stefels J., van Leeuwe M.A., Varela M., Widdicombe C., Yallop M., 2012. A global diatom database – abundance, biovolume and biomass in the world ocean. *Earth System Science Data*, **4**, 149-165.

Utermöhl M., 1931. Über das umgekehrte mikroskop. *Archiv für Hydrobiologie und Planktologie*, **22**, 643-645.