Dataset name: **Diatom silicification**

|  |  |
| --- | --- |
| Parameters: | * **Diatom taxon–specific contribution to silica production** * **image bank** |

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

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**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**

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# OPERATIONS

## Sampling device(s)

Seawater samples were collected from rosette bottles during CTD casts (usually 10 depths between 0–200 m, see Table 1 below) and from bottle–net (deployment depth to complement vertical profile and/or selection of discrete layers).

## List of stations sampled

**Table 1 : Sampling operations for diatom silicification (PDMPO)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Station ID** | **Type of operation** | **Cast ID** | **Rosette bottle water** | **Rosette bottle-net** | **Phytoplankton net** |
| M2\_1 | CTD\_Stock | CTD\_007 | 8 depths | 100-450 m |  |
| M4\_1 | CTD\_OMICS-T | CTD\_011 |  | 125-150 m |  |
| M4\_1 | Phytopl. net | Phytonet\_004 |  |  | 0-125 m |
| M4\_1 | CTD\_Stock | CTD\_013 | 10 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\_Stock | CTD\_023 | 10 depths | 125-500 m |  |
| M3 | CTD\_Deep stocks | CTD\_025 |  | 500-1500 m |  |
| M2\_2 | CTD\_Stock | CTD\_030 | 10 depths | 125-450 m |  |
| M1 | CTD\_Deep stocks | CTD\_035 |  | 500-2500 m |  |
| M1 | CTD\_OMICS-T | CTD\_036 |  | 60-125 m |  |
| M1 | CTD\_Stock | CTD\_038 | 10 depths | 125-500 m |  |
| M4\_2 | CTD\_Stock | CTD\_042 | 10 depths | 248-500 m |  |
| M4\_2 | CTD\_Deep stocks | CTD\_047 |  | 500-1000 m |  |
| M2\_3 | CTD\_Stock | CTD\_053 | 10 depths | 125-375 m |  |
| M3\_3 | CTD\_Stock | CTD\_061 | 10 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**

# DESCRIPTION of PARAMETERS

## Measurement details

PDMPO uptake per species : 10 mL samples from bottle–net and 250 mL samples from rosette bottles were spiked respectively with 20 µL or 250 µL 0.1 mM PDMPO following Leblanc & Hutchins (2005). Samples from rosette bottles were incubated in on-deck incubators while samples samples from bottle–net were incubated in the lab fridge. Incubations lasted 24 h and samples were then filtered onto a black polycarbonate filter and mounted on a glass slide, then stored at –20°C.

## Analytical procedure

At the laboratory, samples will be analyzed in epifluorescence microscopy using image analyses and dedicated macros allowing to quantify the mean fluorescence per cell. This will allow to estimate the % contribution of each species/taxon present to the total silicification rate

## Units

* silicifying diatom cells % relative contribution to total silicification per taxon

## Sensor precision

N/A

## Post-cruise data analysis/treatment required

N/A

## Estimated Date of Delivery

December 2018

# BIBLIOGRAPHY

Leblanc K., Hutchins D.A., 2005. New applications of a biogenic silica deposition fluorophore in the study of oceanic diatoms. *Limnology and Oceanography Methods*, **3**, 462–476.