Dataset name: **Diatom lipids**

|  |  |
| --- | --- |
| Parameters: | * **Diatom taxon–specific lipid content**
* **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

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 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 3 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 selected phytoplankton net (35 µm) vertical tows (0–125 m deployment).

## List of stations sampled

**Table 1 : Sampling operations for diatom lipids (Nile red)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Station ID** | **Type of operation** | **Cast ID** | **Rosette bottle water** | **Rosette bottle-net** | **Phytoplankton net** |
| M2\_1 | Phytopl. net | Phytonet\_002 |  |  | 0-125 m |
| M2\_1 | CTD\_Stock | CTD\_007 | 8 depths | 100-450 m |  |
| M4\_1 | Phytopl. net | Phytonet\_004 |  |  | 0-125 m |
| M4\_1 | CTD\_Stock | CTD\_013 | 3 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 | Phytopl. net | Phytonet\_006 |  |  | 0-125 m |
| M3 | CTD\_Stock | CTD\_023 | 3 depths | 125-500 m |  |
| M3 | CTD\_Deep stocks | CTD\_025 |  | 500-1500 m |  |
| M2\_2 | Phytopl. net | Phytonet\_007 |  |  | 0-125 m |
| M2\_2 | CTD\_Stock | CTD\_030 | 3 depths | 125-450 m |  |
| M1 | CTD\_Deep stocks | CTD\_035 |  | 500-2500 m |  |
| M1 | CTD\_OMICS-T | CTD\_036 |  | 60-125 m |  |
| M1 | Phytopl. net | Phytonet\_008 |  |  | 0-125 m |
| M1 | CTD\_Stock | CTD\_038 | 3 depths | 125-500 m |  |
| M4\_2 | Phytopl. net | Phytonet\_009 |  |  | 0-125 m |
| M4\_2 | CTD\_Stock | CTD\_042 | 3 depths | 248-500 m |  |
| M4\_2 | CTD\_Deep stocks | CTD\_047 |  | 500-1000 m |  |
| M2\_3 | Phytopl. net | Phytonet\_012 |  |  | 0-125 m |
| M2\_3 | CTD\_Stock | CTD\_053 | 3 depths | 125-375 m |  |
| M3\_3 | Phytopl. net | Phytonet\_014 |  |  | 0-125 m |
| M3\_3 | CTD\_Stock | CTD\_061 | 3 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

Seawater samples were collected for further staining at the laboratory onboard with Nile Red following Greenspan *et al.* (1985) in order to determine lipid content at a specific level and identify potential resting stages (from accumulation of lipid droplets). Samples were centrifuged for 20 mn at 2500 rpm, the bottom 1 mL was resuspended in 1 mL of reagent (0.1 M HEPES pH7 buffer, 10 mM CaCl2, 10 mM MgCl2 and 2% glutaraldehyde). Samples were incubated 1 h in the dark at 4°C, then centrifuged again for 20 mn at 2500 rpm. The "pellet" cells were rinsed free of glutaraledhyde and resuspended in 1 mL 0.1 M HEPES pH7 buffer and stored at 4°C until further analysis.

## Analytical procedure

At the laboratory samples will be spiked with 5 µL of Nile Red at 1mg/mL for 1 mL sample (final concentration of 5 µg/mL), incubated 5 mn at room temperature, then observed in epifluorescence microscopy with an FITC or DsREd filter cube. Species containing lipids will be counted and identified, and image analyses of stained droplets will give an estimate of lipid content per cell.

## Units

* diatom lipids % relative contribution to lipid content per taxon

## Sensor precision

N/A

## Post-cruise data analysis/treatment required

N/A

## Estimated Date of Delivery

September 2018

# BIBLIOGRAPHY

Greenspan P., Mayer E.P., Fowler S.D., 1985. Nile red: A selective fluorescent stain for intracellular lipid droplets. *The Journal of Cell Biology*, **100**(3), 965–973.