Dataset name: **Diatom viability**

|  |  |
| --- | --- |
| Parameters: | * **Diatom taxon–specific viability**
* **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 viability (Sytox Green)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **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 |  | 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 | 3 depths | 125-500 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 staining on board with Sytox Green a viability marker following Veldhuis *et al.* (2001) and Zetsche *et al.* (2012). For bottle–nets and phytoplankton nets, 1 mL samples were immediately stained with 10 µL Sytox Green 500 µM for 30 min in the dark. For rosette bottles, 250 mL samples were collected at 3 depths and centrifuged down to 1 mL samples and then stained as above.

## Analytical procedure

Observation in epifluorescence microscopy was carried out onboard after 30 min and the total number of diatoms (full and empty cells) and the number of labelled cells (dead) were counted in a Sedgewick Rafter counting chamber.

## Units

* dead diatom cells % relative contribution to total cell number per taxon
* dead empty frustules % relative contribution to total cell number per taxon

## Sensor precision

N/A

## Post-cruise data analysis/treatment required

N/A

## Estimated Date of Delivery

Data available (measurements made onboard)

# BIBLIOGRAPHY

Veldhuis M.J.W., Kraay G.W., Timmermans K.R., 2001. Cell death in phytoplankton: correlation between changes in membrane permeability, photosynthetic activity, pigmentation and growth. *European Journal of Phycology*, **36**, 167–177.

Zetsche E.M., Meysman F.J.R., 2012. Dead or alive? Viability assessment of micro- and mesoplankton. *Journal of Plankton Research*, **34**, 493–509.