Dataset name: **Methane**

|  |  |
| --- | --- |
| Parameter: | * **Methane concentration** |

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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**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: **Thomas Reinthaler**

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# OPERATIONS

## Sampling device(s)

Water samples were collected from the rosette bottles (see Table 1).

## List of stations sampled

**Table 1 : details of sampled stations**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Station ID** | **Date** | **Cast ID** | **Depth** | **Bottle #** |
| M3 | 04/03/18 | CTD-26 | 50 m | 22 |
| M3 | 04/03/18 | CTD-26 | 100 m | 19 |
| M3 | 04/03/18 | CTD-26 | 200 m | 14 |
| M3 | 04/03/18 | CTD-26 | 500 m | 10 |
| M3 | 04/03/18 | CTD-26 | 1000 m | 6 |
| M3 | 04/03/18 | CTD-26 | 1500 m | 1 |
| M2\_2 | 06/03/18 | CTD-29 | 15 m | 22 |
| M2\_2 | 06/03/18 | CTD-29 | 50 m | 19 |
| M2\_2 | 06/03/18 | CTD-29 | 100 m | 18 |
| M2\_2 | 06/03/18 | CTD-29 | 350 m | 12 |
| M2\_2 | 06/03/18 | CTD-29 | 400 m | 4 |
| M2\_2 | 06/03/18 | CTD-29 | 500 m | 1 |
| M1 | 09/03/18 | CTD-35 | 15 m | 22 |
| M1 | 09/03/18 | CTD-35 | 50 m | 21 |
| M1 | 09/03/18 | CTD-35 | 100 m | 18 |
| M1 | 09/03/18 | CTD-35 | 200 m | 15 |
| M1 | 09/03/18 | CTD-35 | 500 m | 11 |
| M1 | 09/03/18 | CTD-35 | 1000 m | 8 |
| M1 | 09/03/18 | CTD-35 | 2000 m | 5 |
| M1 | 09/03/18 | CTD-35 | 2500 m | 1 |
| M4\_2 | 12/03/18 | CTD-44 | 50 m | 22 |
| M4\_2 | 12/03/18 | CTD-44 | 200 m | 20 |
| M4\_2 | 12/03/18 | CTD-44 | 500 m | 16 |
| M4\_2 | 12/03/18 | CTD-44 | 1000 m | 14 |
| M4\_2 | 12/03/18 | CTD-44 | 2500 m | 11 |
| M4\_2 | 12/03/18 | CTD-44 | 4000 m | 2 |

**Table 1 : details of sampled stations (cont'd)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Station ID** | **Date** | **Cast ID** | **Depth** | **Bottle #** |
| M2\_3 | 16/03/18 | CTD-52 | 25 m | 20 |
| M2\_3 | 16/03/18 | CTD-52 | 50 m | 10 |
| M2\_3 | 16/03/18 | CTD-52 | 175 m | 14 |
| M2\_3 | 16/03/18 | CTD-52 | 300 m | 11 |
| M2\_3 | 16/03/18 | CTD-52 | 400 m | 4 |
| M2\_3 | 16/03/18 | CTD-53 | 450 m | 2 |
| M2\_3 | 16/03/18 | CTD-52 | 500 m | 1 |
| M3\_3 | 18/03/18 | CTD-57 | 100 m | 20 |
| M3\_3 | 18/03/18 | CTD-57 | 200 m | 17 |
| M3\_3 | 18/03/18 | CTD-57 | 500 m | 13 |
| M3\_2 | 18/03/18 | CTD-57 | 800 m | 10 |
| M3\_3 | 18/03/18 | CTD-57 | 1000 m | 7 |
| M3\_3 | 18/03/18 | CTD-57 | 1500 m | 1 |
| M3\_3 | 19/03/18 | CTD-60 | 25 m | 22 |
| M3\_3 | 19/03/18 | CTD-60 | 50 m | 20 |
| M3\_3 | 19/03/18 | CTD-60 | 75 m | 18 |

# INSTRUMENTS

Instrument Type: **CRDS Gas Analyzer**

Manufacturer: **Picarro**

Model: **2201–i**

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

# DESCRIPTION of PARAMETERS

## Measurement details

Sampling was done according to the method published by Roberts & Shiller (2015). Briefly, seawater samples were drawn bubble free into 140 mL syringes. A headspace was created with methane free gas and equilibrated with the seawater. The gas in the headspace was transferred to another syringe avoiding the introduction of any seawater.

## Analytical procedure

The gas was then measured on a Picarro 2201-I analyzer using standard settings.

## Units

* Methane concentration nM

## Sensor precision

N/A

## Post-cruise data analysis/treatment required

Final gas concentrations will be calculated back in the lab in Vienna, considering the *in situ* temperature and salinity from the corrected CTD bottle files.

## Estimated Date of Delivery

2 months after cruise end,

# BIBLIOGRAPHY

Roberts H.M., Shiller A.M., 2015. Determination of dissolved methane in natural waters using headspace analysis with cavity ring-down spectroscopy. *Analytica Chimica Acta*, **856**, 68–73. <https://doi.org/10.1016/j.aca.2014.10.058>