**GEOTRACES Intercalibration Report**

**Cruise ID\*:** SWINGS
**Submitting investigator\*:** Stéphane Blain

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Please fill in as many sections as possible.

**1. Did your lab participate in an intercalibration exercise (**<http://www.geotraces.org/sic/intercalibrate-data/intercalibration-exercices>)**? If so, please provide a relevant figure or table, describe the results of the intercalibration, identifying your laboratory, and provide a reference for the intercalibration exercise, if published.**

No

**2. Did your sampling method at sea follow the GEOTRACES cookbook (available at:** <http://www.geotraces.org/cookbook>**)? Please give a brief description of your sampling methodology (e.g., what bottles were used, what type and size of filters were used, how the samples were treated at sea, etc.).**

Seawater samples were collected using trace metal clean GoFlo bottles and standard Niskin bottles. For samples collected by GoFlo bottles, seawater was filtered (0.45 µm) in the trace metal clean van. For samples collected with standard Niskin bottles, 125 mL of raw seawater was collected in HDPE flask, and 60 mL were filtered (0.45 µm Acetate Cellulose filters). All samples were preserved with HgCl2 (4g/l; 900 µL in 60mL). They were stored in the dark and at room temperature until analysis back in the laboratory 8 months later.

**3. Briefly outline the analytical methodology used in your laboratory, and provide associated metadata and references, as appropriate.**

The analyses of nitrate (NO3-), nitrite (NO2-), phosphate (PO43-) and silicic acid Si(OH)4 were carried out in the laboratory with a segmented flow analyzer (Skalar) equipped with colorimetric detection using methods described in (Aminot and Kérouel, 2007; Blain et al. 2018).

Aminot, A. and Kérouel, R. (2007) Dosage automatique des nutriments dans les eaux marines, méthodes en flux continu, Ifremer.

Blain S., Capparos J., Guéneuguès A., Obernosterer I., Oriol L. (2015). Distributions and stoichiometry of dissolved nitrogen and phosphorus in the iron-fertilized region near Kerguelen (Southern Ocean). *Biogeosciences*, 12, 623-635, doi:10.5194/bg-12-623-2015.

**4. Report your blank values and detection limits, and explain how these were defined and evaluated.**

The limit of detection reported below is the average of 19 independent runs were the limit of detection is calculated the skalar software (flowaccess3) based on the standard deviation of the ordinate at the origin of the standard calibration curve.

|  |  |  |  |
| --- | --- | --- | --- |
| Si(OH)4 | NO3- | NO2- | PO43- |
| 0.07 [µmol L-1] | 0.15 [µmol L-1] | 0.01 [µmol L-1] | 0.02 [µmol L-1] |

**5. Report how you monitored the internal consistency of your data (e.g., through replicate analyses of samples).**

The samples were run in triplicates. Each vertical profile was plotted and examined visually. Quality flag were attributed to each values according to SeaDataNet qualifier flags. Missing values (bottles not sampled during a cast were reported as “-9999” associated with a quality flag of “9”

**6. Report the external consistency of your data (e.g., results from analyses of certified reference materials and/or consensus materials).**

The accuracy of the methods is assessed using reference material (Certipur, Merck)

|  |  |  |
| --- | --- | --- |
| nutrient | Certified values | Measured value |
| mean | Standard deviation | Number of determination |
| PO43- | 1.05 | 1.02 | 0.03 | 25 |
| NO2- | 1.08 | 1.07 | 0.03 | 25 |
| NO3- | 6.48 | 6.33 | 0.13 | 25 |
| NO3- | 25.9 | 25.6 | 0.5 | 21 |
| Si(OH)4 | 7.02 | 7.07 | 0.03 | 25 |
| Si(OH)4 | 70.2 | 70.1 | 0.8 | 21 |

**7. If you occupied a crossover station, include a plot and a table that show relevant data and their level of agreement, and explain any significant discrepancies (e.g., where discrepancies may reflect differences in the depth of isopycnal surfaces between occupations). If possible please also include a profile of Temperature & Salinity**.

Si(OH)4, NO3- and PO43- profiles at the station 31 of SWINGS (green dots) are compared to nutrient profiles at the same position during the project the project CROZEX (2004). Position of the station (49.000°S/51.534°E).

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Si(OH)4 [µmol kg-1] | NO3- [µmol kg-1] | PO43- [µmol kg-1] |

There are only 4 common depths (400m, 1000m, 2000m, 4000m) between the two data sets where the concentrations of nutrients can be strictly compared by calculating the mean and the standard deviation of ((SWINGS-CROZEX)\*100/SWINGS ) . The results are summarized in the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| nutrient | Si(OH) 4 | NO3- | PO43- |
| Mean (%) | 4.3 | -0.9 | -1.5 |
| Standard deviation (%) | 2.4 | 1.5 | 1.9 |

**8. If you did not occupy a crossover station, report replicate analyses from a different laboratory, or if there were no replicate analyses (e.g., due to large volumes or short half-lives), explain how your data compare to historical data including results from nearby stations, even though they may not be true crossover stations.**

**9. If not already included in your responses to the questions above, please provide a representative vertical profile or report the range of values, for the parameter(s) that are addressed in this intercalibration report**