

FICHE META_INFORMATION_PARAMETRES

(à remplir par le responsable du paramètre) / (to be filled by the person in charge of the parameter)

1. PARAMETRES CONCERNES / Parameters

Name of the Parameters :

dry mass sinking flux
particulate organic carbon sinking flux
particulate inorganic carbon sinking flux
particulate nitrogen sinking flux
particulate biogenic silica sinking flux

2. OPERATION & CAMPAGNE & PIs / OPERATION & CAMPAIGN&PIs

Sampling method : PPS3 sediment trap

Station numbers : R1, E1, E3, A3-2, E-5

Operation code : DRIFT_PART_TRAP

3. PROJET ETUDE / PROJECT TITLE

Campaign NAME : KEOPS2

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4. RESPONSABLE SCIENTIFIQUE du paramètre / PI of the parameter

| Nom / name | adresse / address | téléphone / phone number | fax / fax number |
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5. DESCRIPTION DES PARAMETRES / PARAMETERS DESCRIPTION

5.1. Ce qui a été collecté,
mesuré et comment / How
was the parameter collected

and measured (include references for analytical methods)?

Sampling: Sinking particles were collected into a carousel of rotating sampling cups beneath a Technicap PPS3/3 conical-cylindrical free-drifting sediment trap deployed at ~200m depth. All cups contained pre-filtered (0.8 μm pore size glass fibre filter) brine made by salt enrichment of local seawater (final salinity ~50 g L^{-1}), to retard physical loss during carousel movements. Some cups also contained poison (HgCl_2 ~1 g L^{-1}) to inhibit biological activity. After collection, the sinking particles were sieved through 300-350 μm pore-size Nitex screen to remove zooplankton, and then filtered onto a ~1.2 μm pore size silver membrane filter and dried at 60C.

Analytical procedure :

Separate aliquots of each filter were analysed as follows:

For POC and PN, filter aliquots were acidified to remove carbonates and then analysed for total C and total N by combustion-GC elemental analyser, using the methods of Trull et al, 2008a,b.

For PIC, filter aliquots were acidified and evolved CO_2 measured using an isotope ratio mass spectrometer following the method of Assayag et al., 2006.

For PbSi, filter aliquots were digested in hot alkaline solution and analysed by colorimetry following the method of Queguiner , 2001.

For dry mass, dried filter aliquots were weighed before and after removal of the filtered mass by acidification and physical irrigation.

Units:

for POC, PN, PIC and PbSi: milli-mole $\text{m}^{-2} \text{day}^{-1}$

for dry mass: $\text{g m}^{-2} \text{day}^{-1}$

5.2. Post-cruise data analysis/treatment required, and the time frame for this

Analysis is complete and data have been provided to KEOPS2 team.

Date of Delivery :

October 2012

5.3. Estimations des erreurs, précision, sensibilité des données / *Error estimates, precision and accuracy of the data* :

Subsampling of the filter dominates the uncertainties and is estimated to be ~ 10% for all parameters.

6. REFERENCES BIBLIOGRAPHIQUES

Assayag N., K. Rive, M. Ader, D. Jezequel, and P. Agrinier. 2006. Improved method for isotopic and quantitative analysis of dissolved inorganic carbon in natural water samples. *Rapid communications in mass spectrometry* **20**.

Queguiner B. 2001. Biogenic silica production in the Australian sector of the Sub-Antarctic Zone of the Southern Ocean in late summer 1998. *Journal of Geophysical Research* **106**: 31,627-631,636.

Trull, T. W., Bray, S. G., Buesseler, K. O., Lamborg, C. H., Manganini, S., Moy, C. & Valdes, J. 2008a. In situ measurement of mesopelagic particle sinking rates and the control of carbon transfer to the ocean interior during the Vertical Flux in the Global Ocean (VERTIGO) voyages in the North Pacific. *Deep-Sea Research Part II: Topical Studies in Oceanography*, 55, 1684-1695.

Trull TW, Davies D, Casciotti K. 2008b. Insights into nutrient assimilation and export in naturally iron-fertilized waters of the Southern Ocean from nitrogen, carbon and oxygen isotopes *Deep-Sea Research II* 55: 820-840.