FICHE META_INFORMATION_PARAMETRES

DYNAPROC 2

1. PARAMETRES CONCERNES (1 ligne par paramètre)

NO3
NO2
NH4
PO4 Si(OH)4
Chla fluo
PC Particulate carbon
PN Particulate nitrogen
PP Particulate phosphorus
TOC total organic carbon
TON total organic nitrogen
TOP total organic phosphorus
DOC dissolved organic carbon
DON dissolved organic nitrogen
DOP dissolved organic phosphorus
Primary production ^{13}C
Nitrate uptake ^{15}N
Ammonium uptake ^{15}N
N2 fixation ^{15}N

2. OPERATION & CAMPAIN

PECHE
DYNAPROC 2

3. PROJET ETUDE / PROJECT TITLE

Impact of the water column structure on new production and export flux.

4. RESPONSABLE SCIENTIFIQUE / PRINCIPAL INVESTIGATOR

Nom / name	**adresse / address**	**téléphone / phone number**	**fax / fax number**	**adresse mél / email address**
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5. BREVE DESCRIPTION DU PROJET / BRIEF DESCRIPTION OF PROJECT

The main objectives are :

1) Quantify the time evolution of nutrients and biomass
2) Quantify primary production, nitrogen assimilation and export of particulate matter in relation to the vertical structure o f the water column
3) Importance of regeneration processes in carbon and nitrgoen recycling

6. DESCRIPTION DES PARAMETRES / PARAMETERS DESCRIPTION

6.1. Ce qui a été mesuré et comment / What did you measure and how did you do it (include references for analytical methods)?

Macronutrients

Collection and storage of samples

Water samples were collected at different depth according to the water mass stratification and location of chlorophyll maximum. Water was transferred from the Niskin bottles with a Teflon tube into 100 ml litres polyethylene bottles previously washed with chloride acid 2N and rinsed with MilliQ water before the cruise. 500 µl of mercuric chloride were added to poison the samples which stored at dark until analysis at laboratory.

Analysis

Analysis were performed on board and at the laboratory using an automated colorimetric procedure (Tréguer and LeCorre, 1975) for nitrate, nitrite, phosphate and silicate and fluoresence method for ammonium (Holmes et al., 1999).

Inorganic carbon and nitrogen assimilation

Collection and incubation of samples

Six water samples were collected at different depth between surface and 60 m depth. Water was transferred from the Niskin bottles with a Teflon tube into three 600 ml polycarbonate bottles. After addition of ^{13}C tracer ($H^{13}CO_3$ $mg.l^{-1}$), samples were spiked with inorganic nitrogen labelled with ^{15}N. One sample was spiked with 100µl of $^{15}N\text{-}NH_4$ ($1\mu mole.ml^{-1}$), a second with 50µl of $^{15}N\text{-}NO_3$ ($1\mu mole.ml^{-1}$); the third sample was spiked with 1 ml of $^{15}N_2$ gaz. After tracer addition, samples were placed into different plastic boxes covered by a nickel screen simulating different light intensity corresponding to the depths of sampling. Temperature in incubators was maintained by continuous circulation of surface water. Incubation was stopped at sunset and samples were immediately filtered on Whatman GF/F filters (25 mm in diameter) precombusted at 450°C. Filters were dried at

60°C during12 hours and stored dry until mass-spectrometer analysis. Filtrates were poisoned with 1 ml $HgCl_2$ (6g.l^{-1}) and stored until analysis

Analysis

Filtrates were treated as proposed by Slawyk and Raimbault (1995) and Raimbault et al. (1999) to quantify ammonium regeneration, nitrification and dissolved organic nitrogen. $^{13}C/^{15}N$ enrichments were measured on a TracerMass mass-spectrometer.

6.1.1. Instrument (si besoin)	6.1.2. Paramètres	Méthode	Observations

6.2. Stratégie d'échantillonnage / Sampling strategy

6.3. Décrire quels types de données sont nécessaires pour vous compléter votre propre jeu de données **avant** envoi à la base de données, et estimer le délai avant la disponibilité de vos données pour la base de données / Post-cruise data analysis/treatment required, and the time frame for this

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

Nitrate in µmoles.l^{-1}: detection limit= 0.05 µmoles.l^{-1} accuracy = ± 0.05µmoles.l^{-1}
Nitrite in µmoles.l^{-1}: detection limit= 0.03 µmoles.l^{-1} accuracy = ± 0.03µmoles.l^{-1}
Phosphate in µmoles.l^{-1}: detection limit= 0.02 µmoles.l^{-1} accuracy = ± 0.05µmoles.l^{-1}
Silicates in µmoles.l^{-1}: detection limit= 0.05 µmoles.l^{-1} accuracy = ± 0.05µmoles.l^{-}
Nitrogen uptake in nmolesN.l^{-1} .d^{-1}: accuracy = ± 0.5 nmolesN.l^{-1} .d^{-1}
Primary production in µmolesC.l^{-1} .d^{-1}: accuracy = ± 0.5 µmolesC.l^{-1} .d^{-1}

7. FICHIERS / FILES

7.1. Nom de fichier de données / file name

Afin de lever le doute ou toute confusion dans le cas de paramètres identiques, spécifier aussi l'appareil ou la méthode.

7.2. Explication des têtes de colonne, des unités et des abréviations utilisées dans le fichier de données / data file structure

Macronutrients Noms et abréviations utilisées	

Nitrates	NO_3	
Nitrite	NO_2	
Phosphates	PO_4	
Silicates	$SiOH_4$	
Inorganic carbon and nitrogen assimilation Noms et abréviations utilisées		
Nitrate uptake	ρNO_3	
Ammonium uptaken	ρNH_4	
Nitrogen fixation	ρN_2	
Primary Production	PP	

8. RESULTATS PRELIMINAIRES

9. REFERENCES BIBLIOGRAPHIQUES

Tréguer, P., LeCorre, P., 1975. Manuel d'analyses des sels nutritifs dans l'eau de mer (Utilisation de l'Autoanalyser II), 2ème edn. Laboratoire. de Chimie Marine, Université de Bretagne Occidentale, Brest, 110 pp.

Holmes R.M .,Aminot A., Kerouel R., Hooker B.A., Peterson B.J., 1999. A simple and precise method for measuring ammonium in marine and freshwater ecosystems. Can J. Fish. Aquat. Sci., 56: 1801-1808

Slawyk G., Raimbault P.,1995. A simple procedure for the simultaneous recovery of dissolved inorganic and organic nitrogen in 15N-tracer experiments on oceanic waters improving the mass balance. *Mar. Ecol. Prog. Ser.*,124: 289-299

Raimbault P., Slawyk G., Boudjellal B., Coatanoan C., Conan P., Coste B., Garcia N., Moutin T., Pujo-Pay M., 1999. Biomass, new production and export in the equatorial Pacific at 150°W: Evidence for intense nitrogen recycling. *J. Geophys. Res.* 104, 3341-3356.

Raimbault P., Slawyk G., Garcia N, 2000. Comparison between chemical and isotopic measurements of biological nitrate utilization: further evidence of low new production levels in the equatorial Pacific. *Mar. biol.*, 136 :1147-115