

O.R.S.T.O.M.

**Institut Français de Recherche Scientifique
pour le Développement en Coopération**

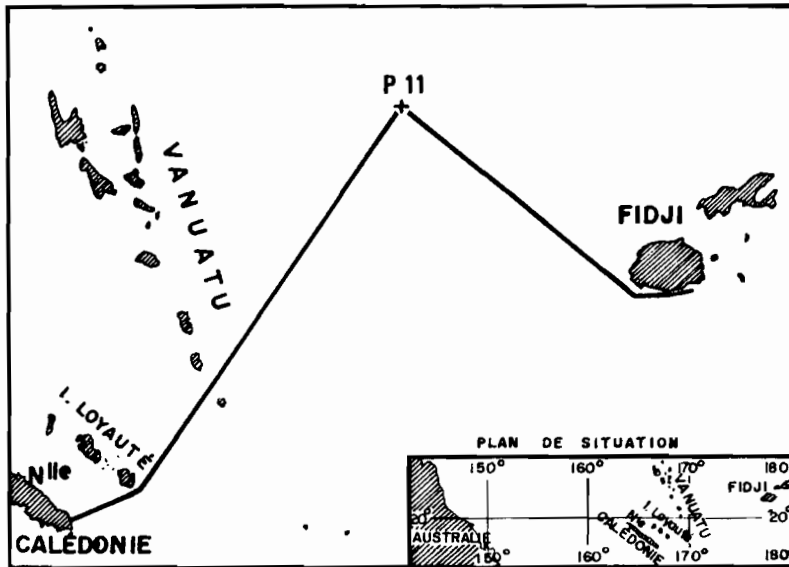
CENTRE DE NOUMÉA

Océanographie

PROGRAMME "PROCAL"

II - CROISIÈRE "PROLIGO"

N.O. J.CHARCOT



1985

Centre ORSTOM-BP A5-NOUMÉA
NOUVELLE-CALÉDONIE

ORSTOM

O . R . S . T . O . M .

INSTITUT FRANCAIS DE RECHERCHE SCIENTIFIQUE
POUR LE DEVELOPPEMENT EN COOPERATION

CENTRE DE NOUMEA

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RESULTATS DES CAMPAGNES A LA MER
DU PROGRAMME "PROCAL"

2 - Croisière "PROLIGO"

Septembre 1985 - Octobre 1985

préparé par

Lionel LEMASSON et Jean-Louis CREMOUX

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A - Physique - Chimie

Production primaire

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I - INTRODUCTION

PROLIGO est la dernière croisière du programme PROCAL et a eu lieu dans une zone réputée comme étant oligotrophe (Bassin Nord - Fidjien), assez éloignée des îles pour ne pas être perturbée directement par celles-ci; elle est le complément des croisières PREFIL dont le but était d'étudier plus directement les effets d'îles. Effectuée avec le N.O. "Jean Charcot", navire français géré par l'IFREMER, cette croisière offrait l'opportunité grâce à la taille du N.O. "Jean Charcot" et de ses laboratoires, de regrouper un nombre de scientifiques deux fois plus élevé que sur le N.O. "Coriolis" et ainsi d'aborder des recherches qui jusqu'alors n'avaient pu être entreprises.

Ce fascicule ne regroupe que les résultats de chimie et de production primaire. Les enregistrements complets de $S^{\circ}/_{\text{oo}}$ et T° faits à la sonde STD dans le but d'étudier les ondes internes n'y sont pas publiés et sont sur support informatique (HP 1000 de Nouméa). Les résultats des mesures portant sur les organismes hétérotrophes (biomasses et comptages des bactéries, nono- et microzooplancton) seront publiés ultérieurement.

II - METHODES DE TRAVAIL ET DE PRELEVEMENTS

A - Physique - Chimie - Production primaire auto et hétérotrophe

1 - Prélèvements

- Courants : mesures au "profileur de courant" avec un courantomètre Aanderaa mouillé à 600 m (référence) et un courantomètre Aanderaa libre de 0 m à 600 m. L'ensemble est monté sur bouée dérivante. Fréquence d'interrogation : 30", correspondant à une profondeur de chute de 7 m environ.
- Sonde STD Bisset Berman: fournit la température et la salinité en fonction de la profondeur, en temps réel.
- Rosette de 12 bouteilles PVC de 1,7 l. associée à la sonde. Permet les prélèvements aux niveaux choisis pour l'analyse ultérieure des descripteurs suivants :
 - . Oxygène dissous
 - . Nutrients : ammoniacque, nitrate, nitrite, phosphate
 - . Pigments : chlorophylle a et phaeophytine
 - . Azote et phosphore total dissous
- Bouteille PVC de 30 l. Fournit des prélèvements pour la détermination des descripteurs suivants :
 - . Assimilation du C14, P32 et N15 (NO3 et NH4) (auto- et hétérotrophes)
 - . Nutrients : NH4, NO2, NO3, PO4, N total dissous, P total dissous
 - . Nombre de Copépodes (Supérieurs à 200 μ)
 - . Particules (C, N et P). P en particules à 50 μ et 200 μ .

2 - Méthodes d'analyse et de travail

Données physiques, chimiques et de production primaire.

Tout est prétéamisé sur soie de 35 μ m.

- NO₃, NO₂, NH₄, PO₄ : Nitrate, nitrite, ammoniacque et phosphate minéral dissous mesurés à l'autoanalyseur Technicon par les méthodes classiques.
(Manuel "Barrier/ORSTOM")
PO₄-P : mesures également au spectrophotomètre Jobin-Yvon.
- Phosphore organique : Phosphore organique dissous mesuré sous forme de PO₄-P (Méthode d'Armstrong et Tibbits, 1968).
- Azote organique : Azote organique dissous mesuré sous forme de nitrate après irradiation UV et oxydation (Méthode d'Armstrong et Tibbits, 1968).
- Oxygène : Méthode de Winkler (Strickland et Parsons, 1972).
- Chl a : Mesure de la concentration en chlorophylle a au fluorimètre TURNER sur extraits acétoniques. Etalonnage au spectrophotomètre avec de la chlorophylle a.
(Strickland et Parsons, 1972).
: Mesures également de la Chl a après extraction au méthanol à 95 %. La chlorophylle est recueillie sur filtres Whatman GF/F.
- Phaeo : Phaeophytine mesurée par fluorimétrie après acidification de l'extrait acétonique, et/ou de l'extrait dans le méthanol.
- Chl A : Equivalent chlorophyll a : quantité de chlorophylle a qui donnerait la même fluorescence.
- P_P : Phosphore en particules. Analyse par la méthode de Menzel et Corwin (1965) après filtration sur Whatman GF/F d'un volume de 1,5 l.
- C_P , N_P : Filtres Whatman GF/F (rétention meilleure que 0.5 μ). Mesures faites avec l'analyseur CHN 185-B Hewlett-Packard. Volume filtré.
- A T P : Mesuré avec l'ATP-mètre LKB - Filtres Millipore 0.45 μ . Extraction suivant Holm-Hansen et Booth (1966).

- Lumière : Pénétration de la lumière mesurée avec un quanta-mètre LI-COR. La lumière intégrée sur la durée du jour a été également enregistrée. La cellule (à correction de cosinus) a été grée sur la sonde de façon à avoir une profondeur précise.
- U A O : Utilisation apparente de l'oxygène, calculée d'après Weiss (1970).
- % Oxygène : Pourcentage de saturation de l'oxygène (Weiss 1970).
- Salinité et Température : Mesurées par la sonde STD Bissett-Berman.
- ^{14}C : Production primaire calculée en prenant une valeur de CO_2 total de 90 mg. l^{-1} , valeur moyenne de la région. Comptages : minivials + 6 cl liquide scintillant. Liquide scintillant : Aquasol 2.
Cette valeur de 90 mg. l^{-1} est sur-estimée et a été choisie faute d'avoir des mesures simultanées de CO_2 total. En reprenant les résultats obtenus lors d'observations précédentes (croisière EPCNITE 2 du Centre ORSTOM de Nouméa, Rap. Sc. Tech. n° 12, 1976) avec les valeurs obtenues entre 20°S et 10°S , et aux environs de 170°E , on peut avoir une bonne appréciation de l'erreur introduite. Celle-ci serait de 1.2% pour la couche 150-200 m et de 5.7% pour la couche 0-50 m qui est en général la plus productive. Sur l'ensemble de la couche on estimera l'erreur de surestimation à 3.4%. Les résultats des comptages ont été corrigés du quenching par la méthode du rapport des canaux (courbe de quenching établie avec des échantillons quenchés avec C Cl 4).
- ^{32}P : Comptages : en Cerenkov avec 10 ml eau, fioles en verre ou plastique.
- Copépodes : Nombre de Copépodes recueillis sur scie de $200 \mu\text{m}$ d'après un prélèvement de 27 l. (bouteille Niskin) et comptés à la loupe binoculaire (tamisage préalable sur $200 \mu\text{m}$).
- 3 H et ^{14}C : Production hétérotrophe. Filtration sur Nucléopore $0.2 \mu\text{m}$. Comptages en scintillation liquide. (^3H -thymidine; ^{14}C -glucose).
- ^{15}N : Analyse au spectromètre d'émission optique (Lemasson et al, 1982).

B - Zooplancton

1 - Microzooplancton et mésozooplancton

1.1. - Prélèvements à la bouteille de 30 l. L'eau est tamisée sur une soie de 200 μm , puis de 35 μm avant de servir aux mesures sur les particules (production primaire, chlorophylle, composition élémentaire, etc...). Ces soies et les organismes qu'elles contiennent font l'objet de mesures de phosphore particulaire par la méthode de Menzel et Corwin (1965), immédiatement après le prélèvement ou au retour de mer après conservation au congélateur. Notons que les organismes recueillis sur 200 μm sont dénombrés sous loupe binoculaire à bord. Seuls les effectifs de Copépodes, qui sont les plus nombreux, seront présentés ici.

2.1. - Prélèvements au filet. Le microzooplancton est recueilli en traits verticaux avec un filet triple de 35 μm de vide de maille, de $\emptyset = 35$ cm à l'ouverture et de longueur 355 cm. Le plancton ainsi recueilli est tamisé sur 200 μm .

Le mésozooplancton est recueilli en traits verticaux avec un filet WP-2 triple (Anonyme, 1968) de 200 μm de vide de maille. Il est tamisé sur 5 mm avant toute mesure.

Le volume d'eau filtré par les filets a été mesuré avec des débitmètres TSK et la profondeur maximum atteinte, estimée à partir de la longueur de câble filé, corrigée de l'angle. Les valeurs de biovolume déplacé, de poids sec, poids sec sans cendre sont rapportées au volume filtré (en m^3) ou à la colonne d'eau (valeurs par mètre-carré = valeurs par mètre-cube multipliée par la profondeur maximum atteinte).

3.1. - Mesures de biomasse et de composition élémentaire (carbone, azote, phosphore), selon le protocole opératoire décrit par LE BORGNE (1975) :

- volume déplacé (VDEPL), mesuré à bord. En ml.
- poids sec (PS), mesuré à terre sur du plancton recueilli sur une soie rincée à l'eau douce, séchée à 60°C pendant 24 h., puis conservée au congélateur.

- poids sec sans cendre (PSSC). L'échantillon destiné à la détermination du poids sec est brûlé au four (550°C) pendant une heure et demi afin de déterminer le pourcentage du poids sec sans cendre (ou poids de matière organique) dans le poids sec total. Les valeurs par mètre-cube ou mètre-carré sont le produit du pourcentage ainsi obtenu par le poids sec rapporté au volume d'eau considéré.
- composition élémentaire (C, N, P) : les mesures sont faites sur le plancton d'un échantillon total, broyé, dilué et dont une fraction est déposée dans les nacelles (récipients en aluminium de env. 100 µl) destinées aux analyses au "CHN" (modèle 185 B de Hewlett -Packard) ou de phosphore particulaire (Menzel et Corwin, 1965). Ces échantillons, séchés (60°C, 24 h.), sont pesés afin de permettre le calcul du pourcentage du poids sec en carbone, azote et phosphore. Les rapports C/N et N/P sont des rapports atomiques. Les valeurs de C,N,P sont, de la même façon que pour le poids sec sans cendre, rapportées au mètre-cube ou au mètre-carré.

2 - Nanozooplancton (0-35 µm)

1 - Prélèvements à la bouteille de 30 l. L'eau est prélevée sur 10 niveaux entre 250 m et la surface, puis tamisée sur soie de 35 µm. Les particules préalablement fixées sont recueillies sur filtres Nucléopore teintés à l'Irgalan Black.

2 - Mesures de la biomasse et de composition faunistique. Les échantillons sont traités par la méthode de double coloration SHERR et SHERR (1983). Les animaux Ciliés et Flagellés sont comptés et mesurés. La biomasse du nanozooplancton est déduite par la méthode des biovolumes calculés.

Des mesures de respiration, d'excrétion et de broutage du zooplancton ont été faites également au cours de ces campagnes, mais leurs résultats ne figurent pas ici.

3 - Macrozooplancton et micronecton

3.1. - Prélèvements au filet OMORI (1965), de maille 2 mm, par traits obliques à une vitesse maintenue proche de 3 noeuds. Volume filtré et profondeurs échantillonnées sont déterminées avec D.D.R (Depth-Distance-Recorder) T.S.K., monté à l'embouchure, au tiers du diamètre ($\emptyset = 160$ cm).

3.2. - Mesures de biomasses. Les échantillons, conservés dans du formol à 10%, sont triés et pesés par taxon. Poids humide et poids sec formolés sont ensuite rapportés au volume filtré par le filet.

3.3. - Analyse élémentaire. Des animaux ayant servi aux mesures d'excrétion sont rincés à l'eau douce, séchés, pesés, broyés dans un mortier et une fraction analysée pour le C, N et P selon les méthodes décrites.

4 - Autres expérimentations

Methods of measurement (J. HIROTA, "PROLIGO").

A. Sediment Traps.

Estimates of the downward flux of suspended particulate matter (SPM) were made during both Legs I and II of the PROLIGO campagne using a pair of particle traps (Shuman 1978, Hirota et al. 1984); however, in this case only a single pair of traps was moored for each time period at 250 m as a free vehicle. The traps were suspended from six Nokalon floats and a large plastic buoy, and they were retarded from vertical motions by a 1.5 m² "damping plate" secured about 20 m below the trap and just above a 50 kg ballast. Four deployments of 48-60 h each were made during the following dates : 1) 17 to 20 Sept. 1985; 2) 21 to 24 Sept. 1985; 3) 1 to 4 Oct. 1985; and 4) 5 to 7 Oct. 1985. For each trap deployment, one side was left "untreated chemically", while the other was "metabolically blocked" for microbial activity by addition of about 20 g of HgCl₂ at the bottom of the "poisoned side". For each trap "side" and each deployment, the following measurements were made to determine the SPM vertical flux, the depth-of-trap seawater infusion, and other pertinent data :

- a) salinity by induction salinometry
- b) DON & DOP by UV
- c) ATP
- d) Chlor a & phaeopigments
- e) particulate phosphorus (PP)
- f) CHN analysis (PC/PN)
- g) samples preserved for microscopic examination.

Initial flux calculations from the PP data (taking into account the PP/liter of trap sample, the total trap volume of 7.38 liters, the trap mouth area of 0.0177 m^2 , and the duration of the deployment in days) indicate a rather typically low flux of the order of less than about $0.1 \text{ mg PP/m}^2/\text{day}$ at the 250 m level.

B. Zooplankton Grazing Experiments by Coulter Counter SPM Analysis.

B.1. - Nanozooplankton Size (-35 μ)

Particle grazing by nanozooplankton (μ -flagellates, ciliates, amoeboid protozoans and other small phagotrophs) was estimated by measuring changes in SPM concentrations and size-frequency distributions using the model TA-II Coulter Counter fitted with its population accessory (100 K memory). Generally, initial (t_0) and time series samplings were carried out at various intervals from 4-48 h and with 3μ (Nucleopore gentle gravity filtrations), 35μ sieved seawater and untreated, unsieved natural seawater (en français : eau naturelle). Four sets of incubations were carried out using seawater collected from various depths (generally, 60-70 m and the surface). The incubations were made in plastic containers of varying size and with 3 to 60 liters of seawater. Temperatures of incubation varied from 25.5° to 28.0°C and were in dim natural light on deck but covered and never in full sunlight. Besides the SPM data at various times and for various size fractions, other ancillary samples and data were collected and/or preserved for analyses from these nanozoo experiments :

a) various particulate material analyses : ATP, Chlor a/phaeopigments, PP, CHN, muramic acid;

b) various dissolved inorganic and organic nutrient analyses : NH_4^+ , NO_3^- , NO_2^- , PO_4 , DON & DOP;

c) various microbiological assays (P. Dufour & J. Garnier) for heterotrophic activity : ^{14}C -glucose activity; ^3H -Thymidine production and biomass estimations;

d) various sets of samples and "live counts" at sea for the enumeration of the populations of particles : detritus (epifluorescence), photo-autotrophic algae (auto fluorescence), cyanobacteria (autofluorescence), eubacteria (DAPI/FITC, acridine orange), μ -flagellates (DAPI/FITC), ciliates (DAPI/FITC), amoebae and other phagotrophic protozoans (DAPI/FITC), $+35 \mu$ -sized ciliates and larger micro-metazoans.

The objectives and primary goals of the nanozooplankton grazing experiments were to demonstrate the following :

a) the quasi-steady state relationship between phytoplankton and bacterial production rates on the one hand and nanozooplankton grazing rates on the other (viz., particulate production is balanced by grazing loss);

b) which size fraction of phagotrophic animals is most responsible for the observed grazing activity;

c) a mass balance accounting for various dissolved and particulate chemical analyses, SPM analyses, microscopic count data for population numbers and taxa, and possible quasi-steady oscillations among populations of eubacteria, cyanobacteria, other phytoplankters, and the animal grazers.

B.2. - Microzooplankton Size (35 - 200 μ)

Seawater was collected generally from 60 - 70 m and the particles concentrated by gentle reverse filtration by 0.8 μ membrane filters (to about 1X, 2X, and 4X of natural seawater) for the grazing experiment. The microzooplankton were obtained from the epipelagic zone (ca. 250 m) using a 35 μ mesh net towed vertically, and whose catch was passed through a 0.2 mm mesh sieve. Time course changes in SPM were followed for up to about 6 h by Coulter Counter, with data also taken from the initial concentrations, controls (the initial seawater medium incubated along without animals), and experimental (+ microzooplankton) 2 l, flasks. During Leg II of PROLIGØ two such experiments were carried out by R. LE BORGNE and J. HIROTA. At the termination of the experiment, animal biomass and samples for microscopy were taken, along with other chemical measurements (e.g., chlor a).

B.3. - Mesozooplankton Size (200 μ - 500 μ)

This set of two grazing experiments for the mesozooplankton was essentially identical to that of the microzoo experiments, except that the animal grazers were collected by the WP-2 net of 0.2 mm mesh and the catch was passed through a 0.5 mm mesh sieve before the animals were selected for the experimental runs. As before, the SPM analysis was carried out for initial, control, and experimental flasks of two liter volume.

C. Particle Size Analyses by Coulter Counter model TA-II.

C.1.a - Vertical profiles of SPM concentration and particle sizes. The 0-250 m level was sampled on five separate dates in the morning for detailed vertical distributions of physical, chemical, and biological properties, including primary productivity and bacterial activity in situ incubations. It was on these five occasions (Leg I : 17, 20, 24 Sept. 1985; Leg II : 2, 3 Oct. 1985) that seawater collections from ten depths plus the surface were processed for SPM analysis by Coulter Counter (see Hirota 1981 for details of counting methods and calibration). Generally, each sample was processed in the 0.5 cm³ manometer mode, but occasionally counts were also made in the 2 cm³ manometer mode for better size spectrum analysis and also for the deeper samples with lower counts.

C.1.b - At various time intervals during both Legs I and II of PROLIGO SPM concentrations and size distribution analyses were carried out on samples of deep Niskin bottle casts at depths between 650 and 3,000 m in conjunction with sampling for the microbial-detrital aggregations of particles in the intermediate salinity minimum (ca. 650 m) and near the bottom of the Fiji Basin in the nepheloid layer (ca. 2,850 - 3,000 m). This research was carried out in conjunction with the sampling of Dr. H. Higgins of CSIRO, Hobart for studies of the complexation capacity of copper.

C.2. - Other experiments for which Coulter Counter size analysis was made.

During the PROLIGO campagne several shipboard incubations and experiments of particulate production were made in addition to the more routine productivity and microbial activity measurements. For these "size fractionation : time series incubations with ATP, ¹⁴C, ³²P, Chl a etc..., SPM size analyses and time course changes in concentrations were also followed by Coulter Counter in a manner similar to the various animal grazing experiments. There were three such time series experiments carried out on the 19, 22, and 23 Sept. 1985 during Leg I of the PROLIGO campagne.

PROLIGO EXPEDITION

SUMMARY

James Finn
University of Hawaii, USA

On this expedition, I worked exclusively with carnivorous copepods of the genus *Euchaeta*; primarily *E. rimana*. I am interested in reproductive energetics and this genus lends itself to these studies. Laboratory studies have lead to predictions of near maximal reproductive rates in nature and associated high respiratory costs relative to basal rates.

EGG PRODUCTION

Egg production was measured using the egg ratio method (Edmondson 1968). A total of 8 samples were collected using a WP2 net (UNESCO, 1967) towed vertically from 250 m to the surface. All samples were collected at night. The catch from 3 nets was pooled and sorted prior to fixation. Ovigerous *Euchaeta* females and loose clutches of eggs were removed. This step is necessary to prevent further damage to the egg sacs so that clutch size analysis can be done. These samples will be returned to Honolulu for enumeration. A total of 60 females and 13 eggs clutches were sacrificed for individual body weight (CHN analysis). With these data egg production can be expressed as percent of body weight per day.

RESPIRATION

A. Respirometry

A respirometer was used extensively for measurement of individual's respiration. By using a constant incubation duration (20 minutes) and a constant animal density (1 per ml), I hoped to circumvent the problem of varying animal density to achieve a measureable change in incubations of varying length. For time course experiments, animals were held at low densities (1-4 per liter) between measurements. All incubations were performed in filtered surface seawater and the animals were pipetted into and out of the incubation cell. A total of 102 such incubations were performed during the cruise from 4 minutes to 6.5 days from capture.

A polarigraphic micocathode electrode and a 1 ml incubation cell (Strathkelvin Instruments) was interfaced with a bucking voltage amplifier (QED Computer Consultants) and a computer (Commodore SX-64) through an A/D converter (Computer Continuum).

B. Bottle incubations

A single comparison experiment was performed between the respirometer and bottle incubations. Ten females, from the same hauls as the animals collected for the bottle incubations were measured in the respirometer 6 and 24 hours after capture. Bottle incubations were performed for 12 (29 females per liter) and 26 hours (19 females per liter). The incubations were set up by pipetting the females into ground glass stopped bottles full of filtered surface water. At the end of the experiment, samples were collected for dissolved oxygen, inorganic nitrogen and phosphorous and total nitrogen and phosphorous. These analyses were graciously performed by Philippe GERARD and Sylvain BONNET. Samples for the C,N,P ratio of the females, eggs, and prey were also collected to allow a comparison between the production measured by the Edmondson method and the Le Borgne method.

III - LISTE DES PARTICIPANTS

Nom	Grade	Spécialité	Organisme
BLANCHOT, J.	Chargé de Recherches	Nano plancton	ORSTOM/Nouméa
BONNET, S.	Technicien chimiste	Chimie	ORSTOM/Nouméa
CHARPY, L.	Chargé de Recherches	Production primaire	ORSTOM/Papeete
CREMOUX, J.L.	Technicien chimiste	Chimie - Physique	ORSTOM/Nouméa
DUFOUR, Ph.	Maître de Recherches	Production bactérienne	ORSTOM/France
ELDIN, G.	Chargé de Recherches	Physique	ORSTOM/Nouméa
FINN, J.	Université Hawaii	Microzooplancton	Univ. Hawaii(USA)
GALLOIS, F.	Electronicien	Electronique - Physique	ORSTOM/Nouméa
GARNIER, J.	CNRS/Paris	Production bactérienne	CNRS/Ec.Nor.Sup.
GERARD, Ph.	Technicien chimiste	Chimie	ORSTOM/Nouméa
HIGGINS, H.	CSIRO/Hobart-Australie	Chimie - Bactériologie	CSIRO/Australie
HIROTA, J.	Prof. Univ. Hawaii	Microzooplancton	Univ/Hawaii(USA)
LE BORGNE, R.	Maître de Recherches	Microzooplancton	ORSTOM/Nouméa
LE BOUTELLER, A.	Ingénieur de Recherches	Production primaire/15N	ORSTOM/Dakar
LEMASSON, L.	Directeur de Recherches	Chef de Mission (Prod.primaire)	ORSTOM/Nouméa
MOLL, Ph.	Technicien biologiste	Zooplancton	ORSTOM/Nouméa
MONTEL, Y.	Technicien chimiste	Chimie	ORSTOM/Dakar
PANCHE, J.Y.	Electronicien	Electronique/Physique	ORSTOM/Nouméa
WALICO, H.	Technicien biologiste	Production primaire	ORSTOM/Nouméa

2 électroniciens IFREMER pour les mesures "Seabeam" (relevés topographiques du fond sur les trajets Nouméa - P11 - Suva (Fidji), aller/retour).

France

IV - RESULTATS

1 - Dates :

Du 14 septembre 1985 au 10 octobre 1985.

2 - Archivage des données :

Les données sont archivées au Centre ORSTOM de Nouméa sur HP 1000. Elles comprennent les données physiques, chimiques et de production primaire. Le fichier porte le nom : RCH85A.

Le fichier complet des données T et S des stations sondes (non publiées ici) est archivé sous le nom : SCH85A.

3 - Numérotation des stations :

Les stations sont numérotées de 1 à 82. Le n° des stations de production primaire est rendu distinct en ajoutant "5" devant le n° correspondant à la station STD précédente. (ex. : la station n° 564 correspond à la station faite à la bouteille de 30 l, qui a été précédée de la station STD n° 64).

La station 163 est une station STD. Elle se situe entre les stations STD 63 et 64.

4 - Notations et unités :

CODE	PARAMETRE (ABREVIATION)	NB. CH.	FORMAT	UNITE
		SIGNIF.	SORTIE	
01	IMMERSION (PROF)	4	... XXXX	... m
03	TEMPERATURE (TEMP)	4	... XX.XX	... °C
04	SALINITE (SAL)	4	... XX.XX	... g l** ⁻¹
06	OXYGENE DISSOUS (O2)	3	... X.XX	... ml l** ⁻¹
07	PHOSPHATE MINERAL DISSOUS (PO4)	3	... X.XX	... UMol l** ⁻¹
09	NITRATE (NO3)	4	... XX.XX	... UMol l** ⁻¹
10	NITRITE (NO2)	3	... X.XX	... UMol l** ⁻¹
22	CHLOROPHYLLE-A acetone (Ch-a)	3	... X.XX	... Ug l** ⁻¹
23	PHAEOPHYTINE acetone (Ph-a)	3	... X.XX	... Ug l** ⁻¹
24	A.T.P. (ATP)	3	... XXX.X	... ng l** ⁻¹
28	AMMONIUM (NH4)	3	... X.XX	... UMol l** ⁻¹
29	CONCENTRATION AZOTE PARTICULAIRE (NP)	4	... XX.XX	... UMol l** ⁻¹
33	EQUIVALENT CHLOROPHYLLE-A (CHLA)	3	... X.XX	... UMol l** ⁻¹
40	C14 (C14)	4	... XX.XX	... Ug (1j)** ⁻¹
41	LUMIERE A LA PROFONDEUR Z (IZ)	4	... XX.XX	... E m** ⁻² j** ⁻¹
42	AZOTE ORGANIQUE TOTAL (NOT)	4	... XX.XX	... UMOL l** ⁻¹
44	PHOSPHORE ORGANIQUE TOTAL (POT)	3	... X.XX	... UMOL l** ⁻¹
45	PHOSPHORE EN PARTICULES (PP)	4	... X.XXX	... UMOL l** ⁻¹ *10
46	ABSORPTION P32 (aP32)	4	... XX.XX	... UMOL l** ⁻¹ h** ⁻¹
48	CHLOROPHYLLE A methanol (Ch-m)	4	... X.XXX	... Ug l** ⁻¹
51	PHAEOPHYTINE A methanol (Ph-m)	4	... X.XXX	... Ug l** ⁻¹
77	CARBONE PARTICULAIRE (CP)	4	... XX.XX	... UMol l** ⁻¹
78	COPEPODES (COMPTAGE EN 30) (COPE)	4	... XXXX	... individus
93	POURCENTAGE SATUR. OXYGENE (O%)	5	... XXX.XX	... %
94	UTILISATION APPARENTE D'OXYGENE (UAO)	3	... X.XX	... ml l** ⁻¹
95	SIGMA-T (SIGT)	4	... XX.XX	... kg m** ⁻³

Remarques :

Vent : Direction en : degrés - Vitesse en : m/s. (ex : 150/10).

Heure : Heure locale.

I_z : Energie reçue par jour calculée à Zm à partir de l'énergie (400-700 nm) reçue en surface (I_o+) corrigée de la réflexion (10% - STRICKLAND, 1958), et à partir du pourcentage d'énergie reçue à Zm [$I_o- = 0,9. (I_o+)$].

Bilan du travail à la mer :

82 stations sonde STD.

37 stations STD avec prélèvements.

21 stations bouteilles 30 l. (11 niveaux 0-250 m).

10 stations bouteilles 5 l.

15 traits hydro.

96 traits de filet WP 2 (200 μ m).

37 traits de filet phyto (35 μ m).

4 traits de filet DVN.

6 stations production in situ (2 bouées avec 2 lignes 0-200 m, 10 niveaux).

2 profils lumineux.

3 traits de filets à micronecton.

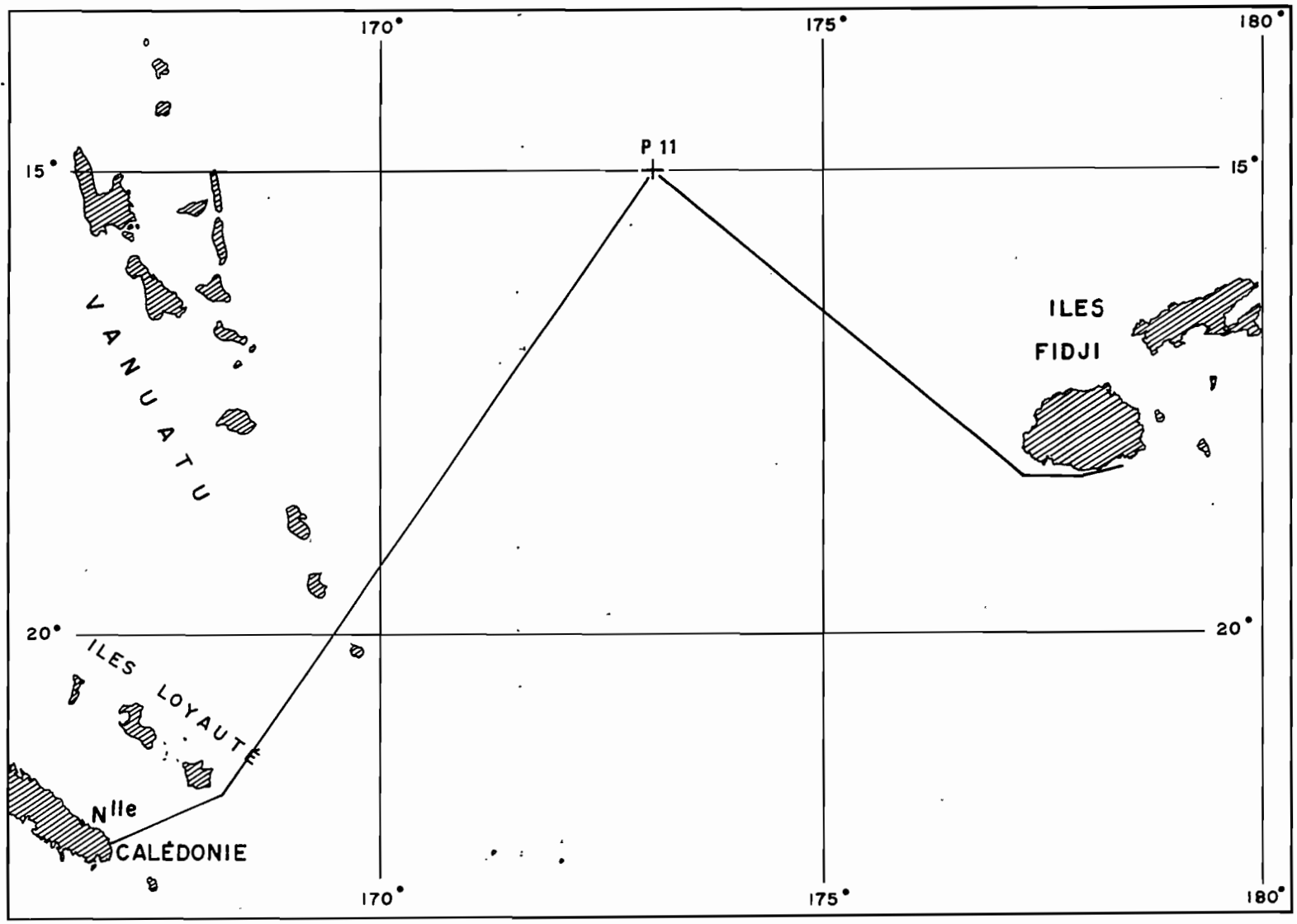
11 séries de mesures au profileur de courant.

4 séries de mesures (3 à 4 jours chacune) à la chaîne à thermistance.

4 séries de mesures (3 à 4 jours chacune) de "sédiment-traps".

10 profils pour détermination des biomasses bactériennes (ac. muramique, AODC) et de la capacité complexante (0-250 m et 500 - 3000 m).

Prélèvements pour observation au microscope électronique.



CROISIERE: RCHBSA
STATION : 502
POSITION :14.59 S 173.01 E

DATE: 17 9 85
HEURE: 6 20

AIR= 272 261 VENT= 0/ 0 FOND= 9999 NP= 10

PROF	TEMP	SAL	SIGT	O2	OZ	UAO	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-m	Ph-m	NH4	NOT	POT
0.	27.06	34.40	22.33	4.70	102.69	-13	.08	0.00	0.00	.08	.01	.08	.031	.029	.10	2.37	.17
30.	26.98	34.54	22.40				.13	.06	0.00	.09	.02	.10	.048	.021	.07	3.26	.20
60.	26.92	34.56	22.43	4.69	102.46	-11	.08	.03	0.00	.17	.04	.19	.053	.038	.09	4.74	.22
80.	26.47	34.73	22.70	4.75	103.03	-14	.22	0.00	.01	.21	.11	.28	.132	.069	.03	5.41	.26
100.	26.55	35.00	22.88	4.73	102.90	-13	.14	0.00	.01	.26	.03	.28	.149	.075	.04	4.84	.25
120.	26.46	35.73	23.46	4.23	92.26	.35	.16	.02	.01	.15	.18	.26	.132	.086	.04	4.35	.27
140.	25.81	35.92	23.01	4.00	86.31	.63	.31	.20	.14	.24	.36	.46	.226	.265	.07	5.50	.30
160.	24.63	36.00	24.23	3.82	80.71	.91	.47	1.22	.26	.20	.18	.31	.128	.213	.01	6.62	.47
200.	22.82	35.95	24.72	3.74	76.39	1.16	.56	3.38	.03	.03	.05	.06	.010	.047	.14		.55
250.	20.66	35.70	25.14	3.79	74.21	1.32	.58	4.35	.03	.01	.04	.03	.002	.023	.20	10.04	.66

PROF	TEMP	SAL	O2	ATP	NP	C14	IZ	PP	SP32	CP	CDPC
0.	27.06	34.40	4.70	25.0	.85	1.42	35.06	.021	.02	7.15	37.
30.	26.98	34.54			.62	1.01	5.96	.009	.02	5.43	140.
60.	26.92	34.56	4.69		.61	.73	2.10	.028	.02	4.53	105.
80.	26.47	34.73	4.75		.72	1.33	1.05	.013	.07	5.59	333.
100.	26.55	35.00	4.73		.47	.88	.56	.014	0.00	4.40	146.
120.	26.46	35.73	4.23		.43	.56	.31	.016	.04	3.89	74.
140.	25.81	35.92	4.00		.56	.11	.12	.013	.10	4.55	148.
160.	24.63	36.00	3.82		.91	.17	.05	.009	.14	6.03	73.
200.	22.82	35.95	3.74	10.0	.39	.09	.01	.017	.10	4.22	37.
250.	20.66	35.70	3.79	5.0			0.00	.017			37.

CROISIERE: RCHBSA
STATION : 3
POSITION :14.54 S 173.00 E

DATE: 17 9 85
HEURE: 17 45

AIR= 279 264 VENT=150/ 8 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAO	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-m	Ph-m	NH4	NOT	POT
0.	27.04	34.40	22.34	4.62	101.10	-.05	0.00	.05	.01	.05	.03	.07				.33	
20.	27.01	34.53	22.38	4.63	101.29	-.06	0.00	.05	.01	.09	.01	.10				.07	
40.	26.98	34.53	22.39	4.64	101.46	-.07	0.00	.04	.02	.08	.01	.08				.04	
60.	26.95	34.54	22.41	4.64	101.41	-.06	0.00	.02	.02	.09	0.00	.09				.01	
80.	26.90	34.56	22.44	4.63	101.11	-.05	0.00	.04	.03	.15	0.00	.15				.06	
100.	25.92	34.79	22.92	4.72	101.40	-.07	0.00	.04	.04	.23	.01	.24				.04	
120.	26.52	35.51	23.28	4.51	98.35	.08	.06	.02	.05	.23	.16	.33				.07	
140.	25.77	35.94	23.83				.23	.60	.30	.23	.28	.41				.07	
160.	24.64	35.95	24.19	3.79	80.07	.94	.32	1.04	.13	.16	.15	.25				.04	
180.	23.45	36.00	24.58	3.72	76.70	1.12	.35	3.09	.07	.05	.03	.07				.04	
200.	22.84	35.94	24.71	3.69	75.39	1.20	.39	3.63	.07	.02	0.00	.01				.06	
250.	19.93	35.73	25.35	3.70	72.99	1.40	.47	4.73	.05	0.00	0.00	0.00				.10	

CROISIERE: RCHBSA DATE: 18 9 85
 STATION : 6 HEURE: 7 0
 POSITION :14.49 S 173.86 E

AIR=99999999 VENT=444/44 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-m	Ph-m	NH4	NOT	POT
0.	27.02	34.47	22.33	4.62	101.06	-.05	0.00	0.00	.02			.03	.026	.021	.18	2.57	.33
20.	27.01	34.49	22.35	4.63	101.27	-.06	0.00	.03	.02			.03	.027	.021	.05	2.43	.47
40.	26.96	34.53	22.40	4.64	101.42	-.06	0.00	.07	.02			.05	.031	.024	.06		
60.	26.93	34.54	22.42	4.61	100.72	-.03	0.00	.02	.03			.06	.064	.034	.27	3.72	.41
80.	26.89	34.55	22.44	4.63	101.09	-.05	0.00	.01	.03			.09	.003	.052	.15	3.48	.50
100.	26.30	34.74	22.77	4.65	100.56	-.03	.03	0.00	.06			.16	.120	.082	0.00	3.55	.34
120.	26.16	35.06	23.05	4.69	101.35	-.06	.16	0.00	.05			.21	.165	.125	.05		
140.	26.59	35.82	23.49	3.87	84.65	.70	.29	.13	.12			.48	.230	.260	.04	3.12	.30
160.	25.33	35.87	23.92	3.77	80.62	.91	.32	1.90	.13			.19	.060	.134	.06	3.04	.41
180.	24.22	35.99	24.34	3.73	78.21	1.04	.36	2.91	.09			.17	.039	.076	.65	4.17	.54
200.	23.05	35.98	24.68	3.68	75.50	1.19	.43	3.67	.10			.12	.016	.027	.05	5.10	.52
240.	20.91	35.73	25.89	3.78	74.38	1.30	.43	4.97	.09			.12	.002	.011	.06	6.88	.57

PROF	TEMP	SAL	O2	ATP	NP	C14	IZ	PP	aP32	CP	COPE
0.	27.02	34.47	4.62				39.08				
20.	27.01	34.49	4.63	61.0			9.77				
40.	26.96	34.53	4.64				4.08				
60.	26.93	34.54	4.61	59.0			2.19				
80.	26.89	34.55	4.63	58.0			1.17				
100.	26.30	34.74	4.65	57.0			.63				
120.	26.16	35.06	4.69	58.0			.35				
140.	26.59	35.82	3.87	46.0			.13				
160.	25.33	35.87	3.77	25.0			.05				
180.	24.22	35.99	3.73	19.0			.02				
200.	23.05	35.98	3.68	15.0			.01				
240.	20.91	35.73	3.78	13.0			0.00				

CROISIERE: RCHBSA DATE: 18 9 85
 STATION : 10 HEURE: 11 0
 POSITION :14.48 S 173.87 E

AIR=99999999 VENT=444/44 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-m	Ph-m	NH4	NOT	POT
0.	27.03	34.48	22.34	4.64	101.52	-.07						.000	.009				
20.	27.03	34.50	22.35	4.62	101.09	-.05						.011	.015				
40.	27.02	34.51	22.36	4.65	101.74	-.08						.047	.031				
60.	26.94	34.55	22.42	4.63	101.18	-.05						.056	.044				
80.	26.84	34.56	22.46	4.63	101.00	-.05						.068	.067				
100.	26.14	34.72	22.80	4.16	89.67	.48						.058	.071				
120.	25.00	34.85	23.00									.123	.091				
140.	26.68	35.83	23.47	4.10	87.83	.46						.244	.248				
160.	25.55	35.98	23.87	3.82	82.03	.84						.078	.135				
180.	24.26	36.01	24.35	3.78	79.33	.99						.042	.107				
200.	22.99	35.96	24.68	3.69	75.61	1.19						.013	.023				
250.	20.30	35.63	25.18	3.80	73.86	1.34						.031	.010				

CROISIERE: RCHBSA
 STATION : 16
 POSITION :14.47 S 173.07 E

DATE: 18 9 85
 HEURE: 17 30

AIR= 272 261 VENT=130/ 9 FGND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	OZ	UAO	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-m	Ph-m	NI14	NOT	POT
0.	27.14	35.50	23.07	4.61	101.65	-.07	.01	.02	.02	.03	.04			.04	2.30	.38
20.	27.10	34.47	22.31	4.63	101.42	-.06	.01	.01	.02	.07	.04			.07	2.87	.24
40.	27.01	34.47	22.34	4.62	101.04	-.05	.01	.01	.03	.06	.03			.06	3.13	.25
60.	26.96	34.48	22.36	4.64	101.39	-.06	0.00	0.00	.05	.10	.02			.06	2.57	.25
80.	26.88	34.69	22.54	4.68	102.24	-.10	0.00	0.00	.04	.12	.07			.04	2.96	.26
100.	26.10	34.74	22.83	5.02	100.16	-.38	0.00	.01	.05	.20	.02			.04	3.33	.27
120.	25.76	35.48	23.49	4.70	101.07	-.05	.01	.01	.05	.26	.12			.09	3.11	.26
140.	26.63	35.86	23.50	4.19	91.73	.38	.17	.05	.09	.35	.31			.06	3.87	.40
160.	24.97	35.92	24.07	3.82	81.18	.89	.30	1.01	.12	.21	.15			.04	5.48	.52
180.	24.41	35.98	24.28	3.75	78.70	1.00	.39	2.78	.10	.07	.11			.19	7.32	.54
200.	23.01	35.91	24.64	3.69	75.62	1.19	.42	3.73	.09	.04	.03			.13	5.94	.53
250.	20.20	35.61	25.19	3.79	73.52	1.37	.52	4.26	.09	0.00	.01			.23	6.89	.59

CROISIERE: RCHBSA
 STATION : 22
 POSITION :14.51 S 173.05 E

DATE: 18 9 85
 HEURE: 23 0

AIR=99999999 VENT=444/44 FGND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	OZ	UAO	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-m	Ph-m	NI14	NOT	POT
0.	27.10	34.41	22.26	4.64	101.61	-.07					.02					
20.	27.09	34.50	22.33	4.62	101.20	-.05					.04					
40.	27.01	34.51	22.37	4.61	100.84	-.04					.06					
60.	26.96	34.53	22.40	4.62	100.98	-.04					.12					
80.	26.67	34.61	22.55	4.72	102.68	-.12					.16					
100.	26.00	34.78	22.86	4.68	100.83	-.04					.30					
120.	26.00	35.10	23.13	4.54	97.85	.10					.51					
140.	26.28	35.78	23.55	4.08	88.72	.52					.25					
160.	24.79	35.90	24.10	3.80	80.40	.92					.25					
180.	24.23	35.92	24.29	3.68	77.15	1.09					.23					
200.	23.36	35.97	24.58	3.70	76.35	1.15					.17					
250.	20.75	35.71	25.12	3.73	73.16	1.37					.12					

CROISIERE: RCH85A
 STATION : 40
 POSITION :14.44 S 173.04 E

DATE: 19 9 85
 HEURE: 17 5

AIR= 272 257 VENT=140/ 9 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	OZ	OZ	UAO	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NHA	NOT	POT
0.	27.13	34.50	22.32	4.66	102.15	-.10	0.00	.04	.02	.04	.05	.07			.09	2.60	.23
20.	27.11	34.49	22.32	4.60	100.79	-.04	0.00	.04	.02	.06	.05	.08			.08	3.01	.21
40.	27.09	34.51	22.34	4.61	100.99	-.05	0.00	.15	.02	.05	.05	.08			.17	3.46	.22
60.	27.02	34.54	22.39	4.63	101.32	-.06	0.00	.03	.05	.03	.02	.05			.22	3.83	.25
80.	26.97	34.56	22.42	4.63	101.24	-.06	0.00	0.00	.04	.09	.04	.12			.03	3.31	.23
100.	26.19	34.75	22.81	4.68	101.01	-.05	0.00	.07	.04	.19	.08	.24			.06	3.56	.22
120.	25.59	34.80	23.03	4.70	100.37	-.02	0.00	.02	.05	.15	.29	.33			.06	3.71	.22
140.	26.18	35.00	23.60	4.06	88.14	.55	.18	.25	.14	.29	.37	.52			.02	3.46	.43
160.	25.40	35.95	23.96	3.84	82.26	.83	.29	1.49	.17	.24	.16	.34			.05	3.85	.47
180.	24.15	36.04	24.40	3.72	77.92	1.05	.34	2.77	.05	.06	.14	.15			.02	5.28	.47
200.	23.24	35.95	24.60	3.69	75.96	1.17	.37	3.50	.08	.05	.07	.09			.05	5.69	.51
250.	20.48	35.64	25.14	3.75	73.15	1.38	.46	5.03	.03	0.00	.03	.01			.05	7.28	.61

CROISIERE: RCH85A
 STATION : 46
 POSITION :14.41 S 173.05 E

DATE: 19 9 85
 HEURE: 23 0

AIR= 271 257 VENT=140/ 9 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	OZ	OZ	UAO	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NHA	NOT	POT
0.	27.03	34.45	22.32	4.64	101.50	-.07						.02					
20.	27.04	34.46	22.32	4.62	101.09	-.05						.02					
40.	27.05	34.46	22.32	4.63	101.33	-.06						.04					
60.	27.06	34.47	22.32	4.61	100.91	-.04						.07					
80.	26.45	34.68	22.67	4.70	101.08	-.09						.13					
100.	25.86	34.81	22.96	4.71	101.08	-.05						.21					
120.	25.54	34.82	23.06	4.71	100.50	-.02						.24					
140.	26.56	35.75	23.44	4.19	91.56	.39						.49					
160.	25.77	35.81	23.74	3.95	85.12	.69						.35					
180.	24.52	35.95	24.22	3.74	78.84	1.00						.23					
200.	23.49	35.95	24.53	3.67	75.98	1.17						.16					
250.	20.08	35.71	25.09	3.70	72.75	1.39						.12					

CROISIERE: RCH85A DATE: 20 9 85
 STATION : 52 HEURE: 5 10
 POSITION :14.47 S 173.00 E

AIR= 271 257 VENT=140/ 8 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NH4	NOT	POT
0.	27.02	34.46	22.33	4.63	101.27	-.06						.05					
20.	27.03	34.47	22.33	4.63	101.30	-.06						.05					
40.	27.04	34.47	22.33	4.60	100.66	-.03						.06					
60.	27.05	34.48	22.33	4.60	102.43	-.11						.10					
80.	26.28	34.68	22.73	4.70	101.57	-.07						.16					
100.	25.76	34.77	22.96	4.71	100.08	-.04						.24					
120.	26.17	35.36	23.27	4.61	99.01	.01						.30					
140.	25.80	35.78	23.70	4.11	80.60	.53						.33					
160.	24.52	35.89	24.18	3.76	79.23	.99						.21					
180.	23.74	35.95	24.46	3.76	78.13	1.05						.17					
200.	22.71	35.90	24.72	3.72	75.01	1.19						.10					
250.	20.47	35.65	25.15	3.76	73.33	1.37						.07					

CROISIERE: RCH85A DATE: 20 9 85
 STATION : 552 HEURE: 7 30
 POSITION :14.44 S 173.06 E

AIR= 271 257 VENT=140/ 8 FOND= 9999 NP= 11

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NH4	NOT	POT
0.	27.02	34.46	22.33	4.63	101.27	-.06	0.00	.01	.02	.04	.07	.08	.023	.017		2.04	.40
10.	27.02	34.46	22.33				0.00	.02	0.00	.04	.07	.09	.027	.014		2.02	.31
20.	27.03	34.47	22.33	4.63	101.30	-.06	0.00	.04	.01	.06	.05	.09	.050	.029		2.04	.36
40.	27.04	34.47	22.33	4.60	100.66	-.03	0.00	.04	.01	.07	.04	.09	.046	.025		3.20	.25
60.	27.05	34.48	22.33	4.60	102.43	-.11	0.00	.04	.01	.09	.03	.10	.066	.043		3.22	.32
80.	26.28	34.68	22.73	4.70	101.57	-.07	0.00	.03	.02	.10	.06	.21	.041	.023		3.75	.26
100.	25.76	34.77	22.96	4.71	100.08	-.04	0.00	.04	.02	.22	.06	.26	.126	.081		2.53	.25
120.	26.17	35.36	23.27	4.61	99.01	.01	0.00	.04	.02	.21	.17	.32	.227	.138		2.77	.29
150.	25.34	35.91	23.94				.18	.37	.14	.10	.29	.20	.122	.132		3.08	.42
200.	22.71	35.90	24.72	3.72	75.01	1.19	.39	3.73	.06	.02	.12	.09	.005	.005		5.02	.52
250.	20.47	35.65	25.15	3.76	73.33	1.37	.46	5.39	.05	.01	.09	.06				7.64	.64

PROF	TEMP	SAL	O2	ATP	NP	C14	IZ	PP	SP32	CP	COPE
0.	27.02	34.46	4.63	33.0	.40	2.69	37.99	.010	.05	3.53	111.
10.	27.02	34.46		40.0	.52	3.72	15.96	.016	.11	4.97	111.
20.	27.03	34.47	4.63	26.0	.40	3.31	9.50	.010	.11	4.02	296.
40.	27.04	34.47	4.60	40.0	.47	.73	4.75	.021	.09	3.72	74.
60.	27.05	34.48	4.60	40.0	.00	3.53	2.13	.016	.08	7.08	140.
80.	26.28	34.68	4.70	76.0	1.10	3.51	1.14	.021	.05	6.96	37.
100.	25.76	34.77	4.71	57.0	.70	2.50	.61	.022	.07	5.61	37.
120.	26.17	35.36	4.61	52.0	.60	1.78	.34	.018	.09	5.19	105.
150.	25.34	35.91		49.0	.75	1.05	.09	.018	.60	5.51	74.
200.	22.71	35.90	3.72	36.0	1.41	1.72	.61	.006	1.09	7.16	37.
250.	20.47	35.65	3.76	6.0			0.00	.003			74.

CROISIERE: RCH85A DATE: 20 9 85
 STATION : 53 HEURE: 21 11
 POSITION :14.38 S 173.03 E

AIR= 99999 VENT=44/44 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NH4	NOT	POT
0.	27.02	34.48	22.34	4.68	182.38	-11	0.00	.02	.01	.04	.06	.07				4.97	.22
20.	27.02	34.48	22.34	4.68	182.38	-11	0.00	.02	.02	.03	.06	.07				4.54	.31
40.	27.01	34.48	22.35	4.70	182.80	-13	0.00	.02	.02	.04	.06	.07				4.74	.26
60.	26.98	34.48	22.35	4.71	182.96	-14	0.00	.02	.02	.04	.06	.08				4.67	.23
80.	26.69	34.58	22.52	4.74	183.13	-14	0.00	.02	.03	.15	.08	.20				4.97	.26
100.	25.89	34.71	22.87	4.76	182.15	-18	0.00	.04	.03	.17	.13	.25				4.67	.23
120.	25.56	34.79	23.03	4.77	181.88	-08	0.00	.04	.04	.22	.15	.32				3.46	.23
140.	26.52	35.72	23.43	4.22	92.13	.36	.14	.07	.08	.34	.33	.55				4.18	.44
160.	24.88	35.84	24.03	3.84	81.43	.88	.25	2.15	.06	.20	.23	.35				6.37	.45
180.	23.77	35.95	24.45	3.78	78.59	1.03	.33	3.33	.07	.06	.14	.15				6.48	.50
200.	22.88	35.98	24.69	3.73	76.14	1.17	.37	4.42	.06	.01	.07	.06				7.15	.53
250.	20.49	35.63	25.13	3.73	72.76	1.40	.46	5.75	.06	0.00	.04	.02				11.29	.62

CROISIERE: RCH85A DATE: 21 9 85
 STATION : 54 HEURE: 19 0
 POSITION :14.50 S 173.04 E

AIR= 269 253 VENT=150/10 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NH4	NOT	POT
0.	26.88	34.45	22.36	4.69	182.32	-11	0.00	.02	.01	.04	.03	.06			.16	3.18	.22
20.	26.88	34.45	22.36	4.69	182.32	-11	0.00	.04	.02	.04	.04	.06			.14	3.74	.24
40.	26.87	34.46	22.37	4.71	182.74	-13	0.00	.02	.02	.04	.04	.06			.05	3.66	.26
60.	26.87	34.46	22.37	4.71	182.74	-13	0.00	.03	.03	.04	.03	.06			.22	3.24	.26
80.	26.85	34.51	22.42	4.77	184.04	-19	0.00	0.00	.04	.06	.03	.08			.15	4.10	.27
100.	26.69	34.94	22.79	4.75	183.56	-16	.04	.02	.04	.11	.08	.15			.30	3.38	.30
120.	26.85	35.55	23.28	4.45	77.64	.11	.08	.02	.05	.30	0.00	.30			.26	3.41	.33
140.	25.45	35.86	23.87	3.97	85.88	.70	.28	1.34	.26	.22	.22	.36			0.00	4.25	.51
160.	24.50	35.79	24.11	3.94	82.95	.81	.31	2.64	.07	.15	.17	.27			.16	5.61	.50
180.	23.91	35.90	24.37	3.83	79.81	.97	.36	3.31	.09	.08	.06	.12			.09	5.76	.55
200.	23.16	35.86	24.56	3.70	76.02	1.17	.37	3.92	.08	.03	.06	.07			.46	6.35	.56
240.	21.24	35.68	24.96	3.86	76.41	1.19											

PROF	TEMP	SAL	O2	ATP	NP	C14	IZ	PP	aP32	CP	COFC
0.	26.88	34.45	4.69				40.00				
20.	26.88	34.45	4.69				9.00				
40.	26.87	34.46	4.71				4.80				
60.	26.87	34.46	4.71				2.80				
80.	26.85	34.51	4.77				1.64				
100.	26.69	34.94	4.75				.88				
120.	26.85	35.55	4.45				.40				
140.	25.45	35.86	3.97				.13				
160.	24.50	35.79	3.94				.05				
180.	23.91	35.90	3.83				.03				
200.	23.16	35.86	3.70				.01				
240.	21.24	35.68	3.86				0.00				

CROISIERE: RCH85A
 STATION : 55
 POSITION :14.49 S 173.82 E

DATE: 22 9 85
 HEURE: 7 0

AIR= 99999 VENT=444/44 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAO	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NH4	NOT	POT
0.	26.81	34.47	22.40	4.69	182.20	-1.10	0.00	.02	.01	.01	.07	.06			.25	1.90	.20
20.	26.82	34.47	22.40	4.70	182.44	-1.11	.01	.01	.02	.04	.05	.07			.10	4.05	.22
40.	26.83	34.48	22.40	4.71	182.68	-1.12	.01	.02	.02	.02	.07	.06			.12	2.59	.22
60.	26.83	34.48	22.40	4.68	182.83	-1.07	.01	.01	.03						.25	3.08	.25
80.	26.88	34.98	22.76	4.67	182.19	-1.10	.01	.02	.02	.03	.05	.06			.53	2.76	.23
100.	26.69	35.44	23.17	4.48	77.96	.07	.09	.03	.03	.15	.09	.21			.09	3.06	.30
120.	26.19	35.75	23.56	4.19	98.95	.42	.18	.20	.12	.31	.36	.53			.13	3.52	.39
140.	25.89	35.79	23.68	4.03	87.82	.60	.23	.81	.25	.25	.32	.44			.12	4.77	.42
160.	24.76	35.85	24.08	3.88	82.10	.85	.27	2.26	.09	.19	.18	.30			.12	5.25	.46
180.	24.03	35.90	24.33	3.87	80.02	.92	.34	2.71	.09	.09	.13	.16			.26	6.46	.51
200.	22.93	35.85	24.62	3.79	77.53	1.10	.36	3.07	.08	.04	.04	.06			.09	6.60	.53
250.	21.19	35.65	24.95	3.84	75.93	1.22	.43	5.00	.10	0.00	.02	.01			.12	7.53	.58

PROF	TEMP	SAL	O2	ATP	NP	C14	??IZ	PP	SP32	CP	COPE
0.	26.81	34.47	4.69				42.22				
20.	26.82	34.47	4.70				9.50				
40.	26.83	34.40	4.71				5.87				
60.	26.83	34.48	4.68				2.96				
80.	26.88	34.98	4.67				1.73				
100.	26.69	35.44	4.48				.93				
120.	26.19	35.75	4.19				.42				
140.	25.89	35.79	4.03				.14				
160.	24.76	35.85	3.88				.05				
180.	24.03	35.90	3.87				.03				
200.	22.93	35.85	3.79				.02				
250.	21.19	35.65	3.84				.01				

CROISIERE: RCH85A
 STATION : 56
 POSITION :14.51 S 173.01 E

DATE: 22 9 85
 HEURE: 19 5

AIR= 270 256 VENT=120/ 6 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAO	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NH4	NOT	POT
0.	26.88	34.43	22.35	4.66	181.65	-1.08	.06	.01	.03	.04	.01	.05			.18	7.31	.63
20.	26.87	34.43	22.35	4.66	181.64	-1.07	.01	.01	.05	.06	.02	.07			.05	5.75	.26
40.	26.85	34.43	22.36	4.68	182.83	-1.09	.02	.07	.04	.05	.02	.06			.08	4.69	.26
60.	26.83	34.44	22.37	4.67	181.77	-1.08	.04	.03	.05	.06	0.00	.06			.03	4.27	.30
80.	26.84	34.49	22.41	4.64	181.18	-1.05	.05	.03	.05	.09	.02	.10			.10	3.59	.24
100.	26.63	35.15	22.97	4.38	95.51	.21	.12	.02	.06	.27	0.00	.27			.07	3.51	.20
120.	26.51	35.70	23.42	4.10	89.49	.48	.21	.35	.19	.33	.29	.51			.66	2.83	.36
140.	25.88	35.79	23.71	3.87	83.43	.77	.29	1.44	.23	.27	.20	.39			.08	4.44	.42
160.	24.45	35.75	24.09	3.63	76.33	1.13	.31	2.58	.11	.13	.15	.23			.15	9.72	.48
180.	23.86	35.87	24.36	3.78	77.02	1.10	.38	3.34	.11	.06	.07	.10			.01	6.36	.49
200.	22.92	35.80	24.58	3.74	76.47	1.15	.44	4.88	.10	.01	.01	.02			.03	7.16	.59
250.	20.74	35.57	25.02	3.74	73.28	1.36	.55	5.06	.12	0.00	.02	.01			.22	7.85	.63

CROISIERE: RCH85A
 STATION : 59
 POSITION :14.54 S 172.50 E

DATE: 24 9 85
 HEURE: 4 10

AIR= 99999 VENT=444/44 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAO	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NHA	NOT	POT
0.	26.68	34.56	22.51	4.67	101.58	-.07	0.00	.01	0.00			.01			.06		
20.	26.68	34.56	22.51	4.67	101.58	-.07	.01	.01	0.00			.03			.03		
40.	26.67	34.56	22.51	4.67	101.56	-.07	.01	.02	.01			.03			.15		
60.	26.67	34.56	22.51	4.67	101.56	-.07	.01	.01	.02			.03			.41		
80.	26.84	34.66	22.53	4.67	101.93	-.09	.02	.02	.02			.05			.15		
100.	26.84	35.40	23.09	4.48	98.20	.08	.09	.02	.02			.09			.35		
120.	26.24	35.81	23.59	4.11	89.33	.49	.20	.21	.13			.50			.31		
140.	25.65	35.89	23.83	3.89	83.68	.76	.23	1.13	.29			.37			.68		
160.	24.88	35.92	24.09	3.75	79.56	.96	.33	2.37	.09			.23			.70		
180.	24.00	35.93	24.34	3.71	77.56	1.07	.39	3.32	.06			.10			.87		
200.	23.04	35.93	24.65	3.71	76.08	1.17	.41	3.86	.06			.07			.17		
250.	20.42	36.03	25.45	3.65	71.27	1.47	.51	5.14	.04			.05			.59		

CROISIERE: RCH85A
 STATION : 559
 POSITION :14.54 S 172.50 E

DATE: 24 9 85
 HEURE: 4 40

AIR= 99999 VENT=444/44 FOND= 9999 NP= 10

PROF	TEMP	SAL	SIGT	O2	OZ	UAO	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NHA	NOT	POT
0.	26.68	34.56	22.51	4.67	101.58	-.07	0.00	.01	0.00	.05	.08	.10			.10	1.84	.21
10.	26.68	34.56	22.51	4.67	101.58	-.07	0.00	.01	0.00	.06	.07	.10			.06	2.73	.25
20.	26.68	34.56	22.51	4.67	101.58	-.07	0.00	0.00	.01	.07	.02	.08			.01	3.66	.25
40.	26.67	34.56	22.51	4.67	101.56	-.07	0.00	0.00	.01	.05	.05	.08			.04	2.12	.21
60.	26.67	34.56	22.51	4.67	101.56	-.07	0.00	.07	.01	.05	.06	.09			0.00	2.64	.23
80.	26.84	34.66	22.53	4.67	101.73	-.09	0.00	0.00	.02	.06	.06	.09			.04	2.30	.31
100.	26.84	35.40	23.09	4.48	98.20	.08	.04	.01	.02	.11	.04	.14			.01	2.24	.26
120.	26.24	35.81	23.59	4.11	89.33	.49	.11	0.00	.03	.22	.07	.26			.05	3.37	.37
150.							.29	1.35	.28	.14	.27	.31			.03	10.16	.52
200.	23.04	35.93	24.65	3.71	76.08	1.17	.39	3.67	.06	.04	.02	.05			.03	6.52	.54

PROF	TEMP	SAL	O2	ATP	NP	C14	??1Z	PP	SP32	CP	COPE
0.	26.68	34.56	4.67	29.0	.60	.88	45.22	.019	.00	3.31	105.
10.	26.68	34.56	4.67	45.0	.56	1.68	16.20	.018	.10	3.03	111.
20.	26.68	34.56	4.67	42.0	.61	1.61	10.17	.025	.11	2.85	0.
40.	26.67	34.56	4.67	48.0	.74	1.64	5.43	.017	.14	3.49	105.
60.	26.67	34.56	4.67	55.0	.45	1.65	3.17	.018	.15	3.01	37.
80.	26.84	34.66	4.67	54.0	.41	1.47	1.85	.016	.16	2.74	111.
100.	26.84	35.40	4.48	48.0	1.06	1.29	.99	.017	.68	6.36	111.
120.	26.24	35.81	4.11	88.0	.62	.53	.45	.017	.63	3.61	222.
150.				23.0	1.07	.66	.09	.013	1.20	6.43	148.
200.	23.04	35.93	3.71	10.0	1.26	.17	.02	.005	1.40	8.51	0.

CROISIERE: RCH85A
 STATION : 60
 POSITION :14.46 S 172.48 E

DATE: 24 9 85
 HEURE: 19 10

AIR= 270 262 VENT=160/10 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NH4	NDT	POT
0.	27.07	34.45	22.30	4.67	102.23	-.10	0.00	.07	0.00	0.00	.13	.08			.10	5.75	.31
20.	26.82	34.44	22.38	4.67	101.77	-.08	.01	.02	.01	.02	.15	.10			.13	4.66	.30
40.	26.79	34.45	22.39	4.67	101.72	-.08	.01	0.00	.01	.02	.10	.08			.08	4.25	.49
60.	26.75	34.46	22.41	4.70	102.30	-.11	0.00	0.00	.01	.03	.08	.08			.08	4.66	.33
80.	26.75	34.48	22.43	4.65	101.23	-.06	0.00	.02	.01	.07	.07	.11			.03	5.04	.27
100.	26.94	35.10	22.83	4.53	99.30	.03	.07	.01	.02	.12	.09	.17			.00	4.83	.51
120.	26.86	35.53	23.18	4.27	93.70	.29	.13	0.00	.10	.20	.30	.38			.28	4.36	.47
140.	26.12	35.72	23.56	3.95	85.62	.66	.21	.62	.22	.27	.30	.50			.04	7.82	.51
160.	24.61	35.77	24.06	3.71	78.25	1.03	.33	2.50	.07	.12	.24	.26			.14	9.19	.54
180.	23.71	35.84	24.38	3.72	77.20	1.10	.36	3.24	.04	.04	.14	.13			.11	8.28	.50
200.	22.34	35.73	24.69	3.69	74.60	1.26	.39	4.11	.04	0.00	.08	.05			.06	9.08	.65
250.	20.72	35.57	25.02	3.60	70.51	1.51	.44	4.80	.04	0.00	.05	.03			.14	9.98	.63

CROISIERE: RCH85A
 STATION : 61
 POSITION :14.45 S 172.49 E

DATE: 25 9 85
 HEURE: 6 37

AIR=99999999 VENT=444/44 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NH4	NDT	POT
0.	26.72	34.45	22.41	4.67	101.59	-.07	.07	.01	.02	.04	.08	.09				5.24	.21
20.	26.72	34.46	22.42	4.67	101.60	-.07	.01	0.00	.02	.07	.04	.09			.13	2.55	.19
40.	26.71	34.47	22.43	4.67	101.59	-.07	0.00	.01	.02	.04	.06	.07			.13	2.52	.22
60.	26.71	34.48	22.44	4.68	101.81	-.08	0.00	0.00	.02	.05	.06	.08			.13	3.71	.27
80.	26.78	34.72	22.60	4.64	101.20	-.06	.05	0.00	.04	.09	.06	.12			.00	4.73	.20
100.	26.93	35.17	22.89	4.46	97.79	.10	.09	0.00	.04	.15	.08	.20			.35	5.34	.32
120.	26.70	35.59	23.28	4.21	92.15	.36	.16	.04	.04	.35	.30	.59			.23	4.73	.39
140.	25.65	35.77	23.74	3.92	84.27	.73	.27	1.10	.28	.27	.51	.45			.17	5.38	.49
160.	24.58	35.80	24.09	3.81	80.33	.93	.29	2.36	.10	.16	.24	.31			.09	5.21	.51
180.	23.51	35.75	24.37	3.76	77.70	1.08	.34	3.62	.08	.05	.11	.12			.09	6.89	.54
200.	22.54	35.73	24.64	3.73	75.69	1.20	.25	4.49	.07	.02	.04	.05			.12	7.43	.54
250.	19.98	35.48	25.15	3.68	71.03	1.50	.48	6.03	.06	0.00	.04	.02			.23	9.46	.66

CROISIERE: RCH85A
 STATION : 62
 POSITION :14.47 S 172.47 E

DATE: 25 9 85
 HEURE: 15 35

AIR=99999999 VENT=444/46 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-m	Ph-m	NH4	NDT	POT
0.	27.88	34.42	22.30	4.78	182.74	-13	.01	.02	.01	.05	0.00	.06			.96	3.68	.19
20.	26.76	34.45	22.48	4.67	181.66	-08	.01	.02	.01	.05	.03	.07			.66	3.56	.23
40.	26.72	34.47	22.43	4.70	182.25	-10	.01	.03	.01	.05	.04	.07			.66	3.40	.23
60.	26.68	34.48	22.45	4.71	182.48	-11	.01	.02	.01	.08	.03	.10			.47	3.16	.22
80.	26.88	35.14	22.88	4.56	99.88	.01	.06	.04	.02	.13	.05	.16			.38	3.00	.27
100.	26.85	35.52	23.18	4.34	95.21	.22	.14	.04	.02	.20	.17	.31			.27	4.01	.35
120.	26.45	35.68	23.43	4.28	91.56	.39	.17	.08	.06	.35	.42	.60			.13	3.56	.37
140.	25.79	35.72	23.66	3.96	85.32	.68	.26	1.00	.21	.27	.31	.46			.33	3.84	.43
160.	24.92	35.71	23.92	3.75	79.52	.97	.30	2.58	.06	.19	.26	.31			.08	6.37	.49
180.	24.01	35.82	24.28	3.73	77.83	1.06	.34	3.52	.03	.07	.09	.12			.14	5.65	.49
200.	22.59	35.71	24.61	3.72	75.55	1.20	.37	4.34	.04	.03	.03	.04			.15	6.57	.52
250.	20.41	35.52	25.07	3.65	71.05	1.49	.46	4.57	.04	0.00	.02	.01			.14	5.65	.53

CROISIERE: RCH85A
 STATION : 63
 POSITION :14.59 S 173.27 E

DATE: 1 10 85
 HEURE: 16 13

AIR= 276 273 VENT=130/ 8 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-m	Ph-m	NH4	NDT	POT
0.	27.23	34.67	22.42	4.71	183.53	-16	.06	0.00	.01	.03	.07	.07			.06	3.16	.29
20.	27.02	34.63	22.45	4.71	183.12	-14	.16	.03	.02	.05	.05	.08			.20	4.74	.31
40.	26.99	34.65	22.48	4.72	183.30	-15	.14	.03	.02	.04	.05	.06			.32	4.58	.33
60.	26.98	34.66	22.49	4.73	183.50	-16	.15	.03	.03	.03	.11	.09			.28	4.07	.34
80.	26.85	34.73	22.58	4.73	183.38	-15	.12	.03	.04	.07	.07	.11			.18	9.05	.41
100.	26.28	34.93	22.71	4.74	182.58	-12	.10	.02	.04	.12	.08	.17			.04	7.57	.41
120.	25.98	35.05	23.12	4.67	188.44	-02	.11	.03	.04	.23	.09	.28			.05	5.11	.37
140.	25.74	35.74	23.69	4.14	87.13	.58	.33	.30	.14	.30	.36	.51			.08	7.77	.55
160.	24.74	35.94	24.15	3.86	81.69	.87	.39	1.74	.12	.26	.25	.36			.06	7.52	.57
180.	23.17	35.91	24.59	3.85	79.14	1.02	.54	3.34	.03	.04	.11	.11			.04	8.44	.65
200.	22.62	35.87	24.72	3.76	76.48	1.16	.50	3.96	.07	.03	.06	.07			.07	8.64	.63
240.	20.64	35.64	25.10	3.82	74.74	1.29	.61	5.28	.07	0.00	.02	.01			.25	9.46	.73

CROISIERE: RCH85A
 STATION : 163
 POSITION :14.59 S 173.27 E

DATE: 1 10 85
 HEURE: 17 10

AIR= 276 273 VENT=130/ 8 FOND= 9999 NP= 11

PROF	TEMP	SAL	SIGT	O2	OZ	UAO	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	HLA	NOT	POT
80.	26.66	34.34	22.35				.88	.02	.02								.01
90.	26.73	34.64	22.55				.86	.02	.02								.08
100.	26.85	34.56	22.71				.87	.03	.03								.10
110.	25.89	34.63	22.81				.12	.02	.03								.04
120.	25.95	34.95	23.83				.18	.05	.08								.07
130.	25.94	35.27	23.28				.20	.02	.16								.06
140.	25.64	35.49	23.54				.35	1.41	.17								.06
150.	25.17	35.58	23.75				.41	2.51	.11								.04
160.	24.44	35.64	24.81				.43	3.05	.10								.05
170.	24.81	35.65	24.15				.43	3.51	.11								.01
180.	23.27	35.58	24.31				.45	3.78	.11								.06

CROISIERE: RCH85A
 STATION : 64
 POSITION :14.58 S 173.24 E

DATE: 2 10 85
 HEURE: 5 0

AIR= 272 268 VENT=130/12 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAO	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	HLA	NOT	POT
0.	27.83	34.53	22.38	4.71	183.88	-.14	.84	.01	.01			.02					.04
20.	27.83	34.53	22.38	4.73	183.52	-.16	.82	.01	.01			.08					.25
40.	27.82	34.53	22.38	4.73	183.50	-.16	.86	.01	.02			.03					.25
60.	26.95	34.54	22.41	4.74	183.59	-.16	.87	.01	.02			.03					.18
80.	26.78	34.79	22.65	4.75	183.64	-.17	.87	0.00	.03			.07					.18
100.	26.12	34.78	22.85	4.76	182.62	-.12	.86	.01	.02			.12					.03
120.	25.91	35.12	23.17	4.48	96.41	.17	.12	.01	.02			.33					.07
140.	25.43	35.71	23.77	3.99	85.40	.68	.20	1.00	.15			.34					.04
160.	24.46	35.83	24.15	3.80	79.96	.95	.36	2.46	.66			.25					.04
180.	23.51	35.79	24.40	3.82	78.96	1.02	.40	3.34	.07			.17					.05
200.	22.65	35.78	24.58	3.88	78.89	1.04	.48	5.10	.05								.05
240.	20.74	35.59	25.83				.49	5.32	.05			.06					.03

CROISIERE: RCH85A
STATION : 564
POSITION :14.58 S 173.24 E

DATE: 2 10 85
HEURE: 5 50

AIR= 272 268 VENT=130/12 FOND= 9999 NP= 11

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NH4	NOT	POT
0.	27.03	34.53	22.30	4.71	103.00	-14	.05	0.00	0.00	.07	.02				0.00	2.59	.31
10.	27.03	34.53	22.38	4.72	103.30	-15	.05	.04	0.00	.07	.02				0.00	5.27	.37
20.	27.03	34.53	22.38	4.73	103.52	-16	.10	.03	.01	.07	0.00				0.00	2.57	.34
40.	27.02	34.53	22.38	4.73	103.50	-16	.07	.01	.01	.07	.01				.05	3.85	.37
60.	26.95	34.54	22.41	4.74	103.59	-16	.10	.01	.01	.12	.01				.04	3.76	.34
80.	26.78	34.79	22.65	4.75	103.64	-17	.23	0.00	.02	.13	.05				.03	5.40	.30
100.	26.12	34.78	22.85	4.76	102.62	-12	.10	.03	.02	.15	.05				.03	3.01	.36
120.	25.91	35.12	23.17	4.48	96.41	.17	.11	.03	.03	.21	.04				.02	3.27	.45
151.	24.97	35.81	23.98				.42	1.31	.13	.18	.26				.03	4.73	.92
200.	22.65	35.70	24.50	3.88	78.09	1.04	.58	3.67	.05	.04	.04				.03	6.82	.76
240.	21.74	35.59	25.03				.62	5.15	.05	0.00	.11				.03	8.03	.74

PROF	TEMP	SAL	O2	ATP	NP	C14	IZ	PP	SP32	CP	COFC
0.	27.03	34.53	4.71	43.0	.45	1.21	43.48	.022	.33	3.50	141.
10.	27.03	34.53	4.72	36.0	.46	1.41	15.65	.025	.33	3.04	105.
20.	27.03	34.53	4.73	45.0	.39	1.49	9.78	.019	.07	2.68	259.
40.	27.02	34.53	4.73	38.0	.50	1.93	5.22	.016	.00	3.65	74.
60.	26.95	34.54	4.74	98.0	.51	2.47	3.04	.025	1.66	4.56	74.
80.	26.78	34.79	4.75	25.0	.46	2.92	1.78	.019	2.04	3.70	185.
100.	26.12	34.78	4.76	43.0	.41	2.07	.96	.023	1.65	2.84	140.
120.	25.91	35.12	4.48	38.0	.40	1.50	.43	.015	.66	2.70	140.
150.	24.97	35.81		21.0	.34	1.50	.09	.009	1.52	2.45	37.
200.	22.65	35.70	3.08	2.0	.44	.70	.02	.006	1.34	2.75	37.
240.	20.74	35.59		5.0			.01	.008			37.

CROISIERE: RCH85A
STATION : 67
POSITION :14.55 S 173.21 E

DATE: 2 10 85
HEURE: 18 0

AIR= 271 267 VENT=120/10 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NH4	NOT	POT
0.	27.04	34.51	22.36	4.65	101.77	-00	.06	.02	.02	.05	.03	.06			.01	2.69	.37
20.	27.03	34.51	22.36	4.67	102.19	-10	.06	.01	.03	.05	.04	.07			.05	2.72	.36
40.	26.95	34.51	22.39	4.67	102.05	-09	.06	.01	.03	.05	.03	.07			.03	2.47	.32
60.	26.92	34.52	22.40	4.67	102.00	-09	.05	.02	.03	.06	.03	.00			0.00	2.82	.35
80.	26.78	34.55	22.47	4.68	101.98	-09	.05	.02	.04	.05	.02	.10			.00	3.51	.31
100.	26.24	34.68	22.74	4.77	103.00	-14	.05	.02	.04	.13	.05	.16			0.00	3.00	.31
120.	25.88	34.97	23.07	4.64	99.71	.01	.07	.06	.05	.22	.10	.28			0.00	3.45	.34
140.	25.50	35.69	23.73	4.11	88.07	.56	.21	.36	.12	.29	.37	.52			.04	3.75	.46
160.	24.42	35.81	24.15	3.78	79.47	.98	.33	2.17	.09	.10	.17	.29			0.00	4.22	.51
180.	23.37	35.81	24.46	3.75	77.32	1.10	.39	3.31	.05	.07	.13	.15			0.00	5.57	.50
200.	22.45	35.74	24.67	3.74	75.77	1.20	.40	4.09	.03	.06	.06	.09			0.00	0.46	.65
250.	19.90	35.47	25.16	3.84	74.00	1.35	.49	5.35	.03	0.00	.04	.02			0.00	7.24	.61

CROISIERE: RCH05A
STATION : 68
POSITION :14.57 S 173.19 E

DATE: 3 10 85
HEURE: 4 50

AIR= 271 268 VENT=130/11 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	ChLA	Ch-H	Ph-m	MHA	NOT	POT
0.	26.94	34.50	22.38	4.70	102.68	-12	.05	0.00	0.00			.03			.01		
20.	26.94	34.51	22.39	4.70	102.68	-12	.06	0.00	0.00			.04			.12		
40.	26.95	34.51	22.39	4.70	102.70	-12	.06	0.00	0.00			.05			.02		
60.	26.95	34.52	22.39	4.70	102.71	-12	.06	.01	0.00			.07			.02		
80.	26.89	34.55	22.44	4.63	101.09	-05	.00	0.00	.01			.21			.02		
100.	26.01	34.65	22.94	4.46	96.00	.19	.13	.02	.01			.41			0.00		
120.	26.12	35.29	23.24	4.10	88.65	.52	.23	.29	.12			.63			.04		
140.	25.70	35.63	23.62	3.83	82.34	.82	.34	2.00	.06			.33			.02		
160.	24.35	35.84	24.19	3.71	77.91	1.05	.39	3.25	.05			.15			.05		
180.	23.46	35.79	24.42	3.72	76.32	1.12	.42	3.97	.01			.08			.09		
200.	22.83	35.77	24.59	3.83	78.16	1.07	.48	5.15	.03			.04			.06		
240.	20.79	35.60	25.03	3.76	73.76	1.34	.48	5.20	.04			.01			.05		

CROISIERE: RCH05A
STATION : 560
POSITION :14.56 S 173.19 E

DATE: 3 10 85
HEURE: 5 46

AIR= 271 268 VENT=130/11 FOND= 9999 NP= 11

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	ChLA	Ch-m	Ph-m	MHA	NOT	POT
0.	26.94	34.50	22.38	4.70	102.68	-12	.04	.02	.01	.08	.02	.09			.01	2.55	.38
20.	26.94	34.51	22.39	4.70	102.68	-12	.03	.02	.01	.03	.03	.10			0.00	3.92	.37
40.	26.95	34.51	22.39	4.70	102.70	-12	.03	.01	.01	.00	.01	.09			0.00	2.84	.40
60.	26.95	34.52	22.39	4.70	102.71	-12	.04	.02	.02	.07	.04	.18			0.00	2.49	.46
70.	26.95	34.52	22.39				.03	.02	.02	.08	.01	.08			0.00	2.68	.41
80.	26.89	34.55	22.44	4.63	101.09	-05	.05	.01	.04	.12	.06	.15			.01	2.56	.43
100.	26.01	34.85	22.94	4.46	96.00	.19	.05	.02	.04	.19	.25	.33			.01	2.72	.44
120.	26.12	35.29	23.24	4.10	88.65	.52	.18	.24	.12	.38	.40	.62			.01	2.97	.56
150.	25.00	35.81	23.97				.32	2.10	.10	.20	.11	.27			.01	4.40	.81
200.	22.83	35.77	24.59	3.83	78.16	1.07	.43	4.29	.03	.02	.02	.04			.01	6.13	.65
240.	20.79	35.60	25.03	3.76	73.76	1.34	.49	5.37	.00	0.00	.02	.01			0.00	8.58	1.98

PROF	TEMP	SAL	O2	ATP	NP	C14	I2	PP	SP32	CP	COPE
0.	26.94	34.50	4.70	18.0	.49	4.09	39.16	.026		3.49	140.
20.	26.94	34.51	4.70	3.0	.46	3.19	8.81	.015		3.29	74.
40.	26.95	34.51	4.70	37.0	.42	7.13	4.70	.013		3.68	111.
60.	26.95	34.52	4.70	40.0	.41	9.63	2.74	.016		3.51	259.
70.	26.95	34.52			.60	9.66	2.08	.023		7.75	222.
80.	26.89	34.55	4.63	35.0	.82	9.93	1.61	.015		6.73	185.
100.	26.01	34.85	4.46	46.0	.77	10.47	.86	.020		5.27	0.
120.	26.12	35.29	4.10	44.0	.45	3.78	.39	.014		3.65	74.
150.	25.00	35.81		6.0	.26	1.17	.08	.009		2.71	148.
200.	22.83	35.77	3.83	20.0	.27	.17	.01	.006		2.95	111.
240.	20.79	35.60	3.76	8.0			0.00	.006			37.

CROISIERE: RCH85A
 STATION : 74
 POSITION :14.59 S 173.11 E

DATE: 4 10 85
 HEURE: 20 39

AIR= 99999 VENT=44/44 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-m	Ph-m	M14	NOT	POT
0.	27.38	34.66	22.36	4.65	102.48	-.11	.09	0.00	.01	.07	.01	.07			.33	2.96	.28
20.	27.37	34.65	22.36	4.65	102.46	-.11	.06	.03	.01	.06	.03	.08			.13	2.94	.29
40.	27.03	34.64	22.46	4.70	102.93	-.13	.05	.02	.02	.10	.03	.12			.16	2.86	.27
60.	26.98	34.64	22.47	4.70	102.03	-.13	.05	.03	.02	.12	0.00	.13			.07	4.15	.30
80.	26.84	34.66	22.53	4.72	103.02	-.14	.05	.02	.02	.10	.07	.14			.07	3.65	.20
100.	26.82	34.69	22.56	4.72	103.00	-.14	.06	.02	.02	.12	.07	.16			.10	3.22	.30
120.	26.74	35.21	22.98	4.60	100.54	-.02	.09	.01	.04	.20	.06	.24			.03	4.45	.38
140.	26.29	35.66	23.46	4.31	93.68	.29	.18	.03	.04	.27	.36	.48			.09	5.70	.40
160.	24.78	35.97	24.16	3.82	88.92	.90	.35	1.03	.10	.14	.24	.28			.06	6.52	.51
180.	23.63	35.95	24.49	3.77	78.17	1.05	.37	2.96	.07	.08	.13	.16			.06	6.59	.53
200.	22.39	35.87	24.79	3.74	75.74	1.20	.40	3.67	.67	.05	.06	.08			.06	7.85	.54
250.	20.44	35.70	25.20	3.72	72.53	1.41	.46	4.86	.07	0.00	.02	.01			.03	8.18	.68

CROISIERE: RCH85A
 STATION : 75
 POSITION :14.59 S 173.09 E

DATE: 5 10 85
 HEURE: 5 0

AIR= 274 235 VENT=130/ 7 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-m	Ph-m	M14	NOT	POT
0.	27.39	34.35	22.13	4.54	99.90	.00	.11	.02	.02	.26	.14	.29			.10	2.21	.33
20.	27.40			4.67			.06	.01	.05	.02	.09	.08			.03	3.99	.33
40.	27.02	34.63	22.45	4.68	102.46	-.11	.05	.02	.01	.03	.07	.07			.01	3.72	.31
60.	26.96	34.63	22.47	4.70	102.79	-.13	.05	.02	.02	.03	.09	.08			.04	4.96	.40
80.	26.86	34.57	22.46	4.71	102.79	-.13	.04	.03	.01	.05	.09	.11			0.00	2.85	.30
100.	26.77	34.63	22.53	4.73	103.07	-.14	.04	.06	.01	.08	.06	.12			.01	3.01	.34
120.	26.49	34.83	22.77	4.74	102.91	-.13	.05	.07	.01	.12	.08	.17			.09	3.75	.32
140.	26.05	35.31	23.27	4.57	98.70	.06	.09	.07	.02	.22	.08	.27			0.00	2.74	.32
160.	25.09	35.71	23.87	4.36	92.74	.34	.19	.13	.10	.22	.44	.48			.04	2.47	.41
180.	23.58			4.04			.31	1.50	.13	.14	.32	.33			0.00	4.00	.50
200.	22.46	35.94	24.82	3.84	77.90	1.09	.36	3.01	.05	.04	.17	.14			0.00	5.34	.53
250.	20.34	35.73	25.25	3.74	72.79	1.40	.42	4.03	.07	0.00	.00	.05			.04	6.59	.60

PROF	TEMP	SAL	O2	ATP	NP	C14	??IZ	PP	ap32	CP	COPE
0.	27.39	34.35	4.54				5.69				
20.	27.40		4.67				1.28				
40.	27.02	34.63	4.68				.68				
60.	26.96	34.63	4.70				.00				
80.	26.86	34.57	4.71				.23				
100.	26.77	34.63	4.73				.13				
120.	26.49	34.83	4.74				.57				
140.	26.05	35.31	4.57				.02				
160.	25.09	35.71	4.36				.01				
180.	23.58		4.04				0.00				
200.	22.46	35.94	3.84				0.00				
250.	20.34	35.73	3.74				0.00				

CROISIERE: RCH85A
 STATION : 77
 POSITION : 15.00 S 173.89 E

DATE: 5 10 85
 HEURE: 12 50

AIR= 222 218 VENT=444/44 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NH4	NOT	POT
0.	27.18	33.50	21.56				.04	.02	.01	.09	.04	.11	.071	.025	.03		
10.	27.34	34.55	22.29				.04	.02	.01	.07	.04	.10	.073	.021	.03		
20.	27.44	34.54	22.25				.05	.01	.02	.08	.05	.11	.076	.031	0.00		
40.	27.07	34.54	22.37				.03	.01	.03	.12	.07	.14	.090	.037	0.00		
60.	26.96	34.54	22.41				.04	.01	.03	.12	.03	.14	.084	.043	.01		
80.	26.82	34.55	22.46				.03	.02	.05	.19	.06	.23	.136	.040	0.00		
100.	26.81	34.83	22.67				.06	.02	.06	.23	.04	.25	.166	.006	0.00		
120.	26.52	35.10	22.97				.07	.01	.06	.25	.06	.29	.152	.117	.01		
140.	25.94	35.45	23.41				.15	.05	.10	.30	.32	.49	.216	.277	.03		
160.	25.22	35.76	23.07				.27	.96	.19	.22	.27	.37	.144	.256	.03		
180.	24.27	35.84	24.22				.34	2.31	.09	.14	.16	.24	.091	.203	0.00		
200.	23.44	35.81	24.44				.37	3.14	.11	.08	.09	.14	.050	.095	.20		

CROISIERE: RCH85A
 STATION : 78
 POSITION : 14.58 S 173.86 E

DATE: 5 10 85
 HEURE: 17 50

AIR= 273 261 VENT=111/14 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-n	Ph-n	NH4	NOT	POT
0.	27.28	34.01	21.91	4.88	106.96	-.32	.06	.02	.02	.08	.04	.10				2.54	.20
20.	27.44	34.38	22.13	4.68	103.09	-.14	.05	.02	.03	.10	.03	.12				2.72	.22
40.	27.37	34.54	22.27	4.69	103.28	-.15	.10	.03	.03	.08	.08	.13				3.07	.26
60.	27.01	34.53	22.38	4.71	103.04	-.14	.08	0.00	.05	.12	.05	.15				3.48	.24
80.	26.85	34.53	22.43	4.73	103.18	-.15	.05	.01	.05	.15	.05	.18				2.82	.24
100.	26.64	34.58	22.54	4.73	102.82	-.13	.04	.01	.06	.21	.05	.24				4.61	.25
120.	26.18	34.83	22.87	4.76	102.76	-.13	.05	.03	.06	.22	.04	.25				2.83	.24
140.	26.04	35.42	23.36	4.38	94.64	.25	.15	.06	.07	.26	.20	.38				2.50	.29
160.	25.19	35.79	23.90	3.93	83.79	.76	.29	1.25	.16	.18	.24	.32				3.84	.42
180.	24.13	35.83	24.25	3.79	79.27	.99	.36	2.71	.09	.11	.13	.19				4.80	.44
200.	23.05	35.79	24.54	3.75	76.85	1.13	.38	3.48	.16	.07	.05	.10				5.61	.48
250.	20.79	35.66	25.07	3.76	73.79	1.34	.44	4.62	.10	0.00	.03	.02				6.56	.53

CROISIERE: RCH85A DATE: 6 10 85
 STATION : 80 HEURE: 18 0
 POSITION :15.02 S 173.00 E

AIR= 275 269 VENT= 30/ 2 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-m	Ph-m	NH4	NOT	POT
0.	27.42	33.68	21.61	4.65	101.99	-.09	.10	.05	.01	.09	.01	.10			.27	2.66	.24
20.	27.46	34.40	22.14	4.61	101.60	-.07	.08	.03	0.00	.09	.01	.10			.09	4.09	.25
40.	27.22	34.65	22.41	4.67	102.62	-.12	.11	.01	0.00	.14	.01	.15			.24	4.81	.25
60.	26.95	34.65	22.49	4.67	102.57	-.12	.06	0.00	.01	.16	.04	.18			.07	3.82	.24
80.	26.74	34.64	22.55	4.68	101.95	-.09	.04	0.00	.01	.19	0.00	.19			.03	2.80	.26
100.	26.44	34.80	22.77	4.70	101.93	-.09	.05	0.00	.02	.27	0.00	.25			.04	3.27	.24
120.	26.67	35.33	23.09	4.49	98.08	.09	.10	0.00	.62	.26	.10	.32			.04	2.96	.29
140.	26.06	35.79	23.63	4.11	07.02	.51	.23	.23	.07	.27	.25	.42			.10	3.46	.40
160.	24.65	35.99	24.22	3.72	70.62	1.01	.36	2.16	.07	.19	.10	.25			.09	4.51	.46
180.	23.45	35.92	24.52	3.74	77.28	1.10	.36	3.00	.65	.10	.05	.13			.06	5.43	.49
200.	22.24	35.89	24.84	3.67	74.13	1.28	.42	3.99	.83	.05	0.00	.83			.03	6.85	.54
240.	20.51	35.66	25.15	3.68	71.83	1.44	.51	5.23	.83	0.00	0.00	0.00			.03	7.55	.58

CROISIERE: RCH85A DATE: 7 10 85
 STATION : 81 HEURE: 5 0
 POSITION :15.02 S 173.02 E

AIR= 273 268 VENT=320/ 3 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAD	PO4	NO3	NO2	Ch-a	Ph-a	CHLA	Ch-m	Ph-m	NH4	NOT	POT
0.	27.28	33.35	21.41	4.63	101.10	-.05	.04	0.00	0.00	.04	.07	.08			.04	2.15	.24
20.	27.46	33.90	21.77	4.63	101.75	-.00	.05	0.00	0.00	.06	.66	.10			.03	3.24	.25
40.	27.12	34.04	21.98	4.67	102.09	-.10	.04	.01	0.00	.09	.06	.12			.05	2.80	.29
60.	26.92	34.83	22.04	4.70	102.37	-.11	.06	.04	0.00	.12	.04	.14			.07	2.23	.26
80.	26.82	34.04	22.08	4.60	101.75	-.08	.04	.04	.01	.14	.07	.18			.04	2.36	.25
100.	26.51	34.16	22.26	4.71	101.90	-.09	.04	.06	0.00	.11	.12	.19			.06	2.78	.25
120.	26.79	34.62	22.52	4.54	98.98	.05	.08	.10	.01	.21	.14	.38			.03	2.51	.29
140.	25.95	35.84	23.10	4.18	89.97	.47	.17	.20	.07	.23	.29	.46			.01	3.31	.35
160.	24.83	35.33	23.66	3.81	00.48	.92	.31	1.77	.03	.07	.29	.25			0.00	3.65	.46
180.	23.59	35.34	24.84	3.74	77.22	1.10	.36	3.11	.04	.06	.13	.14			.07	4.66	.49
200.	22.40	35.23	24.30	3.71	74.37	1.25	.39	3.96	.04	.03	.06	.86			.01	6.13	.56
250.	20.27	35.07	24.76	3.74	72.41	1.42	.46	4.95	.83	0.00	.03	.82			.01	6.64	.58

PROF	TEMP	SAL	O2	ATP	NP	C14	I2	PP	SP32	CP	COPC
0.	27.28	33.35	4.63				21.94				
20.	27.46	33.90	4.63				4.94				
40.	27.12	34.04	4.67				2.63				
60.	26.92	34.83	4.70				1.54				
80.	26.82	34.04	4.68				.90				
100.	26.51	34.16	4.71				.48				
120.	26.79	34.62	4.54				.22				
140.	25.95	35.84	4.18				.07				
160.	24.83	35.33	3.81				.03				
180.	23.59	35.34	3.74				.01				
200.	22.40	35.23	3.71				0.00				
250.	20.27	35.07	3.74				0.00				

CROISIERE: RCIBSA
 STATION : 82
 POSITION :15.01 S 173.83 E

DATE: 7 10 85
 HEURE: 17 50

AIR= 275 264 VENT=140/ 5 FOND= 9999 NP= 12

PROF	TEMP	SAL	SIGT	O2	OZ	UAO	PO4	NO3	NO2	Ch-a	Pl-a	CHLA	Ch-n	Ph-n	Mil4	NDT	POT
0.	27.30	33.71	21.67	4.68	102.44	-.11	.05	0.00	0.00	.09	0.00	.08			.15	3.04	.24
20.	27.33	33.43	21.45	4.66	101.90	-.09	.06	0.00	.01	.10	.01	.11			.20	3.04	.26
40.	27.41	33.72	21.65	4.67	102.43	-.11	.05	0.00	.01	.08	0.00	.07			.06	2.98	.27
60.	26.98	34.38	22.28	4.63	101.15	-.05	.05	0.00	.03	.10	0.00	.08			.03	2.73	.23
80.	26.90	34.72	22.56	4.61	100.77	-.04	.05	0.00	.03	.13	0.00	.10			.06	2.82	.28
100.	26.63	34.71	22.64	4.64	100.92	-.04	.04	0.00	.04	.19	0.00	.19			.03	4.03	.26
120.	25.96	35.07	23.12	4.59	98.83	.05	.07	0.00	.05	.25	.17	.36			.04	2.87	.26
140.	25.38	35.88	23.91	3.94	84.34	.73	.26	.00	.16	.26	.17	.37			.07	3.06	.41
160.	24.37			3.75			.32	2.05	.10	.16	.11	.22			.00	4.46	.40
180.	23.42	35.93	24.54	3.75	77.45	1.09	.35	2.94	.03	.06	0.00	.05			.04	5.36	.47
200.	22.22	35.86	24.83	3.74	75.50	1.21	.36	3.47	.10	.06	0.00	.05			.03	7.19	.52
250.	19.83	35.65	25.32	3.78	72.82	1.41	.46	4.51	.02	0.00	0.00	0.00			.04	7.40	.55

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