

C.I.P.S

MODELE MATHEMATIQUE DE LA
POLLUTION EN MER DU NORD

TECHNICAL REPORT
1974/05 BIOL.03

TECHNICAL REPORT

/ This paper not to be cited without prior reference to the author. /

ETUDE DU ZOOPLANCTON :

Calcul des biomasses

des croisières

de janvier 1974 à mai 1974

par

M. BOSSICART

Laboratorium voor

Ekologie en Systematiek

V.U.B.

Onderzoek CIPS
 Cruisè Jansier 1974

	1101 24-1-74 13.00 - 2m	705 24-1-74 - 2m	1155 14-1-74 - 2m	1116 25-1-74 - 2m
	min.-max.	min.-max.	min.-max.	min.-max.
- Vers gewicht $\mu\text{g}/\text{m}^3$				
<u>Cnidaria</u>				
<u>Acnidaria</u>				
Ctenophora				
<u>Nemathelminthes</u>				
Rotatoria spec.				
Nematoda spec.	13			
<u>Mollusca</u>				
Gastropoda (1)			120	
Lamellibranchia (1)	1300	1500	450	
<u>Annelida</u>				
Polychaeta spec.	6401	173	1384	
Lanice spec.				
<u>Crustacea</u>				
Copepoda nauplii	4977	2844	26781	6241
Copepoda copepodiet	7392	1848	24552	7128
Copepoda adult.	7032	236	1984	3226
Cirripedia (1)	160		160	
Ostracoda				
Decapoda (1)				
Mysidacea				
Cumacea				
Isopoda	181			
Amphipoda				
Cladocera				
<u>Bryozoa (1)</u>				
<u>Chaetognatha Sagitta spec.</u>				
<u>Echinodermata Larvae spec.</u>				
<u>Tunicata Dikopleura</u>	5190	1730		
<u>Pisces (e - 1)</u>				
TOTAAL	32646	8331	55431	16595
GEMIDDELDE				
- Drooggewicht $\mu\text{g}/\text{m}^3$	6529	1666	11086	3319
- Koolstof $\mu\text{g}/\text{m}^3$	2612	666	4434	1328
- Stikstof $\mu\text{g}/\text{m}^3$	718	183	1219	365
- Fosfor $\mu\text{g}/\text{m}^3$	65	16	111	33

Onderzoek CIPS
 Cruisè Janvie - Febr. 1974

	M&O 13.30	25.1.74 -2m	15.10	26.2.74 -2m	11.30	26.2.74 -2m	MSS 12h	25.2.74 .2m
	min.-max.	min.-max.	min.-max.	min.-max.	min.-max.	min.-max.	min.-max.	min.-max.
<u>Vers gewicht</u> $\mu\text{g}/\text{m}^3$								
<u>Cnidaria</u>								
<u>Acnidaria</u>								
<u>Ctenophora</u>								
<u>Nemathelminthes</u>								
Rotatoria spec.								
Nematoda spec.	26	13		39				
<u>Mollusca</u>								
Gasteropoda (1)								
Lamellibranchia (1)	300			2600				
<u>Annelida</u>								
Polychaeta spec.	173	4671		1384				
Lanice spec.	3280							
<u>Crustacea</u>								
Copepoda nauplii	7505	2054		7979				
Copepoda copepodiet	3696	1320		9504				
Copepoda adult.	2090	334		6806				
Cirripedia (1)				640				
Ostracoda								
Decapoda (1)								
Mysidacea								
Cumacea								
Isopoda								
Amphipoda	362							
Cladocera								
<u>Bryozoa (1)</u>								
<u>Chaetognatha</u> Sagitta spec.								
<u>Echinodermata</u> Larvae spec.								
<u>Tunicata</u> Dikopleura	3460	20760		31140				
<u>Pisces</u> (e - 1)				24126				
TOTAAL	20892	29152		84218				
GEMIDDELDE								
<u>Drooggewicht</u> $\mu\text{g}/\text{m}^3$	4178	5820		16844				
<u>Koolstof</u> $\mu\text{g}/\text{m}^3$	1671	2331		6738				
<u>Stikstof</u> $\mu\text{g}/\text{m}^3$	460	641		1853				
<u>Fosfor</u> $\mu\text{g}/\text{m}^3$	42	55		168				

Laboratorium voor Ekologie en Systematiek - V.U.B.

Onderzoek

CIPS

Cruise

Mars 1974

	№01 26.3.74 15h	№03 26.3.74 2h	№55 25.3.74 13.30	№57 25.3.74 2h
	min.-max.	min.-max.	min.-max.	min.-max.
— Vers gewicht $\mu\text{g}/\text{m}^3$				
<u>Cnidaria</u>				
<u>Acnidaria</u>				
Ctenophora				
<u>Nemathelminthes</u>				
Rotatoria spec.				
Nematoda spec.	13			
<u>Mollusca</u>				
Gasteropoda (1)				
Lamellibranchia (1)	600	100	500	
<u>Annelida</u>				
Polychaeta spec.	173		519	
Lanice spec.	410			
<u>Crustacea</u>				
Copepoda nauplii	1264	1975	3476	
Copepoda copepodiet	528	2112	1584	
Copepoda adult.	266	338	0	
Cirripedia (1)	160			
Ostracoda				
Decapoda (1)				
Mysidacea				
Cumacea				
Isopoda				
Amphipoda				
Cladocera				
<u>Bryozoa (1)</u>				
<u>Chaetognatha Sagitta spec.</u>				
<u>Echinodermata Larvae spec.</u>				
<u>Tunicata Oikopleura</u>		3460	1730	
<u>Pisces (e - 1)</u>				
TOTAAL	3414	11349	7809	
GEMIDDELDE				
— Drooggewicht $\mu\text{g}/\text{m}^3$	623	2270	1562	
— Koolstof $\mu\text{g}/\text{m}^3$	273	908	625	
— Stikstof $\mu\text{g}/\text{m}^3$	75	250	172	
— Fosfor $\mu\text{g}/\text{m}^3$	7	23	16	

Onderzoek CIPS

Cruise April - mai 1974

	1101 13h	290474 2m	1152 16h40	290474 2m	1105 16h	290474 -2m	1155 830	30.4.74 -2m
	min.-max.	min.-max.	min.-max.	min.-max.	min.-max.	min.-max.	min.-max.	min.-max.
<u>Vers gewicht</u> Ng/m^3								
<u>Cnidaria</u>								
<u>Acnidaria</u>								
Ctenophora								
<u>Nemathelminthes</u>								
Rotatoria spec.								
Nematoda spec.	13				13			13
<u>Mollusca</u>								
Gastropoda (1)								
Lamellibranchia (1)	8250	120 1300			18300			1800
<u>Annelida</u>								
Polychaeta spec.	14705	6228			22663			13840
Lanice spec.	5330				2460			
<u>Crustacea</u>								
Copepoda nauplii	44951	84603			157289			152312
Copepoda copepodiet	73920	63888			101112			141960
Copepoda adult.	31472	34280			53602			144498
Cirripedia (1)	1280	320			480			160
Ostracoda								
Decapoda (1)	49860							24930
Mysidacea								24930
Cumacea								
Isopoda								
Amphipoda								
Cladocera								940
<u>Eryozoa (1)</u>								
<u>Chaetognatha Sagitta spec.</u>								
<u>Echinodermata Larvae spec.</u>								
<u>Tunicata Dikopleura</u>	1730	10320			72660			22490
<u>Pisces (e - 1)</u>		24126			24126			
TOTAAL	231511	250181			452705			527873
GEMIDDELDE								
<u>Drooggewicht</u> Ng/m^3	46302	50036			90541			105575
<u>Koolstof</u> Ng/m^3	18521	20014			36216			42230
<u>Stikstof</u> Ng/m^3	5093	5504			9960			11613
<u>Fosfor</u> Ng/m^3	463	500			905			1056

Onderzoek CIPS

Cruise *Arnie* Mai 1974

	M09 300474 14.30 - 2m	M09 31574 18.50 - 2m	M55 2-5.74 12.30 - 2m	M11 23-4.74 6h - 2m
	min.-max.	min.-max.	min.-max.	min.-max.
<u>Vers gewicht</u> $\mu\text{g}/\text{m}^3$				
<u>Cnidaria</u>				
<u>Acnidaria</u>				
Ctenophora				
<u>Nemathelminthes</u>				
Rotatoria spec.				
Nematoda spec.	13	39		
<u>Mollusca</u>				
Gasteropoda (1)				
Lamellibranchia (1)	50	200	8900	350
<u>Annelida</u>				
Polychaeta spec.				
Lanice spec.	410	692	18744	79926 820
<u>Crustacea</u>				
Copepoda nauplii	114 866	58697	255170	265519
Copepoda copepodiet	66264	36696	172656	285558
Copepoda adult.	48898	9984	361528	175238
Cirripedia (1)		160	160	1280
Ostracoda				
Decapoda (1)	49860	224370	49860	24930
Mysidacea				
Cumacea				
Isopoda				
Amphipoda				
Cladocera	30080	20680		
<u>Bryozoa (1)</u>				
<u>Chaetognatha</u> Sagitta spec.				
<u>Echinodermata</u> Larvae spec.				
<u>Tunicata</u> Oikopleura	124560	65740	15570	159160
<u>Pisces</u> (e - 1)	72378			24126
TOTAAL	507379	417258	882588	1016907
GEMIDDELDE				
<u>Drooggewicht</u> $\mu\text{g}/\text{m}^3$	101476	89452	176518	203381
<u>Koolstof</u> $\mu\text{g}/\text{m}^3$	40590	33321	70607	81852
<u>Stikstof</u> $\mu\text{g}/\text{m}^3$	11162	9180	19412	22372
<u>Fosfor</u> $\mu\text{g}/\text{m}^3$	1015	835	1765	2034

Onderzoek CIPS

Cruise Asai mei 1974

	M01 270574 13h -2m	M04 190474 5h30 -2m	M71 80574 830 2m	M16 18474 1710 -2m
	min.-max.	min.-max.	min.-max.	min.-max.
<u>Vers gewicht</u> $\mu\text{g}/\text{m}^3$				
<u>Cnidaria</u>				
<u>Acnidaria</u>				
Ctenophora				
<u>Nemathelminthes</u>				
Rotatoria spec.				
Nematoda spec.	13			
<u>Mollusca</u>				
Gasterepoda (1)				
Lamellibranchia (1)	1400	1800	1800	1000
<u>Annelida</u>				
Polychaeta spec.	3806	1320	6228	3432
Lanice spec.				
<u>Crustacea</u>				
Copepoda nauplii	72996	104675	99540	130903
Copepoda copepodiet	141240	49368	91344	111144
Copepoda adult.	19858	14278	20034	7586
Cirripedia (1)	1280	1440		
Ostracoda				
Decapoda (1)	49860		24930	
Mysidacea				
Cumacea				
Isopoda		181		
Amphipoda		940	8460	1880
Cladocera				
<u>Bryozoa (1)</u>				
<u>Chaetognatha Sagitta spec.</u>			1930	
<u>Echinodermata Larvae spec.</u>				
<u>Tunicata Dikopleura</u>	6920	103800	207600	19110
<u>Pisces (e - 1)</u>				48252
TOTAAL	297373	277202	461926	316307
GEMIDDELDE				
<u>Drooggewicht</u> $\mu\text{g}/\text{m}^3$	59475	55500	99325	63261
<u>Koolstof</u> $\mu\text{g}/\text{m}^3$	23790	22224	36954	25304
<u>Stikstof</u> $\mu\text{g}/\text{m}^3$	6542	6112	10162	6959
<u>Fosfor</u> $\mu\text{g}/\text{m}^3$	595	556	923	633

Laboratorium voor Ekologie en Systematiek - V.U.F.

Onderzoek *CIPS*
 Cruise *April-mai 1974*

	1701 1330	150474 -2m 1230	170474 -1m 1335	1555 170474 2m	
	min.-max.	min.-max.	min.-max.	min.-max.	
<u>Vers gewicht</u> <i>kg/m³</i>					
<u>Cnidaria</u>					
<u>Acnidaria</u>					
Ctenophora					
<u>Nemathelminthes</u>					
Rotatoria spec.					
Nematoda spec.		13			
<u>Mollusca</u>					
Gasteropoda (1)					
Lamellibranchia (?)	13000	1550	250		
<u>Annelida</u>					
Polychaeta spec.	16083	692	1038		
Lanice spec.	3280	3280			
<u>Crustacea</u>					
Copepoda nauplii	58460	134774	64859		
Copepoda copepodiet	46728	57552	25344		
Copepoda adult.	3894	38144	5014		
Cirripedia (1)	1600	480			
Ostracoda					
Decapoda (1)					
Mysidacea					
Cumacea					
Isopoda		121			
Amphipoda					
Cladocera		6580			
<u>Bryozoa (1)</u>					
<u>Chaetognatha</u> <i>Savitta spec.</i>					
<u>Echinodermata</u> <i>Larvas spec.</i>					
<u>Tunicata</u> <i>Dikopleura</i>		217980			
<u>Pisces (e - 1)</u>					
TOTAAL	143051	461226	96505		
GEMIDDELDE					
<u>Drooggewicht</u> <i>kg/m³</i>	28610	92245	19301		
<u>Koolstof</u> <i>kg/m³</i>	11444	36898	7720		
<u>Stikstof</u> <i>kg/m³</i>	3147	10147	2123		
<u>Fosfor</u> <i>kg/m³</i>	286	922	193		

Onderzoek CIPS

Cruise Mai 1976

	17.5.76 10.20	29.5.76 -2 m 6	12.6 2m 15.30	15.76 2m 9h	18.5.76 2m
	min.-max.	min.-max.	min.-max.	min.-max.	
<u>Vers gewicht</u> kg/m ³					
<u>Cnidaria</u>					
<u>Acnidaria</u>					
Ctenophora					
<u>Nemathelminthes</u>					
Rotatoria spec.					
Nematoda spec.	26	26			
<u>Mollusca</u>					
Gastropoda (1)					
Lamellibranchia (1)	8150	450		50	
<u>Annelida</u>					
Polychaeta spec.	14878	4152	692	173	
Lanice spec.	6560				
<u>Crustacea</u>					
Copepoda nauplii	71021	34912	44003	10270	
Copepoda copepodiet	93456	24024	18480	29568	
Copepoda adult.	38020	23416	19536	57703	
Cirripedia (1)	800				
Ostracoda					
Decapoda (1)	24930				
Mysidacea					
Cumacea	24930			24930	
Isopoda					
Amphipoda					
Cladocera					
<u>Ervozoa (1)</u>					
<u>Chaetognatha Savitta spec.</u>		1930			
<u>Echinodermata Larvae spec.</u>					
<u>Tunicata Dikopleura</u>	178190	15570	31140	19030	
<u>Pisces (e - 1)</u>			24126		
TOTAAL	460961	109486	137972	141724	
GEMIDDELDNE					
- Drooggewicht kg/m ³	92192	21897	22595	28345	
- Koolstof kg/m ³	36872	2759	11035	11338	
- Stikstof kg/m ³	10141	2409	3035	5118	
- Fosfor kg/m ³	922	217	276	233	

Onderzoek CIPS
 Cruise Amoi 1974

	M16 15-74 16h. -2m	M16 9-5-74 6.20 -2m	M22 2-5-74 8.20 -2m	M16 30-5-74 10.30 -2m
	min.-max.	min.-max.	min.-max.	min.-max.
<u>Vers gewicht</u> $\mu\text{g}/\text{m}^3$				
<u>Cnidaria</u>				
<u>Acnidaria</u>				
Ctenophora				
<u>Nemathelminthes</u>				
Rotatoria spec.				
Nematoda spec.		52		
<u>Mollusca</u>				
Gasteropoda (1)				
Lamellibranchia (1)	150	550	8250	100
<u>Annelida</u>				
Polychaeta spec.	2375	3633	865	
Lanice spec.			3280	2050
<u>Crustacea</u>				
Copepoda nauplii	291510	418305	97960	27334
Copepoda copepodiet	206712	219120	282216	73392
Copepoda adult.	68770	79290	67288	175250
Cirripedia (1)	160	160		
Ostracoda				
Decapoda (1)		49860		
Mysidacea				
Cumacea				
Isopoda				
Amphipoda				
Cladocera	18800	49820	37600	27200
<u>Bryozoa (1)</u>				
<u>Chaetognatha</u> Saritta spec.				
<u>Echinodermata</u> Larvae spec.				
<u>Tunicata</u> Dikopleura	249120	548410	70930	688540
<u>Pisces</u> (e - 1)				120630
TOTAAL	837598	1369200	568389	1115156
GEMIDDELDE				
<u>Drooggewicht</u> $\mu\text{g}/\text{m}^3$	167520	273840	113678	223031
<u>Koolstof</u> $\mu\text{g}/\text{m}^3$	67008	109536	45471	89212
<u>Stikstof</u> $\mu\text{g}/\text{m}^3$	18427	30122	12505	24533
<u>Fosfor</u> $\mu\text{g}/\text{m}^3$	1675	2738	1137	2230

Onderzoek CIPS
 Cruise mei 1974

№ 25-5 71

1347

	min.-max.	min.-max.	min.-max.	min.-max.
— Vers gewicht $\mu\text{g}/\text{m}^3$				
<u>Cnidaria</u>				
<u>Acnidaria</u>				
Ctenophora				
<u>Nemathelminthes</u>				
Rotatoria spec.				
Nematoda spec.				
<u>Mollusca</u>				
Gasteropoda (1)				
Lamellibranchia (1)	150			
<u>Annelida</u>				
Polychaeta spec.	173			
Lanice spec.				
<u>Crustacea</u>				
Copepoda nauplii	4977			
Copepoda copepodiet	4422			
Copepoda adult.	21934			
Cirripedia (1)				
Ostracoda				
Decapoda (1)				
Mysidacea				
Cumacea				
Isopoda				
Amphipoda				
Cladocera				
<u>Bryozoa (1)</u>				
<u>Chaetognatha</u> Saritta spec.				
<u>Echinodermata</u> Larvae spec.				
<u>Tunicata</u> Oikopleura	5190			
<u>Pisces</u> (e - 1)				
TOTAAL	36912			
GEMIDDELDE				
— Drooggewicht $\mu\text{g}/\text{m}^3$	7322			
— Koolstof $\mu\text{g}/\text{m}^3$	2953			
— Stikstof $\mu\text{g}/\text{m}^3$	312			
— Fosfor $\mu\text{g}/\text{m}^3$	24			