

1 Table S1. Two-sample t-test for temperature (T), salinity (S), dissolved inorganic nitrogen (DIN), nitrates (NO₃), nitrites (NO₂), ammonia (NH₄), phosphates
2 (PO₄), silicates (SiO₄), chlorophyll a (Chl a), abundances of picoeukaryots (pEu), *Synechococcus* (SYN), *Prochlorococcus* (Pro) and heterotrophic bacteria
3 (HB), bulk (B) and cell-specific (C) prokaryotic activities for; leucine (Leu) and thymidine (TdR) incorporation and their ratios (L/T), substrate utilization
4 (AWCD) and substrate groups percentage utilization (AA-amino acids, AMI-amides, C- carbohydrates, CA- carboxylic acids, P-polymers, PC- phosphorylated
5 compounds) between waters (LIW, N=39; for Leu and L/T, N=30; SAW, N=45, for Leu and L/T, N=38) and stations (P1200, N=42, for Leu and L/T N=34;
6 P300, N=42, for Leu and L/T N=34) in productive layer (PL), and between layers (PL, N=84; DL, N=17). Differences between months in PL and DL for all
7 parameters were tested by one-way ANOVA. All data were log or log(x+1) transformed and significant differences (p<0.05) given in bold.

LAYER	PRODUCTIVE						ENTIRE			PL		DL	
PARAMETER	<i>t</i>	<i>p</i>	LIW vs SAW	<i>t</i>	<i>p</i>	1200 vs 300	<i>t</i>	<i>p</i>	PL vs DL	<i>F ratio</i>	<i>p</i>	<i>F ratio</i>	<i>p</i>
Environmental													
T (°C)	2,225	0,029	LIW>SAW	-0,505	0,615		7,546	0,000	PL > DL	15,386	0,000	1,195	0,356
S	7,540	0,000	LIW>SAW	-3,102	0,003	1200 < 300	1,599	0,122		4,324	0,003	1,380	0,291
DIN (µM)	-2,018	0,047	LIW<SAW	1,198	0,235		-8,793	0,000	PL > DL	5,026	0,001	3,393	0,028
NO ₃ (µM)	-2,005	0,048	LIW<SAW	1,052	0,297		-9,900	0,000	PL < DL	10,329	0,000	2,047	0,121
NO ₂ (µM)	-0,607	0,546		-1,480	0,143		1,942	0,058		5,530	0,001	1,343	0,284
NH ₄ (µM)	1,052	0,296		-0,732	0,466		0,646	0,521		13,534	0,000	79,457	0,000
PO ₄ (µM)	1,287	0,202		-3,192	0,002	1200 < 300	-8,151	0,000	PL < DL	0,962	0,453	0,655	0,633
SiO ₄ (µM)	-2,010	0,048	LIW<SAW	-1,136	0,156		-8,576	0,000	PL < DL	12,218	0,000	0,848	0,508
Chl <i>a</i> (µg l ⁻¹)	-2,025	0,044	LIW<SAW	0,234	0,816		-	-		23,513	0,000	-	-
Picoplankton abundances (cell l⁻¹)													
pEu	-1,134	0,186		-2,664	0,011	1200 < 300	-	-		6,545	0,000	-	-
SYN	2,431	0,019	LIW>SAW	-1,782	0,079		-	-		2,741	0,036	-	-
Pro	n.a.			0,666	0,519		-	-		2,139	0,160	-	-
HB	0,922	0,359		-0,113	0,911		5,435	0,000	PL > DL	11,755	0,000	2,324	0,111
Prokaryotic production Bulk (pmol l⁻¹ h⁻¹), Cell specific (zmol cell⁻¹ h⁻¹)													
LeuB	3,999	0,000	LIW>SAW	-1,298	0,199		3,378	0,002	PL > DL	34,083	0,000	0,007	0,999
TdRB	1,069	0,289		0,184	0,855		1,273	0,211		58,294	0,000	12,708	0,000
LeuC	4,598	0,000	LIW>SAW	-1,474	0,145		1,604	0,119		20,205	0,000	0,112	0,702
TdRC	1,431	0,157		0,126	0,900		0,067	0,941		37,518	0,000	11,828	0,000
L/T	1,357	0,179		-2,212	0,030	1200 < 300	0,620	0,537		0,619	0,597	3,833	0,042
Substrate utilisation - for substrate groups percentage utilisation													
AWCD	-0,203	0,839		0,289	0,773		0,982	0,335		5,425	0,001	3,138	0,052
AA	-0,030	0,488		-1,219	0,113		-0,655	0,420		0,034	0,964	3,693	0,019
AMI	0,488	0,687		-1,845	0,034	1200 < 300	-0,327	0,569		1,827	0,131	1,355	0,282
C	-0,492	0,312		1,392	0,916		-0,789	0,376		2,914	0,026	2,052	0,122
CA	-0,049	0,481		1,373	0,913		-1,320	0,253		2,991	0,023	0,592	0,672
P	-0,417	0,339		-0,691	0,246		-0,501	0,480		2,279	0,067	1,713	0,183
PC	0,271	0,604		-0,043	0,483		-9,377	0,003	PL < DL	0,528	0,437	1,388	0,271

Table S2. ANOVA for temperature (T), salinity (S), dissolved inorganic nitrogen (DIN), nitrates (NO₃), nitrites (NO₂), ammonia (NH₄), phosphates (PO₄), silicates (SiO₄), chlorophyll a (Chl a), abundances of picoeukaryots (pEu), *Synechococcus* (SYN), *Prochlorococcus* (Pro) and heterotrophic bacteria (HB), bulk (B) and cell-specific (C) prokaryotic activities for; leucine (Leu) and thymidine (TdR) incorporation and their ratios (L/T), substrate utilization (AWCD) and substrate groups percentage utilization (AA-amino acids, AMI-amides, C- carbohydrates, CA- carboxylic acids, P-polymers, PC- phosphorylated compounds) between stations in each cruise. All data were log or log(x+1) transformed and significant differences (p<0.05) given in bold.

LAYER	PRODUCTIVE LAYER (Chl a >0)														
MONTH	October 2011			February			March			May			September		
PARAMETER	F ratio	p	1200 vs 300	F ratio	p	1200 vs 300	F ratio	p	1200 vs 300	F ratio	p	1200 vs 300	F ratio	p	1200 vs 300
Environmental															
T (°C)	0,108	0,747		0,177	0,679		3,851	0,069		0,012	0,915		0,040	0,844	
S	12,228	0,004	1200 < 300	0,754	0,397		195,1	0,000	1200 < 300	0,082	0,778		3,778	0,072	
DIN (µM)	2,408	0,143		6,474	0,021	1200 > 300	2,438	0,139		0,011	0,917		3,689	0,075	
NO ₃ (µM)	0,577	0,460		8,157	0,011	1200 > 300	1,128	0,305		0,332	0,574		3,245	0,093	
NO ₂ (µM)	0,881	0,364		15,220	0,001	1200 < 300	1,269	0,278		0,884	0,363		0,926	0,352	
NH ₄ (µM)	19,710	0,001	1200 > 300	0,396	0,538		0,125	0,729		1,969	0,182		5,152	0,040	1200 < 300
PO ₄ (µM)	3,760	0,076		10,455	0,005	1200 < 300	2,367	0,145		1,556	0,233		4,120	0,062	
SiO ₄ (µM)	7,245	0,018	1200 < 300	2,922	0,106		0,095	0,762		5,750	0,031	1200 < 300	1,870	0,193	
Chl a (µg l ⁻¹)	0,040	0,884		43,300	0,000	1200 < 300	2,490	0,134		0,070	0,796		0,195	0,666	
Picoplankton abundances (cell l⁻¹)															
pEu	3,381	0,087		9,017	0,008	1200 < 300	0,350	0,563		6,040	0,028	1200 < 300	0,010	0,923	
SYN	0,001	0,979		36,033	0,000	1200 < 300	9,239	0,010	1200 < 300	0,074	0,793		0,001	0,982	
Pro	0,001	0,971		-	-		-	-		0,641	0,482		0,010	0,928	
HB	0,266	0,614		10,143	0,005	1200 < 300	0,803	0,384		0,175	0,682		2,605	0,129	
Prokaryotic production: Bulk (pmol l⁻¹ h⁻¹), Cell specific (zmol cell⁻¹ h⁻¹)															
LeuB	1,341	0,266		0,000	0,990		4,044	0,063		-	-		1,368	0,262	
TdRB	0,384	0,545		0,397	0,537		3,070	0,100		1,676	0,216		0,164	0,692	
LeuC	1,202	0,291		1,142	0,300		7,740	0,014	1200 < 300	-	-		0,001	0,976	
TdRC	0,049	0,828		1,131	0,302		1,746	0,206		0,529	0,479		0,806	0,385	
L/T	2,228	0,158		0,354	0,560		6,889	0,019	1200 < 300	-	-		0,780	0,392	
Substrate utilisation - for substrate groups percentage utilisation															
AWCD	0,004	0,948		0,006	0,940		0,062	0,807		0,192	0,668		0,027	0,871	
AA	0,870	0,365		0,185	0,672		1,399	0,253		2,361	0,144		3,287	0,097	1200 < 300
AMI	0,266	0,613		0,154	0,699		2,801	0,113		5,720	0,029	1200 < 300	0,004	0,953	
C	3,160	0,094	1200 < 300	0,001	0,979		2,374	0,142		7,997	0,012	1200 > 300	0,307	0,591	
CA	0,167	0,688		2,404	0,138		0,132	0,721		0,067	0,799		0,363	0,559	
P	0,023	0,882		0,526	0,477		1,389	0,255		0,033	0,859		0,813	0,386	
PC	2,212	0,156		0,409	0,530		0,799	0,384		0,074	0,788		0,045	0,836	