Supplementary Material

Table S1 Pearson matrix of correlation between OC-normalized concentrations of selected of biomarkers. Sigma expresses the probability of non correlation (p=1 - sigma).

		C37 alkenones	Δ5,22	Δ5	24MeΔ5,22	24 Me Δ5,24(28)	24 Et Δ5	4α,23,24 triMe Δ22	C30 alkyl diol	Sum C22-C26-OH	Alcene C37:3	Sum odd HNA C≥25
C37 alkenones	Pearson Correlation coeff.	1	.376	.712**	-.008	.221	.205	.158	-.161	.346	-.134	.308
	Sigma (bilateral)		.053	.000	.967	.267	.305	.430	.422	.077	.531	.143
	N	27	27	27	27	27	27	27	27	27	24	24
Δ5,22	Pearson Correlation coeff.	.376	1	.432*	.682**	.409*	.692**	.597**	.356*	.390*	.419*	.589**
	Sigma (bilateral)	.053		.015	.000	.022	.000	.000	.050	.030	.027	.001
	N	27	31	31	31	31	31	31	31	31	28	28
Δ5	Pearson Correlation coeff.	.712**	.432*	1	.292	.146	.442*	.307	.082	.380*	-.146	.399*
	Sigma (bilateral)	.000	.015		.111	.435	.013	.093	.662	.035	.459	.035
	N	27	31	31	31	31	31	31	31	31	28	28
24MeΔ5,22	Pearson Correlation coeff.	-.008	.682**	.292	1	.523**	.945**	.885**	.631**	.573**	.683**	.737**
	Sigma (bilateral)	.967	.000	.111		.003	.000	.000	.000	.001	.000	.000
	N	27	31	31	31	31	31	31	31	31	28	28
24 Me Δ5,24(28)	Pearson Correlation coeff.	.221	.409*	.146	.523**	1	.639**	.630**	.512**	.900**	.596**	.424*
	Sigma (bilateral)	.267	.022	.435	.003		.000	.000	.003	.000	.001	.025
	N	27	31	31	31	31	31	31	31	31	28	28
24 Et Δ5	Pearson Correlation coeff.	.205	.692**	.442*	.945**	.639**	1	.930**	.681**	.670**	.662**	.763**
	Sigma (bilateral)	.305	.000	.013	.000	.000		.000	.000	.000	.000	.000
	N	27	31	31	31	31	31	31	31	31	28	28
4α,23,24 triMe Δ22	Pearson Correlation coeff.	.158	.597**	.307	.885**	.630**	.930**	1	.806**	.590**	.798**	.569**
	Sigma (bilateral)	.430	.000	.093	.000	.000	.000		.000	.000	.000	.002
	N	27	31	31	31	31	31	31	31	31	28	28
C30 alkyl diol	Pearson Correlation coeff.	-.161	.356*	.082	.631**	.512**	.681**	.806**	1	.354	.744**	.282
	Sigma (bilateral)	.422	.050	.662	.000	.003	.000	.000		.051	.000	.147
	N	27	31	31	31	31	31	31	31	31	28	28
Sum C22-C26-OH	Pearson Correlation coeff.	.346	.390*	.380*	.573**	.900**	.670**	.590**	.354	1	.440*	.554**
	Sigma (bilateral)	.077	.030	.035	.001	.000	.000	.000	.051		.019	.002
	N	27	31	31	31	31	31	31	31	31	28	28
Alcene C37:3	Pearson Correlation coeff.	-.134	.419*	-.146	.683**	.596**	.662**	.798**	.744**	.440*	1	.261
	Sigma (bilateral)	.531	.027	.459	.000	.001	.000	.000	.000	.019		.179
	N	24	28	28	28	28	28	28	28	28	28	28
Sum odd HNA C≥25	Pearson Correlation coeff.	.308	.589**	.399*	.737**	.424*	.763**	.569**	.282	.554**	.261	1
	Sigma (bilateral)	.143	.001	.035	.000	.025	.000	.002	.147	.002	.179	
	N	24	28	28	28	28	28	28	28	28	28	28

**. The correlation is significant at the 0,01 level (2-paired).

*. The correlation is significant at the 0,05 level (2-pairedl).

Figure S1. Comparison of sterol quantification carried out on separated split fractions, each of 1/10th of the samples. Each group of samples was extracted and analyzed separately. Time series fluxes of sterols determined by GC-FID and time series fluxes of sterols determined by Iatroscan (Data from Marty et al., 2009)

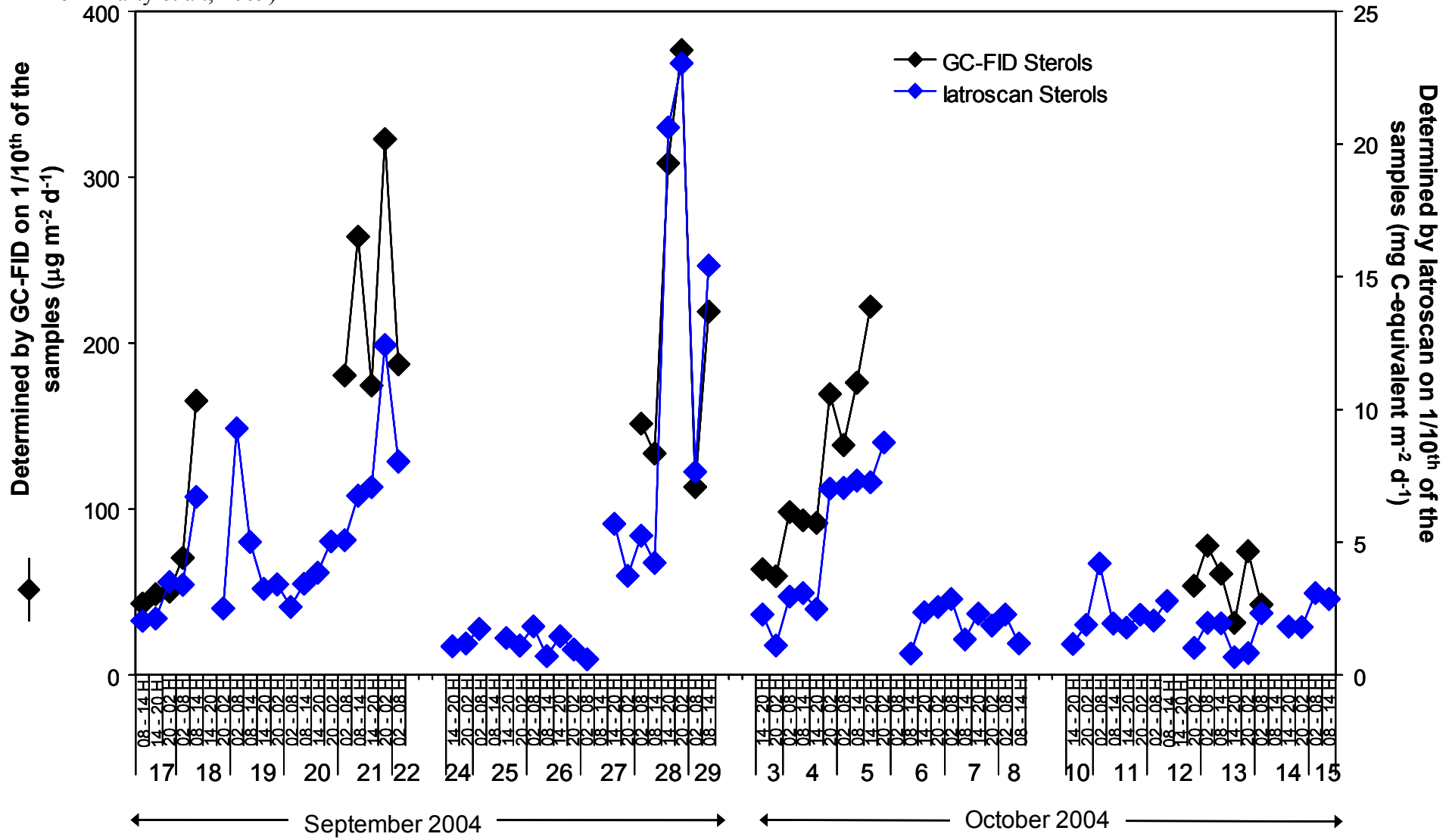


Figure S2. Fluxes of biomarkers for alkenone-producing Haptophytes, mainly of the genera *Emiliana* and *Gephyrocapsa*. C37: sum of C37 alkenones and alkenoates; C38: sum of C38 alkenones and alkenoates. C37:3 alkene and C38:3 alkene are the fluxes of the corresponding long-chain alkenes. Red triangles indicate the ratio of C37 alkenones and alkenoates to the alkene C37:3. The x axis represents the time of collection of drifting sediment traps and is discontinuous. Grey filling indicate night-time collection of particles.

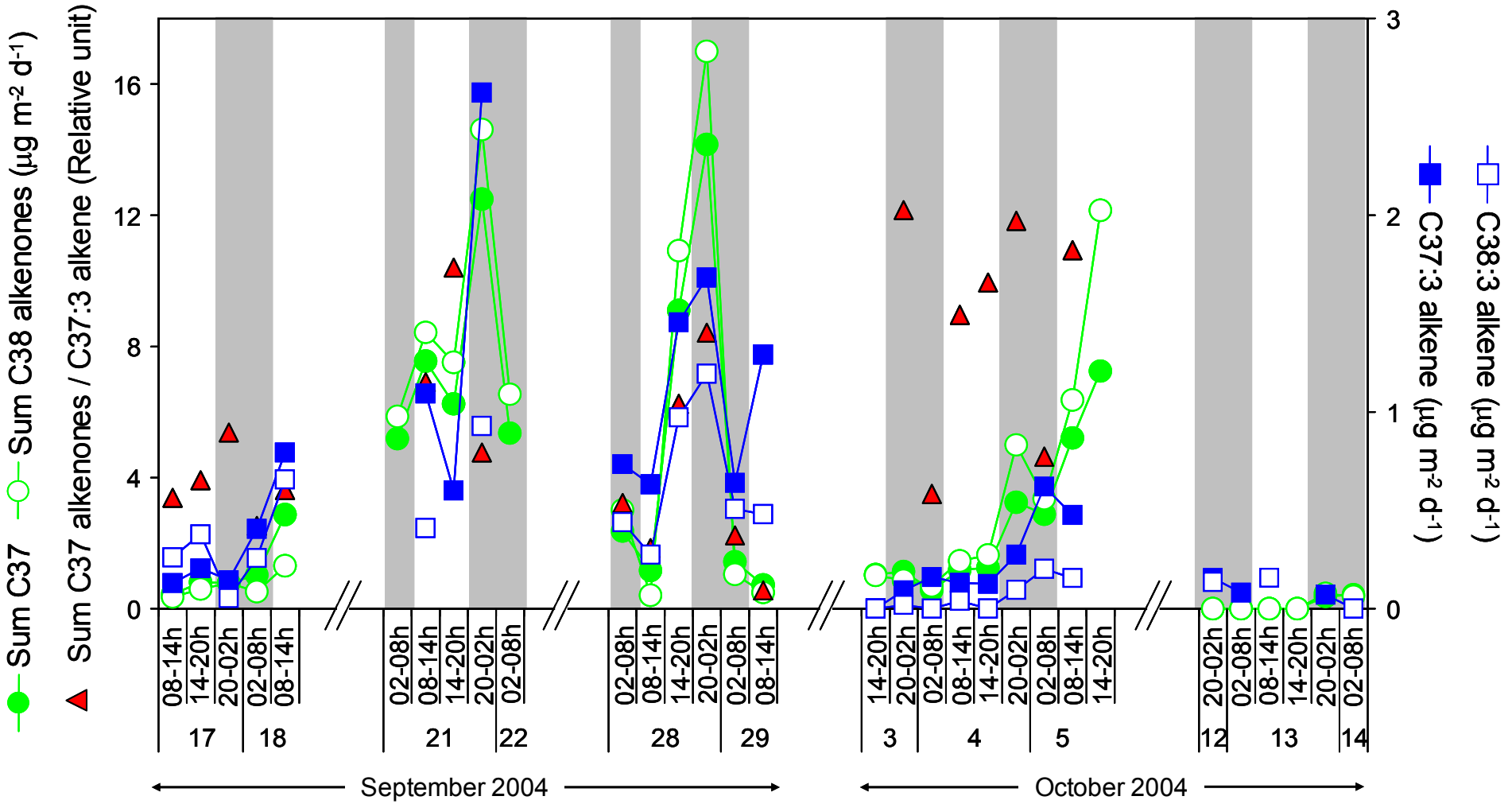
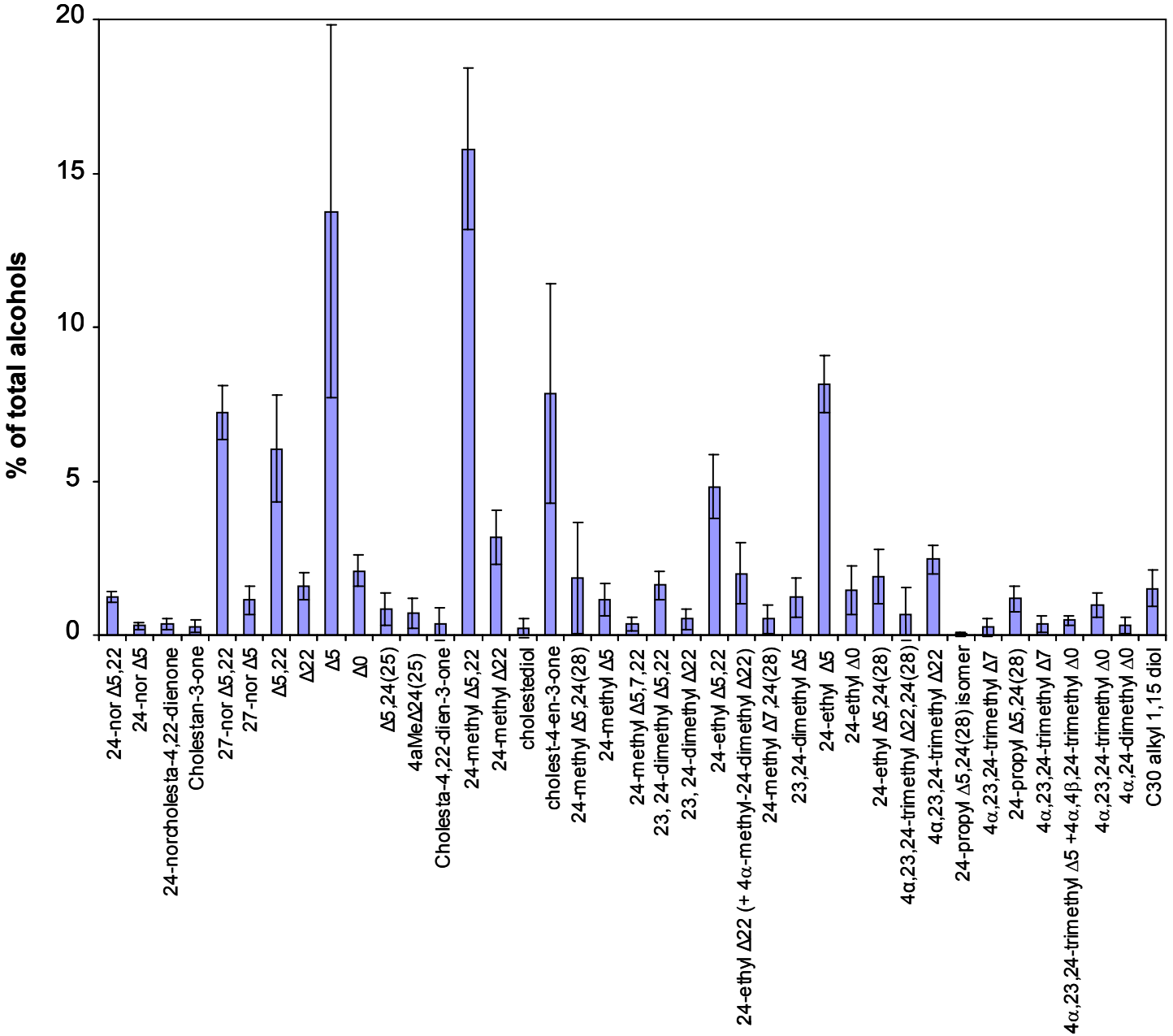


Figure S3. Average composition of sterols. Sterol abundance are given in percent of all identified compounds in the alcohol fractions: sterols, *n*-alkanols, alkane diols, hydroxy alkenones and steroidal ketones.



863 Figure S4. Time series fluxes of phaeopigments and of sterols during DYNAPROC 2. Phaeopigments flux is from Marty et al. (2009).

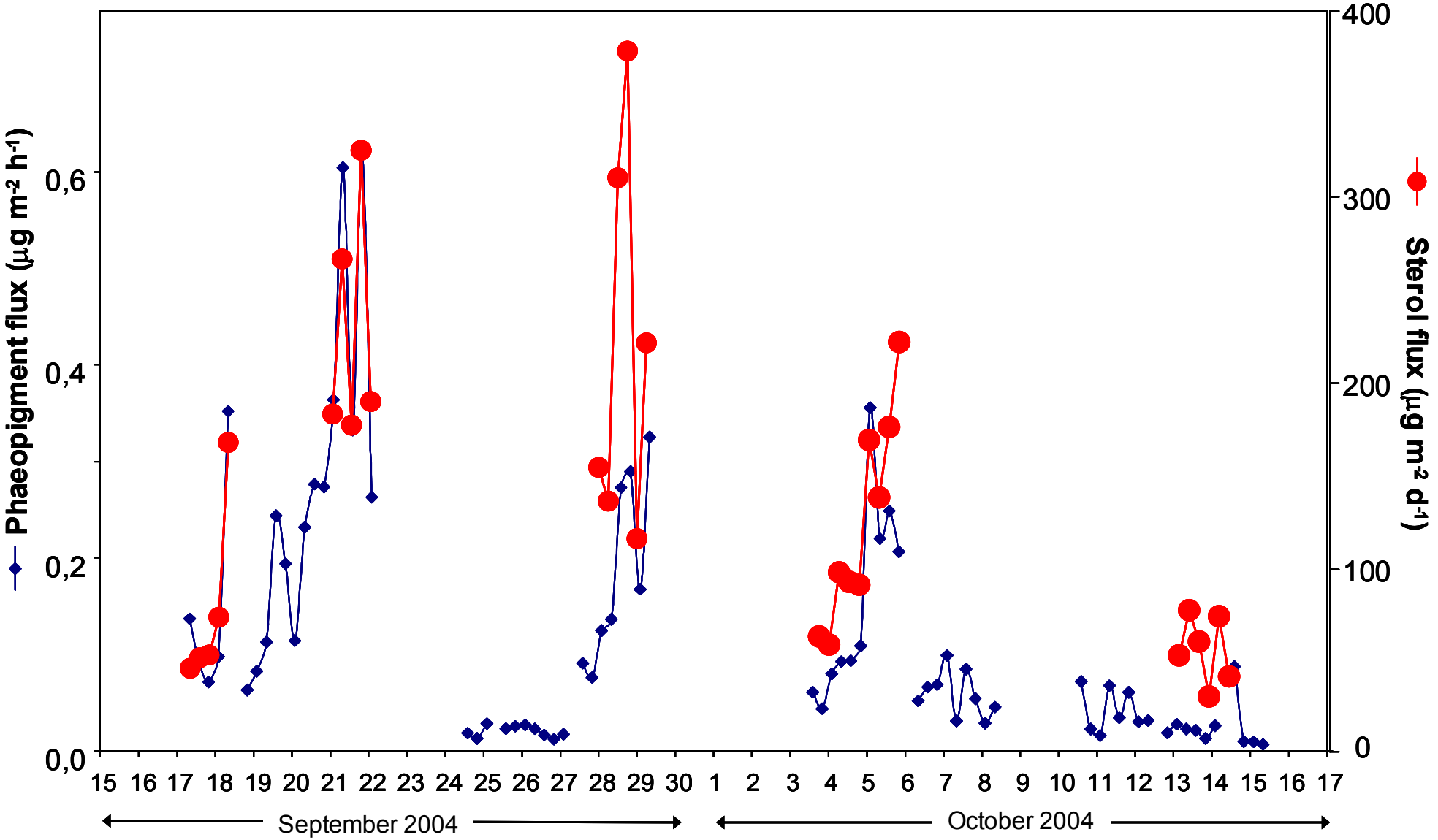
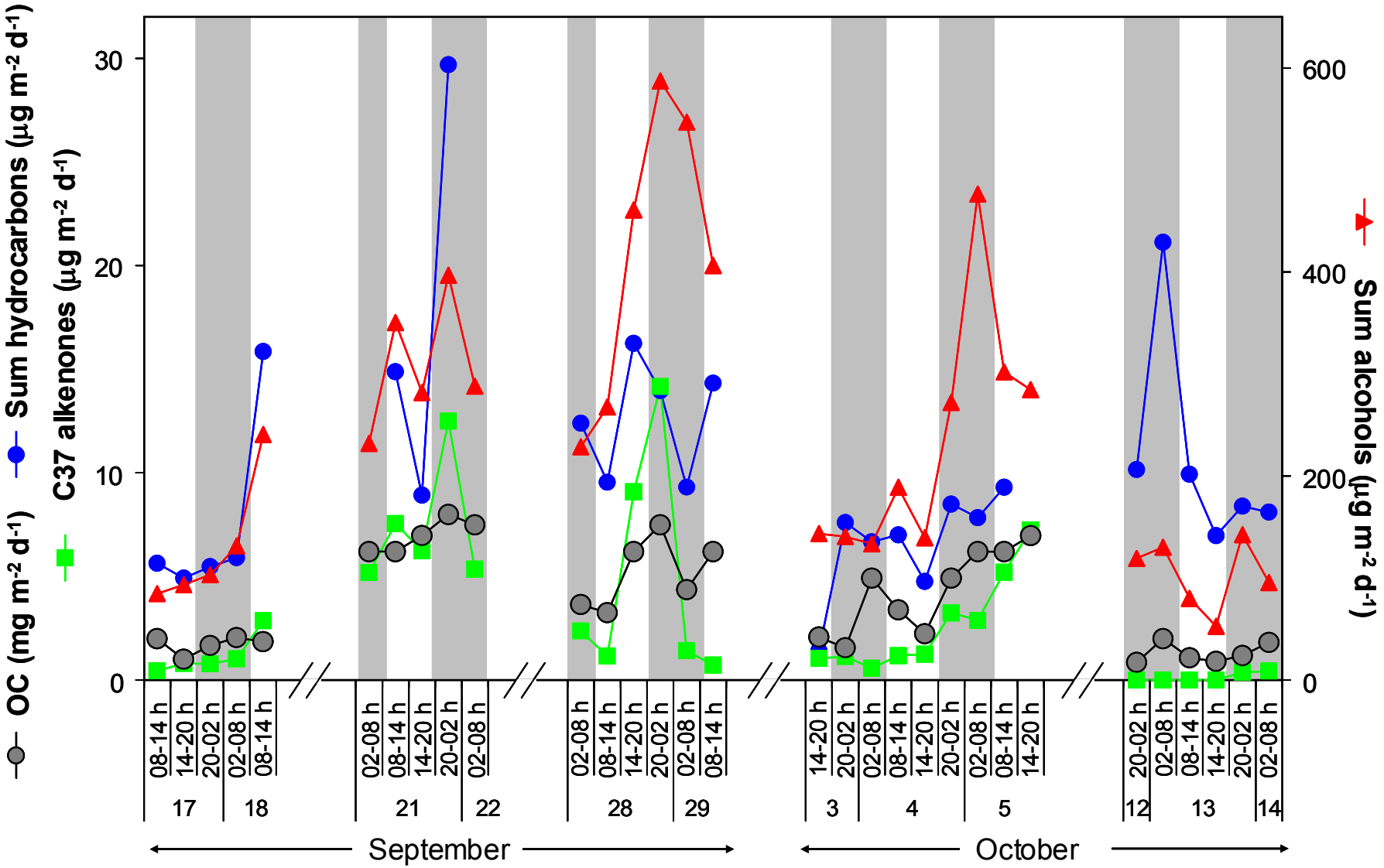


Figure S5. A: Time series fluxes of some lipid classes under study (Sum of hydrocarbons, Sum of C37 alkenones and Sum of alcohols) to the flux of organic carbon, for the subset of samples. Organic carbon data are from Marty et al. (2009). The x axis represents the time of collection of drifting sediment traps and is discontinuous. Grey filling indicate night-time collection of particles.



867 Figure S6 : Abundance of selected biomarkers normalized to organic carbon in sinking particles collected during DYNAPROC 2. The x axis represents
868 the time of collection of drifting sediment traps and is discontinuous. Grey filling indicate night-time collection of particles.
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