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*Supplement of*

## **Ocean acidification impacts bacteria–phytoplankton coupling at low-nutrient conditions**

**Thomas Hornick et al.**

*Correspondence to:* Thomas Hornick (hornick@igb-berlin.de)

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# 1 Supplementary

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3 Table S1: Summary of I) Physical/chemical predictor variables and A) metabolic variables  
4 and C) abundances of functional bacterial and phytoplankton groups used for distance-based  
5 modelling (DistLM) and II) A) Chemical, B) metabolic and C) abundances of functional  
6 bacterial and phytoplankton groups used for permutational multivariate analysis of variance  
7 (PERMANOVA). Fugacity of CO<sub>2</sub> (*f*CO<sub>2</sub>), temperature (Temp), photosynthetically active  
8 radiation (PAR), dissolved organic carbon (DOC), total dissolved nitrogen (TDN), dissolved  
9 silica (DSi), total particulate carbon (TPC), particulate organic phosphorus (POP), particulate  
10 biogenic silica (BSi), bacterial protein production (BPP), areal primary production (PP),  
11 community respiration (CR), chlorophyll *a* (Chl *a*), particle-associated (PA) prokaryotes;  
12 flow-cytometric determined: low SYBR green I fluorescent prokaryotes (LDNA), high  
13 SYBR green I fluorescent prokaryotes (HDNA), *Synechococcus* spp. (SYN),  
14 picophytoplankton I-III (Pico I-III), naophytoplankton I-II (Nano I-II)

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I) A) predictor variables:	<i>f</i> CO <sub>2</sub> , Temp, PAR, DOC, TDN, Phosphate, DSi, TPC, POP, BSi
metabolic variables:	BPP, PP, CR
B) predictor variables:	<i>f</i> CO <sub>2</sub> , Temp, PAR, DOC, TDN, Phosphate, DSi, TPC, POP, BSi
functional groups:	LDNA, HDNA, PA prokaryotes, SYN, Pico I, Pico II, Pico III, Nano I, Nano II, Chl <i>a</i>
II) A) chemical variables:	DOC, TDN, Phosphate, DSi, TPC, TPN, POP, BSi
B) metabolic variables:	BPP, PP, CR
C) functional groups:	LDNA, HDNA, SYN, Pico I, Pico II, Pico III, Nano I, Nano II, Chl <i>a</i>

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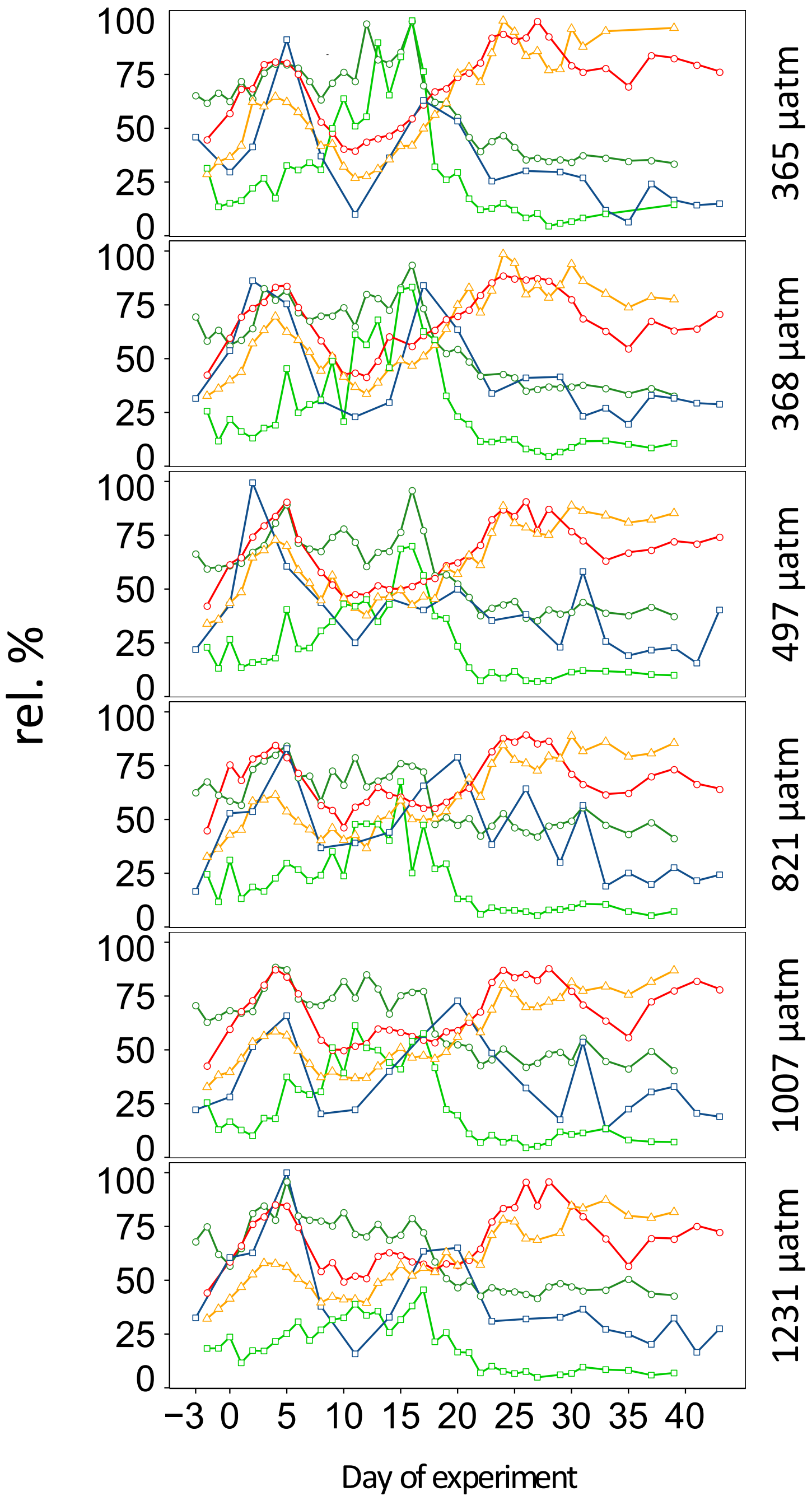
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○ Chl *a*   □ BV<sub>Nano</sub>   △ BV<sub>Pico</sub>   ○ FL BV<sub>HP</sub>   □ PA BV<sub>HP</sub>



1 Figure S1. Concentration of Chl *a*, biovolumes of picophotoautotrophs ( $BV_{\text{Pico}}$ ; sum of  
2 *Synechococcus* spp. and Pico I-III) and nanophotoautotrophs ( $BV_{\text{Nano}}$ ; sum of Nano I and II)  
3 as well as biovolumes of free-living (FL  $BV_{\text{HP}}$ ) and particle-associated (PA  $BV_{\text{HP}}$ )  
4 heterotrophic prokaryotes during the course of the experiment in the respective mesocosms  
5 labelled with the average  $f\text{CO}_2$  [ $\mu\text{atm}$ ] between t1-t43. Biovolumes are standardized to the  
6 highest observed value for each parameter and expressed as relative percentage.

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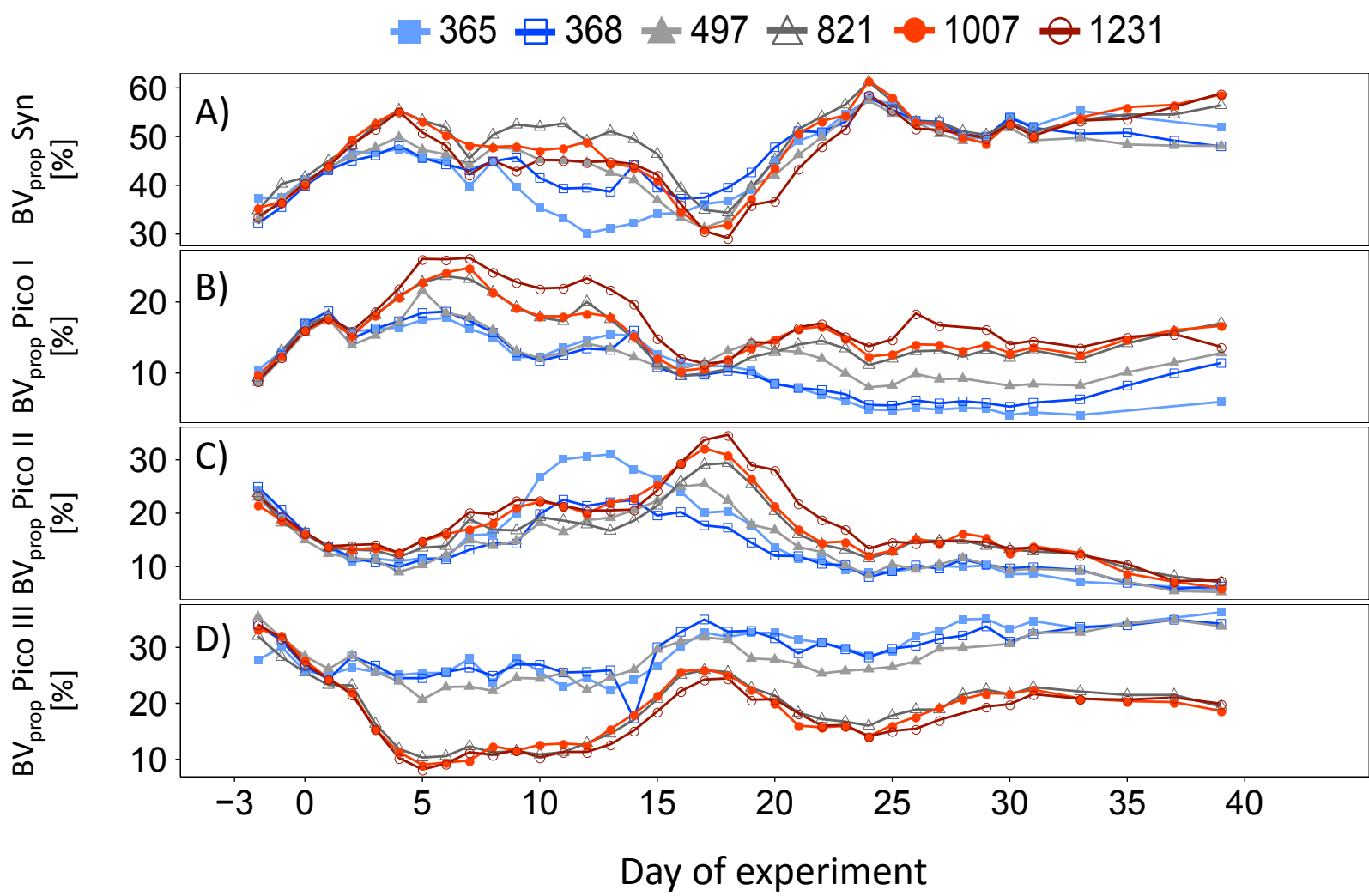
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1 Figure S2. Relative biovolume (BV) contribution of A) BV of *Synechococcus* spp.  
2 [ $\times 10^5 \mu\text{m}^3 \text{ml}^{-1}$ ] and B-D) BV of picoeukaryote groups I-III (Pico I-III) [ $\times 10^5 \mu\text{m}^3 \text{ml}^{-1}$ ] to  
3 total BV of picophotoautotrophs (sum of *Synechococcus* spp. and Pico I-III) revealed by flow-  
4 cytometry during the course of the experiment. Colours and symbols indicate average  $f\text{CO}_2$   
5 [ $\mu\text{atm}$ ] between t1-t43.

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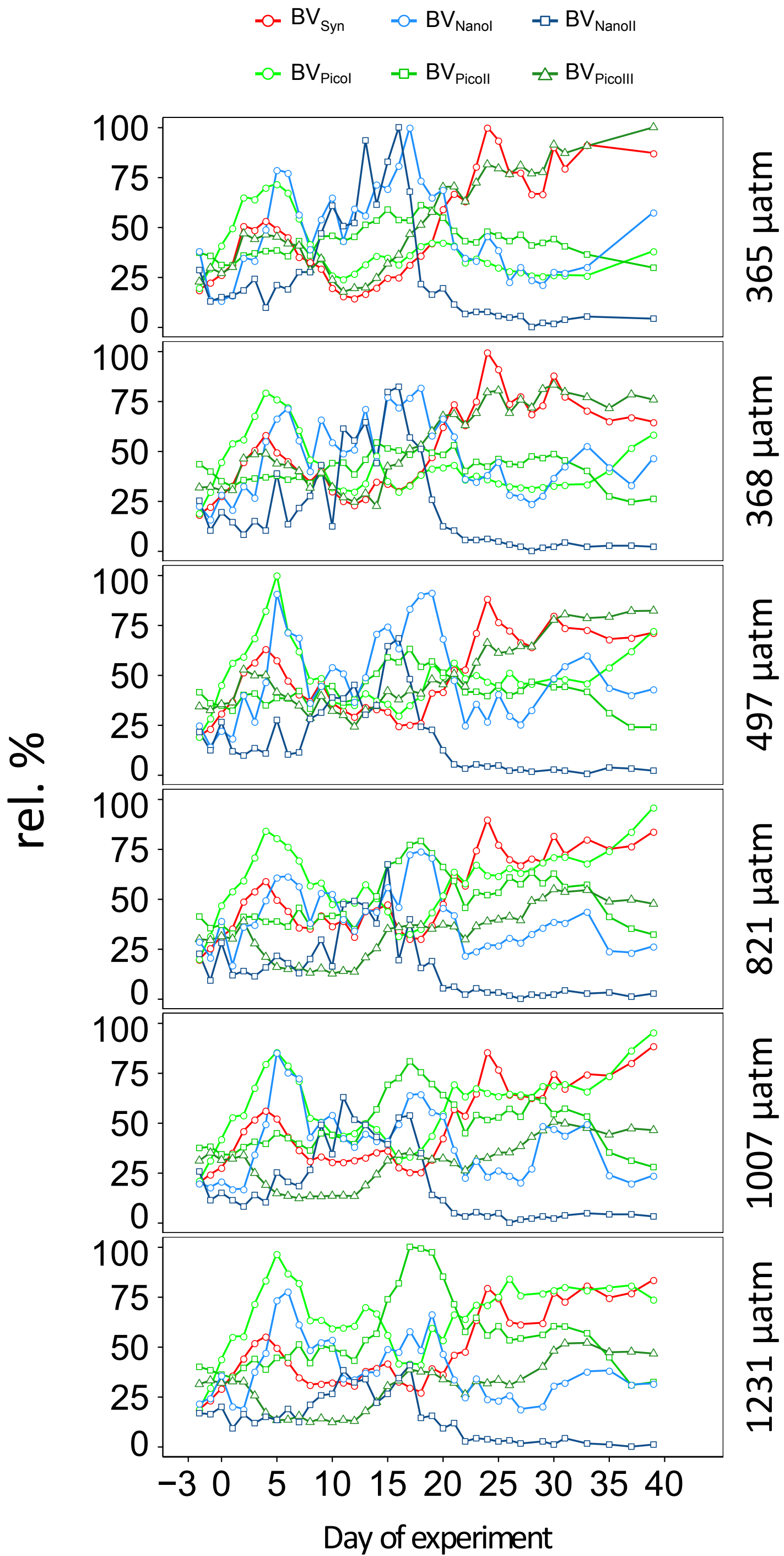
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1 Figure S3. Biovolumes of *Synechococcus* spp., picoeukaryote groups I-III and  
2 nanophytoplankton groups I-II during the course of the experiment in the respective  
3 mesocosms labelled with the average  $f\text{CO}_2$  [ $\mu\text{atm}$ ] between t1-t43. Biovolumes are  
4 standardized to the highest observed value for each organism group and expressed as relative  
5 percentage.