

## 1 Supplementary material

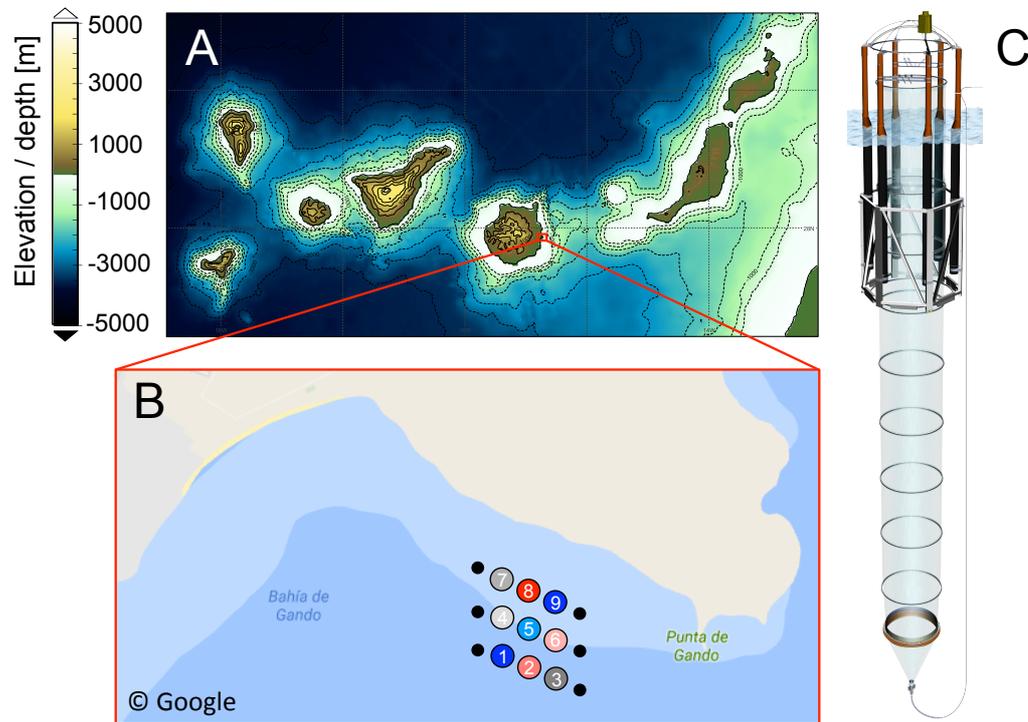


Figure S1. (A) Bathymetric map of the Canary Islands archipelago. Visualization based on data from GEBCO, British Oceanographic Data Centre [30]. (B) Close-up of the study site in Gando Bay (GPS coordinates: 27° 55' 41" N, 15° 21' 55" W), including mesocosm arrangement and mooring (not to scale). Numbers in the circles indicate mesocosm ID and colors represent CO<sub>2</sub> treatment. Source: Google Maps. (C) Schematic illustration of a mesocosm unit. The bag has a diameter of 2 m and reaches 13 m below the water surfaces. The attached sediment trap extends the mesocosm to a depth of 15 m, thereby, enclosing a total water volume of ~35 m<sup>3</sup>.

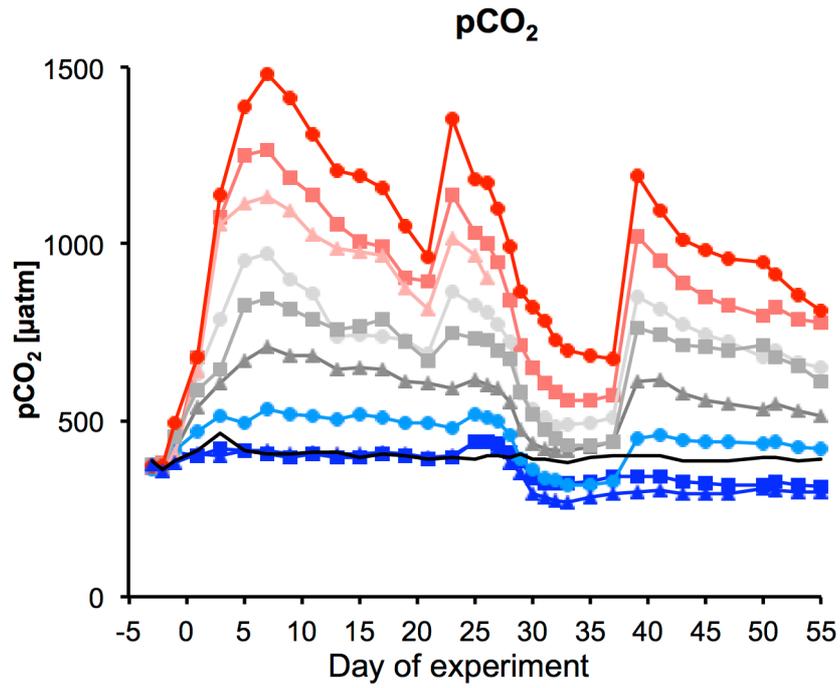


Figure S2. Temporal development of  $p\text{CO}_2$  during the experiment. Style and color-coding are given in Table 1 in the manuscript.

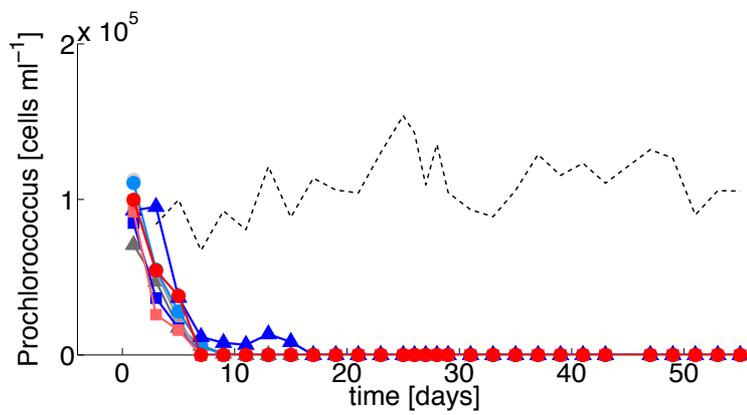


Figure S3. Prochlorococcus abundances as measured by flow cytometry (FACScalibur).

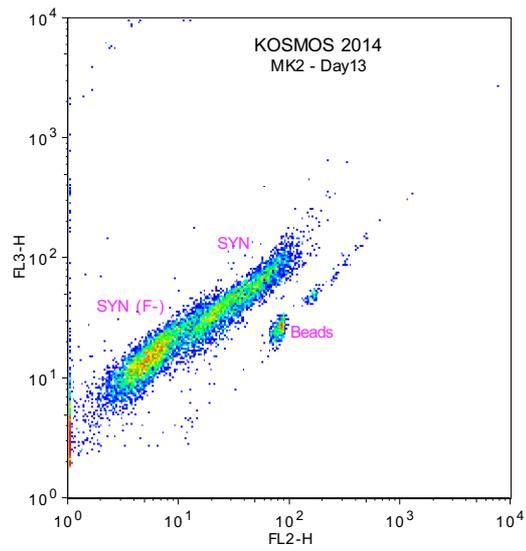


Figure S4. Cytogram illustrating how the two different clusters of Synechococcus were distinguished.