

Response to Anonymous Referee # 1

We would like to thank Referee #1 for his/her comments. We have done our best to address each of the points as detailed below. Reviewer comments are in italics and authors responses are in standard font.

#1. P13534, L11 "and temperature (18 to 30 C)": Why did you choose this temperature range? I would be exciting to see the work could be extended to a broader range of seawater temperature.

The temperature range was chosen to insure that the various phytoplankton species were severely temperature stressed such that a physiological response would be seen. Future studies should certainly be conducted for extend seawater temperatures as well as phytoplankton species. The text now reads:

“For temperature, these experiments represent the natural condition under a limited temperature range (± 4 °C around acclimation temperature) but become a test of physiological capability over a larger temperature range. The temperature values were based on the previous works documented in Eppley (1972), Schofield et al. (1998) and Staehr and Birkeland (2006).”

#2. P13547, L18-19 "Figure 2 reveals very different isoprene production rates for T. weiss., T. pseud., P. carter. and R. salina on the second day (after 12 h of dark cycle)": Why are isoprene production rates on the second day different from the first day?

These second day differences are thought to be attributed to photoadaptive processes in the photosynthetic apparatus of the different phytoplankton species. The body of text starting with “Elevated emission rates on day 2 may also suggest that the photoresponse mechanism applied during the first day was associated with chlorophyll decline and that the second day exposure required a continued adjustment in dark reactions to re-establish long term photoacclimation” provides our hypothesis for the observed response. It is also indicated in the text that longer experiments will need to be conducted to fully describe isoprene and monoterpene production over the full photoacclimation period.

#3. P13547, L28 "Table 2 summarizes monoterpene production rates": Do you mean isoprene?

Yes, the text now reads: “Table 2 summarizes isoprene production rates from all six phytoplankton species...”

#4. P13548, L1 "averaged over a 2 h period ": Do you mean 12 h?

Yes, the text now reads: “...averaged over a 12-hour period on the first day”.

#5. P 13554, L3-17. I think this part can be used to address my question 2. So I would like the authors to do some simple explanations after P13547, L18-19 instead of saying nothing.

To keep with the appropriate format of the journal, the explanation of the second day response is provided in the Discussion section. See also our response to comment #2 above.

#6. P 13567, Figure2: Font size is too small. Too many y-axis ticks for Figure 2 (b). Could you put legend at the same position in each figures?

We have fixed the figures as suggested by the reviewer.

#7. Font size for Figure 3-5 is too small.

We have increased the Figure font size in the modified manuscript.