Interactive comment on “High temperature decreases the PIC / POC ratio and increases phosphorus requirements in Coccolithus pelagicus (Haptophyta)” by A. C. Gerecht et al.

Anonymous Referee #2

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There are several issues regarding experimental design, data quality and interpretation.

I am a bit concerned about the relatively unconstrained carbonate system. There is a considerable and most importantly different drift between initial and final conditions and between treatments. Although pCO2 and pH are relatively stable, there is a big difference in HCO3 concentrations, a known substrate for calcification. This might be a confounding factor as the authors consider temperature and P concentration as the sole drivers of their observations.

Also in this respect, I was surprised that initial TA and pH measurements were in some cases quite different (almost 100 micromol/kg and 0.1 pH units) and with relatively high standard deviations (again of up to 100 micromol/kg and 0.2 pH units). Considering that the same aged seawater medium was used for all treatments, this is questioning sampling/measurement procedures and adds considerable amount of uncertainty.

Furthermore, it has to be noted that biomass (POC or PIC) within the treatments are not only a function of initial P availability but also of the time in stationary phase before sampling as cells will initially continue to calcify and photosynthesize, also when P is exhausted. Thus, running cells into limitation with relatively unconstrained knowledge if the amount spent in stationary phase is similar between treatments, adds another factor of uncertainty.