**General comments**

*Overall quality of the preprint*

The manuscript by Faucher et al. is an interesting and well written study on how the globally important pelagic calcifying algae, *Emiliania huxleyi*, will respond to OAE with NaOH in lab experiments. This is an important study to understand the physiological response of individual and critical taxa to increased alkalinity. Many studies have examined the response of *E. huxleyi* to ocean acidification, so it is a great model species to study the response to alkalinity enhancement also.

One of the major findings of all the ocean acidification studies on *E. huxleyi* has been a strain specific response to acidification (e.g., Langer et al., 2009 Strain-specific responses of Emiliania huxleyi to changing seawater carbonate chemistry, Biogeosciences, 6, 2637–2646). Could it be possible that similar findings could be observed for OAE? This study is only using 1 strain of *E. huxleyi*, so perhaps using a number of other strains might provide different responses? I think it would be good if the authors can make a comment about this, and also in the discussion of the manuscript.

**Specific comments**

Line 45: do they mean ocean alkalinity or acidification studies?

Line 87: State this is a calcifying strain of *E. huxleyi*, and where the strain was obtained from (ei.e. culture collection)

Line 106-107: was there a change in growth rate during the acclimation period? Especially given that growth rate showed a decrease with TA increase. Was this a gradual decline over the acclimation time or an immediate reduction?

Line 108: define what is meant by “low” biomass (i.e. did you target a particular cell abundance or part of the growth curve?)

Line 133: what cellular concentration of PIC and POC did you use? There can be some variability between strains of *E. huxleyi* (e.g., see Harvey et al., 2015. Consequences of strain variability and calcification in Emiliania huxleyi on microzooplankton grazing; Daniels et al., 2014, Biogeochemical implications of comparative growth rates of Emiliania huxleyi and Coccolithus species). Did you use an average or the values specific for this strain?

Line 143: what is R in this context, the level of alkalinity?

Line 168: Is PIC not also a function of u?

Figure 3c and 3d: what is driving the low PIC production rate (and hence PIC:POC ratio) at 2.5 mmol kg-1 of TA? It stands out as quite the outlier.

**Technical corrections**

Line 88-89: second reference to *E. huxleyi* so can abbreviate.