

Interactive comment on “CO₂ perturbation experiments: similarities and differences between dissolved inorganic carbon and total alkalinity manipulations” by K. G. Schulz et al.

Anonymous Referee #1

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This is a sensible paper that apparently needs to be written because of odd disputes in the literature over whether using acid addition or direct CO₂ addition has any significant impact on the outcome of ocean acidification experiments. It does not matter, or matters very, very little whether the pH of the system is perturbed by acid or CO₂ addition within quite large bounds. It is odd that this point has to be made at such length. Nonetheless there have been claims that this does matter and can influence the outcome. This paper cites the comments of Iglesias-Rodriguez et al. (2008). But Ishimatsu et al. (2004) [J. Oceanogr., 60, 731-741] reported that “CO₂-enriched seawater was far more toxic to eggs and larvae of a marine fish, silver seabream, *Pagrus major*, than HCl-acidified seawater when tested at the same seawater pH.” Thus the

C203

effect there was the opposite of that suggested by Iglesias-Rodriguez et al. The most likely explanation for all this is that these are very difficult experiments to carry out and multiple small changes in procedure or specimens can affect the outcome independent of the type of pH adjustment process used. But we really can't blame simple physical chemistry for this.

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C204