



## Is there any relationship between phytoplankton seasonal dynamics and the carbonate system?

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Production of calcium carbonate by marine calcifying organisms has been shown to decrease under increasing CO<sub>2</sub>. This effect appears to be driven by a decrease in [CO<sub>3</sub><sup>2-</sup>]. The modelling study presented here aims at investigating whether the success of a marine calcifying phytoplankton species, the coccolithophore *Emiliana huxleyi*, may be tied to [CO<sub>3</sub><sup>2-</sup>]. The work highlights the complex interactions between the carbonate system variables and spring blooms, and the possibility of a link to the competition between calcifying vs. non-calcifying species on the Bering Sea shelf. We find that the strong seasonal cycle in [CO<sub>3</sub><sup>2-</sup>] is driven primarily by carbon drawdown during spring blooms. The interesting outcome of this work is the fact that *Emiliana huxleyi* bloom timings always coincide with periods of high [CO<sub>3</sub><sup>2-</sup>], which is consistent with studies showing coccoliths malformations and a slowdown in calcification at low [CO<sub>3</sub><sup>2-</sup>].