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Biologically driven variability in coastal carbon fluxes - A model study

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Benthic-pelagic coupling is responsible for the sudden appearance and disappearance of many coastal plankton blooms. Whether this signature is also reflected in $p\text{CO}_2$ and whether the processes involved are important for the carbon fluxes in the coastal ocean is unclear. To address these questions, we use an ecosystem model that accounts for benthic-pelagic coupling of three different functional phytoplankton groups. Coupled with the water column model GOTM, we investigate the air-sea CO_2 fluxes in the Baltic Sea and compared them with observations. We show that the variability is very well captured by the model. The relative importance of the life cycle processes in regulating carbon fluxes is demonstrated.