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INTEGRATING CO2 FLUXES IN THE COASTAL OCEAN: SIMULATING NATURAL VARIABILITY AND ANTHROPOGENIC UPTAKE WITH A GLOBAL MODEL OF 0.5Â HORIZONTAL RESOLUTION.

The coastal ocean represents 7% of the oceanic surface area, but accounts for 20% of the total oceanic organic matter production and 80% of total oceanic organic matter burial. It receives massive inputs of organic matter and nutrients from land and exchanges large amounts of matter and energy with the open ocean. Despite all this, the coastal ocean has been largely ignored in the recent carbon budgeting and in ocean carbon uptake projections over the 21st century. Recent studies have compiled in-situ data from several key coastal environnements and clearly indicate the significance of this active region in the global carbon cycle. In this study, we couple the global biogeochemical model PISCES to a 0.5Â -horizontal resolution version of the NEMO ocean general circulation model. We perform runs over the industrial era (1860-2001) forced by observed atmospheric pCO2 and atmospheric re-analysed fields when available. We present here an evaluation of the simulated natural and anthopogenic carbon fluxes in the coastal ocean thanks to the recent data compilation. We also show how the coastal ocean carbon flux changes under increasing atmospheric pCO2.