



CO₂, δO₂/N₂ and APO: observations from the Lutjewad, Mace Head and F3 platform flask sampling network

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We report results from our atmospheric flask sampling network for three European sites: Lutjewad in the Netherlands, Mace Head in Ireland and the North Sea F3 platform. The air samples from these stations are analyzed for their CO₂ and O₂ concentrations. In this paper we present the CO₂ and O₂ data series from these sites between 1998 and 2009, as well as the atmospheric potential oxygen (APO). The seasonal pattern and long term trends agree to a large extent between our three measurement locations. We however find a changing gradient between Mace Head and Lutjewad, both for CO₂ and O₂. To explain the potential contribution of fossil fuel emissions to this changing gradient we use an atmospheric transport model in combination with CO₂ emission data and information on the fossil fuel mix per region. Using the APO trend from Mace Head we obtain an estimate for the global oceanic CO₂ uptake of 1.8 ± 0.8 PgC/year.

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