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DISSOLVED INORGANIC CARBON CYCLE IN THE MAXIMUM TURBIDITY ZONE OF THE UPPER SCHELDT ESTUARY

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The Scheldt Estuary is one of the most polluted macro-tidal European estuaries due to a high anthropogenic pressure around its catchment area. High load of suspended organic matter (with at least two third directly related to human activities) associated to a long residence time within the estuary (three months) contribute to an intense bacterial degradation (Wollast, 1988). The most striking feature of this work, compared to the previous studies carried on the Scheldt (Frankignoulle *et al.*, 1996, 1998; Abril *et al.*, 2000) is the continuous measurement of the CO₂ partial pressure of the surface brackish water in the maximum turbidity zone of the inner Scheldt Estuary since November 2002 to nowadays. Our results show that pCO₂ in the surface brackish water is outstandingly high, ranging from 2000 to 10000 ppm, which represents up to 2700% of the CO₂ atmospheric pressure. CO₂ also shows strong meso- and macroscale variabilities and on an annual scale it appears that pCO₂ is mainly controlled by temperature and heterotrophy.

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