



Carbon dioxide fluxes in the Benguela region

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In the frame of the CARBOOCEAN Project the QUIMA-ULPGC group is studying the variability of $f\text{CO}_2$ in the Benguela region. The near-coastal South East Atlantic Ocean off Africa is an unique and highly dynamic environment influenced by the Angola coastal upwelling, the Congo River plumes, the Benguela upwelling and the Western Agulhas Bank. The QUIMA-VOS line has been crossing the Benguela current coastal province (BENG) between 15°S and 35°S since July 2005 having a set of data in the area through different seasons.

Benguela is one of the eastern boundary regimes of the World Ocean. In the region, apart from the equatorward and poleward boundaries, zonally oriented fronts tend to develop equatorward of the major upwelling cells and four areas can be distinguished. Between 14°S and 20°S, where the Cumene cell (16°S) and Northern Namibia cell (19°S) are located, the highest values of $f\text{CO}_2$ sw in the area are obtained (460 μatm in July 2005 at 19°S) acting this area as a source of CO_2 .

Between 20°S and 25°S, the $p\text{CO}_2$ values are lower than $f\text{CO}_2$ atm and the area is a light sink of CO_2 affected by the wind field. Around 27°S the influence of the Lüderitz cell is observed and higher seawater $f\text{CO}_2$ than in the surrounded area are obtained result of rich and not totally depleted CO_2 upwelled water. The seawater $f\text{CO}_2$ values fluctuates between 410 μatm (July 2005) and 360 μatm (November 2005). South of 27°S and until 34°S the lowest values of $f\text{CO}_2$ in the area (320 μatm) are found, acting in the period studied as a sink of CO_2 .