



Seasonal variability of $f\text{CO}_2$ and O_2 between 5°S and 30°S in the Angola-Benguela region

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The variability of $f\text{CO}_2$ and O_2 has been studied in the region between 5°S and 30°S in the South-East Atlantic region since July 2005. High $f\text{CO}_2$ variability has been observed in the surface seawater due to the effect of upwelling and derived mesoscales structures like filaments.

The surface temperature change sinusoidally according with the seasonal solar cycle in five-degree latitudinal sectors for the South Atlantic Ocean. A difference of about 4-5° is observed between the austral summer and winter for each sector.

The highest values for the $f\text{CO}_2$ seasonal variability are found in March for all the sectors. The latitudinal sectors 10-15°S and 25-30°S present a minimum in September while, in the other sectors, minimum values appear in July. The 5-10°S presents the highest values for each period (418 μatm) and the sector 25-30°S the lowest (370 μatm). This is related with the latitudinal gradient observed for the temperature.

The 5-10°S sector shows $\Delta f\text{CO}_2 > 0$ all year around, acting the system as a source of CO_2 . The 10-15°S sector presents $\Delta f\text{CO}_2 > 0$ in the austral summer, working the system as a source of CO_2 and $\Delta f\text{CO}_2 < 0$ in winter, being a sink of CO_2 . The 25-30°S sector has $\Delta f\text{CO}_2 < 0$ from May to December acting principally as a sink of CO_2 . Fluxes are computed for each sector using climatology wind speeds

The highest values for O_2 seasonal variability are found in October-November and the lowest values in April-May according with the seasonal cycle of temperature. The 25-30°S sector presents the highest values of O_2 in each period due it is the sector with

the lowest temperature.