



## **On the physical and biogeochemical processes driving the high frequency variability of CO<sub>2</sub> fugacity at 6°S, 10°W : Potential role of the internal waves**

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The availability of nutrients in the mixed layer is the main limitation to carbon biological production in the tropical regions. In this paper, we investigate the potential role of internal waves at promoting the development of biological activity on a PIRATA mooring at 6°S 10°W. This mooring is located above the Mid-Atlantic ridge where we observe strong internal waves. Using a one dimensional physical and biogeochemical coupled model, we show that it is possible to simulate dissolved inorganic carbon variations consistent with the biological production derived from the observations, provided that the vertical advection and diapycnal turbulent vertical diffusivity associated with the internal waves are taken into account. Not all the dissolved inorganic carbon (DIC) variations are simulated, likely because of uncertainties in initialization profiles. Nevertheless, our study strengthens the importance of taking into account correctly the effect of internal waves in tropical regions.