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Impact of mesoscale eddies on salinity and CO₂ ocean parameters in the western tropical Atlantic in February 2020

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Large oceanic eddies are formed by the retroflection of the North Brazil Current (NBC) near 8°N in the western tropical Atlantic. The EUREC⁴A-OA/Atomic cruise took place in January - February 2020, and extensively documented two NBC rings. The NBC flows northward across the Equator and pass the mouth of the Amazon River, entraining fresh and nutrient-rich water along its nearshore edge. From December to March, the Amazon river discharge is low but a freshwater filament stirred by a NBC ring was nevertheless observed. The strong salinity gradient can be used to delineate the NBC ring during its initial phase and its westward propagation. Using satellite sea surface salinity and ocean color associated to in-situ measurements of salinity, temperature, dissolved inorganic carbon, alkalinity and fugacity of CO₂ we characterize the salinity and biogeochemical signature of NBC rings.