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Review

Organic Pollutants and Ocean Fronts Across the Atlantic Ocean: A Review

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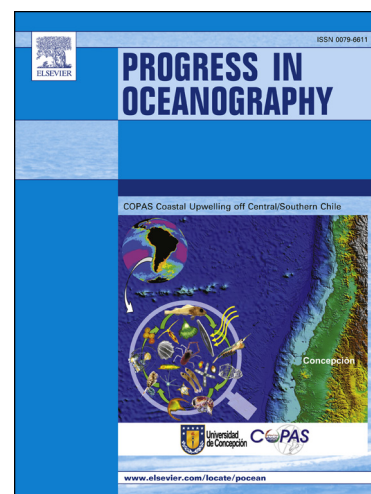
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Organic Pollutants and Ocean Fronts

Across the Atlantic Ocean: A Review

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Abstract. Little is known about the effect of ocean fronts on pollutants dynamics, particularly organic pollutants. Since fronts are associated with convergent currents and productive fishing grounds, any possible convergence of pollutants at fronts would raise concerns. The focus here is on relatively persistent organic pollutants, POPs, as non-persistent organic pollutants are rarely found in the open ocean. Results from recent cruises in the Atlantic Ocean are examined for POPs distribution across ocean fronts in (i) the Canary Current; (ii) the Gulf Stream; and (iii) the Amazon and Rio de la Plata Plumes. Few studies achieved a spatial resolution of 10 to 20 km, while most had 100 to 300 km between adjacent stations. The majority of the well-resolved studies measured perfluorinated compounds (PFCs), which seem particularly well suited for frontal resolution. In the NE Atlantic, concentrations of PFCs sharply decreased between SW Europe and NW Africa upon crossing the Canary Current Front at 24°-27°N. In the Western Atlantic, the PFC concentrations sharply increased upon entering the Amazon River Plume and Rio de la Plata Plume. In the NW Atlantic, concentrations of several pollutants such as polycyclic aromatic hydrocarbons are very high in Rhode Island Sound, decreasing to below detection limit in the open ocean. The more persistent and already

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