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## A NEMO-based model of *Sargassum* distribution in the Tropical Atlantic

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**The Tropical Atlantic is facing a massive proliferation of *Sargassum* since 2011, with severe environmental and socioeconomic impacts. The development of *Sargassum* modelling is essential to clarify the link between *Sargassum* distribution and environmental conditions, and to lay the groundwork for a seasonal forecast on the scale of the Tropical Atlantic basin. We present here a modelling framework based on the NEMO ocean model which integrates transport by currents and waves, stranding at the coast, and physiology of *Sargassum* with varying internal nutrients quota. The model is initialized from basin scale satellite observations and performance was assessed over the *Sargassum* year 2017. Model parameters are calibrated through the analysis of large ensembles of simulations, and the sensitivity to forcing fields like riverine nutrients inputs, atmospheric deposition, and waves is investigated. Overall, results demonstrate the ability of the model to reproduce the seasonal cycle and large-scale distribution of *Sargassum* biomass.**