

## Modélisation écologique de la marée verte sur les côtes bretonnes Ecological modelling of Ulva mass blooms on the Brittany coasts



Every spring and summer, and for two decades, mass-blooms produced by a green alga of the genus *Ulva*, have been polluting some localities along the Brittany coasts. The main aspect of the nuisance lies in the stranding and further decomposition of large amounts of algae along recreational zones inducing visual and odoriferous pollution. Sites which are favourable to *Ulva* mass-blooms are shallow areas where water exchange with the open sea is slow (weak residual drift of water masses and long residence time). Drifting algae and nutrients are both trapped in these zones thus allowing *Ulva* thalli to be kept in good cultivation conditions. In collaboration with Ifremer, the so-called "MARS-ulve" ecological model (coupling the biochemical model ELISE with the hydrodynamical model MARS 2D) has been developed. The main goal of the ecological model is to establish quantitative quality objectives relative to nitrate and ammonia in the tributaries of the main bays of Brittany severely polluted by *Ulva* « green tide ». A specific capability of this model is to allow quantifying the relative contribution of each source of inorganic supply in the feeding of the green

tide. A new numerical technique which allows assessing the proportion of nitrogen in the nitrogen pool of the ulvae has been coupled with the ecological model and applied in the St Brieuc bay.

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