

# Mathematics and the Ocean

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## Spatio-temporal variability of the distribution and abundance of sardine of the Portuguese continental coast and relationship with environmental drivers

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Scientific tools capable of identifying distribution patterns of species are important to improving species management. Species distribution data often implies residual spatial autocorrelation and temporal variability, so both time and space are important components to study the species distribution from an ecological point of view. This study aims to estimate the spatio-temporal distribution of sardine (*Sardina pilchardus*) off the Portuguese continental coast, relating the spatio-temporal variability of the biomass index with the environmental conditions. A hierarchical two-part model is suggested as capable of dealing with data specificities, namely zero-inflated, and with different sources of uncertainty.