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Environmental predictors of body size of pelagic squids on the Southern Kerguelen Axis

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Environmental heterogeneity may strongly influence the life history of animal species living in the system and thus affect the phenotypic traits linking to the abiotic environment. Body size, sometimes referred to as ‘the master trait’ due to its ecological importance, may be expected to be responsive to local environmental conditions that affect habitat quality. Within the Southern Ocean, pelagic squids have been documented to have strong associations with specific water masses or frontal zones, in which they are assumed to exhibit a variability of body size alongside changes in the oceanographic variables of habitats. Here, using linear and generalized additive mixed-effects models, we assessed abiotic conditions are stronger predictors associated the body size of pelagic squids assemblage sampled with midwater trawls on the Southern Kerguelen Axis (the regions spanning the southern part of Kerguelen Plateau, Banzare Bank and Prydz Bay) during the summer season. Preliminary results indicate that larger squids tend to be associated with waters with relatively lower chlorophyll-a., water temperature, and salinity, and higher dissolved oxygen, although overall variance explained was relatively low ($R^2=0.453$ with linear models and 18% with additive models). The findings are consistent with the general predictions of favorable physical variables ideal for larger squids, and suggest that these variables considered may be useful for future work assessing pelagic habitats in this region.