**Supplementary material 14:** Summary of significant explanatory variables determined from generalized linear regression model for taxonomic richness (n = 58 polygons), and simple linear regression for density and beta diversity (n = 9 observations). Tested variables : depth; winter, inter-annual, total, minimum and maximum Chla; current velocity at 350-650 m, current variability at 0-50 m and 350-650 m; frequency of geomorphological classes; distances to the coast (Madagascar, Mozambique); substrate hardness and diversity. Response variables: richness, mean density, and total beta diversity. 1Non-significant relationship when Glorieuses is removed, 2Non-significant relationship when the Mayotte eastern slope is removed.

|  | Richness (58 polygons) | | | Density | | | Beta diversity | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| p-value | Estimate | R2 adj | p-value | Estimate | R2 adj | p-value | Estimate | R2 adj |
| Current:  std 350-650 m | 0.0373 \* | -1.9129 | \_ | \_ | \_ | \_ | \_ | \_ | \_ |
| Current:  speed 350-650 m | 0.0266 \*1 | -3.47265 | \_ | 0.000201 \*\*\*1 | 5251.23 | 0.86 | 0.001593 \*\*1 | -3.26806 | 0.75 |
| Chla winter | 0.0484 \*2 | 3.6599 | \_ | \_ | \_ | \_ | \_ | \_ | \_ |
| Chla min | 0.0197 \* | 15.0926 | \_ | \_ | \_ | \_ | \_ | \_ | \_ |
| Carbonate geomorphology | \_ | \_ | \_ | 0.000192 \*\*\* | 683.12 | 0.861 | 0.001985 \*\*1 | -0.42097 | 0.73 |
| Sedimentary geomorphology | \_ | \_ | \_ | \_ | \_ | \_ | 0.0394 \* | 0.40576 | 0.4 |
| Distance to Madagascar  coast | \_ | \_ | \_ | 0.0288 \* | -1.9891 | 0.45 | \_ | \_ | \_ |
| Distance to Mozambique coast | \_ | \_ | \_ | 0.0106 \*1 | 1.441 | 0.58 | \_ | \_ | \_ |
| Hardness | 0.0478 \* | -0.07229 | \_ | \_ | \_ | \_ | 0.009604 \*\* | -0.08303 | 0.58 |
| Substrate diversity | \_ | \_ | \_ | 0.01658 \*1 | -1537.1 | 0.52 | 0.01975 \*1 | 0.99671 | 0.5 |