Supplementary Material for

Oceanic fronts shape biodiversity of gelatinous zooplankton in the European Arctic

Maciej K. Mańko1\*, Małgorzata Merchel2, Sławomir Kwaśniewski2, Agata Weydmann-Zwolicka1

1Department of Marine Plankton Research, Institute of Oceanography, University of Gdańsk, Gdynia, Poland

2Institute of Oceanology Polish Academy of Sciences, Sopot, Poland

**\* Correspondence:**Corresponding Author  
maciej.manko@ug.edu.pl

**Tab. S1.** Verification of data distribution normality with the Shapiro-Wilk test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **Frontal zone** | | |
|  |  | **W** | **C** | **E** |
| **Salinity** | W statistic | 0.929 | 0.722 | 0.961 |
|  | p | 0.066 | 0.000 | 0.820 |
| **Temperature** | W statistic | 0.913 | 0.965 | 0.970 |
|  | p | 0.027 | 0.021 | 0.901 |
| **Depth** | W statistic | 0.942 | 0.837 | 0.712 |
|  | p | 0.134 | 0.000 | 0.003 |
| **Abundance of GZ** | W statistic | 0.811 | 0.543 | 0.821 |
|  | p | 0.000 | 0.000 | 0.048 |

**Tab. S2.** Results of **A.** PERMANOVA for differences in GZ community composition between fronts, years, and years within fronts (interaction term), and **B.** permutation test for homogeneity of multivariate dispersions within respective groups.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **A.** |  |  |  |  |  |  |  |
|  | **Df** | **SS** | **MS** | **F.model** | **R2** | **Pr (>F)** | **adjusted p** |
| Front | 2 | 3.385 | 1.693 | 11.139 | 0.131 | 0.001 | 0.003 |
| Year | 11 | 3.080 | 0.280 | 1.843 | 0.119 | 0.003 | 0.003 |
| Year x Front | 15 | 5.535 | 0.369 | 2.428 | 0.214 | 0.001 | 0.003 |
| Residuals | 91 | 13.828 | 0.152 |  | 0.535 |  |  |
| Total | 119 | 25.829 |  |  | 1.000 |  |  |
|  |  |  |  |  |  |  |  |
| **B.** |  |  |  |  |  |  |  |
|  |  | **Df** | **SS** | **MS** | **F.model** | **Pr (>F)** |  |
| **Year** |  |  |  |  |  |  |  |
|  | Groups | 11 | 0.388 | 0.035 | 0.709 | 0.713 |  |
|  | Residuals | 108 | 5.374 | 0.050 |  |  |  |
| **Front** |  |  |  |  |  |  |  |
|  | Groups | 2 | 0.104 | 0.052 | 1.324 | 0.278 |  |
|  | Residuals | 117 | 4.605 | 0.039 |  |  |  |
| **Year x Front** | |  |  |  |  |  |  |
|  | Groups | 28 | 1.631 | 0.058 | 1.515 | 0.076 |  |
|  | Residuals | 91 | 3.498 | 0.038 |  |  |  |

**Tab. S3.** Comparison of GZ abundance within frontal zones (W, C, E) on the interannual scale (interaction term: Front x Year) with the Kruskal-Wallis test.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Frontal zone** | | |
|  | **W** | **C** | **E** |
| df | 10 | 11 | 5 |
| χ2 | 7.906 | 23.004 | 6.583 |
| p | 0.638 | 0.018 | 0.254 |

**Tab. S4.** Results of **A.** PERMANOVA for differences in GZ community composition between the Arctic and Atlantic domains, and **B.** permutation test for homogeneity of multivariate dispersions within domains..

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **A.** |  |  |  |  |  |  |
|  | **Df** | **SS** | **MS** | **F.model** | **R2** | **Pr (>F)** |
| Domain | 1 | 0.511 | 0.511 | 2.303 | 0.056 | 0.043 |
| Residuals | 39 | 8.650 | 0.222 |  | 0.944 |  |
| Total | 40 | 9.161 |  |  | 1 |  |
|  |  |  |  |  |  |  |
| **B.** |  |  |  |  |  |  |
|  | **Df** | **SS** | **MS** | **F.model** | **Pr (>F)** |  |
| Domain | 1 | 0.039 | 0.039 | 0.726 | 0.398 |  |
| Residuals | 39 | 2.081 | 0.053 |  |  |  |