|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Code | Slope Factor | | | | a\*(470) | | | | Ф | | | |
| Slope Factor | Std. Error | p. value | Adj. R² | a\*(470) | Std. Error | p.value | Adj. R² | Ф | Std. Error | p. value | Adj. R² |
| ANTA | 2.7 | 0.075 | <0.001 | 0.98 | 0.06 | 0.0007 | <0.001 | 1 | 586 | 142 | <0.001 | 0.34 |
| ARCH | 1.11 | 0.207 | <0.001 | 0.78 | 0.05 | 0.0024 | <0.001 | 0.98 | 1484 | 244 | <0.001 | 0.82 |
| ARCT | 1.93 | 0.213 | <0.001 | 0.52 | 0.04 | 0.0005 | <0.001 | 0.99 | 1331 | 305 | <0.001 | 0.19 |
| BPLR | 2.82 | 0.22 | <0.001 | 0.84 | 0.03 | 0.0009 | <0.001 | 0.98 | 3265 | 899 | <0.001 | 0.29 |
| EMED | 1.73 | 0.106 | <0.001 | 0.91 | 0.05 | 0.0018 | <0.001 | 0.96 | 1060 | 185 | <0.001 | 0.54 |
| SANT | 2.3 | 0.17 | <0.001 | 0.66 | 0.03 | 0.0006 | <0.001 | 0.97 | 2455 | 522 | <0.001 | 0.2 |
| SPSG | 2.3 | 0.326 | <0.001 | 0.86 | 0.07 | 0.0046 | <0.001 | 0.96 | 852 | 189 | <0.001 | 0.71 |
| WMED | 1.94 | 0.11 | <0.001 | 0.82 | 0.04 | 0.001 | <0.001 | 0.96 | 1136 | 268 | <0.001 | 0.22 |

Table S1 : Statistics of the linear regression model applied to the data of each bioregion of the Glo-Argo dataset in order to estimate the regional values of the slope factor, a\*(470) (m-2 mg Chla-1) and Ф (counts.m-1).

Table S2 : Statistics of the linear regression model applied to each bioregion of the Glo-aphy dataset in order to estimate the regional values of a\*(470) (m-2 mg Chla-1).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Code | a\*(470) | std. Error | p.value | Adj. R² |
| PEQD | 0.06 | 0.001 | <0.001 | 0.95 |
| WARM | 0.06 | 0.004 | <0.001 | 0.97 |
| SPSG | 0.05 | 0.001 | <0.001 | 0.93 |
| ISSG | 0.05 | 0.002 | <0.001 | 0.97 |
| NATR | 0.04 | 0.002 | <0.001 | 0.92 |
| NADR | 0.07 | 0.0008 | <0.001 | 0.98 |
| NASE | 0.07 | 0.0004 | <0.001 | 0.97 |
| SSTC | 0.05 | 0.0007 | <0.001 | 0.99 |
| MEDI | 0.04 | 0.0004 | <0.001 | 0.92 |
| ANTA | 0.04 | 0.001 | <0.001 | 0.96 |
| SANT | 0.02 | 0.002 | <0.001 | 0.98 |

Table S3 : Statistics of the linear regression model applied to each depth (in m) and seasons of the Bouss-Med dataset to estimates the values of a\*(470) (m-2 mg Chla-1) and Ф (RFU.m-1).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Depth | Season | a\*(470) | | | | Ф | | | |
| a\*(470) | Std. Error | p.value | Adj. R² | Ф | Std. Error | p.value | Adj. R² |
| 5 | Winter | 0.01 | 0.002 | <0.001 | 0.8 | 12.94 | 2.7 | <0.001 | 0.6 |
| 5 | Spring | 0.01 | 0.001 | <0.001 | 0.94 | 14.76 | 0.9 | <0.001 | 0.91 |
| 5 | Summer | 0.03 | 0.004 | <0.001 | 0.52 | 12.68 | 2.5 | <0.001 | 0.41 |
| 5 | Fall | 0.03 | 0.004 | <0.001 | 0.7 | 18.28 | 6.6 | <0.001 | 0.23 |
| 10 | Winter | 0.01 | 0.001 | <0.001 | 0.89 | 17.15 | 2.3 | <0.001 | 0.76 |
| 10 | Spring | 0.01 | 0.001 | <0.001 | 0.93 | 20.30 | 1.2 | <0.001 | 0.92 |
| 10 | Summer | 0.03 | 0.004 | <0.001 | 0.61 | 15.34 | 2.6 | <0.001 | 0.49 |
| 10 | Fall | 0.02 | 0.005 | <0.001 | 0.55 | 15.65 | 6.9 | <0.001 | 0.2 |
| 20 | Winter | 0.01 | 0.002 | <0.001 | 0.84 | 16.32 | 3.1 | <0.001 | 0.62 |
| 20 | Spring | 0.01 | 0.001 | <0.001 | 0.76 | 27.27 | 3.3 | <0.001 | 0.71 |
| 20 | Summer | 0.02 | 0.002 | <0.001 | 0.71 | 9.41 | 2.5 | <0.001 | 0.54 |
| 20 | Fall | 0.03 | 0.005 | <0.001 | 0.6 | 6.64 | 6.5 | <0.001 | 0.43 |
| 30 | Winter | 0.01 | 0.002 | <0.001 | 0.68 | 22.75 | 4.1 | <0.001 | 0.28 |
| 30 | Spring | 0.01 | 0.001 | <0.001 | 0.57 | 35.99 | 6.3 | <0.001 | 0.8 |
| 30 | Summer | 0.01 | 0.001 | <0.001 | 0.55 | 14.93 | 3.4 | <0.001 | 0.84 |
| 30 | Fall | 0.03 | 0.005 | <0.001 | 0.6 | 10.83 | 3.1 | <0.001 | 0.35 |
| 40 | Winter | 0.01 | 0.002 | <0.001 | 0.59 | 29.23 | 4.6 | <0.001 | 0.52 |
| 40 | Spring | 0.00 | 0.001 | <0.001 | 0.7 | 0.80 | 9.1 | <0.001 | 0.15 |
| 40 | Summer | 0.00 | 0.001 | <0.001 | 0.76 | 4.76 | 4.5 | <0.001 | 0.92 |
| 40 | Fall | 0.02 | 0.003 | <0.001 | 0.46 | 18.21 | 3.6 | <0.001 | 0.75 |
| 50 | Winter | 0.01 | 0.003 | <0.001 | 0.78 | 19.19 | 5.1 | <0.001 | 0.43 |
| 50 | Spring | 0.01 | 0.001 | <0.001 | 0.96 | 17.25 | 3.6 | <0.001 | 0.31 |
| 50 | Summer | 0.01 | 0.001 | <0.001 | 0.8 | 14.54 | 3.3 | <0.001 | 0.83 |
| 50 | Fall | 0.02 | 0.004 | <0.001 | 0.7 | 12.64 | 7.9 | <0.001 | 0.92 |
| 60 | Winter | 0.01 | 0.002 | <0.001 | 0.82 | 29.84 | 4.2 | <0.001 | 0.74 |
| 60 | Spring | 0.01 | 0.001 | <0.001 | 0.74 | 18.40 | 4.7 | <0.001 | 0.69 |
| 60 | Summer | 0.02 | 0.001 | <0.001 | 0.71 | 13.38 | 2.4 | <0.001 | 0.77 |
| 60 | Fall | 0.01 | 0.005 | <0.001 | 0.66 | 28.89 | 14.1 | <0.001 | 0.62 |