Table 1. Effects of environmental variables and their interactions on biomass using linear models applied to the biomass values collected at the end of the experiment. The statistical significance levels used were: \* = P <0.05 and >0.01; \*\* = P < 0.01 and > 0.001; and \*\*\* P <0.001; df = degrees of freedom.

|  |  |  |  |
| --- | --- | --- | --- |
|   | **df**  | **F-value** | **P-value** |
| **Root dry weight** |   |   |   |
| Water table | 1, 28 | 20.63 | **<0.001\*\*\*** |
| Fertiliser | 1, 28 | 5.07 | **0.033 \***  |
| Temperature | 1, 28 | 0.15 | 0.699 |
| Water table\*Temperature | 1, 28 | 0.12 | 0.736 |
| Water table\*Fertiliser | 1, 28 | 0.81 | 0.377 |
| Fertiliser\*Temperature | 1, 28 | 0.5 | 0.487 |
| **Shoot fresh weight**  |   |   |   |
| Water table | 1, 28 | 13.03 | **0.001 \*\*** |
| Fertiliser | 1, 28 | 16.39 | **<0.001\*\*\*** |
| Temperature | 1, 28 | 1.58 | 0.22 |
| Water table\*Temperature | 1, 28 | 0.6 | 0.444 |
| Water table\*Fertiliser | 1, 28 | 0.09 | 0.769 |
| Fertiliser\*Temperature | 1, 28 | 0.02 | 0.901 |
| **Shoot dry weight** |   |   |   |
| Water table | 1, 28 | 11.41 | **0.002 \*\*** |
| Fertiliser | 1, 28 | 14.94 | **<0.001\*\*\*** |
| Temperature | 1, 28 | 18.22 | **<0.001\*\*\*** |
| Water table\*Temperature | 1, 28 | 0.19 | 0.67 |
| Water table\*Fertiliser | 1, 28 | 0.16 | 0.694 |
| Fertiliser\*Temperature | 1, 28 | 0.0 | 0.956 |
| **Root:Shoot dry weight ratio** |  |   |   |
| Water table | 1, 24 | 16.03 | **<0.001\*\*\*** |
| Fertiliser | 1, 24 | 0.11 | 0.74 |
| Temperature | 1, 24 | 19.15 | **<0.001\*\*\*** |
| Water table\*Temperature | 1, 24 | 0.0 | 0.991 |
| Water table\*Fertiliser | 1, 24 | 2.25 | 0.147 |
| Fertiliser\*Temperature | 1, 24 | 0.83 | 0.372 |

Table 2. Effects of environmental variables and their interactions on gas fluxes from peat cores using both the linear mixed model (which included ‘week’ and ‘core’ as random effects, to take into account the temporal and spatial pseudoreplication) and linear models (which were applied to the fluxes averaged over the entire experiment). The statistical significance levels used were: \* = P <0.05 and >0.01; \*\* = P < 0.01 and > 0.001; and \*\*\* P <0.001; df = degrees of freedom.

|  |  |  |  |
| --- | --- | --- | --- |
|   | **linear model** |  | **linear mixed model** |
| **CH4 flux** | **df**  | **F-value** | **P-value** | **df**  |  **χ2**  | **P-value** |
| Water table | 1, 48 | 0.03 | 0.862 | 1 | 0.87 | 0.35 |
| Fertiliser | 1, 48 | 1.92 | 0.172 | 1 | 0.75 | 0.386 |
| Temperature | 1, 48 | 14.07 | **<0.001\*\*\*** | 1 | 1.26 | 0.262 |
| Crop presence | 1, 48 | 9.44 | **0.003 \*\***  | 1 | 4.13 | **0.042 \*** |
| Moisture | 1, 62 | 1.77 | 0.188 | 1 | 1.25 | 0.263 |
| Water table\*Fertiliser | 1, 48 | 0.84 | 0.363 | 1 |  0.58 | 0.447 |
| Fertiliser\*Temperature | 1, 48 | 0.37  | 0.545 | 1 | 0.4 | 0.528 |
| Water table\*Temperature | 1, 48 | 11.87 | **0.001 \*\***  | 1 | 4.5 | **0.034 \*** |
| Crop presence \*Water table  | 1, 48 | 6.52 | **0.014 \***  | 1 |  0.3 | 0.583 |
| Crop presence \*Fertiliser  | 1, 48 | 0.01 | 0.917 | 1 | 0.06 | 0.807 |
| Crop presence \*Temperature | 1, 48 | 3.68 | 0.061 | 1 | 0.35 | 0.552 |
| Water table\*Fertiliser\*Temperature | 1, 48 | 0.85 | 0.36 | 1 | 0.0 | 0.973 |
| Water table\*Fertiliser\* Crop presence | 1, 48 | 0.09 | 0.77 | 1 |  4.99 | **0.025 \*** |
| Water table\*Temperature\* Crop presence | 1, 48 | 13.84 | **<0.001\*\*\*** | 1 | 4.88 | **0.027 \*** |
| Fertiliser\*Temperature\* Crop presence  | 1, 48 | 0.02 | 0.895 | 1 | 0.36 | 0.546 |
| **NEE** |   |   |   |   |   |   |
| Water table | 1, 24 | 0.09 | 0.761 | 1 | 2.09 | 0.148 |
| Fertiliser | 1, 24 | 1.35 | 0.257 | 1 | 1.02 | 0.311 |
| Temperature | 1, 24 | 2.88 | 0.103 | 1 | 0.01 | 0.93 |
| Water table\*Fertiliser  | 1, 24 | 0.41  | 0.53 | 1 | 0.8 | 0.372 |
| Water table\*Temperature | 1, 24 | 0.06 | 0.807 | 1 | 0.05 | 0.828 |
| Fertiliser\*Temperature | 1, 24 | 0.81 | 0.377 | 1 | 0.41 | 0.524 |
| Water table\*Fertiliser\*Temperature | 1, 24 | 0.48 | 0.494 | 1 |  |  |
| **GPP** |   |   |   |   |   |   |
| Water table  | 1, 24 | 1.16 | 0.292 | 1 | 0.01 | 0.937 |
| Fertiliser | 1, 24 | 4.45 | **0.045 \*** | 1 | 0.32 | 0.57 |
| Temperature | 1, 24 | 52.16 | **<0.001\*\*\*** | 1 | 3.01 | 0.083 |
| Water table\*Fertiliser | 1, 24 | 0.07 | 0.795 | 1 | 0.27 | 0.606 |
| Water table\*Temperature | 1, 24 | 0.66 | 0.423 | 1 | 0.04 | 0.839 |
| Fertiliser\*Temperature | 1, 24 | 0.89 | 0.355 | 1 | 0.58 | 0.448 |
| Water table\*Fertiliser\*Temperature | 1, 24 | 0 | 0.968 | 1 | 0.03 | 0.861 |
| **Soil respiration (Rh)** |   |   |   |   |   |   |
| Water table | 1, 24 | 37.85 | **<0.001\*\*\*** | 1 | 9.17 | **0.002 \*\*** |
| Fertiliser  | 1, 24 | 3.11 | 0.091 | 1 | 29.49 | **<0.001\*\*\*** |
| Temperature | 1, 24 | 22.55  | **<0.001\*\*\*** | 1 | 6.69 | **0.0097 \*\*** |
| Water table\*Fertiliser  | 1, 24 | 0.09 | 0.766 | 1 | 1.78 | 0.182 |
| Water table\*Temperature | 1, 24 | 7.93 | **0.0096 \*\***  | 1 | 0.62 | 0.432 |
| Fertiliser\*Temperature | 1, 24 | 3.74 | 0.065 | 1 | 2.9 | 0.088 |
| Water table\*Fertiliser\*Temperature | 1, 24 | 0.8 | 0.379 | 1 | 2.32 | 0.128 |
| **Ecosystem respiration (ER)** |   |   |   |   |   |   |
| Water table | 1, 24 | 0.98 | 0.333 | 1 | 2.79 | 0.095 |
| Fertiliser | 1, 24 | 1.8 | 0.192  | 1 | 1.15 | 0.283 |
| Temperature | 1, 24 | 35.99 | **<0.001\*\*\*** | 1 | 24.41 | **<0.001\*\*\*** |
| Water table\*Fertiliser | 1, 24 | 0.09  | 0.764  | 1 | 0.75 | 0.386 |
| Water table\*Temperature | 1, 24 | 0.48  | 0.495 | 1 | 1.06 | 0.304 |
| Fertiliser\*Temperature | 1, 24 | 0.12 | 0.727 | 1 | 0.36 | 0.546 |
| Water table\*Fertiliser\*Temperature | 1, 24 | 0.31 | 0.581 | 1 | 0.81 | 0.368 |

Table 3. Dependence of soil moisture and DOC on environmental variables and their interactions using linear models applied to the moisture and DOC values averaged over the entire experiment. Water table and temperature are categorical variables. The statistical significance levels used were: \* = P <0.05 and >0.01; \*\* = P < 0.01 and > 0.001; and \*\*\* P <0.001; df = degrees of freedom.

|  |  |  |  |
| --- | --- | --- | --- |
| **Moisture** | **df** |  **χ2**  | **P-value** |
| Crop presence | 1 | 15.71 | **<0.001\*\*\*** |
| Water table | 1 | 57.77 | **<0.001\*\*\*** |
| Temperature | 1 | 0.08 | 0.772 |
| **DOC** | **df** | **F-value** | **P-value** |
| Water table | 1, 48 | 8.58 | **0.005 \*\*** |
| Fertiliser | 1, 48 | 0 | 0.98 |
| Temperature | 1, 48 | 28.13 | **<0.001\*\*\*** |
| Crop presence | 1, 48 | 51.8 | **<0.001\*\*\*** |
| Water table\*Fertiliser | 1, 48 | 0.85 | 0.362 |
| Water table\*Temperature | 1, 48 | 1.96 | 0.168 |
| Fertiliser\*Temperature | 1, 48 | 0.15 | 0.697 |
| Water table\* Crop presence | 1, 48 | 11.06 | **0.002 \*\*** |
| Fertiliser\* Crop presence | 1, 48 | 0.36 | 0.553 |
| Temperature\* Crop presence | 1, 48 | 3.62 | 0.063 |
| Water table\*Fertiliser\*Temperature | 1, 48 | 1.52 | 0.224 |
| Water table\*Fertiliser\* Crop presence | 1, 48 | 1.19 | 0.28 |
| Water table\*Temperature\* Crop presence | 1, 48 | 3.58 | 0.065 |
| Fertiliser\*Temperature\* Crop presence | 1, 48 | 1.58 | 0.215 |