***Appendix 1 - Grouping of ecosystemic functioning axes and abiotic environment***

**Table S1.1**: **Ecosystem functioning variables.** (a) Visualization of the proportion of the variance on the four dimensions to be retained in the PCA as well as (b) the importance of the variables in these dimensions making it possible to form the large groups of axes.

**Table S1.2:**  **Abiotic variables.** (a) Visualization of the proportion of the variance on the 3 dimensions to be retained in the PCA as well as (b) the importance of the variables in these dimensions making it possible to form the large groups of axes.

**Figure S1.1:** Visualization of the elbow (a) and variance explanation percentage (b) to establish the number of dimensions to be retained in the PCA of ecosystem function variables.

**Figure S1.2:** Visualization of the elbow (a) and percentage explanation of variance (b) to establish the number of dimensions to be retained in the PCA of environmental variables.

**Figure S1.3:** **PCA of abiotic variables measured in the boreal forest to perform a grouping**. The graphs represent in a) the dimensions 1 and 2 and in b) the dimensions 2 and 3. The grouping goes as follows: E1 = Organic matter related variables and pH, E2 = Temperature related variables and E3 = Eh regulation related variables. *n = 145*.

***Appendix 2 - Biodiversity correlations - abiotic environment***

**Figure S2.1: GLM of fungal alpha (α) and beta (β) biodiversity and abiotic environment variables.** Analyzed with a Gaussian beta law. Threshold of significance are as follows: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 '' 1. D2 represents the adjusted amount of deviance for GLM (*Dsquared* function in *modEvA* package v1.3.2). Temperature (14.0%) and Eh (12.0%) explains best the Fungal α-diversity. *n = 145*.

**Figure S2.2: GLM of bacterial alpha (α) and beta (β) biodiversity and abiotic environment variables**. Analyzed with a Gaussian beta law. Threshold of significance are as follows: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 '' 1. D2 represents the adjusted amount of deviance for GLM (*Dsquared* function in *modEvA* package v1.3.2). Organic matter and pH (17.0%) explain best the bacterial β-diversity. *n = 145*.

**Figure S2.3: GLMs explanation comparison with and without random variables of bacterial and fungal alpha (α) and beta (β) biodiversity and biotic environment variables**. D2 represents the adjusted amount of deviance for GLM (*Dsquared* function in *modEvA* package v1.3.2). R2m and R2c represent the effect of the fix variable and the effect of the entire model respectively.

***Appendix 3 - SEMs Regressions Correlations Coefficients***

**Table S3.1:** Fungal SEM regressions correlations coefficients values.

**Table S3.2:** Bacterial SEM regressions correlations coefficients values.

**Table S3.3:** Multifunctionality SEM regressions correlations coefficients values.