Affiliation supercript 2 is repeated

Methods

Include, in the section for stats, the analysis over time

L340 specify that for NCP the residuals of the models achieved a normal distribution, although not transformed.

Results

All the stats for lmer are reported as contrasts of the fixed part ($t_{df=\ldots}$ =…, *p*=…) which is the outcome of the summary() function in the lme4 package in R. However, this does not show the significance of the fixed effect being assessed in the model, just if there are specific differences between the intercepts and the factor categories (for categorical variables such as Region, Species, Season). In most of the analysis in this manuscript the fixed factors only have 2 categories, and so, this is likely not a problem as the stats reported are already showing differences between the two categories. However, in the case of Season there are 4 categories, and when the authors report "NCP was lower in spring (tdf=23.89=-3.69, $p<0.01$)" they are not reporting that there are differences among seasons. What they report is that spring is different from the intercept (I assume the intercept will be determined by Fall based on alphabetical order, although I am not sure what order the authors used in the code) and that the other categories are not different from the intercept.

I would recommend including the results table for the fixed factors, which can be obtained by using anova() function in R. For instance, in a model like "m1=lmer(metabolic rate ~ Region + Depth + Season + (1|Site))" use anova (m1) to report:

Region (DF=1, sum squares, mean squares, F-value, p=…)

Depth (as continuous) (DF=1, , sum squares, mean squares, F-value, p=…)

Season (DF=3, sum squares, mean squares, F-value, p=…)

And then use summary(m1) to report which specific categories are showing these differences, as it is already done.

I hope the following picture helps:

```
> sensors=subset(data,data$Methodology=="sensors")
> s=lmer(NCP~Region+Depth+Season+(1|Site),data=sensors)
> anova(s)
Type III Analysis of Variance Table with Satterthwaite's method
       Sum Sq Mean Sq NumDF  DenDF F value    Pr(>F)
Region  71404   71404     1  3.925 11.3725 0.0288098 *
Depth    3712    3712     1 10.293  0.5912 0.4592277
Season 197898   65966     3 25.649 10.5064 0.0001091 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
> summary(s)
Linear mixed model fit by REML. t-tests use Satterthwaite's method [lmerModLmerTest]
Formula: NCP ~ Region + Depth + Season + (1 | Site)
   Data: sensors

REML criterion at convergence: 415.6

Scaled residuals:
    Min      1Q  Median      3Q     Max
-3.5728 -0.4169  0.0610  0.5374  1.6511

Random effects:
 Groups   Name        Variance Std.Dev.
 Site     (Intercept) 10704    103.46
 Residual              6279     79.24
Number of obs: 40, groups:  Site, 7

Fixed effects:
            Estimate Std. Error       df t value Pr(>|t|)
(Intercept)  -244.314    125.738    5.585  -1.943  0.10360
RegionWEST    408.704    121.194    3.925   3.372  0.02881 *
Depth           6.531      8.493   10.293   0.769  0.45923
SeasonSpring -302.430     82.321   20.276  -3.674  0.00148 **
SeasonSummer  -41.255     68.630   20.695  -0.601  0.55428
SeasonWinter  -21.470     89.843   27.650  -0.239  0.81289
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Correlation of Fixed Effects:
            (Intr) RgWEST Depth  SsnSpr SsnSmm
RegionWEST  -0.829
Depth       -0.183 -0.092
SeasonSprng -0.153  0.082 -0.569
SeasonSummr -0.238  0.129 -0.602  0.814
SeasonWintr -0.128  0.087 -0.536  0.651  0.736
>
```

I am positive, based on the plots and the data in the tables that the results will be similar to what is already written, but the missing information is essential for readers to follow the process that the authors went through. If it is easier for the authors, they can add the results table from anova() and summary() in supplementary.

Other minor issues:

Table 2:

Missing depth in Alcanada ID 21.

Explain in the caption the difference between Yearly and Av. Year.

Table 3: There is an empty cell in the first column of benthic chambers - *Cymodocea nodosa* that I suspect corresponds to "Winter". Please add the missing label.

Figure 4: write the species names in italics

L235 pH sampling information can be removed

L369 replace statement “with as only factor methodology and as random effect study” with “with methodology as fixed factor and publication as random”

Fig S2a and S2b: Annual is missing an “n”

L380 typo in the p-value

L547 typo in “*Cymodcea nodosa”.* Actually, the species name can be abbreviated

L560 R or CR?

L581. There is (again) a reference to an inexistent appendix. Please check the text carefully to avoid these types of mistakes.

L624 remove capital letters in Eddy Covariance

L705 check that all species names are in italics

Along the text sometimes the authors use the term “study” and others “publication” to describe on of the random factors. I would suggest keeping consistency in the terms.

Along the text there is inconsistent use of acronyms. For instance, in *L576 “*Gross Productivity and Community Respiration” are used while GPP and CR have been already used before.