

## Fig.S12b

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Regarding Figure S12b. Reviewer: “Spatial variability could be as large as the interannual variability”

What we originally wrote: “The magnitude of NCP was similar among floats that overlapped in time.”

We run a linear mixed-effects model with year and float ID as random effects.

Results: most of the variability is attributed year-to-year changes, not spatial (at the float level) differences. (The model associated zero variance to float ID).

```
S12b <- read.delim("aNCP_export_spring_summer.txt", sep = " ")
```

```
# Linear mixed-effects model  
library(lme4)
```

```
## Loading required package: Matrix
```

```
library(Matrix)  
model.S12b <- lmer(aNCP_carbon_unit ~ (1 | year) + (1 | WMOID), data = S12b)
```

```
## boundary (singular) fit: see help('isSingular')
```

```
summary(model.S12b)
```

```
## Linear mixed model fit by REML ['lmerMod']  
## Formula: aNCP_carbon_unit ~ (1 | year) + (1 | WMOID)  
## Data: S12b  
##  
## REML criterion at convergence: 49  
##  
## Scaled residuals:  
##      Min       1Q   Median       3Q      Max   
## -1.55265 -0.36838 -0.03446  0.51426  1.09446   
##  
## Random effects:  
##  Groups   Name                Variance Std.Dev.  
##  year     (Intercept)  0.8133     0.9018  
##  WMOID     (Intercept)  0.0000     0.0000  
## Residual                    0.1296     0.3600  
## Number of obs: 23, groups:  year, 13; WMOID, 7  
##  
## Fixed effects:
```

```
##           Estimate Std. Error t value
## (Intercept)  2.0751      0.2639   7.863
## optimizer (nloptwrap) convergence code: 0 (OK)
## boundary (singular) fit: see help('isSingular')
```

Year is a major driver of the recorded aNCP variability, since the std.dev is ~0.9. float ID does not explain any additional variance. (The Variance is 0.0000) -> NCP is similar among floats that overlap in time.