**Response to Referee Comments (Anonymous), minor revisions**

**Referee Comment #1:** *Pg. 10 Line 32- Pg 11 Line 4. The assumption of a constant N fixation rate of 4.4 nmol/l/d from Day 23 requires more justification and analysis. "continued elevated A. flos-aquae biomass" does not reflect the data in Fig 5a , as there are only episodic increases in biomass apparent after D23 that exceed D21. A more robust approach to estimate N fixation after D21 would be to relate the biomass on each day, or use the post D21 average, to the biomass on D21. Whereas this has assumptions re the relationship between biomass & N fixation this would seem more robust than applying the highest N fixation rate uniformly.*

**Author response:** It is correct that a more intuitive approach to estimate N supply from $N_2$-fixation from *t23* onwards would be to use biomass-related estimations. We calculated a mean $N_2$-fixation rate relative to *Aphanizomenon* sp. biomass, as determined by microscopy counts, up until *t21* to be 2.0 ± 2.9 nmol N (µg Apha C)$^{-1}$ day$^{-1}$ (mean ± S.D.). This was then multiplied by *A. flos-aquae* biomass over the entire experiment and summed up for each treatment. The maximum cumulative N fixed after *t21* was 40 nmol N L$^{-1}$ (range = 19 – 40 nmol N), or 80 nmol N L$^{-1}$ assuming 50% DON release (see also response to Referee Comment #3 below). Hence in this biomass-related calculation, estimated total N supply from $N_2$-fixation during the study period would be 120 nmol N L$^{-1}$. This is even lower than our original estimation of 200 nmol N L$^{-1}$. This further highlights the small contribution of diazotrophic N to N supply in this plankton assemblage even if our very generous original estimation was applied. However, we believe that this more conservative estimation is more appropriate to include, considering the variable measured biomass of *A. flos-aquae* and an unknown biomass of non-filamentous diazotrophs. This is also acknowledged in the manuscript on P11, lines 7-9: 'This yielded a theoretical new N input from *A. flos-aquae* of only 200 nmol N L$^{-1}$, amounting to ~5% of mean PON pool standing stock (~ 3 µmol L$^{-1}$) and is clearly at the higher end of estimations.'

**Referee comment #2:** *Note that the delta 15N signal in the suspended & sinking matter increases after D17 (currently this increase is not mentioned) and then levels off, suggesting that if N fixation is responsible for this trend, then the N fixation rate decreases after D17.*

**Author response:** As correctly pointed out, there is an increase in $\delta^{15}N$ in suspended particulate N after *t15*, even though measured $N_2$-fixation rates do not decrease. While we can only speculate as to what caused this increase in $\delta^{15}N$, this is further evidence that $N_2$-fixation was a minor contributor to N supply during this study period. We have amended this in the manuscript on P10, lines 16 – 28 and added a line to the discussion on P12, lines 25 - 27.

**Referee comment #3:** *In addition, the assumption of "50% exudation of fixed N as DON or NH4" requires justification and/or citations.*

**Author response:** Justification as well as supporting citations have been added on P.11 lines 4-7 for our decision to use 50% as the proportion of DON/NH4+ release from $N_2$-fixation. This now reads: 'The assessment for between *t23* and *t43* is based on the premise of continued elevated *A. flos-aquae* biomass and assuming 50% exudation of fixed N as DON or $NH_4^+$ (<*t21* = 20 nmol N L$^{-1}$, >*t21* = 80 nmol L$^{-1}$ , total = 100 nmol N L$^{-1}$), and lies within the range of TDN release estimates from the literature for filamentous diazotrophic cyanobacteria in the Baltic Sea (33 – 80 %, Ohlendieck et al., 2007; Ploug et al., 2010; Stal et al., 2003; Wannicke et al., 2013).'