Supplement of

Application of the $^{15}$N gas-flux method for measuring in situ $N_2$ and $N_2O$ fluxes due to denitrification in natural and semi-natural terrestrial ecosystems and comparison with the acetylene inhibition technique

Fotis Sgouridis et al.

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**Supplementary Table 1**: Change of the soil volumetric water content (VWC) after the addition of the $^{15}$N-labelled tracer in each sampling plot in June and August 2013.

<table>
<thead>
<tr>
<th>Field Sites</th>
<th>Volume of soil water (cm$^3$)</th>
<th>Added tracer volume (cm$^3$)</th>
<th>Change in VWC (%)</th>
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**Supplementary Table 2:** Mineral NO$_3^-$-N, $^{15}$N-NO$_3^-$ amendment, the estimated enrichment of the total (ambient + tracer) soil nitrate pool in each field site in the June 2013 and August 2013 campaigns and the annual average soil nitrate pool enrichment in the same sites from 17 campaigns between April 2013 and October 2014.

<table>
<thead>
<tr>
<th>Field Sites</th>
<th>Ambient NO$_3^-$-N (kg ha$^{-1}$)</th>
<th>$^{15}$N-NO$_3^-$ application (kg ha$^{-1}$)</th>
<th>Enrichment of total soil NO$_3^-$ pool ($^{15}$N at %)</th>
<th>Average annual soil NO$_3^-$ pool enrichment ($^{15}$N at %)</th>
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**Supplementary Table 3:** Comparison between the $^{15}$X$_N$ calculated from both the N$_2$ and the N$_2$O isotope ratio data using equation (2). SE = Standard Error.
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**Supplementary Table 4:** Evaluation of the linearity of the evolved N\textsubscript{2} during field incubation, per sampling plot in each field site. Only those samples that were above the MDC value are used. Linear evolution of N\textsubscript{2} in a constant headspace volume is proven when T2/T1 = 2 and T3/T1 ~ 18-24. T1 = 1 hour, T2 = 2 hours and T3 ~ 18-24 hours of incubation time. Ratios close to the ideal values (± 5%) are highlighted in bold font.

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<th>T3</th>
<th>T2/T1</th>
<th>T3/T1</th>
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**Supplementary Table 5**: Evaluation of the linearity of the evolved N$_2$O during field incubation, per sampling plot in each field site. Only those samples that were above the MDC value are used. Linear evolution of N$_2$O in a constant headspace volume is proven when $T_2/T_1 = 2$ and $T_3/T_1 \sim 18-24$. T1 = 1 hour, T2 = 2 hours and T3 ~ 18-24 hours of incubation time. Ratios close to the ideal values (± 5%) are highlighted in bold font.

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<th>T3/T1</th>
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Supplementary Table 6: Evaluation of the change in the N₂O/ (N₂ + N₂O) ratio with incubation time. The denitrification product ratio is calculated only where both N₂ and N₂O fluxes are available. SE = Standard Error; n = number of samples per land use type.

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