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Bias in calculating gross nitrification rates in forested catchments using the triple oxygen isotopic composition ($\Delta^{17}O$) of stream nitrate

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Table S1. $\Delta^{17}O$ values of NO_3^-, leaching flux of NO_3^-, total metabolic rate of NO_3^- (GDR + uptake), and GNR in the simulated forested soil where the distribution of $\Delta^{17}O$ values of NO_3^- is heterogeneous.

Depth	$\Delta^{17}O$	NO_3^- flux	GDR+uptake	GNR
layer	‰	kg of N ha^{-1} y^{-1} $layer^{-1}$		
0	28.0	7.0	0.0	0.0
1	25.4	6.6	1.2	0.7
2	22.8	6.1	1.2	0.7
3	20.2	5.7	1.2	0.8
4	17.7	5.2	1.3	0.8
5	15.1	4.8	1.3	0.9
6	12.5	4.4	1.4	1.0
7	9.9	3.9	1.6	1.1
8	7.3	3.5	1.8	1.4
9	4.7	3.0	2.3	1.9
10	2.2	2.6	4.1	3.6
11	2.2	2.6	0.0	0.0
Total				13.0

Table S2. $\Delta^{17}O$ values of NO_3^-, leaching flux of NO_3^-, total metabolic rate of NO_3^- (GDR + uptake), and GNR in the simulated forested soil where the distribution of $\Delta^{17}O$ values of NO_3^- is homogeneous.

Depth	$\Delta^{17}O$	NO_3^- flux	GDR+uptake	GNR
layer	‰	kg of N ha^{-1} y^{-1} $layer^{-1}$		
0	28.0	7.0	0.0	0.0
1	2.2	6.6	84.0	83.6
2	2.2	6.1	0.4	0.0
3	2.2	5.7	0.4	0.0
4	2.2	5.2	0.4	0.0
5	2.2	4.8	0.4	0.0
6	2.2	4.4	0.4	0.0
7	2.2	3.9	0.4	0.0
8	2.2	3.5	0.4	0.0
9	2.2	3.0	0.4	0.0
10	2.2	2.6	0.4	0.0
11	2.2	2.6	0.0	0.0
Total				83.6

Table S3. $\Delta^{17}O$ values of NO_3^-, leaching flux of NO_3^-, total consumption rate of NO_3^- (GDR + uptake), and GNR in the simulated forested soil where the distribution of $\Delta^{17}O$ values of NO_3^- is heterogeneous. While the net nitrification from soil layer 1 to 5 showed positive values, the soil layer 6 to 10 showed negative values.

Depth	$\Delta^{17}O$	NO_3^- flux	GDR +uptake	GNR
layer	‰	kg of N ha^{-1} y^{-1} $layer^{-1}$		
0	28.0	7.0	0.0	0.0
1	25.4	7.4	0.3	0.7
2	22.8	7.9	0.4	0.8
3	20.2	8.3	0.6	1.0
4	17.7	8.8	0.8	1.2
5	15.1	9.2	1.1	1.5
6	12.5	7.9	3.2	1.9
7	9.9	6.6	3.4	2.1
8	7.3	5.2	3.6	2.3
9	4.7	3.9	4.2	2.9
10	2.2	2.6	6.0	4.7
11	2.2	2.6	0.0	0.0
Total				19.1