

## **Supplementary Materials and Methods**

### **S1. Taxonomic annotation with FROGS pipeline**

The tool « FROGS\_1 Pre-process » merges read 1 and read 2, removes primers from the right sequences, removes sequences of the wrong size, and with "ambiguous" bases N. These tools were used with default parameters and for « Reads 1 size; Reads 2 size; Minimum amplicon size and Maximum amplicon size », respectively: 250; 250; 200 and 700 bp. A total of 596,512 sequences remains after this stage. The tools « FROGS\_2 Clustering swarm » and « FROGS\_3 Remove chimera » were used with default parameters to cluster the sequences at 97% identity and remove possible chimera. This step removed 28.9% of the Operational Taxonomic Units (OTUs), representing 2.7% of the total sequences, and resulted in 25,462 OTUs. Then, « FROGS\_4 Cluster Filters » was used to select only OTUs represented by at least two sequences, with default parameters, and to remove contaminant clusters (e.g., chloroplast and mitochondria) using the contaminant databank « Arabido\_TAIR10\_Ch1\_Mito » of Galaxy: 1,803 OTUs were kept after this step, corresponding to 7.1% of the clusters and to 89.5% of all sequences. Taxonomic affiliation of each OTU's seed was carried out using the « FROGS\_5 Taxonomic affiliation » tool with « 16S\_SILVA\_Pintail80\_138.1 » as the reference database. Both BLAST assignments were performed, 1,605 OTUs have been affiliated, corresponding to 89.0% of the clusters and 97.5% of all remaining sequences.

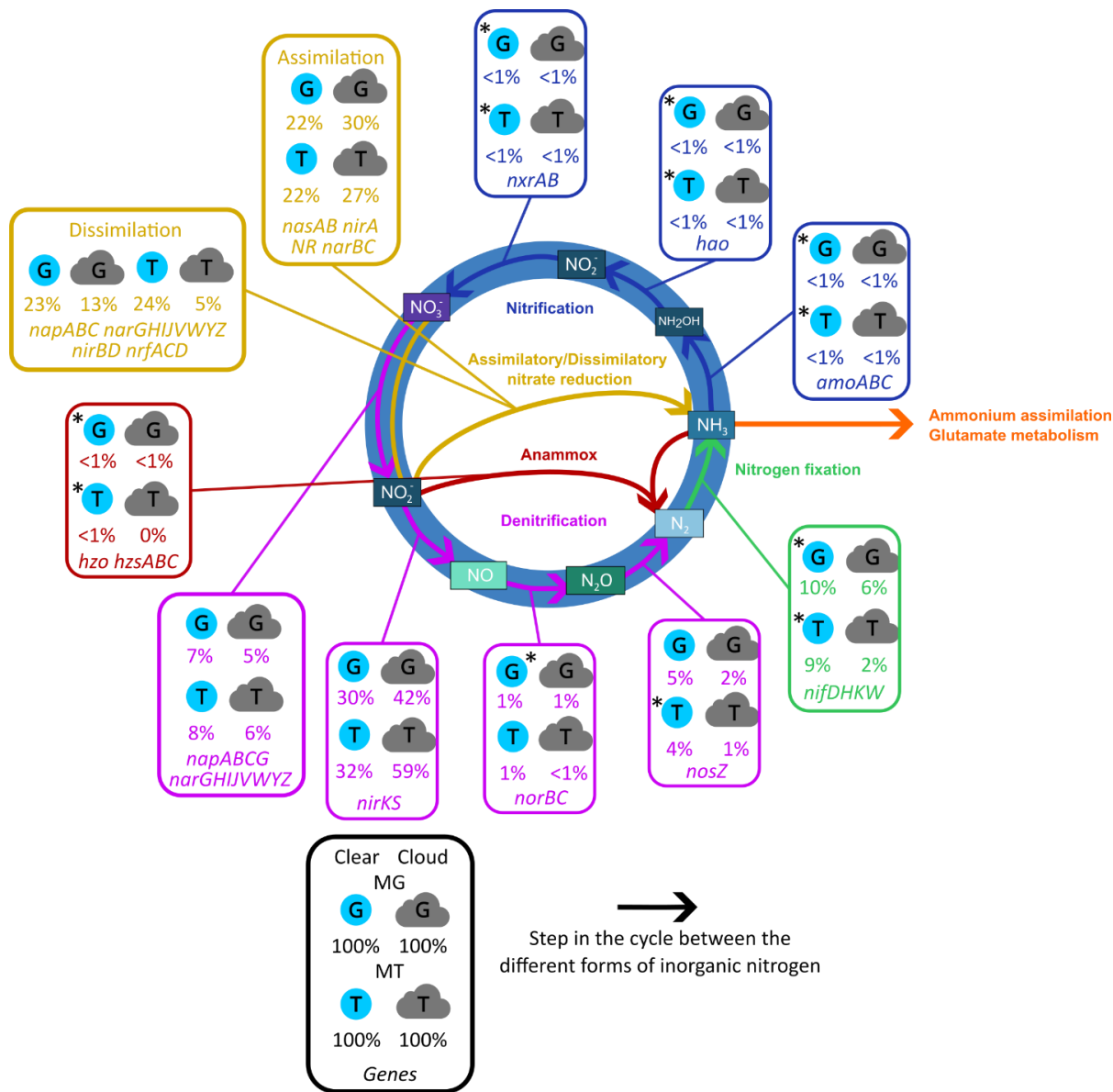
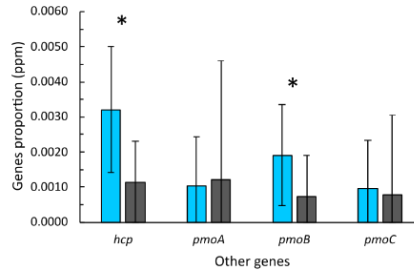
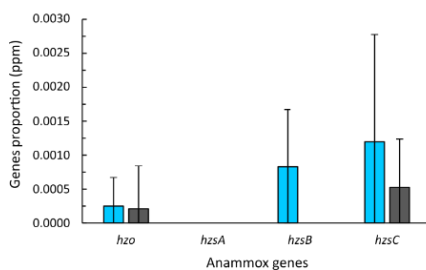
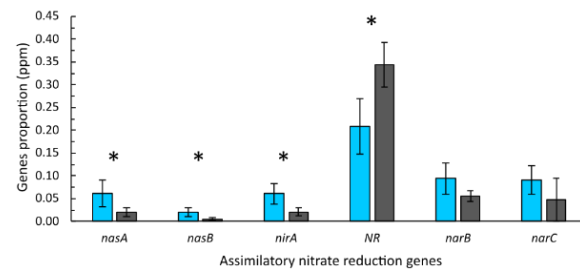
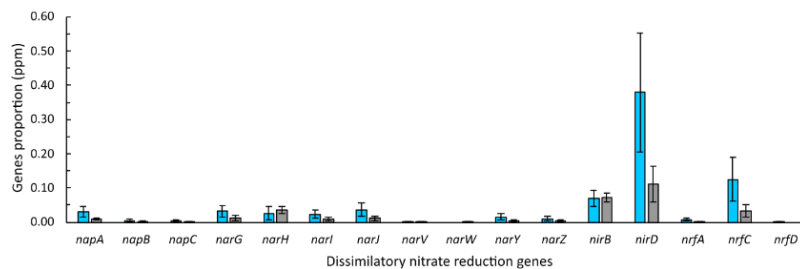
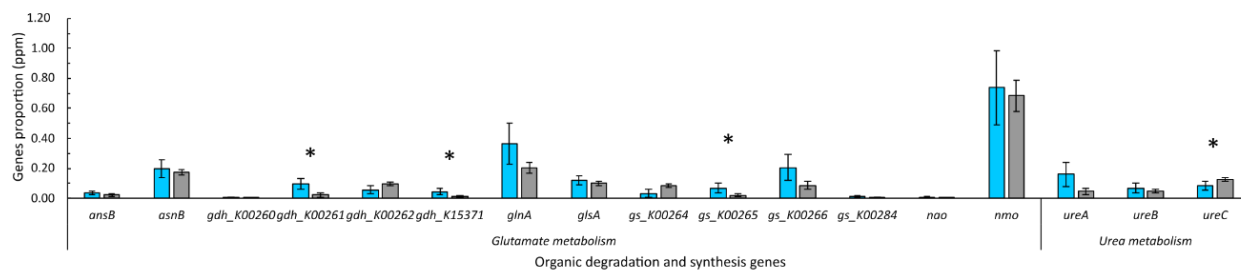
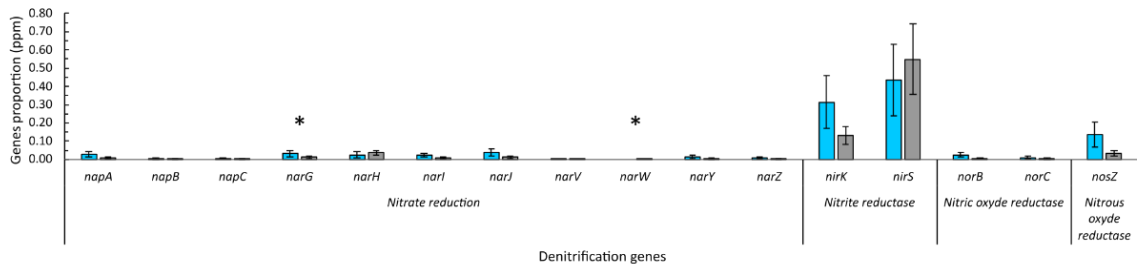
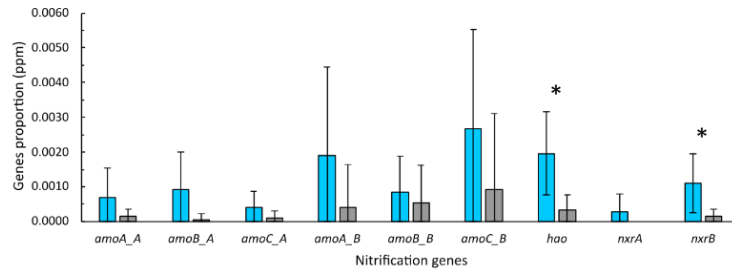
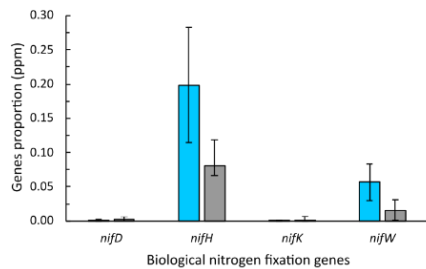
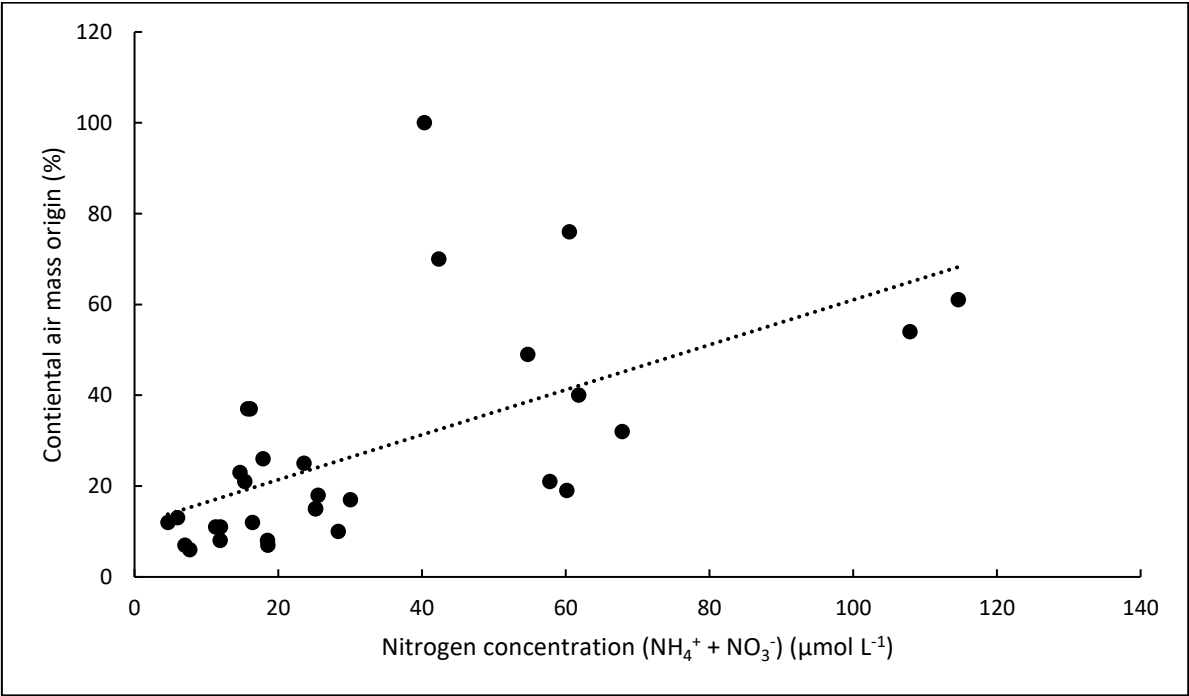


Figure S1. Representation of inorganic nitrogen cycle mediated by microorganisms in the atmosphere. Colors correspond to different steps in inorganic nitrogen cycle processes by atmospheric microorganisms with biomarker genes associated tested: green corresponds to biological nitrogen fixation, blue to nitrification, purple to denitrification, yellow to assimilatory/dissimilatory nitrate reduction, red to anammox and the output of the inorganic cycle with ammonium assimilation in orange. The grey cloud indicates the cloud conditions, and the blue circle indicates the clear atmosphere. Asterisks (\*) indicate significant differences between clear atmosphere and cloud condition in metagenomes (MG) and metatranscriptomes (MT) ( $p < 0.05$  Mann-Whitney test).

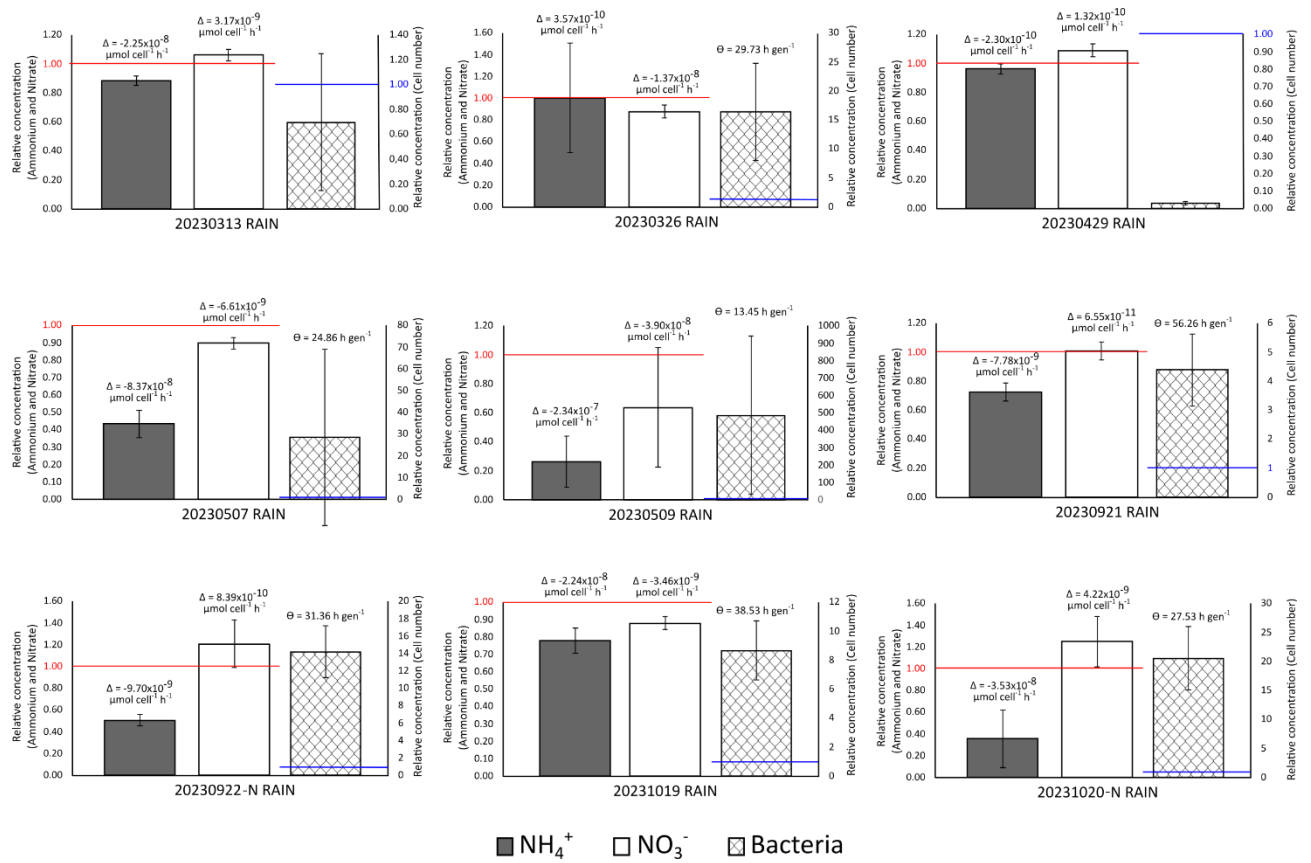


■ Clear MG ■ Cloud MG

**Figure S2. Proportion of different biomarker genes associated with steps in inorganic nitrogen cycle processes by atmospheric microorganisms in metagenomes (MG). The grey indicates the cloud condition, and the blue indicates the clear atmosphere condition. Asterisks (\*) indicate significant differences between clear atmosphere and cloud (p<0.05 Mann-Whitney test).**



**Figure S3. Relationship between concentration of nitrogen-containing ions (NH<sub>4</sub><sup>+</sup> + NO<sub>3</sub><sup>-</sup>) in μmol L<sup>-1</sup> and air mass origin (percentage of continental origin), linear fit R<sup>2</sup>=0.3551 ; p<0.05, Pearson test).**



**Figure S4. Evolution of ammonium concentration (grey bars), nitrate concentration (white bars) and microbial growth (hatched bars) during incubation indicated by  $t_f/t_0$  ratio,  $t_0$  means the start of incubation and  $t_f$  means the end of incubation, after 5 days at 17°C and 130 rpm; the blue and red lines correspond to unity ratio for ammonium and nitrate and for the number of bacteria, respectively;  $\Delta$  and  $\Theta$  are average ammonium or nitrate bioassimilation rates and bacteria generation times, respectively (Equations X and Y in main text).**

**Table S1: Atmospheric bacteria strains tested for their diazotrophic capacities**

Most identification	probable	Bacteria strain	Date sampling (dd/mm/yyyy)	Isolated from	GenBank accession number (16S rDNA)	Diazotrophic activity ( <i>nifH</i> gene presence)	Reference
<i>Rhodococcus enclensis</i>		23b-28	13/12/2007	Cloud pdD	OM827279	-	Renard et al., 2016
<i>Pseudomonas abietaniphila</i>		58b-25	25/06/2012	Cloud pdD	KR922137	-	Renard et al., 2016
<i>Pseudomonas reactans</i>		47b-7	31/03/2011	Cloud pdD	JN176591.1	-	Vinatier et al., 2016
<i>Roseomonas gilardii</i>		31b-6	30/03/2009	Cloud pdD	HQ256827.1	-	Vaïtilingom et al., 2012
<i>Pseudomonas syringae</i>		32b-74	03/11/2009	Cloud pdD	HQ256872.1	-	Vaïtilingom et al., 2012
<i>Sphingomonas</i> sp.		63b-36	29/01/2013	Cloud pdD	KR922234	-	Renard et al., 2016
<i>Bosea massiliensis</i>		R17b-4	22/03/2019	Cloud Reunion island	MW631990	-	Charpentier et al., 2024
<i>Rhizobium</i> sp.		R8b-4	03/2019	Cloud Reunion island	MW711701	-	Charpentier et al., 2024
<i>Methylobacterium</i> sp.		R17b-9	22/03/2019	Cloud Reunion island	MW631995	+	Charpentier et al., 2024
<i>Massilia</i> sp.		R18b-6	26/03/2019	Cloud Reunion island	MW632001	-	Charpentier et al., 2024
<i>Skermanella aerolata</i>		74b-1	16/02/2016	Cloud pdD	OM827391	-	This study
<i>Falsirhodobacter halotolerans</i>		R7b-1	03/2019	Cloud Reunion island	MW711418	-	Charpentier et al., 2024
<i>Pantoea</i> sp.		R15b-21	19/03/2019	Cloud Reunion island	MW631972	-	Charpentier et al., 2024
<i>Pseudomonas graminis</i>		13b-3	07/07/2004	Cloud pdD	DQ512786.1	-	Amato et al., 2007
<i>Pseudomonas viridiflava</i>		14b-14	23/09/2004	Cloud pdD	DQ512797.1	-	Amato et al., 2007
<i>Pseudomonas coleopterorum</i>		27b-3	09/10/2008	Cloud pdD	HQ256813.1	-	Vaïtilingom et al., 2012
<i>Pseudomonas fluorescens</i>		32b-26	03/11/2009	Cloud pdD	OM827287	-	This study
<i>Pseudomonas extremaustralis</i>		50b-8	07/07/2011	Cloud pdD	KR922074	-	Renard et al., 2016
<i>Pseudomonas amygdali</i>		50b-6	07/07/2011	Cloud pdD	KR922072	-	Renard et al., 2016
<i>Pseudomonas congelans</i>		57b-1	18/04/2012	Cloud pdD	KR922105	-	Renard et al., 2016
<i>Pseudomonas cannabina</i>		59b-3	13/09/2012	Cloud pdD	KR922141	-	Renard et al., 2016
<i>Sphingomonas</i> sp.		32b-11	03/11/2009	Cloud pdD	HQ256831.1	-	Vaïtilingom et al., 2012
<i>Sphingomonas</i> sp.		32b-57	03/11/2009	Cloud pdD	HQ256855.1	-	Vaïtilingom et al., 2012
<i>Sphingomonas</i> sp.		3b-10	11/12/2003	Cloud pdD	DQ512744.1	-	Amato et al., 2007
<i>Sphingomonas</i> sp.		12b-4	26/04/2004	Cloud pdD	DQ512779.1	+	Amato et al., 2007
<i>Sphingomonas</i> sp.		32b-4	03/11/2009	Cloud pdD	HQ256841.1	+	Vaïtilingom et al., 2012
<i>Sphingobium</i> sp.		35b-9	31/03/2010	Cloud pdD	JF706522	-	Vaïtilingom et al., 2012
<i>Sphingomonas</i> sp.		60b-7	10/10/2012	Cloud pdD	KR922185	-	Renard et al., 2016
<i>Sphingomonas</i> sp.		60b-19	10/10/2012	Cloud pdD	KR922194	-	Renard et al., 2016

<i>Sphingomonas</i> sp.	63b-26	29/01/2013	Cloud pdD	KR922228	+	Renard et al., 2016
<i>Sphingomonas</i> sp.	63b-45	29/01/2013	Cloud pdD	KR922242	-	Renard et al., 2016
<i>Sphingomonas</i> sp.	67b-24	19/02/2014	Cloud pdD	KR922266	-	Renard et al., 2016
<i>Novosphingobium</i> sp.	69b-29	14/11/2014	Cloud pdD	OM827358	+	This study
<i>Sphingomonas pseudosanguinis</i>	R10b-14	03/2019	Cloud Reunion island	MW711687	-	Charpentier et al., 2024

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**Table S2. Average gene proportion in atmospheric (Clear atmosphere or Cloud) metagenomes (MG) and metatranscriptomes (MT) in ppbbp (proportion per billion base pairs) for all genes tested with NCycDB. The column “All inorganic nitrogen gene” correspond to the addition of all inorganic nitrogen steps proportion. The column “All Nitrogen gene” correspond to the addition of all inorganic + organic nitrogen steps proportion.**

Average gene proportions (ppbbp)	Nitrification				Denitrification				Assimilatory nitrate reduction	Dissimilatory nitrate reduction	Nitrogen fixation	Anammox	Organic degradation and synthesis		Others	All inorganic nitrogen gene	All Nitrogen gene
	Air mass condition	Ammonia oxidation (Archae)	Ammonia oxidation (Bacteria)	Hydroxyl-amine oxidation	Nitrite oxydation	Nitrate reduction	Nitrite reductase	Nitric oxyde reductase	Nitrous oxyde reductase				Glutamate metabolism	Urea metabolism			
CLEAR MG	2	5	2	1	181	748	36	136	535	582	257	2	1982	308	7	2497	4788
CLOUD MG	0	2	0	0	88	681	9	35	492	216	99	1	1517	219	4	1628	3364
CLEAR MT	6	4	4	2	570	2099	44	251	1437	1579	619	0	6123	890	10	6627	13639
CLOUD MT	0	0	0	0	292	2787	12	46	1261	254	105	0	3127	199	3	4762	8088
MG	1	4	1	1	135	715	23	86	514	399	178	2	1750	264	5	2062	4076
MT	3	2	2	1	431	2443	28	149	1349	917	362	0	4625	544	7	5694	10863

**Table S3: Characteristics of rain sample, collected in Theix station 881m altitude asl. N.A.: not available.**



Sample identifier (yyyymmdd)	Sample volume (mL)	Air temperature (°C) daily average	NH <sub>4</sub> <sup>+</sup> (μmol L <sup>-1</sup> )	NO <sub>3</sub> <sup>-</sup> (μmol L <sup>-1</sup> )	Na <sup>+</sup> (μmol L <sup>-1</sup> )	K <sup>+</sup> (μmol L <sup>-1</sup> )	Mg <sub>2</sub> <sup>+</sup> (μmol L <sup>-1</sup> )	Ca <sub>2</sub> <sup>+</sup> (μmol L <sup>-1</sup> )	Cl <sup>-</sup> (μmol L <sup>-1</sup> )	SO <sub>4</sub> <sup>2-</sup> (μmol L <sup>-1</sup> )	PO <sub>4</sub> <sup>3-</sup> (μmol L <sup>-1</sup> )	pH	Cell concentration (cells mL)	Air Mass Direction
20230109_RAIN	157	2	19.7	5.8	80.4	7.2	5.1	0.2	100.9	5.0	2.2	5.8	6.47×10 <sup>3</sup>	NWW
20230121_RAIN	66	-3.3	24.6	30.1	28.3	9.9	2.6	1.0	31.8	2.6	2.2	5.4	1.70×10 <sup>3</sup>	NNW/NNE
20230308_RAIN	231	8.3	22.0	8.0	8.1	3.1	0.8	0.0	9.3	2.1	2.2	6.06	6.61×10 <sup>2</sup>	SSW
20230309_RAIN	132	8.4	21.9	6.4	24.5	2.4	2.0	0.0	29.7	2.4	2.2	6.05	1.18×10 <sup>4</sup>	SSW
20230310_RAIN	839	5.9	4.6	1.4	22.1	4.0	1.4	0.0	26.5	1.3	2.2	5.96	1.94×10 <sup>2</sup>	NWW/SWW
20230311_RAIN	810	9.8	5.6	1.4	12.7	7.7	0.7	0.0	13.1	0.5	2.2	5.91	1.96×10 <sup>2</sup>	SWW
20230313_RAIN	270	11.9	48.7	13.1	8.5	4.2	1.0	1.7	8.6	5.4	2.2	5.88	2.08×10 <sup>3</sup>	SWW
20230314_RAIN	239	4.7	15.8	2.7	29.9	2.1	2.6	0.9	34.4	2.3	2.2	5.96	8.06×10 <sup>2</sup>	NWW/SWW
20230326_RAIN	354	5.6	13.1	3.3	23.2	5.7	1.8	0.7	26.3	1.9	2.5	5.69	2.49×10 <sup>2</sup>	SWW
20230429_RAIN	382	13	48.4	12.0	3.2	1.7	0.9	0.0	4.7	5.3	2.2	6.21	6.73×10 <sup>4</sup>	SWW/SSW
20230501_RAIN	70	9	53.8	14.0	4.1	3.6	1.1	0.3	5.1	5.5	2.5	6.05	1.33×10 <sup>3</sup>	NWW
20230505_RAIN	129	11.3	76.0	31.9	20.1	6.1	3.6	10.6	16.6	10.3	2.6	6.01	3.92×10 <sup>2</sup>	SWW
20230506_RAIN	178	13.8	79.8	34.8	15.3	6.4	2.9	3.2	14.6	7.9	3.8	N.A.	2.30×10 <sup>3</sup>	SWW/SSW
20230507_RAIN	819	11.6	16.5	7.1	56.4	33.5	1.7	0.6	58.5	2.1	2.6	N.A.	9.29×10 <sup>2</sup>	SWW
20230509_RAIN	284	11.2	13.8	4.7	0.6	2.3	0.9	0.2	2.2	1.4	2.4	5.57	3.63×10 <sup>2</sup>	SWW
20230511_RAIN	181	6.8	12.6	3.4	14.4	6.8	1.2	1.0	13.6	1.9	2.2	N.A.	6.07×10 <sup>3</sup>	NWW
20230512_RAIN	957	7.2	27.0	15.3	5.2	1.2	0.9	0.7	5.7	3.5	2.2	5.42	1.44×10 <sup>3</sup>	NNE/NWW
20230513_RAIN	190	8.8	23.5	16.9	3.3	1.8	1.0	1.4	3.1	3.5	2.2	5.48	3.49×10 <sup>3</sup>	NEE/NNE
20230918_RAIN	107	16.6	10.8	4.5	*	0.6	1.0	3.1	*	0.9	2.2	5.45	4.01×10 <sup>2</sup>	SWW
20230921_RAIN	270	13.2	45.6	12.2	3.4	0.9	1.3	0.9	2.6	3.4	2.5	5.47	1.35×10 <sup>4</sup>	SWW
20230922_RAIN	112	10.2	10.2	1.8	15.2	0.6	2.0	0.2	16.9	1.8	3.0	5.82	9.48×10 <sup>3</sup>	NWW/SWW
20230922_RAIN	149	10.2	9.3	1.9	15.5	0.5	1.7	*	19.1	1.9	2.4	5.55	3.96×10 <sup>3</sup>	NWW/SWW
20231018_RAIN	159	15	12.0	2.6	2.0	0.8	1.1	0.0	1.8	1.2	2.3	N.A.	6.45×10 <sup>3</sup>	SWW
20231019_RAIN	164	14.2	46.8	13.3	2.5	1.0	0.6	0.0	3.9	3.8	2.3	N.A.	3.89×10 <sup>3</sup>	SWW
20231020_RAIN	221	11	6.7	1.0	0.0	0.9	0.7	0.6	0.5	0.1	3.1	N.A.	2.00×10 <sup>3</sup>	NWW
20231020_RAIN	169	11	13.7	4.2	0.0	0.6	0.6	0.0	0.4	0.6	2.7	N.A.	2.08×10 <sup>3</sup>	SWW
20231023_RAIN	126	10.7	11.4	4.3	5.8	1.2	1.7	8.4	6.8	2.3	2.3	6.07	4.05×10 <sup>3</sup>	SWW/SSW
20231025_RAIN	150	11.3	9.6	2.2	0.0	0.3	0.6	0.0	0.4	0.4	2.2	6.15	1.87×10 <sup>3</sup>	NWW/SWW
20231026_RAIN	489	10.9	23.6	1.6	1.9	19.5	1.5	0.0	4.9	2.5	6.7	5.94	5.93×10 <sup>3</sup>	SWW
20231027_RAIN	78	8.5	3.3	1.3	1.4	0.2	0.3	0.0	4.3	0.6	2.2	6.01	1.79×10 <sup>3</sup>	NWW/SWW
<b>Mean</b>	283	9.6	24.4	8.8	14.1	4.6	1.5	1.2	16.1	2.8	2.6	5.82	5.44×10 <sup>3</sup>	-
<b>Median</b>	180	10.5	16.1	4.6	8.1	2.2	1.2	0.3	8.6	2.2	2.3	5.91	2.04×10 <sup>3</sup>	-
<b>Min</b>	66	-3.3	3.3	1.0	0.0	0.2	0.3	0.0	0.4	0.1	2.2	5.4	1.94×10 <sup>2</sup>	-
<b>Max</b>	957	16.6	79.8	34.8	80.4	33.5	5.1	10.6	100.9	10.3	6.7	6.21	6.73×10 <sup>4</sup>	-
<b>Standard deviation</b>	248	4.0	20.4	9.3	17.9	6.8	1.0	2.5	21.1	2.3	0.9	0.26	1.22×10 <sup>4</sup>	-

Table S4. Correlations between the main factors tested on fresh rainwater samples (Table S3). The correlation tested is the Spearman correlation with the pvalue of the statistical test on the upper half and the Spearman score on the lower half.

	Spearman rs	pvalue												
		Sample volume (mL)	Air temperature (°C) daily average	NH <sub>4</sub> <sup>+</sup> (μmol L <sup>-1</sup> )	NO <sub>3</sub> <sup>-</sup> (μmol L <sup>-1</sup> )	Na <sup>+</sup> (μmol L <sup>-1</sup> )	K <sup>+</sup> (μmol L <sup>-1</sup> )	Mg <sup>2+</sup> (μmol L <sup>-1</sup> )	Ca <sup>2+</sup> (μmol L <sup>-1</sup> )	Cl <sup>-</sup> (μmol L <sup>-1</sup> )	SO <sub>4</sub> <sup>2-</sup> (μmol L <sup>-1</sup> )	PO <sub>4</sub> <sup>3-</sup> (μmol L <sup>-1</sup> )	pH	Cell concentration (cells mL <sup>-1</sup> )
Statistic score	Sample volume (mL)		0.96	0.75	0.62	0.95	0.06	0.37	0.36	0.94	0.94	0.99	0.76	0.25
	Air temperature (°C) daily average	-0.01		0.29	0.43	0.01	0.09	0.13	0.85	1.88E-03	0.88	0.04	0.55	0.26
	NH <sub>4</sub> <sup>+</sup> (μmol L <sup>-1</sup> )	0.06	0.20		1.61E-10	0.55	0.03	0.16	0.09	0.82	4.43E-12	0.44	0.90	0.31
	NO <sub>3</sub> <sup>-</sup> (μmol L <sup>-1</sup> )	-0.09	0.15	0.88		0.28	0.11	0.20	0.01	0.62	3.51E-08	0.83	0.33	0.75
	Na <sup>+</sup> (μmol L <sup>-1</sup> )	-0.01	-0.49	0.12	0.21		1.06E-03	1.38E-07	0.05	3.62E-19	0.08	0.35	0.36	0.46
	K <sup>+</sup> (μmol L <sup>-1</sup> )	0.35	-0.31	0.40	0.30	0.58		0.01	0.29	8.24E-04	0.02	0.90	0.82	0.22
	Mg <sup>2+</sup> (μmol L <sup>-1</sup> )	-0.17	-0.28	0.26	0.24	0.81	0.48		0.01	9.16E-07	0.01	0.28	0.41	0.47
	Ca <sup>2+</sup> (μmol L <sup>-1</sup> )	-0.17	0.04	0.32	0.49	0.37	0.20	0.48		0.16	0.03	0.61	0.05	0.63
	Cl <sup>-</sup> (μmol L <sup>-1</sup> )	-0.01	-0.55	0.04	0.10	0.97	0.59	0.77	0.27		0.16	0.38	0.57	0.40
	SO <sub>4</sub> <sup>2-</sup> (μmol L <sup>-1</sup> )	-0.01	0.03	0.91	0.82	0.33	0.43	0.46	0.41	0.27		0.83	0.93	0.17
	PO <sub>4</sub> <sup>3-</sup> (μmol L <sup>-1</sup> )	0.00	0.38	0.14	-0.04	-0.18	0.02	0.20	0.10	-0.17	0.04		0.81	0.59
	pH	-0.07	0.13	-0.03	-0.21	-0.20	-0.05	-0.18	-0.43	-0.13	-0.02	-0.05		0.62
	Cell concentration (cells mL <sup>-1</sup> )	-0.22	0.21	0.19	0.06	-0.14	-0.23	0.14	-0.09	-0.16	0.26	0.10	-0.05	

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**Table S5. Correlations between the main factors tested on rainwater incubation samples (Table S3). The correlation tested is the Spearman correlation with the pvalue of the statistical test on the upper half and the Spearman score on the lower half.**

	Spearman rs	Cells concentration (cell mL <sup>-1</sup> )	BHL	Sample volume	T*°	Na+ (μmol L <sup>-1</sup> )	NH4+ (μmol L <sup>-1</sup> )	K+ (μmol L <sup>-1</sup> )	Mg2+ (μmol L <sup>-1</sup> )	Ca2+ (μmol L <sup>-1</sup> )	Cl- (μmol L <sup>-1</sup> )	NO3- (μmol L <sup>-1</sup> )	SO42- (μmol L <sup>-1</sup> )	PO43- (μmol L <sup>-1</sup> )	Bioassimilation rate NH4+	Bioassimilation rate NO3-	pH	Marine High	Marine Low	Continental High	Continental Low	Bacteria richness	Sphingomonadales (%)	Burkholderiales (%)
Statistic score	Cells concentration (cell mL <sup>-1</sup> )		0.51	0.42	0.11	0.62	0.30	0.08	0.47	0.52	0.59	0.36	0.19	0.29	0.29	0.15	0.96	0.62	0.02	0.24	0.95	0.88	0.02	0.01
	BHL	-0.25		0.99	0.78	0.79	0.57	0.68	0.96	0.05	0.44	0.44	0.87	0.63	0.88	0.98	0.71	0.66	0.68	0.30	0.84	0.03	0.91	0.50
	Sample volume	-0.31	0.01		0.97	0.34	0.56	0.01	0.39	0.71	0.32	0.96	0.71	0.83	0.99	0.18	0.16	0.21	0.77	0.73	0.18	0.20	0.17	0.88
	T*°	0.58	0.12	-0.02		0.49	0.01	0.91	0.18	0.89	0.49	0.00	0.04	0.24	1.00	0.91	1.00	0.83	0.12	0.03	0.77	0.82	0.05	0.10
	Na+ (μmol L <sup>-1</sup> )	-0.19	-0.10	0.36	-0.27		0.71	0.18	0.00	0.09	0.00	0.61	0.53	0.83	0.44	0.57	0.92	0.64	0.55	1.00	0.70	0.82	0.81	0.63
	NH4+ (μmol L <sup>-1</sup> )	0.38	0.22	0.23	0.83	-0.15		0.48	0.28	0.79	0.79	0.00	0.00	0.08	0.96	0.66	0.27	0.39	0.25	0.06	0.33	0.70	0.44	0.42
	K+ (μmol L <sup>-1</sup> )	-0.63	0.17	0.80	-0.05	0.50	0.27		0.31	0.28	0.13	0.68	0.53	0.94	0.74	0.12	0.27	0.26	0.61	0.85	0.27	0.82	0.12	0.50
	Mg2+ (μmol L <sup>-1</sup> )	-0.28	0.03	0.32	-0.49	0.91	-0.41	0.38		0.05	0.01	0.22	0.94	0.56	0.33	0.42	0.43	0.60	0.80	0.58	0.92	0.88	0.45	0.89
	Ca2+ (μmol L <sup>-1</sup> )	-0.27	0.73	0.16	-0.07	0.66	0.12	0.44	0.74		0.31	0.83	0.53	0.89	0.83	0.83	0.60	0.70	0.74	0.31	0.93	0.14	0.47	0.52
	Cl- (μmol L <sup>-1</sup> )	-0.21	-0.30	0.38	-0.27	0.95	-0.10	0.55	0.79	0.41		0.64	0.44	0.89	0.46	0.57	0.69	0.93	0.74	0.75	0.49	0.53	0.81	0.63
	NO3- (μmol L <sup>-1</sup> )	0.34	0.30	0.03	0.93	-0.20	0.92	0.17	-0.46	0.10	-0.18		0.02	0.18	0.88	0.91	0.66	0.84	0.34	0.02	0.91	0.43	0.17	0.42
	SO42- (μmol L <sup>-1</sup> )	0.49	0.07	0.14	0.71	0.24	0.86	0.24	-0.03	0.27	0.29	0.78		0.03	0.39	0.65	0.33	0.59	0.14	0.11	0.34	0.80	0.44	0.42
	PO43- (μmol L <sup>-1</sup> )	-0.39	0.19	0.08	-0.44	0.08	-0.62	-0.03	0.22	-0.06	-0.06	-0.49	-0.73		0.55	0.82	0.18	0.40	0.68	0.90	0.53	0.91	0.70	0.73
	Bioassimilation rate NH4+	-0.39	-0.07	-0.01	0.00	-0.30	0.02	0.13	-0.36	-0.10	-0.28	0.07	-0.33	0.23		0.88	0.71	0.48	0.61	0.72	0.42	0.95	0.03	0.02
	Bioassimilation rate NO3-	-0.53	-0.02	0.49	-0.05	0.22	-0.17	0.57	0.30	0.10	0.22	-0.05	-0.18	0.09	0.07		0.66	0.93	0.44	0.30	0.39	0.33	0.47	0.78
	pH	0.03	-0.20	0.67	-0.03	-0.09	0.54	0.54	-0.41	-0.30	0.20	0.26	0.49	-0.72	-0.20	-0.26		0.03	0.66	0.80	0.02	0.63	0.92	0.75
	Marine High	0.19	-0.17	-0.46	0.08	0.18	-0.33	-0.42	0.20	0.17	0.03	-0.08	-0.21	0.32	0.27	0.03	-0.89		0.35	0.42	0.01	0.86	0.78	0.81
	Marine Low	-0.79	0.17	-0.12	-0.57	-0.23	-0.43	0.20	-0.10	-0.15	-0.13	-0.37	-0.54	0.16	0.20	0.30	0.26	-0.35		0.08	0.99	0.67	0.33	0.05
	Continental High	0.44	0.39	-0.13	0.74	0.00	0.65	-0.08	-0.21	0.40	-0.13	0.75	0.57	-0.05	0.14	-0.39	-0.14	0.31	-0.63		0.85	0.20	0.36	0.62
	Continental Low	-0.03	0.08	0.50	-0.11	0.15	0.37	0.42	0.04	0.05	0.26	0.04	0.36	-0.24	-0.30	-0.32	0.94	-0.85	0.01	-0.07		0.77	0.84	0.78
	Bacteria richness	-0.07	0.81	-0.56	0.11	-0.11	0.18	-0.11	-0.07	0.70	-0.29	0.36	0.13	0.06	0.04	-0.43	-0.36	0.09	0.20	0.56	-0.15		0.80	0.42
	Sphingomonadales (%)	-0.85	-0.07	0.59	-0.79	0.11	-0.36	0.64	0.35	0.33	0.11	-0.61	-0.36	0.18	0.82	0.32	0.20	-0.14	0.43	-0.41	0.11	-0.14		0.07
	Burkholderiales (%)	0.88	-0.32	0.07	0.68	0.21	0.36	-0.32	0.07	-0.30	0.21	0.36	0.36	-0.16	-0.86	-0.14	0.40	0.11	-0.79	0.23	0.15	-0.43	-0.75	

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