

1 **GAS GEOCHEMISTRY AT GRANDE COMORE AND MAYOTTE VOLCANIC ISLANDS (COMOROS**  
2 **ARCHIPELAGO), INDIAN OCEAN**

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19 **Key Points:**

- 20 • Map of the spatial distribution of ground CO<sub>2</sub> emissions and its isotopic characteristics in  
21 both islands Grande Comore and Mayotte
- 22 • Geochemical characterisation of fumarolic and hydrothermal gases in terms of both  
23 primary component species and isotopic characteristics
- 24 • Correlation between the variability of geochemical tracers and the new submarine volcano  
25 off Mayotte and its implications for the risk to the island's inhabitants

Table 1: Chemical composition of major and minor gaseous components and isotopic values from fumaroles, bubbling area and soil emission of Grande Comore and Mayotte.

Sampling Date	Sample	Lat	Long	Site	Major (Raw)								$\delta^{13}\text{C}$ (‰)		$\delta\text{D}$ (‰)
					T (°C)	CO <sub>2</sub> (Vol%)	CO (ppmv)	CH <sub>4</sub> (ppmv)	N <sub>2</sub> (Vol%)	O <sub>2</sub> (Vol %)	H <sub>2</sub> (ppmv)	He (ppmv)	CO <sub>2</sub>	CH <sub>4</sub>	CH <sub>4</sub>
08/09/2019	Dist N	-12.80064	45.28883	BAS		97.1		2854.0	0.3	0.04		25.0	-4.1	-21.6	
08/09/2019	Dist N	-12.80064	45.28883	BAS		98.5		2982.0	0.4	0.04	112.0	26.0	-4.0	-21.8	
08/09/2019	C1-2	-12.80015	45.28736	BAS		98.7		2444.0	0.3	0.06		29.0	-4.7	-21.0	
08/09/2019	C1-2	-12.80015	45.28736	BAS		97.3		2384.0	0.5	0.07	16.0	28.0	-4.7	-19.2	
13/09/2019	Dist 2	-12.8005	45.28871	BAS		98.3	1.2	2914.0	0.3	0.10		27.0	-3.8	-22.0	
08/09/2019	DIST-1	-12.80064	45.28883	BAS			18.0	390000.0	43.1	15.81	8.0	3558.0		-22.1	-137.8
08/09/2019	C1-2	-12.80015	45.28736	BAS			4.1	455400.0	48.0	2.96	11.0	5528.0		-19.6	-118.1
06/04/2019	Dist 1-A	-12.80064	45.28883	BAS	39.2	97.1	1.2	2442.0	0.5	0.16	<1	21.0	-3.7	-24.4	
06/04/2019	Dist 1-B	-12.80064	45.28883	BAS	39.1	95.8	2.4	2426.0	1.7	0.51	<1	20.0	-3.6		
06/04/2019	Dist 2	-12.8005	45.28871	BAS	nd	97.3	2.1	2406.0	0.3	0.11	<1	19.0	-3.5	-21.4	
06/04/2019	C 1 -1	-12.80015	45.28736	BAS	43	97.0	2.1	2088.0	0.8	0.20	<1	23.0	-4.2	-19.0	
06/04/2019	C 1 -3	-12.80015	45.28736	BAS	43.2	97.0	5.0	2036.0	0.9	0.21	<1	23.0	-4.3	-19.0	
06/04/2019	MAR 3	-12.80051	45.28740	BAS	42	96.5	10.0	2725.0	1.6	0.36	<1	27.0	-4.2	-21.0	
16/12/2018	MAR-1	-12.80036	45.28766	BAS	30.2	63.3	1.6	1209.0	27.8	7.50	2.2	7.0			
16/12/2018	MAR-1	-12.80036	45.28766	BAS	30.2								-4.8		
16/12/2018	CI-1a	-12.80015	45.28736	BAS	29.5	28.7	2.1	416.0	55.0	14.95	<1	bdl	-4.5	-18.7	
16/12/2018	C1-b	-12.80015	45.28736	BAS	29.5	97.9	1.7	2130.0	0.7	0.10	318.0	23.0	-4.5		
16/12/2018	CI-1	-12.80015	45.28736	BAS	29.5								-4.9		
16/12/2018	CI-2	-12.80015	45.28736	BAS	29.4										
16/12/2018	MAN-1	-12.80064	45.28705	BAS	30.1	95.5	0.7	4587.0	2.5	0.21	<1	107.0	-5.1	-12.4	
16/12/2018	MAN-1	-12.80064	45.28705	BAS	30.1								-5.6		
16/12/2018	MAN-2	-12.80064	45.28705	BAS	30.1	83.5	8.0	4621.0	12.0	2.69	<1	110.0	-5.0	-11.7	
16/12/2018	MAN-2	-12.80064	45.28705	BAS	30.1								-5.7		
12/10/2018	Karthala 1	-11.75833	43.360518	CC		50.3	74.9	40.7	37.1	9.38	63.2	16.6	-4.9		
12/10/2018	Karthala 2	-11.75834	43.360379	CC		39.9	23.1	0.0	44.9	11.53	88.1	13.5	-4.5		
13/10/2018	Ka-Su-01	-11.73217	43.363274	LS		92.2	24.1	345.8	1.0	0.21	25992.2	12.7	-4.6		
13/10/2018	Ka-Su-02	-11.73222	43.363317	LS		53.5	22.6	149.6	33.4	8.71	14000.0	12.3	-3.9		
13/10/2018	Ka-Su-03	-11.73334	43.364004	LS		46.6	15.5	145.8	39.6	10.13	11600.0	9.5	-5.0		

Table 1 - Continued

Sampling Date	Sample	Site	Noble gases isotopes											
			R/Ra	<sup>4</sup> He/ <sup>20</sup> Ne	<sup>4</sup> He ppm	<sup>20</sup> Ne ppm	Rc/Ra	<sup>40</sup> Ar ppm	<sup>38</sup> Ar ppm	<sup>36</sup> Ar ppm	<sup>40</sup> Ar* ppm	<sup>40</sup> Ar atm	<sup>40</sup> Ar/ <sup>36</sup> Ar corr	<sup>38</sup> Ar/ <sup>36</sup> Ar corr
08/09/2019	Dist N	BAS	6.9	329.4	24.4	0.07	6.9	59.3	0.028	0.15	14.9	44.4	392.0	0.1863
08/09/2019	Dist N	BAS	6.9	261.6	25.1	0.10	6.9	55.2	0.025	0.13	16.4	38.8	418.0	0.1878
08/09/2019	C1-2	BAS	7.2	529.1	27.5	0.05	7.2	62.8	0.027	0.14	20.2	42.6	434.1	0.1872
08/09/2019	C1-2	BAS	7.1	152.4	26.0	0.17	7.1	125.3	0.067	0.36	19.6	105.7	348.1	0.1871
13/09/2019	Dist 2	BAS	7.2	310.7	25.7	0.08	7.2	72.0	0.036	0.19	15.4	56.6	374.4	0.1865
08/09/2019	DIST-1	BAS												
08/09/2019	C1-2	BAS												
06/04/2019	Dist 1-A	BAS	7.1	167.7	21.2	0.13	7.1	87.3	0.045	0.24	15.1	72.2	354.9	0.1856
06/04/2019	Dist 1-B	BAS		1663.9										
06/04/2019	Dist 2	BAS												
06/04/2019	C 1 -1	BAS	7.5	219.3	22.5	0.10	7.5	105.5	0.055	0.30	16.2	89.3	347.4	0.1842
06/04/2019	C 1 -3	BAS	7.3	138.9	22.5	0.16	7.3	141.9	0.079	0.43	15.9	126.0	331.8	0.1852
06/04/2019	MAR 3	BAS	7.2	107.8	27.2	0.25	7.3	239.0	0.139	0.75	17.4	221.5	318.1	0.1861
16/12/2018	MAR-1	BAS	3.2	1.1	8.2	7.65	4.2	3346.6	2.146	11.53	-	-	290.7	0.1861
16/12/2018	MAR-1	BAS												
16/12/2018	CI-1a	BAS												
16/12/2018	C1-b	BAS	7.1	200.3	23.2	0.12	7.1	75.1	0.035	0.19	18.5	56.6	390.3	0.1875
16/12/2018	CI-1	BAS												
16/12/2018	CI-2	BAS												
16/12/2018	MAN-1	BAS	6.4	222.2	102.0	0.46	6.4	497.8	0.263	1.41	81.3	416.4	352.8	0.1873
16/12/2018	MAN-1	BAS												
16/12/2018	MAN-2	BAS	6.9	43.6	113.3	2.60	7.0	1762.8	1.072	5.71	74.6	1688.2	308.8	0.1879
16/12/2018	MAN-2	BAS												
12/10/2018	Karthala 1	CC	5.0	1.7	12.3	7.11	5.9	3827.3	2.475	13.06			296.3	0.1894
12/10/2018	Karthala 2	CC	4.8	1.5	12.7	8.75	5.8	5152.8	3.301	17.42			295.9	0.1894
13/10/2018	Ka-Su-01	LS	5.7	356.6	11.9	0.03	5.7	32.9	0.013	0.08	8.5		378.3	0.1810
13/10/2018	Ka-Su-02	LS	3.8	1.3	10.4	7.88	4.7	5047.3	3.068	16.38			308.3	0.1872
13/10/2018	Ka-Su-03	LS	4.4	1.4	10.0	7.06	5.4	4450.6	2.671	14.26			312.3	0.1873

Table 1 - Continued

Sampling Date	Sample	Site	Corrected for air contamination					
			He ppm	H <sub>2</sub> ppm	N <sub>2</sub> %	CH <sub>4</sub> ppm	CO ppm	CO <sub>2</sub> %
08/09/2019	Dist N	BAS	25.6		0.15	2925.3		99.6
08/09/2019	Dist N	BAS	26.2	113.0	0.29	3008.4		99.4
08/09/2019	C1-2	BAS	29.3		0.12	2467.3		99.6
08/09/2019	C1-2	BAS	28.6	16.4	0.22	2438.3		99.5
13/09/2019	Dist 2	BAS	27.4			2958.4	1.22	99.8
08/09/2019	DIST-1	BAS						
08/09/2019	C1-2	BAS						
06/04/2019	Dist 1-A	BAS	21.6			2512.6	1.23	99.9
06/04/2019	Dist 1-B	BAS	20.7			2532.0	2.50	100.0
06/04/2019	Dist 2	BAS	19.5			2469.4	2.15	99.8
06/04/2019	C 1 -1	BAS	23.6		0.01	2148.0	2.16	99.8
06/04/2019	C 1 -3	BAS	23.6		0.14	2090.7	5.13	99.6
06/04/2019	MAR 3	BAS	27.7		0.22	2809.4	10.31	99.5
16/12/2018	MAR-1	BAS						
16/12/2018	MAR-1	BAS						
16/12/2018	CI-1a	BAS						
16/12/2018	C1-b	BAS	23.3	322.8	0.38	2162.0	1.72	99.4
16/12/2018	CI-1	BAS						
16/12/2018	CI-2	BAS						
16/12/2018	MAN-1	BAS	109.6		1.72	4699.5	0.71	97.8
16/12/2018	MAN-1	BAS						
16/12/2018	MAN-2	BAS	127.3		2.27	5378.5	9.27	97.2
16/12/2018	MAN-2	BAS						
12/10/2018	Karthala 1	CC	27.1	120.1	4.00	76.2	142.71	96.0
12/10/2018	Karthala 2	CC						
13/10/2018	Ka-Su-01	LS	13.3	27324.5	0.27	363.5	25.37	97.0
13/10/2018	Ka-Su-02	LS	18.1	25073.9	1.60	266.6	40.24	95.9
13/10/2018	Ka-Su-03	LS	14.0	23402.3	3.71	292.4	31.05	93.9

Table 1 - Continued

Sampling Date	Sample	Lat	Long	Site	Major (Raw)								$\delta^{13}\text{C}$ (‰)
					T (°C)	CO <sub>2</sub> (Vol%)	CO (ppmv)	CH <sub>4</sub> (ppmv)	N <sub>2</sub> (Vol%)	O <sub>2</sub> (Vol %)	H <sub>2</sub> (ppmv)	He (ppmv)	
05/12/2017	KA171206 1A	-11.733	43.241	Soil		1.1	13.0	0.5	78.2	19.57	163.0		-22.3
06/12/2017	KA171205 1A	-11.626	43.309	Soil		1.0	9.0	0.5	78.5	19.18	126.0		-25.0
07/12/2017	KA171207 1B	-11.846	43.306	Soil		3.7	7.0	0.5	78.4	16.79	125.0		-23.5
12/10/2018	KART 181012 -1	-11.757155	43.360631	Soil		3.0	16.6	336.0	80.0	21.40	44.0	10.7	-4.2
15/10/2018	KART 64 A	-11.780161	43.267323	Soil		0.5	5.2	2.8	78.2	20.70	25.3	8.4	-23.2
15/10/2018	KART 61 A	-11.626042	43.30893	Soil		3.5	7.8	2.9	70.1	17.74	24.8	10.5	-21.3
15/10/2018	KART 47 A	-11.614397	43.355913	Soil		0.4	8.0	2.3	73.1	19.36	22.6	8.7	-23.9
15/10/2018	KART 49 A	-11.613266	43.350659	Soil		0.2	6.7	3.0	72.6	17.49	13.4		-20.8
15/10/2018	KART 63 A	-11.626137	43.308888	Soil		0.8	6.7	4.6	74.5	19.22	25.7	9.0	-23.3
16/10/2018	KART 67 A	-11.758396	43.242995	Soil		0.5	8.4	1.5	74.5	19.64	33.9	15.9	-22.6
09/09/2019	MAY 1582	-12.800208	45.286703	Soil		5.1	7.0	2.5	73.9	19.39	2.8	5.0	-3.1
10/09/2019	AEROPORTO	-12.801281	45.276823	Soil		4.0			76.6	17.26			-12.1
10/09/2019	MAY 1590	-12.800167	45.285713	Soil		0.8	5.0	1.3	76.7	19.92			-14.5
10/09/2019	MAY 1603	-12.799336	45.286335	Soil		1.1	4.7	1.3	76.9	20.12			-7.1
10/09/2019	MAY 1599	-12.799945	45.286118	Soil		0.9	4.4	1.2	76.7	19.84			-14.8
10/09/2019	MAY 1631	-12.799228	45.284923	Soil		17.7	7.0	1.6	65.0	16.04	2.4	4.2	-2.1
15/12/2018	V-1	-12.80019	45.28664	Soil	32.2	5.1	11.0	1.8	74.2	19.54	11.0	bdl	-1.3
15/12/2018	V-2	-12.80019	45.28664	Soil	32.5	1.1	14.0	1.8	76.7	20.39	9.0	bdl	-6.7
15/12/2018	V-3	-12.80019	45.28664	Soil	32.0	20.2	13.0	1.8	62.7	16.24	11.0	bdl	-1.0
15/12/2018	V-4	-12.80019	45.28664	Soil	31.9	25.4	12.0	1.9	57.9	14.86	14.0	bdl	-2.0
16/12/2018	PAF-1	-12.80009	45.28598	Soil		2.0	9.0	1.0	77.6	19.12	5.0	bdl	-19.0
16/12/2018	PAF-2	-12.80013	45.28596	Soil		2.0	9.0	0.8	77.1	19.47	8.0	bdl	-13.0

Table 1 - Continued

Sampling Date	Sample	Lat	Long	Site	Major (Raw)					
					CO <sub>2</sub> (Vol%)	CH <sub>4</sub> (ppmv)	N <sub>2</sub> (Vol%)	O <sub>2</sub> (Vol %)	H <sub>2</sub> (ppmv)	He (ppmv)
16/04/2008	G1			BAS - [BRGM (2008)]	97.4	1900.0	0.4	0.58	<50	18.0
17/04/2008	G2			BAS - [BRGM (2008)]	73.3	1900.0	21.9	5.88	<50	22.0
17/04/2008	G3			BAS - [BRGM (2008)]	96.7	2300.0	0.4	0.47	<50	18.0
18/04/2008	G4			BAS - [BRGM (2008)]	98.0	2700.0	0.4	0.45	<50	25.9
18/04/2008	G5			BAS - [BRGM (2008)]	80.7	1600.0	16.4	4.77	<50	9.9
18/11/2005	9a	-12.801715	45.289816	BAS - [BRGM (2008)]	87.7	11300.0	9.9	2.69	<50	340.0
23/11/2005	9b	-12.801625	45.289724	BAS - [BRGM (2008)]	98.4	3700.0	1.2	0.53	<50	130.0
20/11/2005	9c	-12.800144	45.287327	BAS - [BRGM (2008)]	97.1	1900.0	0.6	0.15	<50	130.0
18/11/2005				BAS - [BRGM (2008)]	0.1	<50	78.1	20.90	<50	<50
19/11/2005				BAS - [BRGM (2008)]	0.4	<50	76.8	20.90	<50	<50
13/07/2010	SKM70			LS - [Benavente (2015)]	93.6	370.0	0.3	0.00	41000.0	11.0
13/07/2010	SKM53			LS - [Benavente (2015)]	94.1	430.0	0.3	0.00	42000.0	13.0
13/07/2010	SKM72			LS - [Benavente (2015)]	93.9	430.0	0.6	0.00	40000.0	12.0
14/07/2010	SKM67			LS - [Benavente (2015)]	63.2	110.0	27.0	6.40	23000.0	9.0
02/09/2014	SKM180 (Fum 4)	-11.75810318	43.36108294	CC - [Benavente (2015)]	37.3		48.7	13.30		11.0
02/09/2014	SKM183 (Fum 6)	-11.73236085	43.36335423	LS - [Benavente (2015)]	94.5	410.0	1.9	0.11	25000.0	13.0
02/09/2014	SKM182 (Fum 6)	-11.73236085	43.36335423	LS - [Benavente (2015)]	94.3	440.0	1.9	0.00	25900.0	13.0
03/09/2014	SKM185 (Fum 7)	-11.73390178	43.36406988	LS - [Benavente (2015)]	41.8		44.4	11.60	13800.0	9.0
03/09/2014	SKM66 (Fum 8)	-11.73390178	43.36406988	LS - [Benavente (2015)]	41.7		44.4	11.60	13800.0	9.0
03/09/2014	SKM72 (Fum 8)	-11.73390178	43.36406988	LS - [Benavente (2015)]	44.5		42.6	10.80	12600.0	9.0

Table 1 - Continued

Sampling Date	Sample	Site	$\delta^{13}\text{C}$ (‰)	Noble gases isotopes							Corrected for air contamination		
			CO <sub>2</sub>	R/Ra	<sup>4</sup> He/ <sup>20</sup> Ne	<sup>4</sup> He ppm	<sup>20</sup> Ne ppm	Rc/Ra	<sup>40</sup> Ar ppm	He ppm	N <sub>2</sub> %	CH <sub>4</sub> ppm	CO <sub>2</sub> %
16/04/2008	G1	BAS - [BRGM (2008)]	-3.6	6.7	1083.0	18.0	0.02	6.7	70.0	18.6		1983.1	101.7
17/04/2008	G2	BAS - [BRGM (2008)]	-4.2	6.4	29.0	22.0	0.76	6.4	1900.0	27.9		2585.7	99.8
17/04/2008	G3	BAS - [BRGM (2008)]	-3.9	6.6	118.0	18.0	0.15	6.6	80.0	18.7		2405.8	101.2
18/04/2008	G4	BAS - [BRGM (2008)]	-3.7	6.7	2750.0	25.9	0.01	6.7	90.0	26.6		2784.5	101.1
18/04/2008	G5	BAS - [BRGM (2008)]	-3.8	6.3	8.0	9.9	1.24	6.5	1500.0	11.0		2012.8	101.5
18/11/2005	9a	BAS - [BRGM (2008)]				340.0			700.0	382.2		12729.1	98.8
23/11/2005	9b	BAS - [BRGM (2008)]	-3.2			130.0			300.0	132.6		3776.8	100.4
20/11/2005	9c	BAS - [BRGM (2008)]	-4.3			130.0			100.0	133.5	0.04	1951.8	99.7
18/11/2005		BAS - [BRGM (2008)]							9000.0				
19/11/2005		BAS - [BRGM (2008)]							9000.0				
13/07/2010	SKM70	LS - [Benavente (2015)]				11.0			1501.0				
13/07/2010	SKM53	LS - [Benavente (2015)]				13.0			75.0				
13/07/2010	SKM72	LS - [Benavente (2015)]				12.0			140.0				
14/07/2010	SKM67	LS - [Benavente (2015)]				9.0			3199.0				
02/09/2014	SKM180 (Fum 4)	CC - [Benavente (2015)]				11.0			5690.0				
02/09/2014	SKM183 (Fum 6)	LS - [Benavente (2015)]				13.0			230.0				
02/09/2014	SKM182 (Fum 6)	LS - [Benavente (2015)]				13.0			220.0				
03/09/2014	SKM185 (Fum 7)	LS - [Benavente (2015)]				9.0			5310.0				
03/09/2014	SKM66 (Fum 8)	LS - [Benavente (2015)]				9.0			5300.0				
03/09/2014	SKM72 (Fum 8)	LS - [Benavente (2015)]				9.0			5000.0				

Table 2 – Soil CO<sub>2</sub> flux (g m<sup>-2</sup> d<sup>-1</sup>) surveys at Grande Comore and Mayotte

Grande Comore 4-8 Nov 2014			CO <sub>2</sub> flux [g m <sup>-2</sup> d <sup>-1</sup> ]	Grande Comore 4-8 Nov 2014			CO <sub>2</sub> flux [g m <sup>-2</sup> d <sup>-1</sup> ]	Grande Comore 4-8 Nov 2014			CO <sub>2</sub> flux [g m <sup>-2</sup> d <sup>-1</sup> ]	Grande Comore 4-8 Nov 2014			CO <sub>2</sub> flux [g m <sup>-2</sup> d <sup>-1</sup> ]
Latitude	Longitude			Latitude	Longitude			Latitude	Longitude			Latitude	Longitude		
1	-11.760030	43.358620	0.00	42	-11.753240	43.359270	0.00	83	-11.733480	43.362250	2.10	124	-11.731860	43.367570	0.50
2	-11.760120	43.358940	992.60	43	-11.753320	43.358290	0.00	84	-11.734470	43.362340	6.70	125	-11.731190	43.368440	4.00
3	-11.760440	43.359140	0.00	44	-11.753340	43.357310	0.00	85	-11.734260	43.363090	3.40	126	-11.731050	43.369530	1.10
4	-11.760070	43.359300	0.00	45	-11.734620	43.356290	0.00	86	-11.733520	43.363050	2.70	127	-11.731810	43.370240	3.00
5	-11.760150	43.359830	5378.00	46	-11.731600	43.356970	0.00	87	-11.732700	43.363090	8.50	128	-11.732570	43.370970	2.20
6	-11.760410	43.360290	8.90	47	-11.728210	43.356650	2.50	88	-11.731730	43.363020	2.80	129	-11.738900	43.372030	4.40
7	-11.760550	43.361020	0.00	48	-11.727900	43.357430	2.60	89	-11.731340	43.363770	6.00	130	-11.738920	43.371310	4.20
8	-11.760560	43.361840	0.00	49	-11.728070	43.358410	1.10	90	-11.731630	43.364810	8.20	131	-11.738890	43.370270	1.60
9	-11.760500	43.362970	0.00	50	-11.727990	43.359880	1.50	91	-11.732660	43.364940	6.10	132	-11.738950	43.369280	2.70
10	-11.760040	43.363590	0.00	51	-11.728090	43.360430	1.40	92	-11.733500	43.365130	7.50	133	-11.738940	43.368460	1.50
11	-11.758290	43.362920	30.20	52	-11.728050	43.361270	1.90	93	-11.734420	43.364980	1.30	134	-11.738900	43.367580	1.30
12	-11.758200	43.362060	0.00	53	-11.727940	43.362010	4.70	94	-11.735480	43.365060	2.90	135	-11.738890	43.366800	4.20
13	-11.757630	43.361340	1242.70	54	-11.728060	43.363120	9.10	95	-11.735480	43.364010	5.40	136	-11.738880	43.365750	0.00
14	-11.758260	43.361440	5.70	55	-11.728050	43.363840	3.60	96	-11.734120	43.364140	313.40	137	-11.738770	43.365270	2.50
15	-11.758390	43.360850	24.50	56	-11.727720	43.364480	3.80	97	-11.733950	43.364120	8994.00	138	-11.738960	43.363820	1.10
16	-11.758310	43.360750	153.50	57	-11.732320	43.363310	21.50	98	-11.733710	43.364130	553.70	139	-11.738840	43.363260	1.50
17	-11.758460	43.360220	7.90	58	-11.732320	43.363260	796.70	99	-11.733580	43.364050	175.80	140	-11.739020	43.361900	1.40
18	-11.758430	43.359810	0.00	59	-11.732820	43.362400	0.00	100	-11.733390	43.363960	3046.10	141	-11.738830	43.361170	1.90
19	-11.758320	43.359130	21.30	60	-11.731670	43.362060	10.10	101	-11.732920	43.363410	17364.40	142	-11.738850	43.360300	4.60
20	-11.758320	43.359790	6931.00	61	-11.731540	43.361200	6.10	102	-11.732400	43.363310	396.10	143	-11.738890	43.359250	8.90
21	-11.756940	43.356410	0.00	62	-11.731630	43.360350	3.30	103	-11.735470	43.365470	4.50	144	-11.738860	43.358360	3.60
22	-11.756960	43.357310	0.00	63	-11.731850	43.359590	7.20	104	-11.735410	43.366680	4.20	145	-11.738570	43.357640	3.70
23	-11.756970	43.358240	0.00	64	-11.731530	43.357740	4.10	105	-11.735290	43.367860	1.60	146	-11.738800	43.356490	21.10
24	-11.756920	43.359290	4.00	65	-11.735020	43.357890	5.30	106	-11.734920	43.368590	2.70	147	-11.742410	43.360250	1.30
25	-11.757020	43.360120	1.30	66	-11.735290	43.358390	8.10	107	-11.734950	43.369160	1.50	148	-11.742630	43.361150	2.20
26	-11.756930	43.361020	4.60	67	-11.735430	43.359460	4.90	108	-11.735100	43.370020	1.30	149	-11.742560	43.362230	2.90
27	-11.756870	43.361130	9811.10	68	-11.735390	43.360180	8.00	109	-11.734880	43.371330	4.30	150	-11.742500	43.363040	7.20
28	-11.756960	43.361920	0.00	69	-11.735350	43.361070	3.20	110	-11.734890	43.372370	0.00	151	-11.742550	43.363730	3.30
29	-11.756930	43.362760	0.00	70	-11.735510	43.362140	1.30	111	-11.731630	43.372480	5.30	152	-11.742620	43.364710	6.00
30	-11.753250	43.364720	0.00	71	-11.735580	43.362880	3.00	112	-11.727760	43.371830	2.70	153	-11.742450	43.365780	10.00
31	-11.753290	43.363780	0.00	72	-11.735400	43.361130	0.00	113	-11.728050	43.370230	3.00	154	-11.742530	43.366600	0.00
32	-11.753240	43.362890	0.00	73	-11.734460	43.361040	0.00	114	-11.728340	43.369200	13.50	155	-11.742480	43.367530	7.80
33	-11.753270	43.361690	0.00	74	-11.733640	43.360980	1.30	115	-11.728570	43.368350	1.30				
34	-11.753660	43.360930	0.00	75	-11.732860	43.360950	1.60	116	-11.728670	43.367390	2.60				
35	-11.753490	43.359830	0.00	76	-11.731890	43.360570	5.80	117	-11.728860	43.366670	5.70				
36	-11.749920	43.361890	0.00	77	-11.730180	43.359770	6.30	118	-11.728690	43.365970	4.80				
37	-11.749930	43.361090	0.00	78	-11.729260	43.359940	1.80	119	-11.728840	43.365040	4.40				
38	-11.750010	43.360040	0.00	79	-11.728800	43.360780	1.60	120	-11.729510	43.365180	0.00				
39	-11.749950	43.359240	0.00	80	-11.730240	43.360810	4.80	121	-11.730080	43.365400	9.00				
40	-11.749550	43.358340	0.00	81	-11.730710	43.361680	4.80	122	-11.731050	43.365570	1.20				
41	-11.753260	43.355550	0.00	82	-11.731120	43.362160	6.60	123	-11.731370	43.366580	5.50				





Mayotte 9-13 Sept 2019			CO <sub>2</sub> flux [g m <sup>-2</sup> d <sup>-1</sup> ]
Latitude	Longitude		
26	45.286118	-12.799945	17.06
27	45.286107	-12.799880	7.76
28	45.286142	-12.799805	5.36
29	45.286244	-12.799578	21.54
30	45.286335	-12.799336	41.57
31	45.286491	-12.799352	14.70
32	45.286694	-12.799469	19.13
33	45.286883	-12.799525	6.48
34	45.287022	-12.799293	11.90
35	45.287079	-12.799116	8.10
36	45.287149	-12.798782	12.95
37	45.282678	-12.805537	0.45
38	45.282875	-12.805612	1.18
39	45.283069	-12.805955	0.00
40	45.282586	-12.805040	1.63
41	45.282379	-12.805167	1.00
42	45.277490	-12.802276	0.00
43	45.277386	-12.802210	0.00
44	45.277352	-12.802227	0.00
45	45.277246	-12.802167	4.45
46	45.277162	-12.802143	4.36
47	45.277292	-12.802176	1.21
48	45.277152	-12.802055	8.00
49	45.277126	-12.801957	1.64
50	45.277061	-12.801850	0.52
51	45.276823	-12.801281	15.70
52	45.276858	-12.801248	4.21
53	45.284543	-12.799820	11.56
54	45.284848	-12.799386	37.94
55	45.284923	-12.799228	173.44
56	45.285052	-12.799154	39.81
57	45.285033	-12.797719	0.00
58	45.285041	-12.797734	11.98
59	45.284897	-12.797933	4.84
60	45.284909	-12.798320	27.11
61	45.284959	-12.798641	13.28
62	45.284912	-12.798811	42.42
63	45.284776	-12.799008	9.62
64	45.285290	-12.797520	1.69
65	45.285442	-12.797118	2.12
66	45.285659	-12.796799	6.87
67	45.284645	-12.801006	2.36
68	45.284708	-12.800662	3.18
69	45.286793	-12.800945	3.26
70	45.288012	-12.799281	2.55
71	45.287850	-12.799243	0.49

Mayotte 9-13 Sept 2019			CO <sub>2</sub> flux [g m <sup>-2</sup> d <sup>-1</sup> ]
Latitude	Longitude		
72	45.287528	-12.799367	0.00
73	45.287306	-12.799543	4.04
74	45.287123	-12.799624	1.61
75	45.281475	-12.795606	1.99
76	45.281311	-12.796021	4.06
77	45.281218	-12.796457	6.18
78	45.281190	-12.797037	6.81
79	45.281312	-12.797480	2.53
80	45.281154	-12.798122	2.03
81	45.280780	-12.798222	7.22
82	45.281349	-12.797331	2.60
83	45.282582	-12.798498	5.60
84	45.282209	-12.799108	1.80
85	45.280079	-12.792672	1.06
86	45.279778	-12.793405	1.45
87	45.279577	-12.794203	3.39
88	45.279207	-12.795135	13.83
89	45.279342	-12.795964	0.00
90	45.278689	-12.796682	3.46
91	45.278386	-12.797120	2.67
92	45.278279	-12.797905	16.76
93	45.277967	-12.798124	0.00
94	45.277448	-12.798648	7.81
95	45.255220	-12.782986	1.97
96	45.255288	-12.781948	3.81
97	45.254958	-12.781035	0.00
98	45.257887	-12.783449	2.11
99	45.260400	-12.785424	3.47
100	45.261339	-12.786133	2.61
101	45.262178	-12.786088	0.00
102	45.261778	-12.785416	3.32
103	45.264903	-12.787605	5.05
104	45.268356	-12.789905	5.71
105	45.268894	-12.791590	2.73
106	45.273430	-12.794984	8.00
107	45.274379	-12.794448	5.34
108	45.275029	-12.794076	1.03
109	45.275483	-12.793842	2.43
110	45.275939	-12.793916	7.21
111	45.276297	-12.793910	12.45
112	45.276781	-12.793827	3.11
113	45.277189	-12.793428	2.68
114	45.277539	-12.792994	1.97
115	45.278188	-12.792446	5.57
116	45.280727	-12.766360	0.00
117	45.280762	-12.768051	0.39

Mayotte 9-13 Sept 2019			CO <sub>2</sub> flux [g m <sup>-2</sup> d <sup>-1</sup> ]
Latitude	Longitude		
118	45.279645	-12.770106	2.52
119	45.279858	-12.771997	3.38
120	45.280814	-12.774220	2.93
121	45.281827	-12.776119	1.50
122	45.294567	-12.783769	1.70
123	45.293457	-12.784258	6.53
124	45.292021	-12.784650	3.35
125	45.290841	-12.785500	26.03
126	45.289486	-12.785186	6.06
127	45.288814	-12.784143	10.06
128	45.288652	-12.783974	11.54
129	45.289141	-12.783073	6.76
130	45.288129	-12.782416	1.27
131	45.286670	-12.781859	4.26
132	45.285204	-12.782200	0.00
133	45.283348	-12.782728	6.09

  

Mayotte BAS 9-13 Sept 2019			CO <sub>2</sub> flux [g m <sup>-2</sup> d <sup>-1</sup> ]
Latitude	Longitude		
1	45.288840	-12.800657	33304.40
2	45.288840	-12.800657	33304.40
3	45.288818	-12.800576	29549.64
4	45.288818	-12.800576	29549.64
5	45.288787	-12.800533	20025.38
6	45.288787	-12.800533	20025.38
7	45.288766	-12.800518	21481.59
8	45.288766	-12.800518	21481.59
9	45.288766	-12.800518	21481.59
10	45.288766	-12.800518	21481.59
11	45.288734	-12.800502	34896.13
12	45.288734	-12.800502	34896.13
13	45.288676	-12.800483	22764.99
14	45.288611	-12.800534	27874.64
15	45.288257	-12.799866	12330.93
16	45.288257	-12.799866	12330.93
17	45.288257	-12.799866	12330.93
18	45.288257	-12.799866	12330.93
19	45.288257	-12.799866	12330.93
20	45.288257	-12.799866	12330.93
21	45.288257	-12.799866	12330.93
22	45.288257	-12.799866	12330.93
23	45.288257	-12.799866	12330.93
24	45.288257	-12.799866	12330.93
25	45.288257	-12.799866	12330.93
26	45.288257	-12.799866	12330.93
27	45.287666	-12.800374	35046.24

Mayotte 9-13 Sept 2019			CO <sub>2</sub> flux [g m <sup>-2</sup> d <sup>-1</sup> ]
Latitude	Longitude		
28	45.287666	-12.800374	35046.24
29	45.287666	-12.800374	35046.24
30	45.287666	-12.800374	35046.24
31	45.287666	-12.800374	35046.24
32	45.287666	-12.800374	35046.24
33	45.287361	-12.800153	18028.15
34	45.287361	-12.800153	18028.15
35	45.287361	-12.800153	18028.15
36	45.287361	-12.800153	18028.15
37	45.287364	-12.800154	47932.23
38	45.287370	-12.800155	12824.78
39	45.287392	-12.800154	13008.43
40	45.287356	-12.800126	18762.74
41	45.287356	-12.800126	18762.74
42	45.287388	-12.800106	23629.43
43	45.287388	-12.800106	23629.43
44	45.287388	-12.800106	23629.43
45	45.287402	-12.800144	136.21
46	45.288553	-12.800236	35046.24
47	45.289069	-12.800259	70485.66
48	45.289104	-12.800310	17064.31
49	45.289178	-12.800359	26435.94
50	45.289290	-12.800481	8730.58
51	45.289524	-12.800485	5952.67
52	45.289584	-12.800270	15537.98
53	45.289039	-12.800000	14289.19

Mayotte 11 Nov 2020

CO<sub>2</sub> flux  
[g m<sup>-2</sup> d<sup>-1</sup>]

	Latitude	Longitude	
1	45.28444	-12.7644	4.81
2	45.28326	-12.7654	6.69
3	45.28096	-12.7656	5.95
4	45.28058	-12.7681	15.93
5	45.27964	-12.7702	34.82
6	45.27978	-12.7718	17.22
7	45.28066	-12.7736	26.00
8	45.28116	-12.7753	17.04
9	45.28222	-12.7771	13.72
10	45.28137	-12.7787	16.14
11	45.28062	-12.7801	15.93
12	45.27904	-12.7812	29.44
13	45.27759	-12.7818	39.00
14	45.27644	-12.7828	8.52
15	45.27516	-12.7842	4.78
16	45.27395	-12.7852	48.00
17	45.27289	-12.7863	8.96
18	45.26905	-12.7873	10.93
19	45.26936	-12.7895	19.95
20	45.26946	-12.7896	3.85
21	45.26819	-12.789	7.94
22	45.2847	-12.7824	62.91
23	45.28392	-12.7826	159.30
24	45.28293	-12.7828	28.73
25	45.28168	-12.783	6.07
26	45.28016	-12.7838	48.72
27	45.27952	-12.7842	14.55
28	45.27929	-12.7856	13.95
29	45.2793	-12.7856	37.36
30	45.27905	-12.7868	4.03
31	45.27994	-12.7891	15.85
32	45.28001	-12.7911	12.56
33	45.28612	-12.7999	29.08