Observations of speciated isoprene nitrates in Beijing: implications for isoprene chemistry

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Supplementary Information

S1. Isoprene Nitrate Chemistry

A detailed description of the gas-phase chemistry of isoprene and its major oxidation products is given in the recent review by Wennberg et al. (2018) (hereafter referred to as W2018). In this section a summary of the chemistry relating to IN (largely based on W2018) is provided with a focus on those IN that we are able to measure in the field.

S1.1. Formation of First Generation IN via Oxidation of Isoprene by OH

On addition of OH to isoprene 6 OH-adducts are formed. Addition at C2 and C3 constitute only very minor channels (<2%). The 4 main adducts are formed through C1 and C4 addition (approximately in a 63:37 ratio (Teng et al., 2017)), each with a pair of *cis* (Z) and *trans* (E) isomers (approximately 50:50 *cis*:*trans* for 1-OH adducts and 70:30 *cis*:*trans* for 4-OH adducts) (W2018). On reaction with O_2 these adducts form peroxy radicals (ISOPOO). These reactions are reversible and have differing rates which along with rapid 1,6 H atom shift isomerisation of the Z-δ-ISOPOO leading to hydroperoxyaldeyhyde (HPALD), this leads to interconversion of the peroxy radicals within a sub group (i.e. having a common OH position) and an equilibrated thermal peroxy radical distribution that has a greater β:δ ratio to the kinetic one (Teng et al., 2017; Peeters et al. 2009; Peeters et al. 2014). Note, that this change from the kinetic to thermodynamic equilibrium will be more important when the peroxy radical bimolecular lifetimes exceed around 0.01 – 0.1 s, which is not the case when NO is greater than 10 ppb. Uncertainty in the peroxy distribution remains, but β

peroxy radicals (i.e. β-(1-OH, 2-OO)-ISOPOO and β-(4-OH, 3-OO)-ISOPOO) dominate over the δ peroxy radicals (i.e. E/Z δ-(1-OH, 4-OO)-ISOPOO and E/Z δ-(4-OH, 1-OO)-ISOPOO).

These peroxy radicals react with nitric oxide (NO) forming primarily alkoxy radicals and nitrogen dioxide (NO_2), but with a channel leading to the production of isoprene hydroxy nitrates (IHN). The rates of these reaction do not seem very sensitive to small changes in the structure of the peroxy radical (W2018). However, there is considerably uncertainty over the branching ratio for the formation of the IHN. This is important since the primary reaction leads to O_3 formation, via NO_2 photolysis, and to radical propagation, whilst the formation of IHN acts as a chain-terminating step, with the IHN being a reservoir for NO_X and radicals.

Estimates of the branching ratio for the formation of IHN from these reactions vary from 0.04 to 0.15 (Tuazon at al., 1990; Chen et al., 1998; Chuong et al., 2002; Sprengnether et al., 2002; Patchen et al., 2007; Paulot et al., 2009; Lockwood et al., 2010; Xiong et al., 2015; Teng et al., 2017), with the most recent estimate being 0.13 (Teng et al., 2017). Moreover, the branching ratio is poorly constrained for individual peroxy radicals, with Paulot et al (2009) estimating that they may vary from 0.067 to 0.24 for different isomers whilst Teng et al., (2017) estimate that they differ by only about 10% (i.e. 0.12 to 0.14). It is thought that some of these discrepancies can be explained by the differing experimental techniques used to derive these branching ratios, but there are also uncertainties associated with the temperature and pressure dependencies of these branching ratios (Piletic et al., 2017; W2018).

These reactions of the peroxy radicals with NO are in competition with reactions with the hydro peroxy radical (HO_2) (Jenkin et al., 1998) , other organic peroxy radicals (RO_2) (Jenkin and Hayman, 1995) and H-shift isomerization (Peeters and Nguyen, 2012; Crounse et al., 2011; Teng et al., 2017), all of which have their own uncertainties, which will consequently affect the yield of IHN.

S1.2. Formation of First Generation IN via Oxidation of Isoprene by NO_3

Addition of NO_3 to the isoprene double bond followed by addition of O_2 produces nitroxy peroxy radicals (INO_2). The NO_3 addition at C1 dominates over C4 by 6:1 and the subsequent addition of O_2 leads to β-INO_2 and δ-INO_2 in approximately a 50:50 ratio, with the β-(1-ONO_2, 2-OO)-INO_2 and δ-(1-ONO_2, 4-OO)-INO_2 dominating (W2018). The E and Z isomers are presumed to be formed in equal amounts and their subsequent chemistry largely the same. The details of this understanding are based largely on one study (Schwantes et al., 2015) and there remains considerable uncertainty (W2018).

These INO_2 can go on to form different types of isoprene derived nitrates through various reaction pathways: 1) isoprene hydroperoxy nitrates (IPN) following reaction of INO_2 with HO_2; 2) isoprene carbonyl nitrates (ICN) from the δ-nitroxy alkoxy radicals formed from the major channel of the δ-INO_2 reaction with NO; 3) ICN from reaction of δ-INO_2 with NO_3; 4) isoprene dinitrates (IDN) in a minor channel following reaction of INO_2 with NO; and 5) IHN and ICN following reactions of INO_2 with RO_2 (including self-reactions of INO_2) (W2018).

In pathway 5, Schwantes et al (2015) reckon that 80% of IHN formed are δ-IHN and 20% are β-IHN. Note that because the NO_3 addition to isoprene occurs at the C1 and C4 positions, the β-IHN formed are β-(2-OH, 1-ONO_2)-IHN and β-(3-OH, 4-ONO_2)-IHN and not the more common β-IHN formed from the OH oxidation of isoprene (i.e. β-(1-OH, 2-

ONO_2)-IHN and β-(4-OH, 3-ONO_2)-IHN). The ICN formed from the δ-INO_2 peroxy radicals (in 3 and 5 above) are the E/Z-δ-(1-ONO_2, 4-CO)-ICN and E/Z-δ-(4-ONO_2, 1-CO)-ICN and as the NO_3 addition to isoprene predominantly occurs in the C1 position the main ICN formed are the E/Z-δ-(1-ONO_2, 4-CO)-ICN.

S1.3. Fate of IN and Formation of Second Generation IN

S1.3.1. Reaction with OH

For the dominant β-IHN (i.e. β-(1-OH, 2-ONO_2)-IHN and β-(4-OH, 3-ONO_2)-IHN) reaction with OH occurs via addition to one of the two carbons in the remaining double bond, giving lifetimes of around 6-10 hours for OH mixing ratios of 0.04 ppt at 298K and 993 hPa (based on the rates from Teng et al. (2017), Lee et al. (2014), Jacobs et al. (2014) and W2018). The resulting adduct predominantly reacts with O_2 to form a peroxy radical, but a fraction can undergo unimolecular rearrangement to form an isoprene expoxydiol (IEPOX) releasing NO_2 (Jacobs et al., 2014; St Clair et al., 2016; W2018). The peroxy radicals formed can react with NO or with HO_2, potentially releasing NO_2. In theory (Kurtén et al., 2017) both of these reactions have a branch leading to the formation HO_2 and formaldehyde along with second-generation nitrates: methacrolein nitrate ((2-ONO_2, 3-OH)-MACR) in the case of the β-(1-OH, 2-ONO_2)-IHN, and methyl vinyl ketone nitrate ((3-ONO_2, 4-OH)-MVK)) in the case of the β-(4-OH, 3-ONO_2)-IHN. With respect to β-(1-OH, 2-ONO_2)-IHN, however, W2018 states that there is evidence of only low yields of MACR nitrate. There is also evidence of a small yield of dinitrates (Lee et al., 2014).

The mechanisms for the OH oxidation of the β-(2-OH, 1-ONO_2)-IHN and β-(3-OH, 4-ONO_2)-IHN are less well constrained but are thought to yield peroxy radicals which can react with NO and HO_2 to form a range of products including smaller chained carbonyls and nitrates (i.e. MACR nitrate and propanone nitrate from β-(2-OH, 1-ONO_2)-IHN, and MVK nitrate and ethanal nitrate from β-(3-OH, 4-ONO_2)-IHN), but not direct release of NO_2 (W2018).

For δ-IHN the reaction rates with OH are 2-3 times faster than for the β-IHN, having lifetimes of around 3-4 hours for OH mixing ratios of 0.04 ppt at 298K and 993 hPa (based on the rates from Teng et al. (2017), Lee et al. (2014) and W2018). OH adds to the C2 and C3 positions of the δ-IHN followed primarily by O_2 addition to form peroxy radicals, but a minor pathway is decomposition to form IEPOX and NO_2. Similar to the β-IHN, the peroxy radicals react with NO and HO_2 leading to smaller chained carbonyls and nitrates (i.e. MACR nitrate and propanone nitrate from δ-(4-OH, 1-ONO_2)-IHN, and MVK nitrate and ethanal nitrate from δ-(1-OH, 4-ONO_2)-IHN), but not direct release of NO_2.

As for reactions of ICN with OH, Xiong et al., (2016) only measured the rate for (4-ONO2, 1-CO)-ICN so W2018 recommends that the rate for the major isomer, (1-ONO_2, 4-CO)-ICN, is scaled based on the rates of reactions of the respective IHN isomer counterparts with OH. The OH loss rates for δ-ICN are slower than for the δ-IHN, instead being similar to those of the β-IHN. Following OH addition, NO_2 release can occur but the dominant products are peroxy radicals following O_2 addition (W2018). Reaction of the peroxy radicals with NO lead to MVK nitrate, ethanal nitrate (Xiong et al., 2016) and propanone nitrate (MCM (http://mcm.york.ac.uk)). H abstraction is of similar importance to OH addition for reactions of OH with δ-ICN oxidation.

S1.3.2. Reaction with O_3

Reaction rates of five IHN with O_3 have been reported: (2-OH, 1-ONO_2)-IHN (Lockwood et al., 2010); (1-OH, 2-ONO_2)-IHN (Lockwood et al., 2010; Teng et al., 2017); E-δ-(1-OH, 4-ONO_2)-IHN (Lockwood et al., 2010; Lee et al., 2014); Z-δ-(1-OH, 4-ONO_2)-IHN (Lee et al., 2014); and (4-OH, 3-ONO_2)-IHN (Lee et al., 2014). However, the rates of Lockwood et al. (2010) are 2-3 orders of magnitude faster than those of Lee et al. (2014) and Teng et al. (2017). Due to the observed presence of IHN at night (Beaver et al., 2012), W2018 recommend the lower rates of Lee et al. (2014) and Teng et al. (2017) (i.e. β-IHN lifetimes of around 500-1000 hours and δ-IHN lifetimes of around 10 hours for O_3 mixing ratios of 40 ppb at 298K and 993 hPa). The rate constant for the reaction of O_3 with one of the ICN has been measure: (1-CO, 4-ONO_2)-ICN (Xiong et al., 2016), giving a lifetime of around 65 hours for O_3 mixing ratios of 40 ppb at 298K and 993 hPa (W2018). Rates for all other IHN, IPN and ICN are extrapolated from these rates with the loss rate for the δ-IN by O_3 oxidation approximately 2 orders of magnitude faster than those of the β-IN (W2018).

Reactions of O_3 with both δ-(4-OH, 1-ONO_2)-IHN and (1-ONO_2, 4-CO)-ICN can lead to propanone nitrate (MCM (http://mcm.york.ac.uk)), so it can be formed from IN both during the day and during the night.

S1.3.3. Reaction with NO_3

For the reactions of IN with NO_3, there has only been one published study which measured the rate of reaction of NO_3 with bulk IHN (Rollins et al., 2009) and one unpublished study that assessed the reaction of NO_3 with (4-OH, 3-ONO_2)-IHN (W2018). Rates for all IN can be constrained by extrapolations from these two studies, with the loss rate for the δ-IN by NO_3 oxidation assumed to be 4 times faster than those of the β-IN (W2018).

Reactions of NO_3 with (1-ONO_2, 4-CO)-ICN can also lead to propanone nitrate (MCM, (http://mcm.york.ac.uk)).

S1.3.4. Photolysis

Very few studies provide information on the photolysis of IN. Xiong et al. (2016) measured the absorption cross-section for (1-CO, 4-ONO_2)-ICN and estimated its ambient photolysis frequency to be 3.1 x 10^{-4} s^{-1} for a solar zenith angle of 45° and 4.6 x 10^{-4} s^{-1} for a solar zenith angle of 0°, with photolysis being a dominant daytime sink. Müller et al. (2014) make recommendations for the photolysis rates of second-generation IN such as propane nitrates, ethanal nitrate, MACR nitrates and MVK nitrates, based on published values for nitroxy-ketones. They estimate the photolysis rates of key carbonyl nitrates from isoprene to be typically between 3 and 20 times higher than their sink due to reaction with OH in relevant atmospheric conditions. Moreover, since the reaction is expected to release NO_2, photolysis is especially effective in recycling NO_X. Xiong et al. (2015) found that when they enhanced the photolysis rates of the IHN in their model to about 30-50% of their total loss, they had better agreement with observed mixing ratios.

S1.3.5. Hydrolysis

Very little is known about this, but hydrolysis lifetimes of 18 h and 2.5 min have been reported for (4-OH, 3-ONO_2)-IHN and (1-OH, 4-ONO_2)-IHN (Jacobs et al., 2014) and a further unpublished study suggests that (1-OH, 2-ONO_2)-IHN has a lifetime of less than 1 second in water (W2018).

S1.3.6. Deposition

Nguyen et al. (2015) measured the deposition velocity of temperate forest and found a string diurnal pattern, with a daytime (10:00-15:00 h) mean of 1.5 ± 0.6 cm s^{-1} and low values during the night-time. They also reported similar daytime means for the second generation IN, MACR and MVK nitrates (1.5 ± 0.5 cm s^{-1}) and propanone nitrate (1.7 ± 0.6 cm s^{-1}).

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Table S1: Data used for plotting Figs. 3, 5, 6, 8 and 15.

Date Time (DD/MM/YYYY hh:mm)	(4-OH, 3-ONO_2)-IHN (ppt)	(1-OH, 2-ONO_2)-IHN (ppt)	E-(4-ONO_2, 1-CO)-ICN (ppt)	Z-(1-ONO_2, 4-CO)-ICN (ppt)	E-(1-ONO_2, 4-CO)-ICN (ppt)	Z-(4-ONO_2, 1-CO)-ICN (ppt)	Propanone nitrate (ppt)
17/05/2017 17:40	5.19						
17/05/2017 18:40	5.56					2.95	8.03
17/05/2017 19:40	8.33		3.27	0.73	11.65	1.46	14.42
17/05/2017 20:40	11.01		9.37	1.36	14.69	2.24	16.69
17/05/2017 21:40	9.66		9.95	1.58	16.91	2.36	22.21
17/05/2017 22:40	10.06		14.27	1.17	15.50	2.57	54.42
17/05/2017 23:40	10.67		22.08	2.18	27.72	2.45	73.78
18/05/2017 00:40	10.53		26.68	2.46	33.86		92.10
18/05/2017 01:40	9.30		23.97	2.98	49.39	1.78	104.52
18/05/2017 02:40	6.94		17.57	2.14	28.93		98.76
18/05/2017 03:40	5.35		14.24	1.45	8.45	1.18	63.62
18/05/2017 04:40	3.70		11.38	0.95	17.16		60.87
18/05/2017 05:40	2.72		10.20	1.27	13.19		65.45
18/05/2017 06:40	2.38		7.68	1.26	6.76	1.89	67.56
18/05/2017 07:40	3.99		5.50	1.28		1.60	74.75
18/05/2017 08:40	13.04		4.17	0.81	4.83	1.23	99.95
18/05/2017 10:44	25.69		2.92	0.59	5.02	2.90	114.00
18/05/2017 11:44	16.09		1.99	0.44		3.23	63.81
18/05/2017 12:44	12.20		1.85	0.35		2.41	52.86
18/05/2017 13:44			0.45				3.66
18/05/2017 14:44			8.85	0.24			
18/05/2017 15:44			0.78				
18/05/2017 16:44	7.16		0.86		6.08		25.31
18/05/2017 17:44	7.95		1.23		4.98	1.36	21.94
18/05/2017 18:44	6.09		1.49			1.71	17.02
18/05/2017 19:44	8.35		5.71	0.96	19.17	1.44	26.92
18/05/2017 20:44	6.44		12.44	1.48	25.31	1.23	47.10
18/05/2017 21:44	3.52		8.71	0.95	14.44	0.99	36.44
18/05/2017 22:44	3.67		9.88	0.88	15.46		40.04
18/05/2017 23:44	3.20		10.19	1.32	24.77		46.70
19/05/2017 00:44	3.35		8.85	1.33	14.87	0.56	52.27
19/05/2017 01:44	3.47		7.35	0.83	11.11		49.96
19/05/2017 02:44	3.28		7.90	0.88	16.14		58.45
19/05/2017 03:44	3.50		7.65	0.77	10.19	1.23	61.74
19/05/2017 04:44	3.35		7.63	0.80	15.51	0.88	63.81
19/05/2017 05:44	3.12		9.24	0.95	10.92	0.98	77.75
19/05/2017 06:44	3.96		12.39	1.41	17.49	1.28	86.20
19/05/2017 07:44	6.12		8.73	1.38	9.52	1.32	89.54
19/05/2017 08:44	8.32		6.33	1.00		1.31	109.90
19/05/2017 11:23	17.43						156.64

19/05/2017 12:37	12.60						102.27
19/05/2017 13:47	9.34						89.48
19/05/2017 14:54	9.37		2.79	0.22	2.42	1.85	98.05
19/05/2017 15:54	10.97		2.24	0.31		1.99	48.87
19/05/2017 16:54	13.61		3.11	0.24		2.23	50.39
19/05/2017 17:54	12.02		2.80	0.36		1.35	40.58
19/05/2017 18:54	10.19		4.54	0.40	9.13	1.38	26.59
19/05/2017 19:55	9.11		10.40	0.94	14.93		31.61
19/05/2017 20:55	6.65		12.49	1.07	26.23		26.95
19/05/2017 21:55	5.74		11.75	0.95	28.35		37.24
19/05/2017 22:55	4.03		9.81	0.58	13.28		41.60
19/05/2017 23:55	2.77		6.18	0.62	15.03		47.19
20/05/2017 00:55	2.16		5.60	0.92	14.30		39.88
20/05/2017 01:55	2.27		5.61	0.66	14.15		43.02
20/05/2017 02:55	2.34		6.11	0.58	9.71		55.37
20/05/2017 03:55	2.58		6.90	0.81	7.39		57.33
20/05/2017 04:55	2.79		7.43	0.52	9.66	0.48	56.61
20/05/2017 05:55	2.83		6.90	0.72	7.25	0.86	41.98
20/05/2017 06:55	4.12		5.48	0.68	4.15		42.67
20/05/2017 07:55	7.12		4.79	0.47	9.03	0.73	48.21
20/05/2017 08:55	6.66		2.85	0.49	3.38	0.79	58.02
20/05/2017 09:55	16.12		2.66	0.51	4.15	0.81	76.71
20/05/2017 10:55	23.07		2.77	0.42		0.98	83.70
20/05/2017 11:54	25.60		2.32	0.25		1.14	83.42
20/05/2017 12:54	8.91		1.76		4.54	1.18	48.23
20/05/2017 13:54	6.70		3.86				28.17
20/05/2017 14:54	5.88		3.52	0.12		0.98	33.63
20/05/2017 15:54	6.48		2.88				31.61
20/05/2017 16:54	4.83		4.64			1.23	35.20
20/05/2017 17:54	5.07		4.39			0.91	35.71
20/05/2017 18:54	6.22		6.28	0.62	11.98		38.99
20/05/2017 19:54	3.53		5.92	0.43	14.00		34.29
20/05/2017 20:54	4.47		11.00	0.81	19.46	0.87	51.66
20/05/2017 21:54	2.46		6.87	0.77	11.01		36.64
20/05/2017 22:54	2.75		11.34	0.93	14.58		83.63
20/05/2017 23:54	0.93		7.33	0.65	9.90	0.49	59.36
21/05/2017 00:54	0.49		6.39	0.42	6.57	0.74	60.23
21/05/2017 01:54	0.45		4.41	0.23	5.17		45.76
21/05/2017 02:54	0.36		3.68	0.29			25.12
21/05/2017 03:54	0.26		3.09	0.23			22.29
21/05/2017 04:54	0.25		3.53				17.48
21/05/2017 05:54	0.32		2.70	0.24			19.34
21/05/2017 06:54	0.47		2.76				17.66
21/05/2017 07:54	1.05		2.17	0.13			23.35
21/05/2017 08:54	2.78		2.44				28.53

21/05/2017 09:54	5.62		2.23				41.00
21/05/2017 10:59	8.98		3.34			0.54	64.62
21/05/2017 11:59	8.57		2.24			1.21	46.71
21/05/2017 12:59	7.15		3.04			0.96	36.48
21/05/2017 13:59	6.24		2.34			1.20	33.05
21/05/2017 14:59	5.60		1.35			0.62	18.84
21/05/2017 15:56							
21/05/2017 16:56							
21/05/2017 18:05				0.37		1.35	58.72
21/05/2017 19:05	4.30		1.92				21.31
21/05/2017 20:05	3.06		3.50	0.08	5.61		18.12
21/05/2017 21:05	1.55		3.52	0.24	8.45		16.79
21/05/2017 22:05	1.66		3.92	0.32	8.71		19.83
21/05/2017 23:05	0.87		1.81	0.26	4.96		15.44
22/05/2017 00:05	0.51		2.43		4.91	0.70	11.82
22/05/2017 01:05	0.55		2.50				12.15
22/05/2017 02:05	0.39		2.21	0.16	4.58		9.80
22/05/2017 03:05	0.27		2.20		2.51		8.73
22/05/2017 04:05							
22/05/2017 05:05							
22/05/2017 06:05							
22/05/2017 07:05				0.02	0.39		
22/05/2017 08:05				0.02	0.59		
22/05/2017 09:05				0.02	0.87		
22/05/2017 10:05							
22/05/2017 10:46	0.57						14.70
22/05/2017 11:46	0.13		1.14				5.27
22/05/2017 12:46	0.14		1.46				3.67
22/05/2017 13:46	0.28		1.58				4.16
22/05/2017 14:46	0.30		1.78				3.81
22/05/2017 15:44	0.47		1.55				5.43
22/05/2017 16:44	0.66						4.85
22/05/2017 17:44	0.76						4.63
22/05/2017 18:44	0.79						4.29
22/05/2017 19:44	1.00						4.54
22/05/2017 20:45	0.78						3.94
22/05/2017 21:45	1.03						2.87
22/05/2017 22:45	1.09						4.10
22/05/2017 23:45	1.02						4.58
23/05/2017 00:45	0.81						2.61
23/05/2017 01:45	0.70		0.30				3.45
23/05/2017 02:45	0.69						3.58
23/05/2017 03:45	0.54		0.48				2.18
23/05/2017 04:45	0.47						2.67
23/05/2017 05:45	0.46						2.38

23/05/2017 06:45	0.82						4.31
23/05/2017 07:45	1.08						5.72
23/05/2017 08:45	1.11						5.10
23/05/2017 10:05							
23/05/2017 10:51	1.88		0.92		1.90		7.47
23/05/2017 11:51	2.90		1.12		2.97		7.13
23/05/2017 12:51	2.48		1.46				6.58
23/05/2017 13:51	1.96		1.53				6.75
23/05/2017 14:51	1.94		1.53				5.83
23/05/2017 15:51	1.26		1.34				4.29
23/05/2017 16:51	1.24		0.99				5.44
23/05/2017 17:51	3.36		1.95				7.45
23/05/2017 18:51	4.40		2.11			0.68	9.15
23/05/2017 19:51	3.14		2.58	0.11	3.60		9.06
23/05/2017 20:51	3.94		4.14	0.35	5.03		11.19
23/05/2017 21:51	3.48		6.24	0.32	6.62		13.39
23/05/2017 22:51	3.04		11.15	0.34	5.25		13.74
23/05/2017 23:51	2.97		7.80	0.31	4.72	0.27	16.35
24/05/2017 00:51	2.38		5.49	0.30	3.15		16.76
24/05/2017 01:51	1.96		4.01	0.35	1.54	0.39	12.82
24/05/2017 02:51	2.07		3.58	0.19	2.99		13.33
24/05/2017 03:51	1.70		2.97	0.19	2.46		10.30
24/05/2017 04:51	1.89		2.61	0.20			14.49
24/05/2017 05:51	1.79		2.70	0.26	1.48	0.24	37.48
24/05/2017 06:51	3.20		2.00	0.26	2.47		10.95
24/05/2017 07:51	3.05		0.84			0.32	8.69
24/05/2017 08:51	8.87		0.68			0.47	5.96
24/05/2017 09:51	9.05		0.71		2.17		4.80
24/05/2017 10:51	7.07		1.15				3.06
24/05/2017 11:51	4.69		0.59		2.62		4.58
24/05/2017 12:51	8.20		0.97			0.53	6.19
24/05/2017 13:51	4.24		1.15			0.56	7.30
24/05/2017 14:51	5.83		1.51		2.20	0.63	10.19
24/05/2017 15:51	4.59		0.89				9.15
24/05/2017 16:51	7.00		1.42			0.69	10.49
24/05/2017 17:51	5.22		1.54				9.26
24/05/2017 18:51	4.71		1.36				6.60
24/05/2017 19:51	4.23		1.93	0.22	3.27		8.54
24/05/2017 20:51	6.93		10.03	0.55	13.09	0.95	10.39
24/05/2017 21:51	7.24		12.96	1.07	18.55		15.56
24/05/2017 22:51	6.61		12.08	0.87	13.04		15.76
24/05/2017 23:51	7.02		10.63	0.98	11.34		15.70
25/05/2017 00:51	4.84		7.61	0.52	6.18		16.12
25/05/2017 01:51	3.16		4.06	0.35	3.45		11.46
25/05/2017 02:51	1.35		1.86	0.14	3.10		5.23

25/05/2017 03:51	0.66		1.03	0.08			
25/05/2017 04:51	0.48		0.74				3.10
25/05/2017 05:51	0.59		0.62				2.88
25/05/2017 06:51	0.85		0.61				2.42
25/05/2017 07:51	3.25		0.84				3.18
25/05/2017 08:51	5.42		0.86				4.81
25/05/2017 09:51	8.88		1.24				5.91
25/05/2017 10:51	17.47		1.69	0.11			8.92
25/05/2017 11:51							
25/05/2017 12:51	6.40						9.96
25/05/2017 13:50	7.28		2.56			0.47	18.20
25/05/2017 14:50	6.21		3.29			1.00	11.45
25/05/2017 15:50	4.85		2.84		1.85	1.27	14.62
25/05/2017 16:50	4.82		2.52				11.83
25/05/2017 17:50	4.57		2.14				10.69
25/05/2017 18:50	4.62		1.64	0.11			8.72
25/05/2017 19:50	5.29		2.16	0.17	2.52		6.34
25/05/2017 20:50	4.25		6.52	0.63	9.06		7.89
25/05/2017 21:50	2.02		4.23	0.43	7.18		6.40
25/05/2017 22:50	1.60		3.44	0.35	4.96		7.23
25/05/2017 23:50	1.40		3.55	0.42	5.41		7.89
26/05/2017 00:50	1.16		3.68	0.36	5.06		7.93
26/05/2017 01:50	0.97		3.10	0.48	8.16		10.90
26/05/2017 02:50	0.96		3.16	0.37	6.15		13.96
26/05/2017 03:50	1.04		3.20	0.39	5.49		12.13
26/05/2017 04:50	0.88		2.77	0.29			13.66
26/05/2017 05:50	0.49		1.64	0.37			7.32
26/05/2017 06:50	0.63		1.97	0.34			9.43
26/05/2017 07:50	1.29		1.37	0.15			10.37
26/05/2017 08:50	2.57		1.47	0.28			11.72
26/05/2017 09:50	4.58		1.45	0.17	0.16		14.65
26/05/2017 10:50	8.92		1.58			0.33	18.72
26/05/2017 11:50	11.99		2.06			0.68	24.63
26/05/2017 12:50	13.52		2.27			0.71	30.08
26/05/2017 13:50	13.20		2.20			0.74	34.49
26/05/2017 14:50	9.57		3.17			0.71	36.69
26/05/2017 16:02	13.39						107.95
26/05/2017 17:02	13.64						65.58
26/05/2017 18:02	13.68						73.04
26/05/2017 19:02	12.46						64.44
26/05/2017 20:02	13.72						89.41
26/05/2017 21:02			23.27	2.02	31.85	0.75	
26/05/2017 22:02			26.33	2.39	31.35	0.60	
26/05/2017 23:02			27.10	2.77	35.71	0.44	
27/05/2017 00:02			14.62	1.47	22.24	0.40	

27/05/2017 01:02			5.72	0.56	10.28	0.30	
27/05/2017 02:02			5.72	0.45	6.91		
27/05/2017 03:02			4.12	0.59	5.18		
27/05/2017 04:02			3.23	0.33	5.32	0.31	
27/05/2017 05:02			3.67	0.19	4.24	0.35	
27/05/2017 06:02			2.93	0.25	2.81		
27/05/2017 07:02			2.60	0.20		0.32	
27/05/2017 08:02	1.26						32.98
27/05/2017 09:02	3.92						46.78
27/05/2017 10:02	9.85						58.31
27/05/2017 11:02	19.07						84.93
27/05/2017 12:02	25.31						100.82
27/05/2017 13:02	33.39						101.07
27/05/2017 14:02	33.28						135.89
27/05/2017 15:02	22.41						
27/05/2017 16:02	20.76						
27/05/2017 17:02	21.14						
28/05/2017 12:28							
28/05/2017 13:49							
28/05/2017 14:45							
28/05/2017 15:40							
28/05/2017 16:22	0.81						
28/05/2017 17:22	0.29						
28/05/2017 18:22	8.50						
28/05/2017 19:22	7.02						
28/05/2017 20:22	4.15						
28/05/2017 21:22	2.34						
28/05/2017 22:22	0.62						
28/05/2017 23:22	1.00						
29/05/2017 00:22	0.14						
29/05/2017 01:22	0.05						
29/05/2017 02:22	0.10						
29/05/2017 03:22	0.10						
29/05/2017 04:22	0.19						
29/05/2017 05:22	0.14						
29/05/2017 06:22	0.19						
29/05/2017 07:22	0.29						
29/05/2017 08:22	3.44						
29/05/2017 09:22	4.06						
29/05/2017 10:22	3.94						
29/05/2017 11:22	3.71						
29/05/2017 12:22	0.12						
29/05/2017 13:25							
29/05/2017 14:37	2.06						20.75
29/05/2017 16:50	1.12		0.85				31.72

29/05/2017 17:50	0.95		1.20				18.88
29/05/2017 18:50	0.78		1.42				16.74
29/05/2017 19:50	0.55		1.51				20.51
29/05/2017 20:50	0.50		1.77				24.01
29/05/2017 21:50	0.54		2.46	0.31			26.49
29/05/2017 22:50	1.12		2.53	0.15	5.20		27.35
29/05/2017 23:50	0.89		2.57	0.27			37.85
30/05/2017 00:50	0.93		2.55	0.17	2.48		40.57
30/05/2017 01:50	0.74		2.94	0.27	2.27		38.13
30/05/2017 02:50	1.34		2.61	0.31	5.41		31.61
30/05/2017 03:50	1.38		1.94	0.32	4.38		31.99
30/05/2017 04:50	1.51		2.18	0.27			24.51
30/05/2017 05:50	1.02		1.16				22.52
30/05/2017 06:50	1.04		1.28				20.52
30/05/2017 07:50	0.86		0.80				22.18
30/05/2017 08:50	0.93		1.18				23.73
30/05/2017 09:50	1.18		1.10				28.90
30/05/2017 10:50	1.63		0.55				26.62
30/05/2017 11:50	2.77		1.33				29.33
30/05/2017 12:50	4.90						22.59
30/05/2017 13:47	5.37						28.25
30/05/2017 14:47	4.24						29.23
30/05/2017 15:47	3.42						37.52
30/05/2017 16:47	4.98						36.37
30/05/2017 17:47							
30/05/2017 18:47	5.20		1.66				25.58
30/05/2017 19:47	5.06		1.90	0.19	3.20		26.18
30/05/2017 20:47	4.27		5.50	0.57	20.03		43.95
30/05/2017 21:47	3.61		6.31	0.58	17.98		61.32
30/05/2017 22:47	2.81		5.59	0.44	12.29		72.36
30/05/2017 23:47	2.29		4.71	0.42	10.83		69.82
31/05/2017 00:47	1.75		4.30	0.44	12.13		60.93
31/05/2017 01:47	1.60		3.88	0.45	9.35		59.20
31/05/2017 02:47	1.52		4.04	0.31	8.51		56.68
31/05/2017 03:47	2.41		4.62	0.34	7.70		66.02
31/05/2017 04:47	2.04		3.07	0.35	3.90		43.40
31/05/2017 05:47	2.87		4.88	0.43	8.43		46.30
31/05/2017 06:47	2.75		4.81	0.48	5.93		53.77
31/05/2017 07:47	3.02		3.02	0.35	2.86		90.40
31/05/2017 08:47	4.80		2.19	0.21			102.99
31/05/2017 09:47	6.71		1.98	0.15			109.41
10/06/2017 09:16		6.02					
10/06/2017 10:01	2.12	23.54					
10/06/2017 10:46	2.85	8.87					
10/06/2017 11:31	3.81	7.11					

10/06/2017 12:16	1.46						
10/06/2017 13:01	10.43	31.80					
10/06/2017 13:46							
10/06/2017 14:31	12.18	27.98					
10/06/2017 15:16	8.28	28.81					
10/06/2017 15:48	6.18	19.74					
10/06/2017 16:28	8.25	25.83					
10/06/2017 17:09	5.54	16.83					
10/06/2017 19:08	9.04	27.95					
10/06/2017 21:08	13.04	29.30					
10/06/2017 23:07	4.25	14.25					
11/06/2017 01:07	4.54	6.61					
11/06/2017 03:07	2.69	8.43					
11/06/2017 05:06	3.83	5.99					
11/06/2017 07:06	3.25	12.26					
11/06/2017 09:05	7.74	16.11					
11/06/2017 09:50	6.33	18.70					
11/06/2017 10:35	6.73	22.11					
11/06/2017 11:20	9.81	35.83					
11/06/2017 12:05	13.00	41.50					
11/06/2017 12:50	15.14	42.80					
11/06/2017 13:35	13.30	34.87					
11/06/2017 14:20	10.88	16.02					
11/06/2017 15:05	7.20	17.90					
11/06/2017 15:50	7.42	16.27					
11/06/2017 16:35	4.31	20.89					
11/06/2017 17:20	5.76	24.13					
11/06/2017 18:05	7.74	17.72					
11/06/2017 19:35	4.38	8.92					
11/06/2017 21:04	5.09	9.51					
11/06/2017 22:34	5.54	8.51					
12/06/2017 00:04	3.00	8.70					
12/06/2017 01:33	1.92						
12/06/2017 03:03	2.41	7.68					
12/06/2017 04:32							
12/06/2017 06:02		4.86					
12/06/2017 07:31	1.75	1.03					
12/06/2017 09:01	1.75	3.83					
12/06/2017 09:46	0.39						
12/06/2017 10:31	0.79						
12/06/2017 11:16	3.08	10.90					
12/06/2017 12:04							
12/06/2017 13:42	8.90	24.61					
12/06/2017 14:27	7.91	28.92					
12/06/2017 15:48	8.62	30.32					

12/06/2017 16:33	8.48	20.47					
12/06/2017 17:19	8.26	28.70					
12/06/2017 18:04	8.60	24.70					
12/06/2017 19:34	4.51	13.89					
12/06/2017 21:03	3.61	7.12					
12/06/2017 22:33	3.31	19.44					
13/06/2017 00:03	3.76	3.75					
13/06/2017 01:32	1.50	2.06					
13/06/2017 03:02		7.19					
13/06/2017 04:31							
13/06/2017 06:01	1.53						
13/06/2017 07:30							
13/06/2017 09:00	0.39	4.54					
13/06/2017 09:45		2.74					
13/06/2017 11:23	1.98	1.55					
13/06/2017 12:06	2.91	5.43					
13/06/2017 12:51	3.78	8.52					
13/06/2017 13:36	3.59	8.13					
13/06/2017 14:21	7.92	25.62					
13/06/2017 15:06	7.18	18.67					
13/06/2017 15:51	7.41	12.02					
13/06/2017 16:36	4.99	19.61					
14/06/2017 12:29	17.25	53.40					
14/06/2017 13:13	9.51	30.26					
14/06/2017 13:58	10.06	30.48					
14/06/2017 14:43	12.24	34.89					
14/06/2017 15:28	11.91	36.67					
14/06/2017 16:13	10.11	37.66					
14/06/2017 16:58	9.93	37.82					
14/06/2017 17:43	11.53	50.48					
14/06/2017 18:28	18.87	75.97					
14/06/2017 19:58	8.77	39.25					
14/06/2017 21:28	5.31	30.86					
14/06/2017 22:57	6.46	32.90					
15/06/2017 00:27	9.13	28.21					
15/06/2017 01:56	6.28	19.03					
15/06/2017 03:26	3.06	9.75					
15/06/2017 04:56	4.10	9.81					
15/06/2017 06:25	2.31	5.52					
15/06/2017 07:55	4.17	15.60					
15/06/2017 09:24	11.28	42.95					
15/06/2017 10:09	22.41	76.29					
15/06/2017 10:54	20.89	79.56					
15/06/2017 11:39	25.20	90.63					
15/06/2017 12:23	23.25	80.38					

15/06/2017 13:08	15.12	65.78					
15/06/2017 13:53	12.75	58.43					
15/06/2017 14:38	14.63	68.35					
15/06/2017 15:23	14.99	72.21					
15/06/2017 16:08	13.85	68.04					
15/06/2017 16:53	13.63	64.99					
15/06/2017 17:38	13.93	58.14					
15/06/2017 18:23	11.38	66.37					
15/06/2017 19:53	12.03	51.40					
15/06/2017 21:22	7.75	35.12					
15/06/2017 22:52	5.46	26.58					
16/06/2017 00:22	4.95	25.23					
16/06/2017 01:51	1.35	11.84					
16/06/2017 03:21	1.34	4.71					
16/06/2017 04:50	2.29	4.90					
16/06/2017 06:20	2.79	5.58					
16/06/2017 07:49	3.16	6.74					
16/06/2017 09:19	2.00						
17/06/2017 17:42							
17/06/2017 18:46	6.31						
17/06/2017 19:46	4.91						
17/06/2017 20:46	4.97						
17/06/2017 21:46	2.37						
17/06/2017 22:46	2.95						
17/06/2017 23:46	1.99						
18/06/2017 00:46	1.97						
18/06/2017 01:46	1.39						
18/06/2017 02:46	1.29						
18/06/2017 03:46	1.19						
18/06/2017 04:46	1.09						
18/06/2017 05:46	1.35						
18/06/2017 06:46	1.28						
18/06/2017 07:46	2.36						
18/06/2017 08:46	3.80						
18/06/2017 11:16	8.67						
18/06/2017 12:16							
18/06/2017 13:16	10.53						
18/06/2017 14:16	10.82						
18/06/2017 15:16	9.09						
18/06/2017 16:16	6.91						
18/06/2017 17:16	6.55						
18/06/2017 18:16	8.27						
18/06/2017 19:16	8.33						
18/06/2017 20:16	4.76						
18/06/2017 21:16	3.09						

18/06/2017 22:16	2.29						
18/06/2017 23:16	2.21						
19/06/2017 00:16	1.69						
19/06/2017 01:16	1.45						
19/06/2017 02:16	1.14						
19/06/2017 03:16	0.95						
19/06/2017 04:16	0.83						
19/06/2017 05:16	0.88						
19/06/2017 06:16	0.83						
19/06/2017 07:16	2.08						
19/06/2017 08:16	5.72						
19/06/2017 09:16	6.67						
19/06/2017 10:16	6.79						
19/06/2017 11:16							
19/06/2017 12:16	8.57						30.45
19/06/2017 13:16	7.85						29.24
19/06/2017 14:16	5.46						35.68
19/06/2017 15:16	5.22		0.35	0.03	0.11		32.48
19/06/2017 16:16	7.06		0.41	0.06	0.16		40.45
19/06/2017 17:16	11.53		0.75	0.16	0.44		48.54
19/06/2017 18:17	7.54		0.47	0.10	0.31		24.14
19/06/2017 19:16	7.24		0.76	0.26	1.06		36.53
19/06/2017 20:16	6.51		3.81	0.88	7.93	0.41	67.83
19/06/2017 21:16	6.98		8.74	2.11	20.91	0.90	142.65
19/06/2017 22:17	5.10		7.61	1.66	15.80	0.69	168.21
19/06/2017 23:16	1.86		1.43	0.39	2.98		69.92
20/06/2017 00:17	1.89		0.24	0.26	1.92		59.92
20/06/2017 01:17	2.26		1.34	0.34	2.50	0.14	54.60
20/06/2017 02:16	2.26		1.50	0.36	2.67	0.12	49.25
20/06/2017 03:17	1.67		1.15	0.26	2.03	0.10	38.48
20/06/2017 04:17	1.60		1.15	0.22	2.01	0.09	44.52
20/06/2017 05:17	1.47		1.08	0.27	1.85	0.08	44.50
20/06/2017 06:16	1.21		0.57	0.20	1.01	0.06	34.15
20/06/2017 07:17	1.47		0.38	0.16	0.56	0.03	30.09
20/06/2017 08:17	3.76		0.31	0.13	0.26	0.02	33.54
20/06/2017 09:17	5.72		0.23	0.11	0.11	0.03	37.38
20/06/2017 10:17	8.01		0.28	0.07	0.07	0.02	41.37
20/06/2017 11:17	7.48		0.30	0.05	0.08	0.03	46.07
20/06/2017 12:49	7.22		0.36	0.06	0.07	0.04	53.18
20/06/2017 13:49	7.34		0.40	0.04	0.09	0.06	59.79
20/06/2017 14:49	7.81		0.45	0.05	0.08	0.04	57.81
20/06/2017 15:49	7.62		0.41	0.06	0.11	0.04	58.83
20/06/2017 16:49	7.23		0.37	0.06	0.13	0.02	55.59
20/06/2017 17:49	10.75		0.57	0.15	0.31	0.05	61.42
20/06/2017 18:49	9.48		0.70	0.24	0.75	0.05	58.17

20/06/2017 19:49	8.86		2.18	0.62	4.15	0.23	70.45
20/06/2017 20:49	8.27		4.04	0.91	8.90	0.40	88.35
20/06/2017 21:49	6.36		3.12	0.88	5.75	0.29	112.38
20/06/2017 22:49	5.31		4.09	1.08	7.02	0.36	189.71
20/06/2017 23:49	6.01		9.28	2.10	21.74	0.95	181.21
21/06/2017 00:49	3.48		6.18	1.46	14.41	0.60	150.17
21/06/2017 01:49	1.64		2.63	0.80	5.26	0.22	139.67
21/06/2017 02:49	2.14		3.40	0.73	5.62	0.29	198.08
21/06/2017 03:49	0.36		0.64	0.18	1.20	0.05	212.10
21/06/2017 04:49	0.30		0.63	0.13	0.81	0.04	93.21
21/06/2017 05:49	0.37		0.52	0.17	0.72	0.03	73.44
21/06/2017 06:49	0.62		0.48	0.18	0.61	0.04	74.17
21/06/2017 07:49	1.91		0.39	0.16	0.41	0.04	71.11
21/06/2017 08:49	4.85		0.39	0.14	0.24	0.04	68.14
21/06/2017 09:49	6.51		0.27	0.10	0.11	0.04	95.44
21/06/2017 10:49	9.89		0.26	0.06	0.05	0.03	87.41
21/06/2017 11:49	11.09		0.37	0.08	0.06	0.03	116.18
21/06/2017 12:52	12.14		0.40	0.09	0.08	0.02	115.90
21/06/2017 13:52	8.07		0.31	0.05	0.06	0.03	134.33
21/06/2017 14:52	7.87		0.38	0.10	0.16	0.03	125.57
21/06/2017 15:52	7.19		0.41	0.11	0.34	0.05	114.89
21/06/2017 16:52	6.81		0.58	0.21	0.68	0.06	119.98
21/06/2017 17:52	7.31		0.74	0.28	0.76	0.06	
21/06/2017 18:52	7.16		3.43	0.93	7.52	0.35	134.83
21/06/2017 19:52	5.57		1.58	0.27	2.73	0.15	89.72
21/06/2017 20:52	2.62		0.97	0.29	1.74	0.09	65.92
21/06/2017 21:52	1.25		0.42	0.08	0.74	0.04	39.02
21/06/2017 22:52	0.91		0.48	0.11	0.68	0.04	38.97
21/06/2017 23:52	0.61		0.36	0.05	0.50	0.03	30.98
22/06/2017 00:52	0.57		0.36	0.08	0.63	0.03	29.04
22/06/2017 01:52	0.53		0.41	0.09	0.66	0.04	27.03
22/06/2017 02:52	0.65		0.34	0.06	0.57	0.03	25.85
22/06/2017 03:52	0.59		0.28	0.06	0.56	0.03	22.61
22/06/2017 04:52	0.61		0.40	0.10	0.62	0.04	25.67
22/06/2017 05:52	0.61		0.37	0.08	0.59	0.03	32.20
22/06/2017 06:52	0.62		0.39	0.08	0.43	0.03	28.87
22/06/2017 07:52	0.68		0.28	0.07	0.27	0.03	29.04
22/06/2017 08:52	0.95		0.20	0.06	0.20	0.02	26.33
22/06/2017 09:52	1.28		0.17	0.05	0.12		22.94
22/06/2017 10:50	0.00		0.00	0.00	0.00		
22/06/2017 11:50	0.00		0.00	0.00	0.00		
22/06/2017 12:50	0.00						
22/06/2017 13:27	0.77		0.06	0.02			18.83
22/06/2017 14:27	1.49		0.08	0.03	0.03		19.58
22/06/2017 15:27	1.06		0.01	0.00	0.00		19.50

22/06/2017 16:44	0.85		0.41	0.03	0.70		18.67
22/06/2017 17:44	1.16		0.85	0.02	0.75		14.54
22/06/2017 18:44	0.43		1.07	0.02	2.91		12.85
22/06/2017 19:44	0.41		1.25	0.01	4.31		11.32
22/06/2017 20:44	0.31		0.95	0.01	3.36		10.85
22/06/2017 21:44	0.25		1.05	0.01	2.16		10.86
22/06/2017 22:44	0.13		0.95	0.02	1.08		8.57
22/06/2017 23:44	0.14		0.91	0.02	3.05		9.06
23/06/2017 00:44	0.12		1.10	0.02	0.51		6.87
23/06/2017 01:44	0.11		1.17	0.01	0.11		5.19
23/06/2017 02:44	0.11		0.95	0.03	2.35		5.10
23/06/2017 03:44	0.10		1.08	0.03	0.26		6.81
23/06/2017 04:44	0.08		0.86	0.01	0.64		4.61
23/06/2017 05:44	0.08		0.59	0.02	0.52		4.68
23/06/2017 06:44	0.08		0.82	0.01	0.37		6.56
23/06/2017 07:44	0.07		0.51	0.01	0.38		4.91
23/06/2017 08:44	0.09		0.28	0.03	0.54		4.10
23/06/2017 09:44	0.14		0.60	0.01	0.41		
23/06/2017 10:44	0.14		0.53	0.02	0.28		4.27
23/06/2017 11:44	0.42		0.96	0.01	0.36		5.43
23/06/2017 12:44	0.33		0.80	0.02	0.42		4.42
23/06/2017 13:44	0.43		0.83	0.02	0.10		5.03
23/06/2017 14:57	0.27		0.47	0.04	0.17		4.70

Table S2: Data plotted in Figs. 4 and 15.

Date Time (DD/MM/YYYY hh:mm)	Isoprene (ppb)	O_3 (ppb)	CO (ppm)	NO (ppb)	NO_2 (ppb)
17/05/2017 17:40		115	0.532	0.38	
17/05/2017 18:40		107	0.497	0.17	
17/05/2017 19:40		103	0.649	0.09	
17/05/2017 20:40		108	0.708	0.10	
17/05/2017 21:40		75	0.862	0.10	
17/05/2017 22:40		42	1.048	0.21	
17/05/2017 23:40		25	1.101	0.16	
18/05/2017 00:40		30	0.989	0.13	
18/05/2017 01:40		24	1.015	0.14	
18/05/2017 02:40		26	0.786	0.12	
18/05/2017 03:40		10	0.862	0.13	
18/05/2017 04:40		13	0.758	0.14	
18/05/2017 05:40		15	0.701	1.07	
18/05/2017 06:40		27	0.711	2.69	
18/05/2017 07:40		34	0.709	5.18	
18/05/2017 08:40		44	0.851	5.85	
18/05/2017 10:44		103	0.959	1.76	
18/05/2017 11:44		127	0.631	0.53	
18/05/2017 12:44		136	0.599	0.30	
18/05/2017 13:44		137	0.557	0.32	
18/05/2017 14:44		142	0.597	0.31	
18/05/2017 15:44	1.92	134	0.512	0.35	
18/05/2017 16:44	1.81	117	0.402	0.32	
18/05/2017 17:44	1.05	113	0.442	0.18	
18/05/2017 18:44	0.95	107	0.511	0.16	
18/05/2017 19:44	0.30	101	0.723	0.12	
18/05/2017 20:44	3.10	106	0.827	0.11	
18/05/2017 21:44	0.04	97	0.701	0.11	
18/05/2017 22:44	0.06	80	0.605	0.12	
18/05/2017 23:44	0.07	62	0.624	0.17	
19/05/2017 00:44	0.09	70	0.561	0.10	
19/05/2017 01:44	0.03	71	0.529	0.09	
19/05/2017 02:44	0.04	59	0.549	0.09	
19/05/2017 03:44	0.06	55	0.536	0.10	
19/05/2017 04:44	0.09	35	0.604	0.17	
19/05/2017 05:44	0.14	21	0.732	0.80	
19/05/2017 06:44	0.66	13	0.824	6.60	
19/05/2017 07:44	0.92	9	0.911	23.81	
19/05/2017 08:44	1.14	29	0.864	10.79	
19/05/2017 11:23	1.79	112	0.842	1.06	
19/05/2017 12:37	2.39	143	0.736	0.51	

19/05/2017 13:47		132	0.621	0.33	
19/05/2017 14:54		133	0.559	0.35	
19/05/2017 15:54	2.67	129	0.534	2.65	
19/05/2017 16:54	1.72	137	0.551	0.26	
19/05/2017 17:54	0.95	114	0.416	0.18	
19/05/2017 18:54		95	0.533	0.16	
19/05/2017 19:55	0.43	68	0.401	0.17	
19/05/2017 20:55	0.07	58	0.325	0.18	
19/05/2017 21:55	0.04	57	0.338	0.14	
19/05/2017 22:55	0.04	53	0.375	0.13	
19/05/2017 23:55		54	0.404	0.10	
20/05/2017 00:55	0.03	49	0.390	0.12	
20/05/2017 01:55	0.05	45	0.446	0.10	
20/05/2017 02:55	0.07	27	0.515	0.37	
20/05/2017 03:55	4.26	29	0.559	0.13	
20/05/2017 04:55	0.10	21	0.521	0.12	
20/05/2017 05:55	5.42	5	0.592	8.89	
20/05/2017 06:55	1.00	4	0.746	40.92	
20/05/2017 07:55	1.14	7	0.784	44.72	
20/05/2017 08:55	0.89	32	0.638	8.86	
20/05/2017 09:55	1.58	54	0.837	4.51	
20/05/2017 10:55	1.72	62	1.041	4.09	
20/05/2017 11:54	1.69	104	0.601	1.47	
20/05/2017 12:54	1.64	122	0.388	0.51	
20/05/2017 13:54	1.56	110	0.286	0.48	
20/05/2017 14:54	2.38	111	0.281	0.43	
20/05/2017 15:54		103	0.237	0.46	
20/05/2017 16:54		114	0.350	0.28	
20/05/2017 17:54		116	0.423	0.26	
20/05/2017 18:54		104	0.493	0.21	
20/05/2017 19:54		77	0.452	0.26	
20/05/2017 20:54		88	0.577	0.27	
20/05/2017 21:54		77	0.538	0.18	
20/05/2017 22:54		65	0.738	0.13	
20/05/2017 23:54	0.05	68	0.838	0.20	
21/05/2017 00:54	0.04	64	0.726	0.14	
21/05/2017 01:54	0.03	50	0.566	0.14	
21/05/2017 02:54	0.02	40	0.550	0.16	
21/05/2017 03:54	0.02	32	0.888	0.17	
21/05/2017 04:54	0.03	26	1.019	0.24	
21/05/2017 05:54	0.04	19	1.010	2.04	
21/05/2017 06:54	0.13	23	0.951	3.04	
21/05/2017 07:54	0.21	24	0.971	4.06	
21/05/2017 08:54	0.56	32	0.874	3.45	
21/05/2017 09:54	0.88	53	0.822	2.17	

21/05/2017 10:59	0.74	68	0.817	1.81	
21/05/2017 11:59	0.98	75	0.781	1.73	
21/05/2017 12:59		95	0.730	0.89	12.23
21/05/2017 13:59	0.68	99	0.576	0.56	7.99
21/05/2017 14:59		94	0.415	0.50	7.50
21/05/2017 15:56	0.83	90	0.260	0.44	7.33
21/05/2017 16:56	0.73	81	0.220	0.45	8.73
21/05/2017 18:05	0.63	69	0.299	0.41	13.72
21/05/2017 19:05	0.47	68	0.415	0.41	13.16
21/05/2017 20:05	0.27	54	0.403	0.10	16.74
21/05/2017 21:05	0.10	52	0.294	0.16	14.89
21/05/2017 22:05	0.05	54	0.308	0.27	11.59
21/05/2017 23:05	0.05	53	0.306	0.44	10.11
22/05/2017 00:05	0.05	51	0.293		7.00
22/05/2017 01:05	0.03	38	0.416	0.30	13.72
22/05/2017 02:05	0.04	34	0.401	0.10	11.71
22/05/2017 03:05	0.03	26	0.651	0.24	18.27
22/05/2017 04:05	0.08	26	0.819	0.10	17.07
22/05/2017 05:05	0.01	17	1.164	0.24	22.47
22/05/2017 06:05		16	1.370	0.94	21.96
22/05/2017 07:05		12	1.449	2.38	25.71
22/05/2017 08:05		10	1.304	1.24	25.41
22/05/2017 09:05		9	1.404	2.14	24.74
22/05/2017 10:05		10	1.196	3.84	23.25
22/05/2017 10:46		12	1.131	4.17	23.37
22/05/2017 11:46		20	0.697	3.03	15.31
22/05/2017 12:46		18	0.454	3.36	16.48
22/05/2017 13:46		24	0.335	1.57	11.66
22/05/2017 14:46		21	0.315	2.57	13.63
22/05/2017 15:44		18	0.262	2.99	16.79
22/05/2017 16:44		17	0.212	3.14	17.56
22/05/2017 17:44		12	0.284	2.91	22.10
22/05/2017 18:44		7	0.284	4.18	26.26
22/05/2017 19:44		2	0.196	2.61	26.15
22/05/2017 20:45		3	0.113	2.01	23.15
22/05/2017 21:45	0.48	1	0.230	10.99	26.08
22/05/2017 22:45		1	0.175	14.74	26.31
22/05/2017 23:45	0.36	1	0.180	17.50	24.08
23/05/2017 00:45	0.32	1	0.037	13.25	24.58
23/05/2017 01:45	0.32	1	0.080	16.82	23.19
23/05/2017 02:45	0.35	1	0.221	26.91	21.74
23/05/2017 03:45		1	0.150	29.86	21.52
23/05/2017 04:45	0.42	2	0.148	43.76	17.36
23/05/2017 05:45	0.49	2	0.122	47.62	20.13
23/05/2017 06:45	0.32	6		14.71	24.14

23/05/2017 07:45	0.35	17		9.84	21.55
23/05/2017 08:45	0.52	24	0.156	7.71	19.08
23/05/2017 10:05	0.54	32		5.45	16.62
23/05/2017 10:51	0.84	42	0.137	2.85	10.33
23/05/2017 11:51	0.92	48	0.173	7.01	10.53
23/05/2017 12:51	0.91	56	0.175	1.74	8.24
23/05/2017 13:51		61	0.114	1.30	5.50
23/05/2017 14:51	1.06	61	0.095	0.98	6.03
23/05/2017 15:51	1.42	56	0.094	1.06	6.09
23/05/2017 16:51	1.47	63	0.185	1.02	9.31
23/05/2017 17:51	1.03	79	0.291	0.66	11.80
23/05/2017 18:51	0.64	71	0.343	0.48	16.19
23/05/2017 19:51	0.24	62	0.306	0.30	15.85
23/05/2017 20:51	0.10	47	0.346	1.06	22.24
23/05/2017 21:51	0.08	36	0.389	0.73	24.32
23/05/2017 22:51	0.09	30	0.350	1.04	24.27
23/05/2017 23:51	0.17	8	0.444	4.81	41.27
24/05/2017 00:51	0.16	4	0.433	9.39	44.41
24/05/2017 01:51	0.27	2	0.464	23.52	45.31
24/05/2017 02:51	4.41	2	0.742	58.06	43.94
24/05/2017 03:51	4.96	2	0.667	86.67	40.98
24/05/2017 04:51	6.13	1	0.621	84.02	41.81
24/05/2017 05:51		1	0.486	50.71	36.48
24/05/2017 06:51		6	0.467	33.58	38.58
24/05/2017 07:51		9	0.379	33.94	40.23
24/05/2017 08:51		21	0.320	17.04	33.59
24/05/2017 09:51		42	0.171	3.43	14.71
24/05/2017 10:51		52	0.136	2.74	12.52
24/05/2017 11:51		57	0.121	11.44	11.84
24/05/2017 12:51	1.04	69	0.144	1.81	11.65
24/05/2017 13:51	1.16	78	0.127	0.87	8.16
24/05/2017 14:51	1.52	84	0.149	0.78	7.99
24/05/2017 15:51	0.83	75	0.134	0.83	10.60
24/05/2017 16:51	1.09	81	0.226	0.77	11.33
24/05/2017 17:51	4.59	74	0.211	0.67	10.61
24/05/2017 18:51	0.54	63	0.232	0.63	14.92
24/05/2017 19:51	0.27	60	0.222	0.66	12.78
24/05/2017 20:51	0.08	47	0.266	0.84	20.00
24/05/2017 21:51	0.06	38	0.302	0.61	23.43
24/05/2017 22:51	0.12	13	0.379	1.71	42.69
24/05/2017 23:51	0.24	3	0.497	7.78	53.25
25/05/2017 00:51	6.11	2	0.713	43.72	52.43
25/05/2017 01:51	0.44	1	0.515	38.02	46.93
25/05/2017 02:51		1	0.372	29.11	45.07
25/05/2017 03:51	0.17	1	0.242	19.62	39.01

25/05/2017 04:51	0.23	1	0.276	19.84	42.48
25/05/2017 05:51	0.57	2	0.303	27.72	37.06
25/05/2017 06:51	0.92	12	0.263	11.32	30.45
25/05/2017 07:51	1.58	17	0.306	11.87	27.68
25/05/2017 08:51	1.44	38	0.207	2.98	12.52
25/05/2017 09:51	1.50	48	0.189	1.97	10.71
25/05/2017 10:51	1.86	47	0.464	4.23	20.06
25/05/2017 11:51	1.36	59	0.654	3.04	19.41
25/05/2017 12:51		74	0.635	1.67	15.12
25/05/2017 13:50		88	0.562	1.01	11.81
25/05/2017 14:50		91	0.547	1.31	14.46
25/05/2017 15:50		94	0.459	0.86	11.43
25/05/2017 16:50		82	0.352	0.84	13.11
25/05/2017 17:50		77	0.377	0.49	10.76
25/05/2017 18:50		68	0.391	0.32	12.34
25/05/2017 19:50	0.26	57	0.345	0.50	14.44
25/05/2017 20:50	0.11	42	0.374	0.62	19.39
25/05/2017 21:50	0.04	40	0.281	0.59	16.08
25/05/2017 22:50	0.03	37	0.281	0.48	16.56
25/05/2017 23:50	0.02	32	0.310	0.88	17.51
26/05/2017 00:50	0.00	27	0.334	0.81	20.12
26/05/2017 01:50	0.00	26	0.367	0.43	18.46
26/05/2017 02:50	0.00	22	0.397	0.54	19.13
26/05/2017 03:50		13	0.429	0.94	28.43
26/05/2017 04:50	0.04	1	0.513	7.48	41.12
26/05/2017 05:50	0.11	2	0.427	19.84	34.74
26/05/2017 06:50	0.10	9	0.427	15.31	30.38
26/05/2017 07:50	0.47	10	0.455	19.18	34.49
26/05/2017 08:50		16	0.460	17.50	31.06
26/05/2017 09:50	0.65	21	0.489	13.19	31.97
26/05/2017 10:50	0.66	30	0.530	11.29	31.60
26/05/2017 11:50	0.92	44	0.528	6.92	31.21
26/05/2017 12:50	0.73	59	0.466	3.79	25.62
26/05/2017 13:50	0.66	79	0.393	2.06	20.41
26/05/2017 14:50	0.57	111	0.372	0.86	13.13
26/05/2017 16:02	0.51	122	0.404	0.43	11.68
26/05/2017 17:02	0.82	123	0.464	0.62	18.56
26/05/2017 18:02	0.65	119	0.498	0.33	17.51
26/05/2017 19:02	0.49	118	0.476	0.25	16.93
26/05/2017 20:02	0.11	92	0.596	0.51	29.48
26/05/2017 21:02	0.06	83	0.629	0.37	30.79
26/05/2017 22:02	0.17	62	0.731	0.49	38.30
26/05/2017 23:02	2.28	50	0.558	0.28	26.55
27/05/2017 00:02		43	0.575	0.54	23.01
27/05/2017 01:02		36	0.644	0.41	19.28

27/05/2017 02:02	0.06	27	0.547	0.16	21.47
27/05/2017 03:02	0.02	29	0.510	0.12	19.75
27/05/2017 04:02	0.00	27	0.653	0.57	22.47
27/05/2017 05:02	0.03	15	0.853	3.41	41.68
27/05/2017 06:02	0.32	19	0.878	4.81	38.50
27/05/2017 07:02	0.17	28	1.168	6.24	35.04
27/05/2017 08:02	0.32	41	1.084	4.74	27.35
27/05/2017 09:02	0.52	44	1.013	5.56	28.28
27/05/2017 10:02	0.84	51	0.955	4.74	27.28
27/05/2017 11:02	0.82	60	0.926	4.63	30.07
27/05/2017 12:02	0.76	80	1.069	2.43	22.76
27/05/2017 13:02	1.14	94	1.266	1.88	22.59
27/05/2017 14:02	1.29	107	1.312	1.38	22.07
27/05/2017 15:02	0.93	130	1.137	0.89	18.87
27/05/2017 16:02	1.03	144	1.160	0.59	18.61
27/05/2017 17:02		141	1.304	0.42	19.42
28/05/2017 12:28		78	0.367	0.73	8.86
28/05/2017 13:49		65	0.121	0.70	6.88
28/05/2017 14:45		57	0.094	0.69	6.20
28/05/2017 15:40	0.00	144	0.873	0.27	11.58
28/05/2017 16:22	1.27	156	1.211	0.25	14.36
28/05/2017 17:22		184	2.055		15.65
28/05/2017 18:22		157	2.057	0.11	15.98
28/05/2017 19:22		137	2.077	0.12	20.00
28/05/2017 20:22		117	0.860	0.13	9.97
28/05/2017 21:22		104	0.727	0.12	13.50
28/05/2017 22:22		95	0.705	0.15	11.30
28/05/2017 23:22		69	0.753	0.10	14.25
29/05/2017 00:22		51	0.784	0.10	15.13
29/05/2017 01:22		47	0.696	0.11	14.32
29/05/2017 02:22		46	0.831	0.55	16.52
29/05/2017 03:22		37	0.820	0.08	20.25
29/05/2017 04:22		38	0.734	0.95	20.04
29/05/2017 05:22		36	0.519	0.16	22.60
29/05/2017 06:22		47	0.507	0.34	16.88
29/05/2017 07:22		39	0.499	1.30	20.26
29/05/2017 08:22		41	0.281	1.52	15.07
29/05/2017 09:22		39	0.225	1.46	13.94
29/05/2017 10:22		34	0.377	2.48	18.94
29/05/2017 11:22		39	0.262	0.90	11.72
29/05/2017 12:22		44	0.223	0.93	9.62
29/05/2017 13:25		49	0.257	1.03	7.45
29/05/2017 14:37		44	0.335	1.75	12.87
29/05/2017 16:50		58	0.307	0.41	9.02
29/05/2017 17:50		61	0.303	0.22	7.46

29/05/2017 18:50		58	0.324	0.37	10.32
29/05/2017 19:50	0.03	55	0.344	1.07	13.10
29/05/2017 20:50	0.03	56	0.378	0.69	13.81
29/05/2017 21:50	0.04	47	0.408	0.85	20.25
29/05/2017 22:50	0.04	38	0.367	0.44	18.00
29/05/2017 23:50	4.13	34	0.407	0.18	20.42
30/05/2017 00:50	0.03	29	0.410	0.14	23.12
30/05/2017 01:50	0.04	17	0.484	5.29	39.37
30/05/2017 02:50	0.05	8	0.389	1.01	37.30
30/05/2017 03:50	0.04	21	0.323	1.24	17.45
30/05/2017 04:50	0.05	14	0.334	0.66	25.02
30/05/2017 05:50	0.05	21	0.313	1.09	25.28
30/05/2017 06:50	0.37	17	0.358	3.98	26.62
30/05/2017 07:50		11	0.469	13.61	35.26
30/05/2017 08:50	0.19	23	0.393	3.09	24.71
30/05/2017 09:50	0.46	36	0.394	2.24	17.80
30/05/2017 10:50	0.47	34	0.427	3.36	23.04
30/05/2017 11:50	0.48	41	0.474	4.86	20.13
30/05/2017 12:50	0.62	54	0.483	3.34	16.91
30/05/2017 13:47	0.68	66	0.406	2.27	14.06
30/05/2017 14:47	0.65	86	0.301	0.95	7.37
30/05/2017 15:47	0.44	98	0.295	0.83	8.87
30/05/2017 16:47	0.53	86	0.326	0.79	13.26
30/05/2017 17:47	0.49	87	0.331	0.41	10.88
30/05/2017 18:47	0.30	80	0.362	0.21	11.56
30/05/2017 19:47	0.09	73	0.425	0.38	17.54
30/05/2017 20:47	0.04	70	0.440	0.22	14.64
30/05/2017 21:47	0.06	57	0.511	0.32	19.15
30/05/2017 22:47		48	0.574	0.23	17.58
30/05/2017 23:47		39	0.554	0.29	18.45
31/05/2017 00:47	0.07	30	0.563	0.49	19.97
31/05/2017 01:47	0.09	21	0.574	0.41	20.67
31/05/2017 02:47	0.08	17	0.550	0.73	20.93
31/05/2017 03:47	0.10	1	0.596	10.62	44.81
31/05/2017 04:47	0.09	1	0.665	25.60	46.45
31/05/2017 05:47	0.28	2	0.656	24.66	42.85
31/05/2017 06:47	0.29	5	0.761	27.65	48.40
31/05/2017 07:47		20	0.741	10.78	39.56
31/05/2017 08:47		36	0.712	7.24	35.36
31/05/2017 09:47	1.37	53	0.727	5.48	33.83
10/06/2017 09:16	0.76	34	0.446	4.27	13.40
10/06/2017 10:01	0.91	35	0.437	3.25	13.71
10/06/2017 10:46	0.91	46	0.323	3.91	15.16
10/06/2017 11:31	1.03	40	0.259	2.83	11.21
10/06/2017 12:16		52	0.289	2.18	8.97

10/06/2017 13:01		51	0.392	2.16	10.10
10/06/2017 13:46		57	0.424	2.38	11.39
10/06/2017 14:31	0.81	61	0.402	2.34	12.08
10/06/2017 15:16	0.70	67	0.285	1.41	9.53
10/06/2017 15:48	0.70	72	0.294	2.68	12.39
10/06/2017 16:28		72	0.224	1.67	10.56
10/06/2017 17:09		76	0.227	0.78	9.22
10/06/2017 19:08	0.33	56	0.253	2.65	21.39
10/06/2017 21:08	0.15	35	0.232	5.31	22.86
10/06/2017 23:07	0.03	26	0.421	3.08	23.30
11/06/2017 01:07	0.13	7	0.403	21.86	56.96
11/06/2017 03:07	0.19	1	0.580	47.73	64.59
11/06/2017 05:06		1	0.620	99.96	61.24
11/06/2017 07:06		3	0.565	66.99	43.97
11/06/2017 09:05	0.78	11	0.570	31.70	43.20
11/06/2017 09:50	1.27	19	0.569	19.09	39.15
11/06/2017 10:35	1.14	33	0.439	8.29	24.00
11/06/2017 11:20	1.06	34	0.377	9.60	29.13
11/06/2017 12:05	1.06	52	0.349	3.60	18.02
11/06/2017 12:50	0.97	67	0.294	3.09	14.16
11/06/2017 13:35	0.68	88	0.250	1.93	10.68
11/06/2017 14:20	0.70	91	0.326	2.11	12.61
11/06/2017 15:05	0.70	99	0.362	1.11	8.10
11/06/2017 15:50	0.51	110	0.401	0.75	7.35
11/06/2017 16:35	0.34	116	0.499	1.10	15.41
11/06/2017 17:20	0.28	115	0.604	1.93	24.98
11/06/2017 18:05	0.28	117	0.618	1.31	18.64
11/06/2017 19:35	0.10	90	0.658	6.12	27.40
11/06/2017 21:04	0.04	46	0.796	23.84	77.41
11/06/2017 22:34	0.04	33	0.426	9.81	43.07
12/06/2017 00:04	0.06	4	0.424	29.68	75.62
12/06/2017 01:33	0.05	5	0.552	15.19	71.39
12/06/2017 03:03	0.04	4	0.466	25.46	69.21
12/06/2017 04:32	0.02	13	0.586	7.17	41.40
12/06/2017 06:02	0.05	15	1.299	7.04	39.75
12/06/2017 07:31	0.58	26	1.190	11.15	40.20
12/06/2017 09:01	0.62	30	1.032	7.29	36.29
12/06/2017 09:46	0.96	39	0.967	8.65	29.57
12/06/2017 10:31	1.04	50	0.840	4.25	23.84
12/06/2017 11:16		53	0.793	3.42	24.31
12/06/2017 12:04		63	0.712	2.31	16.83
12/06/2017 13:42		65	0.794	3.22	18.43
12/06/2017 14:27		67	0.782	2.97	18.83
12/06/2017 15:48		80	0.768	1.21	14.21
12/06/2017 16:33	0.87	82	0.691	0.76	13.78

12/06/2017 17:19	0.41	82	0.667	0.42	13.36
12/06/2017 18:04	0.39	72	0.727	0.47	18.39
12/06/2017 19:34	0.21	67	0.640	0.11	17.71
12/06/2017 21:03	0.00	62	0.644	0.60	18.65
12/06/2017 22:33	0.00	58	0.574	0.70	15.86
13/06/2017 00:03	0.00	58	0.492	0.85	12.58
13/06/2017 01:32	0.00	50	0.457	2.72	21.00
13/06/2017 03:02	0.01	55	0.387	0.63	15.99
13/06/2017 04:31	0.00	41	0.448	0.85	22.00
13/06/2017 06:01	0.04	24	0.522	2.92	38.80
13/06/2017 07:30		29	0.621	2.66	33.95
13/06/2017 09:00	0.06	28	0.739	1.78	30.00
13/06/2017 09:45	0.14	38	0.629	5.08	27.05
13/06/2017 11:23	0.68	35	0.864	4.81	29.18
13/06/2017 12:06	0.40	49	0.596	2.92	23.40
13/06/2017 12:51	0.40	63	0.502	2.71	15.78
13/06/2017 13:36	0.53	77	0.432	1.21	9.84
13/06/2017 14:21	0.62	82	0.391	1.09	9.85
13/06/2017 15:06	0.38	84	0.415	0.89	9.43
13/06/2017 15:51	0.38	87	0.360	0.44	6.56
13/06/2017 16:36	0.53	87	0.340	0.48	7.87
14/06/2017 12:29	1.51	137	0.395	0.52	9.87
14/06/2017 13:13	1.20	107	0.234	0.42	6.17
14/06/2017 13:58	1.20	93	0.179	0.46	5.97
14/06/2017 14:43	1.28	92	0.154	0.33	5.08
14/06/2017 15:28	1.84	88	0.139	0.35	5.50
14/06/2017 16:13		78	0.167	0.58	7.83
14/06/2017 16:58		77	0.182	0.33	8.59
14/06/2017 17:43	1.52	81	0.245	0.38	11.14
14/06/2017 18:28		73	0.271	0.31	17.15
14/06/2017 19:58		68	0.268	0.11	14.67
14/06/2017 21:28		70	0.260	0.10	14.62
14/06/2017 22:57	0.02	63	0.402	0.12	17.17
15/06/2017 00:27	0.03	52	0.400	0.10	15.41
15/06/2017 01:56	0.10	7	0.659	1.76	50.51
15/06/2017 03:26	7.11	4	0.803	33.70	51.79
15/06/2017 04:56	0.32	3	0.627	55.14	46.81
15/06/2017 06:25	2.70	3	0.620	51.52	39.93
15/06/2017 07:55	1.80	21	0.429	15.34	40.96
15/06/2017 09:24	2.92	29	0.450	9.50	40.83
15/06/2017 10:09		41	0.557	9.00	43.33
15/06/2017 10:54		57	0.529	4.86	35.53
15/06/2017 11:39		71	0.566	4.25	35.72
15/06/2017 12:23	2.29	83	0.422	2.79	27.27
15/06/2017 13:08	2.29	130	0.334	0.56	11.01

15/06/2017 13:53	0.00	119	0.268	0.45	7.86
15/06/2017 14:38		121	0.218	0.39	8.13
15/06/2017 15:23		122	0.195	0.40	8.06
15/06/2017 16:08		102	0.151	0.35	8.06
15/06/2017 16:53		96	0.179	0.36	9.01
15/06/2017 17:38		104	0.232	0.37	11.04
15/06/2017 18:23		118	0.320	0.23	13.77
15/06/2017 19:53		88	0.350	0.22	16.87
15/06/2017 21:22		77	0.446	0.25	20.89
15/06/2017 22:52	0.00	86	0.560	0.18	18.07
16/06/2017 00:22	0.02	82	0.679	0.21	18.04
16/06/2017 01:51	7.21	67	0.771	0.13	21.24
16/06/2017 03:21	0.00	55	0.931	0.12	22.90
16/06/2017 04:50	0.02	52	0.779	0.43	19.69
16/06/2017 06:20	1.35	32	0.843	1.95	34.41
16/06/2017 07:49	2.88	11	0.716	42.07	66.62
16/06/2017 09:19	2.96	62	0.711	4.61	40.29
17/06/2017 17:42	0.95	133	0.526	0.15	12.05
17/06/2017 18:46	0.66	126	0.607	0.12	14.30
17/06/2017 19:46	0.22	117	0.626	0.25	17.94
17/06/2017 20:46	0.04	114	0.837	0.34	18.94
17/06/2017 21:46		110	0.944	0.11	18.32
17/06/2017 22:46	0.03	107	0.574	0.38	10.13
17/06/2017 23:46	0.02	94	0.570	0.25	11.52
18/06/2017 00:46	0.07	74	0.572	0.11	18.21
18/06/2017 01:46	0.09	55	0.705	0.29	24.75
18/06/2017 02:46	0.03	56	0.558	0.13	16.66
18/06/2017 03:46	0.03	53	0.486	0.11	13.20
18/06/2017 04:46	0.03	37	0.523	0.16	21.90
18/06/2017 05:46	0.27	43	0.550	0.31	18.15
18/06/2017 06:46	0.38	48	0.544	0.69	16.44
18/06/2017 07:46	0.88	55	0.588	1.18	15.84
18/06/2017 08:46	0.79	74	0.563	0.96	13.12
18/06/2017 11:16	1.41	128	0.730	0.47	10.43
18/06/2017 12:16	1.76	149	0.912	0.33	9.37
18/06/2017 13:16		154	0.864	0.31	8.87
18/06/2017 14:16		151	0.765	0.26	8.68
18/06/2017 15:16	0.16	135	0.559	0.11	10.63
18/06/2017 16:16	0.06	132	0.787	0.22	11.26
18/06/2017 17:16	1.30	104	0.833	0.53	14.38
18/06/2017 18:16	0.81	56	1.020	0.31	30.11
18/06/2017 19:16	0.14	77	0.869	1.00	26.26
18/06/2017 20:16	0.03	74	0.707	0.28	21.20
18/06/2017 21:16	0.03	64	0.708	0.44	23.42
18/06/2017 22:16	0.02	76	0.526	0.46	13.70

18/06/2017 23:16	0.03	68	0.507	0.44	14.78
19/06/2017 00:16	0.02	65	0.530	0.18	12.96
19/06/2017 01:16	0.00	61	0.497	0.79	13.66
19/06/2017 02:16	0.03	52	0.437	0.24	16.51
19/06/2017 03:16	0.02	43	0.430	0.18	20.20
19/06/2017 04:16	0.03	45	0.390	0.15	17.09
19/06/2017 05:16	0.14	45	0.353	0.54	14.37
19/06/2017 06:16		40	0.551	1.25	17.71
19/06/2017 07:16	0.74	45	0.423	1.88	14.58
19/06/2017 08:16	0.86	49	0.400	2.57	15.28
19/06/2017 09:16	0.76	54	0.325	2.13	13.48
19/06/2017 10:16	1.13	68	0.325	1.61	10.04
19/06/2017 11:16	0.87	81	0.369	1.19	10.43
19/06/2017 12:16	1.19	97	0.358	0.74	8.16
19/06/2017 13:16	1.17	105	0.302	0.47	7.51
19/06/2017 14:16		121	0.270	0.31	6.76
19/06/2017 15:16	1.83	122	0.222	0.35	7.24
19/06/2017 16:16	1.04	115	0.297	0.38	7.96
19/06/2017 17:16		107	0.374	0.36	12.77
19/06/2017 18:17	1.30	82	0.184	0.47	10.08
19/06/2017 19:16	0.67	104	0.331	0.21	10.52
19/06/2017 20:16	0.31	77	0.684	0.21	27.00
19/06/2017 21:16	6.96	83	0.590	0.28	20.65
19/06/2017 22:17	0.10	59	0.726	0.18	34.49
19/06/2017 23:16	0.02	69	0.683	0.15	13.06
20/06/2017 00:17		67	0.650	0.22	13.37
20/06/2017 01:17		57	0.526	0.22	11.97
20/06/2017 02:16	0.02	45	0.421	0.17	21.87
20/06/2017 03:17	0.00	55	0.360	0.10	13.06
20/06/2017 04:17	0.00	51	0.444	0.27	12.00
20/06/2017 05:17	0.00	48	0.462	0.21	15.34
20/06/2017 06:16	0.08	52	0.383	0.38	12.51
20/06/2017 07:17	0.28	54	0.428	1.38	14.27
20/06/2017 08:17	0.60	60	0.367	1.61	13.44
20/06/2017 09:17	0.63	64	0.417	2.12	16.07
20/06/2017 10:17	0.75	75	0.432	1.51	13.53
20/06/2017 11:17	0.63	88	0.396	0.89	9.38
20/06/2017 12:49	0.78	103	0.362	0.56	6.57
20/06/2017 13:49	1.22	115	0.393	0.61	8.24
20/06/2017 14:49	1.40	109	0.381	0.43	7.46
20/06/2017 15:49	1.07	110	0.368	0.41	8.25
20/06/2017 16:49		111	0.350	0.33	7.01
20/06/2017 17:49	0.99	108	0.385	0.27	9.41
20/06/2017 18:49	0.99	103	0.410	0.19	11.27
20/06/2017 19:49	0.13	105	0.539	0.26	13.54

20/06/2017 20:49	0.04	100	0.730	0.11	15.77
20/06/2017 21:49	0.08	80	0.765	0.35	28.32
20/06/2017 22:49	0.03	73	0.830	0.31	26.08
20/06/2017 23:49	0.02	62	0.738	1.01	18.67
21/06/2017 00:49	0.00	59	0.599	0.35	16.07
21/06/2017 01:49	0.00	54	0.608	0.10	14.94
21/06/2017 02:49	0.00	27	0.741	0.31	28.11
21/06/2017 03:49	0.00	42	0.526	0.12	15.63
21/06/2017 04:49	0.03	37	0.499	0.15	17.92
21/06/2017 05:49	0.30	51	0.515	0.92	14.02
21/06/2017 06:49	0.37	53	0.579	0.69	15.62
21/06/2017 07:49	0.39	56	0.677	1.49	18.65
21/06/2017 08:49		60	0.737	2.07	19.46
21/06/2017 09:49		74	0.723	1.64	16.26
21/06/2017 10:49	0.88	90	0.610	1.14	12.05
21/06/2017 11:49	1.14	105	0.645	0.65	10.88
21/06/2017 12:52	0.76	111	0.738	0.65	14.18
21/06/2017 13:52	0.59	116	0.645	0.47	10.35
21/06/2017 14:52	0.84	122	0.577	0.31	9.55
21/06/2017 15:52	0.39	122	0.574	0.30	9.02
21/06/2017 16:52	0.40	123	0.691	0.21	9.72
21/06/2017 17:52	0.36	122	0.631	0.21	15.44
21/06/2017 18:52	0.04	104	0.581	0.66	14.13
21/06/2017 19:52	0.09	59	0.763	0.15	31.26
21/06/2017 20:52	0.03	82	0.460	0.76	9.05
21/06/2017 21:52	0.02	75	0.280	0.52	6.96
21/06/2017 22:52	0.00	72	0.303	0.26	8.58
21/06/2017 23:52	0.03	69	0.275	0.33	6.93
22/06/2017 00:52	0.00	64	0.279	0.12	9.09
22/06/2017 01:52		60	0.275	0.22	8.98
22/06/2017 02:52	0.00	54	0.296	0.12	9.99
22/06/2017 03:52	0.02	54	0.313	0.17	8.88
22/06/2017 04:52	0.02	47	0.318	0.72	11.68
22/06/2017 05:52	0.05	31	0.349	0.50	21.88
22/06/2017 06:52	0.11	34	0.342	1.60	23.94
22/06/2017 07:52	0.24	40	0.391	2.10	24.58
22/06/2017 08:52	0.26	42	0.404	0.93	23.82
22/06/2017 09:52	0.28	48	0.442	0.95	19.78
22/06/2017 10:50	0.29	52	0.401	0.74	17.01
22/06/2017 11:50	0.17	65	0.431	0.52	10.61
22/06/2017 12:50	0.23	59	0.496	0.38	13.39
22/06/2017 13:27	0.23	59	0.466	0.60	12.54
22/06/2017 14:27	0.41	60	0.530	0.47	12.70
22/06/2017 15:27	0.21	57	0.543	0.38	12.80
22/06/2017 16:44	0.41	40	0.714	0.31	20.77

22/06/2017 17:44		39	0.965	0.32	26.32
22/06/2017 18:44		48	0.892	0.15	20.33
22/06/2017 19:44	0.11	44	0.965	0.12	19.31
22/06/2017 20:44	0.10	43	1.108	0.14	18.74
22/06/2017 21:44	0.07	40	1.191	0.14	16.56
22/06/2017 22:44	0.04	53	0.716	0.13	11.19
22/06/2017 23:44	0.03	54	0.589	0.11	9.43
23/06/2017 00:44	0.02	48	0.566	0.12	10.17
23/06/2017 01:44	0.03	56	0.512	0.12	5.16
23/06/2017 02:44	0.03	56	0.422	0.13	4.31
23/06/2017 03:44	0.01	58	0.343	0.10	4.07
23/06/2017 04:44	0.00	57	0.338	0.10	3.82
23/06/2017 05:44	0.02	55	0.307	0.10	5.71
23/06/2017 06:44	0.04	47	0.383	0.13	11.26
23/06/2017 07:44	0.05	41	0.446	0.19	16.59
23/06/2017 08:44	0.17	43	0.403	0.98	13.25
23/06/2017 09:44	0.25	43	0.373	1.06	11.30
23/06/2017 10:44		47	0.384	0.62	7.06
23/06/2017 11:44	0.28	43	0.476	1.08	11.51
23/06/2017 12:44	7.50	43	0.583	1.19	11.53
23/06/2017 13:44	7.29	37	0.649	0.96	15.50
23/06/2017 14:57	0.23	34	0.494	0.74	12.36

Table S3: Chemical data plotted in Fig. 7.

Hour of Day (h)	Isoprene (ppb)	O_3 (ppb)	OH (cm^{-3})	NO (ppb)	NO_3 (ppt)	(4-OH, 3-ONO_2)-IHN (ppt)	E-(1-ONO_2, 4-CO)-ICN (ppt)	Propanone nitrate (ppt)
0	0.04	52	4.14E+05	0.25	4.0	2.29	6.76	42.3
1	0.04	38	3.44E+05	0.30	2.7	1.86	5.55	40.2
2	0.05	39	3.16E+05	0.26	1.1	1.50	3.88	40.6
3	0.03	27	2.95E+05	0.31	0.6	1.34	3.49	28.7
4	0.03	28	2.86E+05	0.22	0.7	1.12	3.03	38.3
5	0.04	17	4.89E+05	0.66	0.2	1.09	2.77	25.7
6	0.27	19	1.21E+06	2.00	0.1	1.12	2.70	34.1
7	0.34	20	2.57E+06	3.51	0.1	1.16	2.00	28.9
8	0.60	21	4.00E+06	9.84	0.2	3.04	1.10	31.0
9	0.76	33	5.87E+06	4.44	0.2	4.06	1.33	33.0
10	0.88	42	7.37E+06	3.64	0.3	6.42	1.17	41.0
11	0.88	52	8.18E+06	3.42	0.6	8.08	1.37	46.1
12	1.06	63	9.09E+06	2.43	0.9	8.57	1.33	30.5
13	1.01	94	8.41E+06	1.03	1.4	9.21	1.46	33.3
14	0.68	88	8.24E+06	1.01	1.7	7.91	1.55	30.7
15	0.88	94	7.26E+06	0.69	2.0	7.81	1.65	29.2
16	0.83	103	5.53E+06	0.52	2.2	7.19	1.12	37.5
17	0.77	96	3.35E+06	0.47	1.9	6.68	0.92	35.2
18	0.95	95	1.62E+06	0.35	1.9	7.84	1.39	23.0
19	0.52	95	9.13E+05	0.25	2.6	6.22	1.65	21.3
20	0.22	73	8.10E+05	0.25	5.0	4.98	2.58	26.2
21	0.06	70	8.55E+05	0.34	7.0	4.72	7.63	25.5
22	0.05	60	6.66E+05	0.34	6.5	2.46	6.59	31.5
23	0.03	53	5.47E+05	0.31	6.7	3.00	7.70	39.5
24	0.04	52	4.14E+05	0.25	4.0	2.29	6.76	42.3

Table S4: Mixing layer height data plotted in Fig. 7.

Hour of Day (h)	Mixed Layer Height (m*10)
0.125	30.7
0.375	28.7
0.625	28.6
0.875	29.0
1.125	29.0
1.375	28.2
1.625	27.9
1.875	28.0
2.125	28.3
2.375	28.3
2.625	28.3
2.875	28.3
3.125	28.1
3.375	28.3
3.625	28.8
3.875	28.7
4.125	28.6
4.375	28.9
4.625	29.1
4.875	29.0
5.125	29.8
5.375	30.9
5.625	31.4
5.875	31.9
6.125	32.7
6.373	33.3
6.625	33.9
6.875	35.0
7.125	37.1
7.375	39.3
7.625	40.6
7.875	42.9
8.125	45.7
8.375	48.1
8.625	50.8
8.875	53.8
9.125	56.8
9.375	59.4
9.625	62.9
9.875	66.9
10.125	69.9
10.375	73.1

10.625	76.6
10.875	80.5
11.125	84.7
11.375	87.5
11.625	89.5
11.877	91.8
12.125	94.1
12.375	96.2
12.625	98.4
12.875	100.8
13.125	102.5
13.375	103.4
13.625	103.9
13.875	105.2
14.125	107.0
14.375	106.8
14.625	105.4
14.875	104.5
15.125	104.9
15.375	105.3
15.625	105.3
15.875	105.9
16.125	106.3
16.375	104.6
16.625	102.6
16.875	100.6
17.125	97.1
17.375	94.1
17.625	93.0
17.875	92.8
18.125	91.6
18.375	90.1
18.625	87.7
18.875	83.9
19.125	79.4
19.375	75.3
19.625	70.2
19.875	64.8
20.125	61.2
20.375	57.7
20.625	54.3
20.875	49.9
21.125	45.0
21.375	42.1
21.625	40.4

21.875	39.1
22.125	38.7
22.375	38.0
22.625	36.7
22.875	36.0
23.125	35.8
23.375	35.3
23.625	34.3
23.750	33.7

Table S5: Data plotted in Figs. 8 and 12.

Hour of Day (h)	Simple Model (4-OH, 3-ONO_2)-IHN Production cm^{-3} s^{-1}	Simple Model (1-OH, 2-ONO_2)-IHN Production cm^{-3} s^{-1}	Simple Model (4-OH, 3-ONO_2)-IHN (ppt)	Simple Model (1-OH, 2-ONO_2)-IHN (ppt)	Observed mean (10-16/6/2017) (4-OH, 3-ONO_2)-IHN (ppt)	Observed mean (4-OH, 3-ONO_2)-IHN (ppt)	Observed mean (1-OH, 2 -ONO_2)-IHN (ppt)
0	1.11E+03	2.08E+03	13.2	36.2	5.2	2.3	16.5
1	8.37E+02	1.56E+03	10.8	29.9	4.5	1.9	6.6
2	1.02E+03	1.89E+03	8.9	24.9	2.8	1.5	11.0
3	5.70E+02	1.06E+03	7.4	21.0	2.4	1.3	7.6
4	6.62E+02	1.23E+03	6.2	17.7		1.1	
5	1.28E+03	2.38E+03	5.2	15.0	3.4	1.1	6.9
6	2.30E+04	4.27E+04	4.4	12.7	2.2	1.1	5.3
7	6.22E+04	1.16E+05	6.1	15.1	3.3	1.2	12.3
8	1.70E+05	3.16E+05	10.7	23.7	3.0	3.0	7.8
9	3.14E+05	5.83E+05	22.7	48.5	4.6	4.1	14.7
10	4.57E+05	8.50E+05	36.9	81.3	7.8	6.4	30.3
11	5.06E+05	9.41E+05	48.7	111.7	6.6	8.1	26.5
12	6.77E+05	1.26E+06	52.5	124.9	12.4	8.6	46.4
13	5.82E+05	1.09E+06	62.6	149.9	10.8	9.2	35.8
14	3.84E+05	7.20E+05	60.7	149.2	9.4	7.9	28.4
15	4.32E+05	8.16E+05	45.4	117.0	11.1	7.8	38.2
16	3.08E+05	5.81E+05	49.2	122.7	8.8	7.2	30.0
17	1.76E+05	3.31E+05	47.0	117.1	7.6	6.7	29.2
18	1.05E+05	1.97E+05	43.2	107.5	12.0	7.8	48.9
19	3.17E+04	5.98E+04	41.8	102.0	9.0	6.2	28.0
20	1.18E+04	2.23E+04	35.2	87.1	7.4	5.0	28.4
21	3.68E+03	6.90E+03	28.1	71.0	7.0	4.7	22.4
22	2.45E+03	4.58E+03	21.4	55.9		2.5	
23	1.13E+03	2.11E+03	16.7	44.8	5.0	3.0	20.3
24	1.11E+03	2.08E+03	13.2	36.2	5.2	2.3	16.5

Table S6: Observed and Simple Model data plotted in Fig. 10.

	(1-OH, 2-ONO_2)-IHN / (4-OH, 3-ONO_2)-IHN ratio			
Hour of Day (h)	**Observed mean**	**Simple Model**	**Simple Model kOH for (1-OH, 2-ONO_2)-IHN*0.72**	**Simple Model yield ratio (1-OH, 2-ONO_2)-IHN / (4-OH, 3-ONO_2)-IHN ratio of 2.5**
0	3.02	2.73	3.77	3.68
1	1.45	2.77	3.86	3.73
2	4.38	2.81	3.94	3.78
3	3.25	2.83	3.99	3.81
4		2.85	4.06	3.84
5	2.03	2.87	4.11	3.87
6	2.19	2.90	4.17	3.90
7	3.77	2.50	3.29	3.36
8	2.15	2.23	2.66	3.00
9	4.94	2.14	2.43	2.88
10	5.82	2.20	2.54	2.97
11	3.03	2.29	2.74	3.09
12	2.85	2.38	2.95	3.20
13	3.13	2.39	3.00	3.22
14	2.95	2.46	3.15	3.31
15	3.29	2.58	3.46	3.47
16	3.18	2.49	3.26	3.35
17	3.81	2.49	3.25	3.35
18	3.93	2.49	3.23	3.35
19	3.09	2.44	3.13	3.29
20	3.47	2.47	3.19	3.33
21	3.29	2.53	3.31	3.41
22		2.61	3.50	3.52
23	4.14	2.68	3.64	3.60
24	3.02	2.73	3.77	3.68

Table S7: MCM data plotted in Fig. 10.

Hour of Day (h)	MCM (1-OH, 2-ONO_2)-IHN / (4-OH, 3-ONO_2)-IHN ratio
0.125	2.35
0.375	2.31
0.625	2.33
0.875	2.36
1.125	2.38
1.375	2.44
1.625	2.52
1.875	2.56
2.125	2.57
2.375	2.52
2.625	2.47
2.875	2.43
3.125	2.41
3.375	2.40
3.625	2.34
3.875	2.30
4.125	2.26
4.375	2.21
4.625	2.18
4.875	2.17
5.125	2.14
5.375	2.10
5.625	2.06
5.875	2.04
6.125	2.04
6.373	2.05
6.625	2.06
6.875	2.04
7.125	2.02
7.375	2.01
7.625	2.00
7.875	2.01
8.125	2.02
8.375	2.04
8.625	2.06
8.875	2.08
9.125	2.11
9.375	2.14
9.625	2.17
9.875	2.19
10.125	2.20

10.375	2.23
10.625	2.26
10.875	2.30
11.125	2.33
11.375	2.36
11.625	2.38
11.877	2.40
12.125	2.42
12.375	2.44
12.625	2.46
12.875	2.50
13.125	2.53
13.375	2.54
13.625	2.55
13.875	2.55
14.125	2.56
14.375	2.57
14.625	2.59
14.875	2.62
15.125	2.64
15.375	2.65
15.625	2.67
15.875	2.67
16.125	2.67
16.375	2.65
16.625	2.64
16.875	2.62
17.125	2.61
17.375	2.58
17.625	2.56
17.875	2.54
18.125	2.53
18.375	2.52
18.625	2.53
18.875	2.53
19.125	2.52
19.375	2.45
19.625	2.38
19.875	2.32
20.125	2.31
20.375	2.38
20.625	2.48
20.875	2.52
21.125	2.53
21.375	2.50

21.625	2.44
21.875	2.42
22.125	2.45
22.375	2.48
22.625	2.47
22.875	2.44
23.125	2.43
23.375	2.42
23.625	2.41
23.750	2.41

Table S7: MCM data plotted in Fig. 12.

Hour of Day (h)	(4-OH, 3-ONO_2)-IHN (ppt)	(1-OH, 2-ONO_2)-IHN (ppt)	(4-OH, 3-ONO_2)-IHN production (cm^{-3} s^{-1})	(1-OH, 2-ONO_2)-IHN production (cm^{-3} s^{-1})
0.125	0.87	2.05	4.26E+03	8.98E+03
0.375	0.98	2.26	4.75E+03	9.96E+03
0.625	0.99	2.31	3.59E+03	8.68E+03
0.875	1.13	2.66	7.04E+03	1.69E+04
1.125	1.34	3.19	1.04E+04	2.44E+04
1.375	1.45	3.56	9.60E+03	2.40E+04
1.625	1.49	3.74	7.75E+03	2.07E+04
1.875	1.48	3.79	6.85E+03	1.78E+04
2.125	1.47	3.76	7.08E+03	1.69E+04
2.375	1.51	3.82	9.04E+03	1.96E+04
2.625	1.52	3.77	8.36E+03	1.71E+04
2.875	1.47	3.59	6.73E+03	1.33E+04
3.125	1.39	3.35	5.94E+03	1.18E+04
3.375	1.27	3.05	4.59E+03	9.19E+03
3.625	1.30	3.05	7.89E+03	1.55E+04
3.875	1.34	3.08	8.33E+03	1.64E+04
4.125	1.35	3.07	8.46E+03	1.67E+04
4.375	1.46	3.22	9.29E+03	1.80E+04
4.625	1.44	3.14	6.00E+03	1.14E+04
4.875	1.36	2.95	5.67E+03	1.09E+04
5.125	1.39	2.98	8.83E+03	1.69E+04
5.375	1.62	3.41	1.59E+04	3.02E+04
5.625	2.19	4.50	2.90E+04	5.54E+04
5.875	3.23	6.58	5.05E+04	9.65E+04
6.125	4.66	9.49	7.53E+04	1.43E+05
6.373	5.43	11.15	1.01E+05	1.92E+05
6.625	4.75	9.77	1.18E+05	2.26E+05
6.875	3.59	7.33	1.24E+05	2.38E+05
7.125	2.96	5.99	1.36E+05	2.62E+05
7.375	2.73	5.48	1.51E+05	2.92E+05
7.625	2.88	5.77	1.67E+05	3.23E+05
7.875	3.47	6.96	1.93E+05	3.72E+05
8.125	4.25	8.59	2.18E+05	4.22E+05
8.375	5.22	10.65	2.46E+05	4.76E+05
8.625	6.40	13.19	2.89E+05	5.60E+05
8.875	7.53	15.68	3.17E+05	6.15E+05
9.125	8.89	18.78	3.43E+05	6.64E+05
9.375	10.41	22.32	3.80E+05	7.38E+05
9.625	11.28	24.45	3.86E+05	7.49E+05
9.875	11.62	25.40	3.72E+05	7.24E+05
10.125	12.27	27.06	3.94E+05	7.69E+05

10.375	13.70	30.53	4.59E+05	8.96E+05
10.625	15.00	33.92	4.99E+05	9.75E+05
10.875	15.80	36.28	5.05E+05	9.91E+05
11.125	16.62	38.74	5.23E+05	1.03E+06
11.375	17.39	40.98	5.36E+05	1.06E+06
11.625	17.93	42.60	5.40E+05	1.07E+06
11.877	17.87	42.90	5.41E+05	1.08E+06
12.125	18.08	43.78	5.49E+05	1.10E+06
12.375	19.01	46.30	5.68E+05	1.15E+06
12.625	19.45	47.90	5.64E+05	1.15E+06
12.875	19.48	48.65	5.56E+05	1.14E+06
13.125	19.34	48.85	5.43E+05	1.12E+06
13.375	19.01	48.25	5.22E+05	1.08E+06
13.625	18.53	47.16	5.03E+05	1.04E+06
13.875	18.14	46.27	4.82E+05	1.00E+06
14.125	17.85	45.69	4.64E+05	9.72E+05
14.375	17.58	45.20	4.56E+05	9.60E+05
14.625	17.18	44.52	4.35E+05	9.22E+05
14.875	16.73	43.89	3.99E+05	8.55E+05
15.125	16.60	43.85	3.77E+05	8.05E+05
15.375	16.11	42.75	3.37E+05	7.18E+05
15.625	15.22	40.58	3.00E+05	6.41E+05
15.875	14.24	38.07	2.70E+05	5.82E+05
16.125	13.23	35.31	2.39E+05	5.15E+05
16.375	12.26	32.53	2.18E+05	4.68E+05
16.625	11.31	29.83	1.97E+05	4.25E+05
16.875	10.36	27.16	1.72E+05	3.72E+05
17.125	9.37	24.44	1.52E+05	3.33E+05
17.375	8.44	21.80	1.40E+05	3.07E+05
17.625	7.51	19.20	1.16E+05	2.56E+05
17.875	6.59	16.77	8.81E+04	1.97E+05
18.125	5.68	14.36	6.96E+04	1.55E+05
18.375	4.69	11.82	5.24E+04	1.17E+05
18.625	3.76	9.49	3.79E+04	8.52E+04
18.875	2.99	7.57	2.73E+04	6.22E+04
19.125	2.40	6.05	2.18E+04	4.90E+04
19.375	2.07	5.07	1.99E+04	4.24E+04
19.625	1.93	4.61	2.00E+04	4.15E+04
19.875	2.02	4.70	2.38E+04	4.88E+04
20.125	2.23	5.16	2.67E+04	5.61E+04
20.375	2.13	5.05	1.82E+04	4.18E+04
20.625	1.82	4.50	9.27E+03	2.49E+04
20.875	1.57	3.97	1.49E+04	3.59E+04
21.125	1.18	2.99	1.49E+04	3.44E+04
21.375	0.80	2.00	8.39E+03	1.91E+04

21.625	0.61	1.50	6.13E+03	1.32E+04
21.875	0.53	1.28	4.67E+03	1.04E+04
22.125	0.48	1.18	3.59E+03	8.64E+03
22.375	0.47	1.17	2.83E+03	7.10E+03
22.625	0.55	1.35	4.16E+03	9.71E+03
22.875	0.64	1.56	4.09E+03	9.21E+03
23.125	0.66	1.62	2.59E+03	5.81E+03
23.375	0.69	1.67	2.55E+03	5.70E+03
23.625	0.73	1.76	2.86E+03	6.63E+03
23.750	0.75	1.82	3.12E+03	7.39E+03

Table S9: Observed data plotted in Figs. 17 and 19.

Hour of Day (h)	ICN Total (ppt)	Propanone Nitrate (ppt)
0	21.28	47.37
1	17.07	45.38
2	14.83	43.21
3	12.53	45.23
4	9.58	50.57
5	11.02	35.69
6	9.39	35.63
7	8.67	34.51
8	6.69	38.79
9	4.42	44.95
10	2.80	45.40
11	4.36	55.14
12	4.87	46.57
13	4.07	44.16
14	2.27	44.23
15	4.26	37.26
16	2.96	43.05
17	4.45	38.56
18	4.40	30.54
19	9.98	31.80
20	12.51	34.53
21	25.76	39.82
22	23.73	42.71
23	20.58	48.16
24	21.28	47.37

Table S10: MCM data plotted in Figs. 17, 19 and 21.

	All Data				Excluding spike on 16/06/2017		
Hour of Day (h)	(1-OH, 4-ONO_2)-IHN (ppt)	(4-OH, 1-ONO_2)-IHN (ppt)	Total ICN (ppt)	Propanone Nitrate (ppt)	(4-OH, 1-ONO_2)-IHN (ppt)	Total ICN (ppt)	Propanone Nitrate (ppt)
0.125	1.47	0.06	106.69	14.23	1.47	106.69	14.23
0.375	1.33	0.07	109.56	15.23	1.33	109.56	15.23
0.625	1.98	0.07	132.59	16.44	1.43	113.89	15.83
0.875	3.69	0.08	182.18	19.09	1.48	114.46	16.18
1.125	8.19	0.09	249.11	23.50	1.33	108.04	16.25
1.375	13.69	0.09	328.14	29.93	1.24	102.83	16.13
1.625	14.67	0.09	368.56	37.70	1.15	97.98	15.86
1.875	13.24	0.10	369.28	44.45	1.03	94.01	15.54
2.125	11.97	0.11	364.29	49.75	0.91	93.10	15.21
2.375	9.98	0.13	350.46	54.91	0.83	92.94	14.82
2.625	7.96	0.16	321.81	58.64	0.78	92.83	14.41
2.875	6.46	0.17	284.02	58.67	0.76	90.72	13.86
3.125	5.36	0.18	251.19	56.37	0.71	87.37	13.30
3.375	4.50	0.18	225.05	53.59	0.74	86.84	12.82
3.625	3.75	0.19	204.13	50.91	0.74	88.37	12.49
3.875	3.06	0.21	185.14	48.19	0.67	88.30	12.22
4.125	2.51	0.22	169.22	45.08	0.61	88.42	12.04
4.375	2.07	0.24	153.72	41.84	0.57	86.92	11.84
4.625	1.68	0.24	135.24	38.55	0.52	80.53	11.40
4.875	1.37	0.24	117.11	35.43	0.47	71.48	10.83
5.125	1.15	0.27	101.07	33.07	0.45	61.81	10.39
5.375	1.01	0.34	86.94	31.68	0.46	52.84	10.24
5.625	0.91	0.47	70.93	30.91	0.52	43.70	10.25
5.875	0.91	0.67	52.51	29.98	0.65	32.87	10.35
6.125	1.01	0.92	38.11	28.47	0.84	23.81	10.43
6.373	0.99	0.99	26.51	23.46	0.89	17.38	9.36
6.625	0.76	0.79	14.36	13.74	0.73	11.25	8.29
6.875	0.55	0.59	6.12	5.54	0.55	6.12	5.54
7.125	0.44	0.47	2.57	1.82	0.44	2.57	1.82
7.375	0.39	0.40	1.39	0.62	0.39	1.39	0.62
7.625	0.39	0.40	1.13	0.29	0.39	1.13	0.29
7.875	0.44	0.45	1.29	0.24	0.44	1.29	0.24
8.125	0.49	0.49	1.46	0.26	0.49	1.46	0.26
8.375	0.53	0.51	1.68	0.33	0.53	1.68	0.33
8.625	0.57	0.54	2.07	0.44	0.57	2.07	0.44
8.875	0.60	0.57	2.66	0.59	0.60	2.66	0.59
9.125	0.65	0.61	3.23	0.80	0.65	3.23	0.80
9.375	0.69	0.66	3.46	1.06	0.69	3.46	1.06
9.625	0.71	0.68	3.92	1.27	0.71	3.92	1.27

9.875	0.69	0.66	4.45	1.44	0.69	4.45	1.44
10.125	0.69	0.66	5.08	1.66	0.69	5.08	1.66
10.375	0.72	0.70	5.89	2.03	0.72	5.89	2.03
10.625	0.75	0.73	6.74	2.48	0.75	6.74	2.48
10.875	0.75	0.73	8.03	2.99	0.75	8.03	2.99
11.125	0.74	0.74	9.28	3.58	0.74	9.28	3.58
11.375	0.78	0.78	10.49	4.30	0.78	10.49	4.30
11.625	0.78	0.78	11.71	5.04	0.78	11.71	5.04
11.877	0.72	0.74	12.63	5.51	0.72	12.63	5.51
12.125	0.71	0.74	13.86	5.95	0.71	13.86	5.95
12.375	0.73	0.77	15.74	6.68	0.73	15.74	6.68
12.625	0.72	0.77	17.47	7.54	0.72	17.47	7.54
12.875	0.70	0.76	18.73	8.40	0.70	18.73	8.40
13.125	0.69	0.75	19.52	9.16	0.69	19.52	9.16
13.375	0.67	0.73	20.47	9.70	0.67	20.47	9.70
13.625	0.65	0.71	21.60	10.04	0.65	21.60	10.04
13.875	0.64	0.70	22.50	10.42	0.64	22.50	10.42
14.125	0.63	0.69	22.48	10.71	0.63	22.48	10.71
14.375	0.61	0.68	22.43	10.93	0.61	22.43	10.93
14.625	0.59	0.66	23.44	11.26	0.59	23.44	11.26
14.875	0.56	0.64	25.15	11.84	0.56	25.15	11.84
15.125	0.55	0.63	27.54	12.96	0.55	27.54	12.96
15.375	0.53	0.60	29.66	14.01	0.53	29.66	14.01
15.625	0.50	0.57	30.78	14.69	0.50	30.78	14.69
15.875	0.46	0.53	30.72	14.93	0.46	30.72	14.93
16.125	0.43	0.50	30.20	14.61	0.43	30.20	14.61
16.375	0.41	0.47	29.95	14.10	0.41	29.95	14.10
16.625	0.38	0.44	29.52	13.40	0.38	29.52	13.40
16.875	0.35	0.40	29.04	12.35	0.35	29.04	12.35
17.125	0.32	0.37	28.54	11.04	0.32	28.54	11.04
17.375	0.30	0.34	28.31	9.67	0.30	28.31	9.67
17.625	0.28	0.32	29.50	8.49	0.28	29.50	8.49
17.875	0.26	0.28	30.97	7.61	0.26	30.97	7.61
18.125	0.23	0.25	31.37	6.88	0.23	31.37	6.88
18.375	0.20	0.20	31.22	6.15	0.20	31.22	6.15
18.625	0.17	0.16	30.09	5.47	0.17	30.09	5.47
18.875	0.14	0.13	28.82	4.86	0.14	28.82	4.86
19.125	0.14	0.11	29.78	4.34	0.14	29.78	4.34
19.375	0.14	0.09	31.98	4.14	0.14	31.98	4.14
19.625	0.13	0.09	33.47	4.27	0.13	33.47	4.27
19.875	0.14	0.09	38.57	5.00	0.14	38.57	5.00
20.125	0.21	0.10	47.34	6.18	0.21	47.34	6.18
20.375	0.67	0.10	59.31	6.84	0.67	59.31	6.84
20.625	1.07	0.08	70.51	7.26	1.07	70.51	7.26
20.875	1.00	0.07	82.29	7.84	1.00	82.29	7.84

21.125	0.81	0.06	79.89	7.38	0.81	79.89	7.38
21.375	0.52	0.04	56.51	6.16	0.52	56.51	6.16
21.625	0.52	0.03	40.30	5.43	0.52	40.30	5.43
21.875	0.68	0.02	43.54	5.18	0.68	43.54	5.18
22.125	0.72	0.02	54.32	5.30	0.72	54.32	5.30
22.375	0.88	0.02	61.71	5.81	0.88	61.71	5.81
22.625	0.94	0.03	70.34	7.05	0.94	70.34	7.05
22.875	0.91	0.04	78.61	8.64	0.91	78.61	8.64
23.125	0.89	0.04	83.58	10.02	0.89	83.58	10.02
23.375	0.88	0.04	85.79	11.13	0.88	85.79	11.13
23.625	0.92	0.05	91.32	12.24	0.92	91.32	12.24
23.750	0.95	0.05	96.51	12.91	0.95	96.51	12.91