Evidence of Aqueous Secondary Organic Aerosol Formation from Biogenic Emissions in the North American Sonoran Desert

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Table S1. Correlation matrix of the cumulative dataset covering a full annual cycle in Tucson, Arizona. "r" values are only reported when statistically significant with a two-tailed student's T-Test at 95% confidence (n = 489). "Water vapor" = water vapor mixing ratio, RH = relative humidity, and isoprene/monoterpene correspond to modeled surface concentrations.

	WSOC:OC	WSOC	RH	Water Vapor	T	O_3	NO_2	CO	SO_2	Isoprene	Monoterpene
WSOC:OC	1.00										
WSOC	0.71	1.00									
RH	0.20	0.39	1.00								
Water Vapor	0.52	0.64	0.82	1.00							
T	0.46	0.32	-0.36	0.17	1.00						
O_3	0.36	0.12	-0.38	--	0.60	1.00					
NO_2	-0.27	--	0.15	--	-0.45	-0.73	1.00				
CO	-0.29	--	--	-0.19	-0.49	-0.58	0.87	1.00			
SO_2	--	--	--	--	-0.11	--	0.20	0.20	1.00		
Isoprene	0.22	--	-0.25	--	0.66	0.52	-0.47	-0.44	-0.24	1.00	
Monoterpene	0.36	0.29	0.24	0.50	0.43	0.13	-0.28	-0.38	-0.15	0.60	1.00

Table S2. Summary of data (average ± standard deviation) during the "dry" and "moist" periods in each of the two case studies examined.

	Case Study 1		Case Study 2	
	Moist	Dry	Dry	Moist
Time	0500 (12 Sep) - 0500 (16 Sep)	0500 (16 Sep) - 0500 (22 Sep)	0500 (17 Jul) - 0500 (21 Jul)	0500 (21 July) - 0500 (23 Jul)
WSOC:OC	0.35 ± 0.07	0.18 ± 0.05	0.31 ± 0.06	0.45 ± 0.08
WSOC ($\mu g\ m^{-3}$)	1.26 ± 0.26	0.68 ± 0.20	1.36 ± 0.42	1.65 ± 0.21
Water Vapor ($g\ kg^{-1}$)	12.43 ± 1.28	7.85 ± 2.23	10.72 ± 3.35	14.79 ± 1.20
RH (%)	63.49 ± 15.83	36.92 ± 15.58	42.96 ± 22.33	60.64 ± 11.53
T (C)	24.51 ± 3.26	27.41 ± 4.06	29.67 ± 4.35	28.01 ± 2.58
O_3 (ppm)	0.029 ± 0.012	0.025 ± 0.012	0.031 ± 0.012	0.034 ± 0.010
NO_2 (ppb)	9.72 ± 3.94	11.66 ± 6.22	10.60 ± 4.29	8.70 ± 2.87
CO (ppm)	0.200 ± 0.052	0.183 ± 0.070	0.168 ± 0.042	0.168 ± 0.034
SO_2 (ppb)	0.162 ± 0.114	0.276 ± 0.186	0.093 ± 0.038	0.033 ± 0.012
Isoprene (ppt)	240.7 ± 165.4	251.9 ± 180.6	198.9 ± 146.8	143.9 ± 98.1
Monoterpene (ppt)	11.6 ± 4.9	10.8 ± 5.6	11.4 ± 3.5	9.7 ± 3.5

Table S3. Correlation matrix of the dataset for Case Study 1 (12-22 September 2011). "r" values are only reported when statistically significant with a two-tailed student's T-Test at 95% confidence (n = 37). "Water vapor" = water vapor mixing ratio, RH = relative humidity, and isoprene/monoterpene correspond to modeled surface concentrations.

	WSOC:OC	WSOC	RH	Water Vapor	T	O_3	NO_2	CO	SO_2	Isoprene	Monoterpene
WSOC:OC	1.00										
WSOC	0.86	1.00									
RH	0.42	0.61	1.00								
Water Vapor	0.61	0.66	0.92	1.00							
T	--	-0.41	-0.89	-0.68	1.00						
O_3	0.39	--	-0.44	--	0.74	1.00					
NO_2	--	--	--	--	--	-0.64	1.00				
CO	--	0.38	--	--	--	-0.41	0.83	1.00			
SO_2	--	--	--	--	--	--	--	--	1.00		
Isoprene	--	--	-0.45	--	0.66	0.66	-0.57	-0.43	--	1.00	
Monoterpene	--	--	--	--	--	--	-0.39	--	--	0.50	1.00

Table S4. Correlation matrix of the dataset for Case Study 2 (17-24 July 2012). "r" values are only reported when statistically significant with a two-tailed student's T-Test at 95% confidence (n = 23). "Water vapor" = water vapor mixing ratio, RH = relative humidity, and isoprene/monoterpene correspond to modeled surface concentrations.

	WSOC:OC	WSOC	RH	Water Vapor	T	O_3	NO_2	CO	SO_2	Isoprene	Monoterpene
WSOC:OC	1.00										
WSOC	0.52	1.00									
RH	0.47	0.85	1.00								
Water Vapor	0.67	0.88	0.94	1.00							
T	--	-0.61	-0.86	-0.68	1.00						
O_3	0.44	--	--	--	0.72	1.00					
NO_2	-0.54	--	--	--	-0.42	-0.74	1.00				
CO	--	0.52	--	--	-0.51	-0.54	0.74	1.00			
SO_2	--	--	--	--	--	--	--	--	--		
Isoprene	--	-0.43	-0.43	--	0.66	0.63	-0.67	-0.59	--	1.00	
Monoterpene	--	--	--	--	--	--	--	--	--	--	1.00

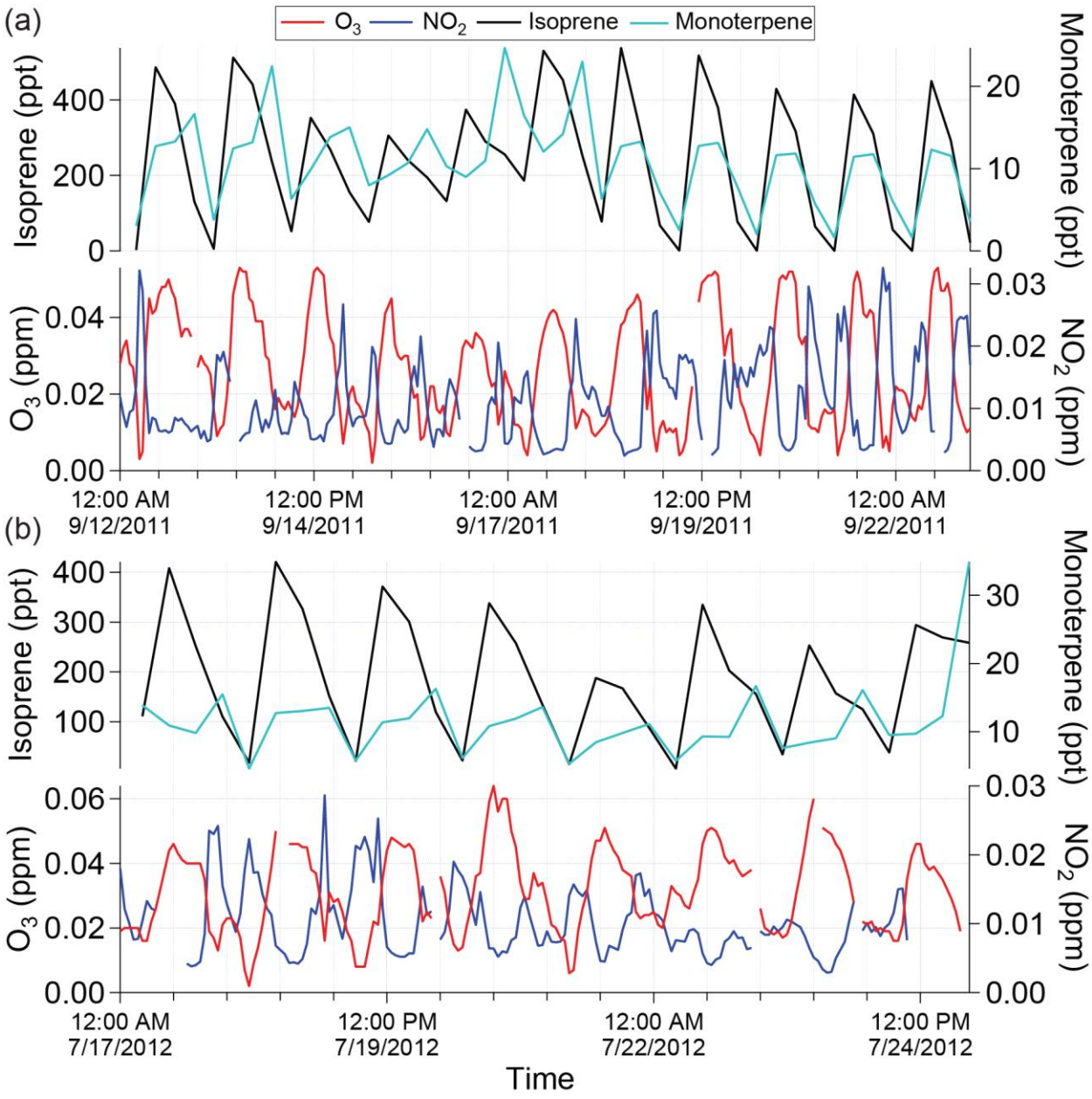

Figure S1. Temporal variation in gas-phase species during the two case studies examined. The average values of these species during the "dry" and "moist" periods for each case study are summarized in Table S2.